Cognitive behavioral therapy for schizophrenia: an empirical review
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Authors' objectives
The authors appear to study the effectiveness of cognitive-behavioural therapy (CBT) interventions for patients with a schizophrenia-spectrum disorder.

Searching
MEDLINE and PsycINFO were searched, although the dates were not specified. The search terms used included 'schizophrenia', 'psychosis', 'cognitive therapy' and 'cognitive behavioral therapy'. In an attempt to locate unpublished studies, the reference sections of published studies were examined and researchers known to be working in the area were contacted.

Study selection
Study designs of evaluations included in the review
Only randomised controlled trials (RCTs) were included in the review.

Specific interventions included in the review
CBT interventions plus routine care (RC) were compared with control interventions of RC, problem solving plus RC, supportive therapy (ST) plus RC, informal support plus RC, and befriending therapy plus RC. Where stated, the experimental and control interventions were of the same frequency and duration. The duration of the studies ranged from 12 weeks to 9 months.

Participants included in the review
Patients with a schizophrenia-spectrum disorder. The diagnostic criteria used were the American Psychiatric Association's DSM-III-R (3 studies) and DSM-IV (4 studies) criteria. Patients were classified as chronic in 6 studies and as acute in one study. The average age of the patients in the studies ranged from 30.7 to 40.9 years and, where stated, between 46 and 79% of the patients were male.

Outcomes assessed in the review
The outcomes assessed in the studies included overall psychopathology, 'response', psychotic symptoms, positive symptoms, negative symptoms and delusional conviction. The effect size (ES) estimates were computed to determine the statistical magnitude of clinical change in CBT and control treatment conditions.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
Validity was not formally assessed, although the methodological strengths and shortcomings of the studies were discussed.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Data were extracted on the following: the number of participants; sample size; diagnostic criteria; age and gender; the type of experimental and control treatment; outcomes; and the number of months of follow-up.
Methods of synthesis

How were the studies combined?
To determine the magnitude and clinical significance of change on the outcomes reviewed in the studies, the pre-test post-test ES estimates were computed for the different symptom measures according to Cohen (see Other Publications of Related Interest). The unpublished study was not retained in the ES summary, in order to minimise the inflation of effects based on an unpublished study. Owing to the limited number of comparisons between CBT-RC and RC-only and between ST-RC and RC-only, the average ES estimates were only calculated for the CBT-RC and ST-RC comparisons. The ESs were tabulated and summarised graphically.

To compare the between-group ESs, a single ES was selected based on the primary dependent variable of each of the six published studies comparing CBT-RC and ST-RC. The weighted, between-group ES difference between CBT-RC and ST-RC was then examined for statistical significance. The between-group ES was calculated as follows: the post-test mean of CBT-RC was subtracted from the post-test mean of ST-RC, then divided by the pooled standard deviation (SD). These effects were then weighted by sample size.

How were differences between studies investigated?
The homogeneity of the ESs was examined across the different studies using a chi-squared test.

Results of the review
Seven RCTs with a total of 383 participants were identified for the review. Six studies were published in peer-reviewed journals and one was unpublished.

Five studies reported the pre-test post-test change scores on composite measures of positive symptoms. The average ES on measures of positive symptom functioning was 1.31 (SD=0.71) in CBT-RC and 0.63 (SD=0.53) in ST-RC. Clinical improvements in the frequency and distress associated with hallucinations and delusions following CBT-RC appear to be sustained throughout the follow-up period, with pre-test follow-up ESs of 1.48 (SD=0.95) in CBT-RC and 0.64 (SD=0.50) in ST-RC.

Three studies also reported on CBT-RC for negative symptoms. Large treatment effects for CBT-RC (ES=1.08, SD=0.83) and medium effects for ST-RC (ES=0.47, SD=0.24) were observed. The ESs at the 9-month follow-up point continued to show large gains for those treated with CBT-RC (ES=0.88), whereas those in ST-RC showed slippage (ES=0.22). The summarised results in follow-up for the same 3 studies demonstrated that the gains were maintained in CBT-RC (ES=1.19, SD=0.95) and ST-RC (ES=0.39, SD=0.21), although to a lesser extent.

The CBT-RC and ST-RC ES estimates were found to be homogeneous (chi-squared (4, N=239) 4.79, p>0.31). The mean weighted between-group ES was 0.91 (SD=0.14), demonstrating a large and significant ES difference in favour of CBT-RC (z=6.59, p<0.00001).

Authors' conclusions
CBT has been shown to produce large clinical effects on measures of positive and negative symptoms of schizophrenia. Patients receiving routine care and adjunctive CBT have experienced additional benefits above and beyond the gains achieved with routine care and adjunctive supportive therapy. These results reveal promise for the role of CBT in the treatment of schizophrenia although additional research is required to test its efficacy, long-term durability and impact on relapse rates and quality of life. Clinical refinements are also needed to help those who show only minimal benefit with the intervention.

CRD commentary
The authors stated their inclusion criteria clearly. They listed the electronic databases and other sources searched, including the search terms used, but omitted to state the search dates. The search was limited to two electronic databases, although the authors attempted to identify unpublished literature by contacting researchers known to be working in the area. One unpublished study was found but was excluded from the ES analysis. This narrow search strategy may have missed relevant studies, allowing the introduction of selection bias. Publication bias was not
assessed.

The validity of the individual studies did not appear to have been formally assessed, although the methodological strengths and shortcomings of the studies were discussed. The authors did not report details relating to the decision-making process for selecting the studies and extracting the data; e.g. how many of the reviewers were involved, whether the studies were examined independently, whether the reviewers were blinded to the source, and how any disagreements were resolved.

Adequate details of the studies were reported in tabular format, and were supplemented with narrative descriptions. However, there were weaknesses in the study synthesis. Whilst a statistically significant advantage in CBT-RC over ST-RC was seen in the between-group ES comparison, the ESs of different primary outcomes were pooled together. The ES estimates for both the positive and negative symptoms were calculated and presented in tabular format, but were not examined for statistical significance.

The authors' conclusions should be interpreted with caution owing to the limitations of the search strategy, the lack of details relating to the review process, and the weakness in the synthesis of the studies.

**Implications of the review for practice and research**

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

**Research:** The authors state that more controlled and methodologically rigorous research is needed to test the efficacy of CBT for patients with a schizophrenia-spectrum disorder. They state that future research would ideally aim to address the following questions.

What combination of medications and CBT would represent the optimal 'dose' of treatment?

Does CBT offer additive benefits above and beyond those achieved with other effective psychosocial interventions, such as social skills training or family therapy? Or, is there a multiplier effect on clinical outcomes if CBT is delivered in tandem with family therapy or social skills training?

What are the active ingredients of change in CBT?

Future research could aim to identify the pertinent attitudes and beliefs that predict medication non-compliance and the extent to which, if targeted in treatment, they result in improved compliance. Compliance issues within CBT treatment also need to be assessed. Effectiveness studies in 'real life' clinical settings are needed to determine the feasibility of CBT for schizophrenia outside of the well-controlled efficacy study. Research is also required to determine whether early intervention can change the long-term trajectory of the disorder. Finally, the feasibility and cost-utility of CBT in the United States and Canada will need to be determined.

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**Other publications of related interest**

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