Psychological treatment of depression in inpatients: a systematic review and meta-analysis


CRD summary
The review concluded that psychological treatments had a small but robust and statistically significant additional effect in reducing depression compared to usual care in in-patients with depression. Potential limitations in the review process and the suboptimal quality of the evidence made the reliability of the authors’ conclusions unclear.

Authors’ objectives
To evaluate the effectiveness of psychological treatment of depression in inpatients.

Searching
PubMed, PsycINFO, EMBASE and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from 1966 to January 2010. Bibliographies of retrieved articles, earlier relevant reviews and primary studies of 42 relevant meta-analyses were handsearched. Search terms were not reported, but the authors referred to an earlier paper for details of the complete search process (see Other Publications of Related Interest). The included publications were published in English and German.

Study selection
Randomised controlled trials (RCTs) of psychological treatment compared to a control group in adults with a depressive disorder (established at a diagnostic interview) as the primary presenting problem were eligible for inclusion. Participants needed to be hospitalised in a psychiatric setting during the treatment. Eligible interventions had to be structured and standardised psychotherapies that referred to a protocol or a clearly defined method and were clearly different from standard care. Studies of patients with comorbid substance-use disorders or depression in substance-use disorder units, studies that provided insufficient data to calculate an effect size and maintenance trials were all excluded.

The primary outcomes were symptoms of depression, which had to be measured using instruments such as Beck Depression Inventory and Hamilton Rating Scale for Depression. Included studies were performed in Europe (one trial was in UK) and USA. Just under half of the interventions were cognitive-behavioural therapy (CBT) and two studies used behavioural activation therapy. The remaining interventions included family therapy, interpersonal psychotherapy, problem-solving therapy, social skills training and a mix of behavioural activation therapy, social skills training and cognitive restructuring. Slightly more than half of the interventions used an individual treatment format. Numbers of sessions ranged from six to 47. Control group details were reported. Most patients had a major depressive disorder. Patient characteristics (age/gender) were not reported; one study included geriatric patients. Patients in most studies received pharmacotherapy.

The authors did not report how many reviewers performed study selection.

Assessment of study quality
Methodological quality was assessed using four Cochrane Collaboration criteria: adequate allocation sequence generation, adequate allocation concealment, blinding and incomplete outcome data adequately addressed.

The authors did not report how many reviewers performed the quality assessment.

Data extraction
Effect sizes were calculated using standardised mean difference (Hedges’ g) of post-test scores for interventions and controls. An effect size of 0.8 was assumed to be large, 0.5 was moderate and 0.2 was small. Where means and standard deviations were not reported, effect sizes were calculated from dichotomous outcomes using Comprehensive Meta-Analysis software. Effect sizes were corrected for small sample bias (Hedges and Olkin). Where more than one depression measure was used, the mean of the effect sizes was calculated so that each study provided only one effect size.
size.

The authors did not report how many reviewers performed data extraction.

**Methods of synthesis**

Significant heterogeneity was expected, so standardised mean differences (Hedges’ g) were pooled giving 95% confidence intervals (CI) using a random-effects model. Numbers needed to treat (NNT) were calculated using the method of Kraemer and Kupfer. Between-study heterogeneity was determined using Q and \( I^2 \) (\( I^2 = 25\% \) indicated low heterogeneity, \( I^2 = 50\% \) moderate heterogeneity and \( I^2 = 75\% \) high heterogeneity).

Subgroup analyses were performed using a random-effects model; their significance was determined using a fixed-effect model. For continuous variables, meta-regression was used to determine whether there was a significant relationship between the continuous variable and the effect size, as indicated by Z-values and associated p-values. Publication bias was assessed using the method of Duval and Tweedie and visually using funnel plots. A power calculation was performed to determine the number of studies required to detect different effect sizes.

**Results of the review**

Twelve RCTs were identified (n=586 participants, range 20 to 124). Seven studies gave insufficient information on allocation sequence generation. Nine studies gave inadequate information on allocation concealment. Intention-to-treat analysis was performed in five studies. Assessors were blinded in six studies. Only three studies met all four quality criteria. Three studies included two different interventions, which gave a total of 15 comparisons with controls. Follow-up was post test in five studies, until discharge in one study and for six or 12 months in six studies. Studies had sufficient power to detect small effect sizes. Most of the analyses showed no significant heterogeneity (\( I^2 = 0\% \)).

Overall there was a significant reduction in depression with psychological treatment (g=0.29, 95% CI 0.13 to 0.44, NNT=6.17; 15 comparisons). The result was significant irrespective of whether the calculation was based on Beck Depression Inventory (g=0.24, 95% CI 0.08 to 0.40, NNT=7.46; 14 comparisons) or Hamilton Rating Scale for Depression (g=0.33, 95% CI 0.14 to 0.52, \( I^2 = 4.81\% \), NNT=5.43; 11 comparisons). The effect was not significant but showed a trend at 12 months follow-up.

Subgroup analyses (from tabulated results) found that the reduction in depression was not significant for CBT (seven comparisons) but was significant for behavioural activation therapy (g=0.56, 95% CI 0.11 to 1.00, NNT=3.25; two comparisons) and the other psychological interventions (g=0.30, 95% CI 0.07 to 0.52, NNT=5.95; six comparisons). Individual format interventions had no significant effect (eight comparisons). Mixed/group/other format interventions had a significant effect (g=0.31, 95% CI 0.11 to 0.51; seven comparisons). Interventions with six to nine sessions had a significant effect on depression (g=0.41, 95% CI 0.15 to 0.67; six comparisons) but those with 10 to 15 sessions (five comparisons) or at least 16 sessions (four comparisons) did not. Higher-quality (four comparisons) and lower-quality studies (11 comparisons) both showed a significant effect.

Sensitivity analyses (from tabulated results) found that the effect was significant when CBT interventions were considered (g=0.28, 95% CI 0.06 to 0.50, NNT=6.41; nine comparisons). Effects were significant when studies with more than 15 sessions were removed (11 comparisons) and when studies with no pharmacotherapy were removed (12 comparisons).

There was no evidence for publication bias. A series of meta-regression analyses found no significant effect with number of sessions, mean age of respondents and percentage of women.

**Authors’ conclusions**

Psychological treatments had a small but robust effect on depression in depressed in-patients.

**CRD commentary**

The review addressed a well-defined question in terms of participants, interventions and study design. Outcomes were
not specified a priori. Relevant databases were searched. It appeared that unpublished studies were not considered. Publication bias was assessed. It was unclear whether language restrictions were applied, but English and German publications were identified for inclusion. Study quality was assessed using suitable criteria and the results were not considered to be optimal overall. It was unclear whether efforts were made to reduce error and bias during the review process. Relevant study details were reported, but there was little detail of age and gender of patients. Statistical heterogeneity was assessed and this was taken account in the chosen method of synthesis. Appropriate sensitivity and subgroup analyses were performed, although the authors’ conclusions in the text did not appear to agree with the tabular results presented. Most of the studies were small.

Potential limitations in the review process and the suboptimal quality of the evidence made the reliability of the authors’ conclusions unclear.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors suggested that high-quality research with sufficient statistical power was needed to confirm the results of this review. Research should focus on long-term effects of treatment, economical cost-benefit analyses and determine why psychological treatments had an additional effect when compared to usual care and when compared to pharmacotherapy. Future studies should report comorbidity rates more accurately and include the role of medication and cognitive functioning and any affect they had on outcomes.

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