Cognitive therapy for psychosis in schizophrenia: an effect size analysis

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Authors' objectives
To undertake a meta-analysis of all available controlled treatment outcome studies of cognitive therapy (CT) for psychotic symptoms in schizophrenia.

Searching
PsycLIT (from 1974 to present) and MEDLINE (from 1966 to present) were searched using the following combination of key terms: 'schizophrenia', 'psychosis', 'cognitive', 'cognitive-behavioural', 'treatment', 'treatment outcome', 'clinical trial' and 'comparative study'. These terms were used both as free-text forms and as major key terms in searching the database. The reference lists of the located articles were examined for additional studies. Unpublished articles were sought by examining Dissertation Abstracts from 1980 to the present. Articles 'in press' were included if the reviewers had knowledge of them, i.e. they had been presented at national conferences prior to January 2000.

Study selection
Study designs of evaluations included in the review
Controlled studies were eligible for inclusion. Pilot studies using a single case or multiple baseline designs were excluded. The designs of the included studies were not reported.

Specific interventions included in the review
CT that focuses on decreasing psychotic symptoms and modifying core dysfunctional beliefs. Studies were excluded if they looked at 'cognitive rehabilitation', or social skills training that also used behavioural techniques; were behavioural studies that used compensation approaches as their primary intervention; taught illness or medication management skills without trying to modify dysfunctional beliefs; or were behavioural studies in which the primary intervention was the reinforcement or punishment of specific behaviours. Only controlled trials were included in which the control could include wait-list, treatment as usual or psychological placebo.

The mean number of CT treatment sessions used by the included studies was 13.6 (standard deviation, SD=5.7; range: 5 to 20). The CT format was fairly consistent across studies with 6 studies employing individual therapy and one a combination of individual and group therapy. The content of CT was also fairly similar across studies, focusing on modifying beliefs about delusions and hallucinations in order to decrease the impact that these phenomena had on the patients' lives. Where reported, the treatment was conducted by doctoral-level psychologists or psychiatric nurses.

Participants included in the review
Patients with schizophrenia or schizoaffective disorder according to the American Psychiatric Association’s Diagnostic and Statistical Manual for mental health (DSM-III), DSM-III-R (revised edition) or DSM-IV (fourth edition) criteria. Two studies that enrolled patients with delusional disorder were also included as they only represented a small percentage of the total sample (6%). The proportion of male participants (where reported) enrolled in the included studies was 70%. Where provided, the mean duration of illness in the included studies was 14 years (SD=3.2; range: 11.0 to 18.2). The total mean number of past hospital admissions (where reported) was 3.4 (SD=0.8; range: 2.5 to 4.8). The proportion of patients taking psychotic medication ranged from 95 to 100%. The participants were attending as out-patients in 5 studies and as in-patients in 2 studies. Eighty-nine per cent of the sample met the criteria for schizophrenia, 7% had schizoaffective disorder and 4% had delusional disorder.

Outcomes assessed in the review
Changes in psychotic symptoms were assessed. The effect sizes were derived from the following validated clinician-rated scales: Brief Psychiatric Rating Scale, Psychiatric Assessment Scale, the Comprehensive Psychiatric Rating Scale-Schizophrenia Change, and the Maudsley Assessment of Delusions Scale.

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**
The authors do not state that they assessed quality, although some aspects of study quality were discussed in the text.

**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.

The data provided in a summary table included: the type of control group employed; sample size; the length of treatment; the drop-out rates for the experimental and control groups; and the effect sizes for changes in psychotic symptoms from pre-treatment to post-treatment. The effect sizes were derived using the procedures of Glass et al. (see Other Publications of Related Interest no.1). A number of different methods were used if the means and SDs of a comparison group were not reported; these were described in the text. Follow-up effect sizes (using a minimum period of 6 months) were drawn from the same outcome measures as the post-treatment effect sizes.

**Methods of synthesis**

How were the studies combined?
It was not stated how the effect sizes were pooled. Dependent measures mentioned in the 'Methods' section of articles, but not presented in the 'Results' section, were assumed to be non significant. Non significant results were assumed to have a P-value of 0.05 unless otherwise specified.

How were differences between studies investigated?
The effect sizes of all studies were tested for heterogeneity using the chi-squared test according to Rosenthal (see Other Publications of Related Interest no.2).

**Results of the review**
Seven controlled studies with 340 patients (108 dropped out) were included. Four studies provided follow-up data (277 patients with 62 drop-outs).

All of the studies satisfied Rosenthal's chi-squared test for heterogeneity.

The mean effect size for change in psychiatric symptoms from pre- to post-treatment was 0.65 (95% confidence interval, CI: 0.56, 0.71). All 7 studies reported a statistically-significant decrease in positive symptoms at post-treatment, while 5 of the 7 reported a statistically-significant decrease for CT relative to the control condition at post-treatment.

Simple regression analyses revealed no statistically-significant relationship between the number of sessions of CT treatment and change in psychotic symptoms (correlation, R=0.28; d.f.=1,4, p=0.64). In 3 studies, the treatment intensity varied across participants and, as such, these studies were excluded from the analysis.

Four studies assessed the outcome past 6-months' post-treatment. In all 4 studies, the patients continued to improve statistically significantly over the follow-up periods; their combined mean effect size at follow-up was 0.93.

The studies included strong experimental designs, well-articulated treatment interventions (which were generally standardised in the form of a treatment manual), and comprehensive assessment batteries. Although the assessment raters did not provide the treatment in most of the included studies, they were not blinded to the treatment allocation. The use of independent raters was not mentioned in 2 studies and, therefore, was assumed not to have been employed. The overall drop-out rate was 12.4%.
Authors' conclusions
The results of this met-analysis indicate that CT has a significant effect on improving symptoms in patients with schizophrenia who experience psychotic symptoms.

CRD commentary
This was a review of moderate quality. The objectives were clearly stated and specific inclusion and exclusion criteria were reported. The search strategy was not extensive with only two electronic databases being searched, but attempts were made to search for unpublished data.

The authors do not report how the studies were selected for inclusion or how the data were extracted. Relevant details of the individual studies were presented in a summary table and in the text. However, information relating to the results of the individual studies was limited. Only the summary effect sizes were presented and there was no measure of their variance. No baseline and post-treatment measurements were presented, or any data indicating the level of statistical significance. It was not stated which, or how many rating scales were used by the individual studies. The results of seven studies were reported to be significant, but it is assumed that this means statistical significance, and not clinical significance, as this was not reported in the text. The designs of the included studies were not reported, only that 'strong experimental designs' were used. Therefore, it is unknown whether they were randomised controlled trials. It was not stated whether a quality assessment was undertaken systematically using a quality checklist, but some information relating to the quality of the included studies was presented in the text. The statistical method used to pool the individual effect sizes was not described, and the actual result of the statistical test for heterogeneity was not reported.

The authors’ conclusions appear to follow from the results. The reviewers were supported in part by a grant from Eli Lilly Corporation.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors state that further research on CT for schizophrenia is warranted and that it should be designed to replicate findings by other investigators. In particular, research is needed to evaluate which patients are most likely to benefit, and to better understand the effects of CT on other areas of functioning presumably related to severity of psychotic symptoms, including relapses and rehospitalisations, distress and quality of life.

Funding
NARSAD Young Investigator Award; Eli Lilly Corporation.

Bibliographic details

PubMedID
11295385

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
AccessionNumber
12001003971

Date bibliographic record published
31/12/2002

Date abstract record published
31/12/2002

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.