Meta-analysis of randomized, controlled treatment trials for pediatric obsessive-compulsive disorder
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CRD summary
The authors concluded that cognitive-behavioural therapy and pharmacotherapy are significantly more effective than placebo for treating children with obsessive-compulsive disorder, but which is the superior treatment cannot be determined. Given several limitations of the included studies, such as small sample sizes and variation between them, as well as uncertainties in the review, the authors' conclusions may not be reliable.

Authors' objectives
To assess the effectiveness of treatments for paediatric obsessive-compulsive disorder.

Searching
MEDLINE, PsycINFO, and Current Contents were searched to January 2007 for publications in English; the search terms were reported. In addition, citations from relevant articles searched iteratively.

Study selection
Randomised controlled trials (RCTs) comparing interventions with controls for the treatment of participants aged up to 19 years with a clinically recognised primary diagnosis of obsessive-compulsive disorder (OCD), based upon the International Classification of Diseases and American Psychiatric Association's DSM criteria, were eligible for inclusion. Eligible studies were required to use a valid outcome measure and report sufficient evidence to allow effect sizes (ESs) to be calculated. The majority of included studies were conducted in the USA and included comparisons between cognitive-behavioural therapy (CBT) and wait-list controls, and/or pharmacotherapy versus placebo. The majority of studies used the Children's Yale-Brown Obsessive Compulsive Scale as the outcome measure. The mean ages of the participants ranged from 10.75 to 14.5 years, and the mean treatment duration was 11.74 weeks for CBT and 11.91 weeks for pharmacotherapy (range: 5 to 16).

The authors did not state how many reviewers screened studies for relevance.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Pre- to post-treatment change scores, or where these were not reported, pre- and post-treatment means and standard deviations, were extracted to calculate the standardised mean difference with 95% confidence intervals (CIs), to represent treatment ESs. A positive result indicated that the treatment condition was more effective than the control condition.

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
A random-effects model was used to pool ESs, taking into account the inverse of the variance. Heterogeneity was assessed using the $\chi^2$ and I$^2$ tests. Subgroup analysis was undertaken to examine differences in ES by method of control (wait-list versus placebo). Sensitivity analyses were conducted to assess the robustness of the data analysis by removing outliers and subgroups of studies (intention-to-treat versus completers). Publication bias was investigated through funnel plots and Egger's test.

Results of the review
Thirteen RCTs (n=1,177; 161 CBT versus control and 1,016 pharmacotherapy versus control) were included in the
The sample sizes ranged from 5 to 105 participants, and the majority of studies were based on intention-to-treat analysis.

CBT (5 study arms) and pharmacotherapy (10 study arms) were significantly more effective than controls: ES 1.45 (95% CI: 0.68, 2.22, p=0.0002) for CBT and ES 0.48 (95% CI: 0.36, 0.61, p<0.00001) for pharmacotherapy. However, significant statistical heterogeneity was detected in studies comparing CBT with controls.

The subgroup analysis did not significantly alter the results, although the wait-list group showed a larger treatment effect than the placebo group. Sensitivity analyses involving the removal of outliers and subgroups of CBT studies also did not significantly alter the results, although subgroups of pharmacotherapy study arms showed a non significant pooled ES for completers.

The authors stated that Egger's test showed no evidence of publication bias.

Authors' conclusions
CBT and pharmacotherapy are significantly more effective than placebo for treating children with OCD, but it was not possible to determine which was the most effective intervention because of the heterogeneity between the studies.

CRD commentary
The review question was clear and was supported by appropriate inclusion criteria. The literature search was slightly limited, using only three electronic databases and one other source, and was restricted to studies published in English. This, together with the fact that no attempt was made to seek unpublished studies, means that language bias might have been introduced and potentially relevant papers missed. The study selection and data extraction processes were not clear, thus reviewer error and bias cannot be ruled out. The validity of the included studies does not appear to have been formally assessed, which means that the reliability of the subsequent data synthesis is unclear. Furthermore, sample sizes were small and CIs for some studies appeared wide. Appropriate methods were used to assess statistical heterogeneity but, as heterogeneity was detected for some studies and the authors mentioned potential clinical and methodological heterogeneity, the pooling of the results might not have been appropriate. Although the authors’ conclusions are supported by the evidence presented, they may not be reliable given uncertainties in the review process, the potential for missing studies and heterogeneity between the included studies.

Implications of the review for practice and research
Practice: The authors stated that CBT should be used as the first-line treatment for children with OCD, followed by pharmacotherapy, but the results may not be representative of the whole paediatric OCD population.

Research: The authors stated that more good-quality head-to-head trials are required to determine the efficacy of pharmacotherapy compared with CBT, and further research is needed to assess the long-term effects of both CBT and pharmacology. Continued research should further examine the potential cognitive developmental factors involved in the maintenance of paediatric OCD, and further investigations of heterogeneity, using moderator analysis, should be included in future research.

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**Record Status**
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