Psychological treatment of obsessive-compulsive disorder: a meta-analysis
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CRD summary
This review assessed the effectiveness of psychological interventions for the treatment of adults with obsessive-compulsive disorder, and found that exposure with response prevention and cognitive restructuring were effective in reducing symptoms. The authors' conclusions appear to reflect the evidence, but consideration should be given to the low level of study quality and the potential for bias in the review.

Authors' objectives
To assess the effectiveness of psychological interventions for the treatment of adults with obsessive-compulsive disorder.

Searching
MEDLINE, PsycINFO, the Cochrane Library, PSICODOC (Spanish database), and the obsessive-compulsive disorder database of the Madison Institute of Medicine were searched between 1980 and 2006 for publications in English, French and Spanish. Search terms were reported. In addition, references of retrieved articles and relevant meta-analysis were manually searched. Attempts were made to identify non-published studies.

Study selection
Studies comparing a psychological intervention with a control (placebo and/or waiting list) for the treatment of adults with obsessive-compulsive disorder (diagnosed according to standardised diagnostic criteria) were eligible for inclusion. Eligible studies were required to include five or more participants in the post-test group and report on statistical data for each treatment group for pre-test and/or post-test.

Included studies were conducted in Asia, Australia, Europe, North America and South America. Mean ages of patients ranged between 30 and 39.3 years. Some patients had comorbidities or had received previous treatment. Psychological interventions included exposure with response prevention, cognitive restructuring, or a combination of the two. Treatment durations ranged between three and 20 weeks. Types of treatment included exposure in vivo and mixed exposure (in vivo and imagination), while contact between therapist and patient included contact included therapist-guided exposure, or therapist-assisted self-exposure. Outcomes of interest included: obsessions and compulsions; anxiety; depression; and social adjustment; and 'other outcomes' as measured by self-report (inventory or scale) or clinical assessment.

The authors did not state how the many reviewers performed the selection.

Assessment of study quality
Methodological quality was assessed on the following criteria: randomisation, attrition, sample size, control group, intention-to-treat analysis. Studies received a maximum score of 5. Consistency in scores was assessed by two independent reviewers, using a random sample of the included studies. Discrepancies were resolved by consensus.

Data extraction
Mean differences between the intervention and control groups were extracted with their standard deviations to calculate standardised mean differences. Where mean differences and standard deviations were not reported, the results of other statistical tests were extracted and the standardised mean difference was calculated in accordance with previously published procedures.

The authors stated that two reviewers independently checked a random sample of studies to assess the reliability of the effect size calculations.

Methods of synthesis
Random and mixed-effects models were used to combine the standardised mean differences (SMDs) and their 95% confidence intervals (CIs) for overall post-test results, weighted by the inverse of the variance. Subgroup analyses were undertaken for each outcome measure and type of report. Sensitivity analyses were also undertaken for various moderator variables.

Statistical heterogeneity was assessed using the Cochran Q and I-squared ($I^2$) tests. Where statistical heterogeneity was present, weighted regression analyses were undertaken to investigate the influence of the moderator variables. Publication bias was undertaken using the Egger test and Fail-Safe N.

**Results of the review**

Nineteen studies (24 independent comparisons) were included in the review (n=752 participants; 431 receiving treatment and 321 controls). Fifteen studies were randomised and four were quasi-experimental. Post-test sample sizes ranged between 12 and 121, with the majority including less than 100 patients. Quality scores for the individual studies ranged between 0.5 and 4.0, with nine studies scoring three or above.

There was a statistically significant difference in overall results between intervention and control groups, showing greater benefit with psychological treatments (SMD 0.918, 95% CI 0.712 to 1.124). The greatest improvements were reported for obsessions and compulsions (SMD 1.075, 95% CI 0.843 to 1.306); then other outcomes (SMD 0.844, 95% CI 0.407 to 1.280), social adjustment (SMD 0.757, 95% CI 0.348 to 1.166), general anxiety (SMD 0.674, 95% CI 0.333 to 1.014), and depression (SMD 0.580, 95% CI 0.261 to 0.899).

All treatment types were equally as effective in reducing obsessive-compulsive symptoms and depression.

Therapist guided exposure (SMD 1.217, 95% CI: 0.910, 1.524, 17 comparisons) was shown to be more effective than therapist-assisted self-exposure (SMD 0.480, 95% CI:-0.204 to 1.164; three comparisons) for obsessive compulsions. No significant differences were reported between mode of therapist exposure for depression. Analyses by type of exposure treatments indicated greater effect for mixed exposure (SMD 1.303, 95% CI 0.850 to 1.756; seven comparisons) compared with in vivo exposure (SMD 0.976, 95% CI 0.644 to 1.307; 13 comparisons) for obsessive-compulsion treatment, and for mixed exposure (SMD 1.142, 95% CI 0.634 to 1.649; five comparisons) compared with in vivo exposure (SMD 0.299, 95% CI -0.066 to 0.665; nine comparisons) for depression treatment.

Heterogeneity was indicated for obsessions and compulsions ($I^2=57\%$), depression ($I^2=70\%$), social adjustment ($I^2=63.7\%$), and other outcomes ($I^2=75.3\%$); analyses of moderator variables were undertaken and reported in the review. Publication bias was reported for obsessions and compulsions ($p=0.032$).

**Authors’ conclusions**

Exposure with response prevention and cognitive restructuring were effective psychological treatments for the reduction of obsessive-compulsive symptoms in patients with obsessive-compulsive disorder. These treatments were most effective for improving obsessions and compulsions, but also general anxiety, depression, social adjustment and other related measures.

**CRD commentary**

The review question was clear and the inclusion criteria appeared appropriate, but criteria for outcome data were broad. A comprehensive search of the literature was undertaken, including five databases and other appropriate sources. The search attempted to locate unpublished papers, which reduced the possibility that potentially relevant papers were missed. However, the search was restricted by language, so language bias cannot be ruled out. Validity was assessed, but the general quality of the included studies did not appear to be high. The authors did not state how the papers were selected for inclusion, and the process details were somewhat limited for validity assessment and data extraction (assessed consistency in only a random sample of studies), which meant that reviewer error and bias could not be ruled out.

Appropriate methods were used to combine the results and assess statistical heterogeneity. Statistical heterogeneity was detected for a number of outcomes, and this was investigated in depth. The authors’ conclusions appear to reflect the evidence presented, but consideration should be given to the low level of quality of the included studies, small sample...
sizes, and the potential for bias in the review, when interpreting their conclusions.

Implications of the review for practice and research

Practice: The authors stated that exposure with response prevention would be the treatment of choice in professional practice, and can be implemented in accordance to standard protocol, but allowing for tailoring to the patient and the therapist.

Research: The authors recommended that improvements to future studies should include, for example, improvements in the design of the study, the presentation of more detail on study and patient characteristics, and the use of a fixed-effect model in any meta-analyses. The authors also suggested that further research into cognitive restructuring alone should be undertaken. Further research is also required to include cost-effectiveness analyses in terms of treatment duration, number of sessions, and level of expertise needed by the clinicians.

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