

Cognitive -Behavioral Group Treatment for Schizophrenia and Other Psychotic Disorders- a Systematic Review



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SUMMARY

Objective: The aim of this study is to review empirical studies that were carried out to evaluate the effectiveness of Cognitive-Behavioral Group Treatment programs for the treatment of schizophrenia and other psychotic disorders.

Method: The PsycINFO, PsycARTICLES and MEDLINE databases were searched to identify articles in English that were published between the years of 1980 and 2011 (July) using the following keywords: “(1) psychosis and cognitive treatment (2) schizophrenia and cognitive treatment, (3) schizophrenia and cognitive therapy, (4) psychosis and cognitive therapy, (5) schizophrenia and cognitive intervention (6), psychosis and cognitive intervention, (7) hallucination and cognitive therapy, (8) hallucination and cognitive treatment, (9) hallucination and cognitive intervention”. The articles that were identified by these search terms were read and those that were not related to therapy effectiveness and group therapies were eliminated.

Results: The remaining 42 studies that satisfied the search criteria were included in this review and were summarized in terms of the methods utilized (characteristics of the study population, measures, randomization, results, follow-up, etc.) and therapy characteristics (number of sessions, frequency of sessions, number of therapists and members, etc.).

Conclusion: Taken together, the studies included in this review suggested that cognitive behavioral therapy plus standard treatment given to schizophrenic patients and patients with other psychotic disorders is effective in decreasing the symptoms of the disorder (positive and negative symptoms) and/or the problems that accompany the disorder (anxiety, hopelessness etc.).

Keywords: schizophrenia, psychotic disorders, psychosis, cognitive behavioral therapy, effectiveness of psychotherapy

INTRODUCTION

Although schizophrenia is a severe and important disease due to its symptoms and associated problems, at present it is considered a disorder which can be treated successfully (Aker and Sungur 2001). It is thought that although antipsychotic drug treatment is important for managing schizophrenia, the success of treatment remains limited when it is not supported by psychological-social treatment programs..(Kültür and Mete 1997, Soygür 1999).

When psychosocial approaches used in the treatment of schizophrenia are examined, it can be seen that psychodynamic therapies were used until the 1960s, after which supportive

therapy was utilized. Once the importance of emotional expression in the family in the development of schizophrenia was revealed, the first studies on family therapy were initiated in England. Another approach to the treatment of schizophrenia is milieu treatment, which includes behavioral strategies and the early example of which was seen in the 19th century (Özmenler and Battal, 1998).

Cognitive treatment was first administered to a chronic schizophrenic patient by Beck in 1952 and was found to be beneficial in the treatment of their persistent delusional system (Beck and Rector 2000, Beck 2002). Although cognitive behavioral therapy has been utilized for more than fifty years, it has not been commonly used in the treatment of psychotic

Received: 27.09.2011 - Accepted: 01.03.2012

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disorders until recently. Recently, some specific cognitive treatment programs have been developed for the treatment of schizophrenia and are beginning to be utilized (Fowler *et al.* 1995, Kingdon and Turkington 1994, Tarrier *et al.* 1993a, etc.).

Previous studies have compared the effectiveness of cognitive behavioral therapy combined with drug treatment, known as standard treatment, in schizophrenia and other psychotic disorders, with standard treatment alone and alternative treatments. Some Cognitive Behavioral Therapy (CBT) programs are administered individually and some in groups. Since group therapy saves time compared to individual therapy, it seems to be more feasible in crowded clinics. Therefore, in the present study, studies investigating the effectiveness of Cognitive Behavioral Group Therapy (CBGT) programs have been reviewed. The aim of this review is to examine the effectiveness of CBGT compared to conventional treatment and other psychosocial treatment approaches.

METHODS

The PsycINFO, PsycARTICLES and MEDLINE databases were searched to identify articles written in English published between July 1980- July 2011 using the following keywords: (1) psychosis and cognitive treatment (2) schizophrenia and cognitive treatment, (3) schizophrenia and cognitive therapy, (4) psychosis and cognitive therapy, (5) schizophrenia and cognitive intervention (6), psychosis and cognitive intervention, (7) hallucination and cognitive therapy, (8) hallucination and cognitive treatment, (9) hallucination and cognitive intervention. In addition, “cognitive treatment” and “cognitive intervention” and “cognitive therapy” keywords were used since it is thought that these keywords encompass cognitive behavioral therapies, and “cognitive behavior” therapy, intervention or treatment keywords were not used. Of the articles accessed, those which did not address the effectiveness of the treatment and those in which psychotherapy was not administered in a group setting were excluded from the study. Using this method, 42 published articles fulfilling the criteria were found. In the present review, although it is thought that in a few studies different findings of the same study were presented as different results, each article was evaluated separately. Information on the study population such as the diagnoses of the patients, the number of patients, the diagnosis criteria, information on the methods such as treatment modalities, the presence of randomization and independent assessment and measurement tools utilized and finally information on the cognitive behavioral treatment administered such as the duration, number and frequency of sessions, the number of psychotherapists and the number of patients in each group were evaluated.

RESULTS

Information on the studies is outlined in Tables 1 and 2 and listed according to the names of the authors.

Characteristics of the Methodologies of the Studies Reviewed

Study Population: The participants in the studies were patients between the ages of 18-65 who meet the criteria of schizophrenia or another psychotic disorder. Even though the exact diagnosis was not clear in some studies since it was reported that they followed patients with the diagnosis of ‘psychotic disorder’, in the majority of studies, the reported diagnosis was schizophrenia or schizophrenia spectrum disorder. Patients were usually diagnosed according to the DSM-III-R, DSM-IV and ICD-10 criteria and in some studies, according to criteria of the WHO, MINI-Plus or SCID (for example, Drury *et al.* 1996, Kingsep *et al.* 2003).

The sample sizes of the studies ranged widely from 4 cases (Gledhill *et al.* 1998) to 422 (Rathod *et al.* 2005).

Treatment and Control/Comparison groups: In the majority of studies (13 studies) drug treatment (known as ‘standard treatment’) was compared to CBGT plus standard treatment (for example, Barrowclough *et al.* 2006, Wykes *et al.* 2005). However, there were ten studies comparing supportive treatment in combination with standard treatment to CBGT in combination with standard treatment (for example, Andres *et al.* 2000, Kemp *et al.* 1996). Supportive treatment involves an unstructured therapy program in which a supportive group environment is provided to instill self-confidence in group members for coping with symptoms. In addition, there were studies comparing three different treatment modalities. In five articles, standard treatment, standard treatment in combination with supportive treatment and CBGT in combination with standard treatment were compared (Eckman 1992, Tarrier *et al.* 1998, Tarrier and Wittowski 1999, Tarrier *et al.* 2000, 2001). In one article, two different CBGT methods in combination with standard treatment were compared with standard treatment alone (Tarrier *et al.* 1993a). In addition, there were seven articles comparing different CBGT interventions involving different techniques such as increasing coping skills, psychoeducation and problem solving training (for example, Bradshaw 1993, Tarrier *et al.* 1993b). In addition, in six studies, only the effectiveness of CBGT in combination with standard treatment was investigated and no comparison could be made as there was no control group (Gledhill *et al.* 1998, Perlman and Hubbard 2000, Pinkham *et al.* 2004). Due to the biological origin of schizophrenia and other psychotic disorders, Cognitive Behavioral Therapies were never the solo treatment modality and were always administered in combination with anti-psychotic drug treatment, which is considered standard treatment.

Assignment to treatment groups: Most of studies with more than one intervention group (30 studies) were randomized, controlled trials. In 4 studies, although there was a comparison group, patients were not randomized into treatment groups (Andres *et al.* 2000; 2003, Shelley *et al.* 2001, Wykes *et al.* 1999). In the remaining four studies, there was no comparison or control group.

Measurement methods: In the majority of studies, in the evaluation of symptoms prior to and after treatment, both self-report and clinician measurements were employed. However, in 12 studies, measurements were based solely of the clinician's report without any self-report measurements from the patients (for example Bechdolf *et al.* 2004, Combs *et al.* 2007). In addition, in 25 of 42 studies, in the pre-test, post-test and/or follow-up evaluations, the clinicians were independent from the investigators (for example, Eckman *et al.* 1992, Kemp *et al.* 1996).

Since different studies had different areas of focus, there were a variety of measurements utilized. Some measurements were directed towards investigating psychotic symptoms (for example, PANNS, PSYRATS), some were focused on investigating problems accompanying psychotic disorders such as depression, anxiety, hopelessness and self-esteem (for example, the Beck Depression Inventory, Beck Anxiety Inventory, Rosenberg Self Esteem Scale) and others aimed to investigate the impact of the disorder on functionality (for example, the Social Functioning Scale, Social Behavior Scale, Global Assessment of Functioning Scale). In a few studies, observations and records involving the duration and number of hospitalizations (Bradshaw 1993, Tarrier *et al.* 2000) and the efficacy of coping and the number of positive coping techniques (Tarrier *et al.* 1993b) were used rather than standard measurements.

The effectiveness of interventions was assessed through pre- and post-treatment evaluation and in addition, in some studies, in order to evaluate the long-term effectiveness of therapy, follow-up measurements were administered at different time intervals. In 11 of the 42 articles, only pre- and post-test evaluation was administered without any follow-up evaluation. Follow-up evaluations were performed in a wide time range extending from 1 month (Geldhill *et al.* 1998, Mann and Chong 2004) to five years after the end of the study (Drury *et al.* 2000). However, in the majority of studies, the follow-up evaluation was given between 3 months and 1 year after the study. The follow-up was longer than 1 year in only 4 articles. (Andres *et al.* 2000, 2003, Drury *et al.* 2000, Tarrier *et al.* 2000)

The Content and Application of Cognitive Behavioral Group Therapy Programs in the Reviewed Studies

The CBGT Techniques:

The most frequently used techniques involved teaching coping skills and psychoeducation. In 35 studies, the therapy

programs included coping techniques and in 26 studies, psychoeducation was used. There were 13 studies in which coping techniques were used along with problem solving techniques (for example, Bradshaw 1993, Tarrier *et al.* 2001). Cognitive re-structuring techniques were utilized in only 18 studies (for example, Bechdolf *et al.* 2004, Drury *et al.* 1996). In several studies (7), social skill training was used (for example, Bradshaw 1993, Eckman *et al.* 1992, Valencia *et al.* 2007). In 6 studies, treatment included families as well (for example, Andres *et al.* 2001, Valencia *et al.* 2007).

Session characteristics: When the duration of sessions in the studies was evaluated, it was established that some studies did not report this detail, but generally the duration varied between 1-2 hours, although there were also some studies that had longer sessions. In addition, it was reported that group therapy occurred at frequencies ranging from 3 to 5 times weekly (Shelley *et al.* 2001) to twice monthly (Bradshaw 1993). The number of sessions ranged from a minimum of 4-6 to 90. Only in the studies by Lysaker *et al.* (2009) and Drury *et al.* (1996) and (2000), was individual therapy combined with group therapy.

The number of group members and therapists: In 17 studies, the number of members in the therapy group was not reported while in other studies, the least amount of members was 4 (Andres *et al.* 2000 and 2003) and the maximum was 20 (Eckman *et al.* 1992). However, the number of members mostly ranged from 4 to 8. With regards to the number of therapists, there were 11 studies that did not report this piece of information. Of the remaining studies, there was 1 therapist in 10 studies, 1-2 therapists in 3 studies, 2 therapists in 13 studies and 3 therapists in 2 studies.

Findings of the reviewed studies

Comparison between Groups: In the evaluation of the 13 studies comparing CBGT plus standard drug treatment with conventional drug treatment alone, it was determined that only the study done by Barowclough *et al.* (2006) found no statistically significant difference between the two treatment approaches. In all of the other studies, CBGT plus standard treatment yielded a significantly higher rate of positive results than standard therapy in terms of at least one variable. In 10 studies comparing CBGT with supportive treatment, it was established that CBGT was superior to supportive treatment in all measures (Kemp *et al.* 1996, Shelley 2001). However, some studies found no difference between the two approaches with regards to some measures (for example, Andres 2003, Tarrier *et al.* 2001). Studies focusing on CBGT approaches involving different techniques yielded results that varied according to the CBT technique used. Therefore, it seems difficult to draw a common conclusion from these studies. In the study by Bechdolf *et al.* (2004), it was reported that CBGT (coping techniques and cognitive

restructuring techniques) and psychoeducation had similar effectiveness in terms of disease symptoms, but that CBGT was superior in terms of recurrence and compliance with the drug treatment. However, in the study by Mann and Chong (2004) which compared psychoeducation with coping techniques, it was reported that CBGT including coping techniques was more effective in decreasing hallucinations and increasing patient functionality. Studies comparing problem solving training with coping techniques yielded diverse results as well. Tarrier *et al.* (1993b) compared coping technique with problem solving training and reported that both approaches had similar effectiveness in enhancing the problem solving skills of patients but in increasing coping skills, CBGT, which includes coping techniques, was more successful. In another study, Tarrier *et al.* (1993a) reported that these two approaches had comparable effectiveness in reducing psychiatric symptoms and improving social functionality. Bradshaw (1993) compared problem solving training with CBGT, including techniques such as cognitive restructuring and psychoeducation, and found that CBGT without problem solving was superior in improving the ability of patient to reach goals and that CBGT with problem solving therapy was superior with regards to hospitalization rates during one year.

Changes in symptoms : Since the cognitive behavioral group therapy used in the studies reviewed focused on diverse areas, a wide spectrum of results was obtained.

Positive symptoms: In some studies (8 articles), CBGT and alternative treatment was found to be equally effective in decreasing the frequency of hallucinations and delusions, distress level caused by auditory hallucinations, time spent in delusions and, in general, positive symptoms (for example, Andres *et al* 2000; 2003, Barrowclough *et al.* 2006). In 26 studies, CBGT was found to be more effective than alternative treatment (for example, Halperin *et al.* 2000, Mann and Chong 2004, Tarrier *et al.* 2000 and 2001).

Insight: There are few studies that aimed to gain more insight into the disorder. (5) Of the studies, two reported that both treatment approaches were equally effective (Drury *et al.* 2000, Rathod *et al.* 2005), three studies showed that CBGT was more effective than the comparison group (Andres *et al.* 2003, Kemp *et al.* 1996, Wykes *et al.* 1999).

Negative Symptoms : Six studies reported that both treatment groups had similar effectiveness in decreasing negative symptoms (for example, Bechdolf *et al.* 2004, Drury *et al.* 1996). However, in 9 studies, CBGT was found to be more effective than alternative treatment. (for example, Eckman *et al.* 1992, Shelley *et al.* 2001).

Accompanying problems: In some of the studies reviewed, the accompanying problems such as depression, anxiety, hopelessness and low self-esteem and the impact of treatment on these problems were also evaluated. A few of these studies

showed that both treatment groups were similarly effective in reducing the symptoms accompanying the psychotic disorder (for example, Barrowclough *et al.* 2006) while some reported that the CBGT group was more effective than the comparison group (for example, Kingsep *et al.* 2003, Gumley *et al.* 2006).

Follow-up evaluations: Only in a few studies that included a follow-up evaluation (4 articles) was it stated that the change in the CBT group was not maintained or further improved over time (Barrowclough *et al.* 2006, Bechdolf *et al.* 2004 and, 2010, Drury *et al.* 1996). In the remaining studies with follow-up data (28 articles), it was reported that the change was maintained in the CBT group or further improved over time (for example, Tarrier *et al.* 2000, Trower *et al.* 2004).

DISCUSSION

In the present review, articles published between 1980 and 2011 (July) were reviewed. However, the oldest article found dated back to 1993 (Tarrier *et al.* 1993a, Tarrier *et al.* 1993b). Of the 42 articles, only 10 were from the 1990s. The remaining 32 articles were from the 2000s. No study was found on this issue from the 1980s. In other words, it can be stated that CBGT studies on psychotic disorders are a recent phenomenon and have increased in incidence within the last several years. It is known that cognitive behavioral group therapy is not a common approach in the treatment of schizophrenia in Turkey. Of the 42 articles evaluated in this review, only one was based upon a study conducted in Turkey and it is a very recent study (Mortan *et al.* 2011).

Although a long time has passed since Beck's successful administration of cognitive treatment in a schizophrenia patient, this approach is not used commonly in schizophrenia and other psychotic disorders. There may be multiple reasons for this, the first of which may be that there is a general idea that psychotherapy will not be beneficial in psychotic disorders since conventional psychotherapies were not useful and that psychotherapies are more effective in milder diseases. Another reason that may explain why CBT has not traditionally been used in this group of patients is the idea that schizophrenia and other psychotic disorders can only be treated with drugs since these disorders have a biological origin (Aker 2003, Aker and Sungur 2001). Moreover, not only CBT, but also psychosocial treatment in general, is much more time-consuming than drug therapy. Thus psychosocial treatment tends to not be preferred in areas where the clinicians have heavy patient burdens, such as in our country.

Studies show that Cognitive Behavioral Group Therapies used in combination with standard treatment are more effective than conventional treatment alone in increasing insight into the disorder and decreasing negative and positive

symptoms of the disorder. Moreover, CBGT was found to be effective in decreasing problems accompanying the disorder such as anxiety, hopelessness and depression. In addition, in some other studies, it was demonstrated that CBGT also contributes to an increased patient compliance and motivation to use the prescribed drugs (for example, Bechdolf *et al.* 2004; Mortan *et al.* 2011). Follow-up evaluations indicated the benefits obtained were maintained after the treatment was over and some studies even reported that CBGT helped to decrease the number and duration of future hospitalizations (for example, Bradshaw 1993, Valencia *et al.* 2007). These results show that CBGT combined with standard treatment is superior to standard drug treatment alone in reducing many symptoms in psychotic patients. Therefore, it may be concluded that for psychotic patients, anti-psychotic drug treatment is an indispensable treatment, but is not sufficient alone. It is thought that integration of cognitive behavioral therapies into the routine standard treatment of psychotic patients will yield additional benefit. Yet, the fact that there are few clinicians in Turkey qualified to utilize these techniques is one of the factors that makes it challenging to routinely use this therapy. As the studies reviewed in this article suggest, although delivering therapy in groups increases feasibility, it is still necessary to have an adequate number of therapists trained to administer CBT.

It is known based on many studies comparing supportive treatment in addition to standard treatment and CBGT in addition to standard treatment, that CBGT is superior to supportive therapy. However, with regards to some variables, the two approaches have a similar efficacy. In the studies by Tarrier *et al.* (1993, 1999, 2000, 2001) it was also shown that supportive therapy added to standard therapy is advantageous over standard therapy alone. These findings indicate the importance of not only CBT, but also psychosocial treatments in general for psychotic diseases such as schizophrenia. In practice, it may not be easy to find enough therapists who can work with all psychotic patients. Nevertheless, it seems that the incorporation of supportive treatments, which do not require intensive training and can be administered more easily into routine practice, in addition to standard drug treatment, will bring important benefits.

In the reviewed studies, therapies under the umbrella of Cognitive Behavioral Therapy have a wide range of variation. Therefore, there is actually not a single type of CBGT. With this in mind, the question of which therapy is more effective becomes important. However, since only a few of the articles reviewed in the present study compared CBGT programs using different techniques, and since they focused on different variables, it was not possible to reach a conclusion on this issue. It is our recommendation that in the future, studies should be carried out that aim to determine which techniques are more effective for specific symptoms. Information

obtained from these studies may make these therapies more practical.

In the present review, therapies that were found to be effective had varying durations. For example, there are data indicating that relatively brief therapy consisting of 6-8 sessions is superior to standard treatment alone. The study by Pinkham *et al.* (2004) compared therapies of different durations using the same technique and they established that a program of seven sessions had comparable efficacy with a program of 20 sessions in terms of variables such as stress caused by voices and a belief in voices. These results suggest that short-term CBGT is quite effective and may be used in routine practice. Yet, it is not possible to reach a definitive conclusion based upon these findings. Similarly, it is not also known whether the number of members in the groups or the number of therapists leading the group is a significant factor in the efficacy of the treatment. It is also recommended that in the future, studies aiming to determine the components of therapy, such as the ideal duration of therapy and the size of the group, should be performed in order to maximize time and produce higher efficiency. In addition, patients participating in the studies reviewed in this article have different demographic and clinical characteristics. The efficacy of therapy may have been influenced by these variables as well. Nevertheless, at present we do not have enough information to determine which group of patients derives the most benefit from CBGT. Therefore, studies attempting to determine the variables predicting the level of benefit obtained from a particular treatment are also required.

In most of the studies, the goal was to reduce the positive symptoms and other factors such as associated problems and insight were not stressed. However, it is known that symptoms such as anxiety, depression, and hopelessness are associated with the onset and maintenance of hallucinations and delusions and that improvement in these areas helps decrease positive symptoms. (Kingdon and Turkington, 1994; Smith *et al.* 2006). In addition, the effect of treatment on insight should be taken into account in the evaluation. It may be useful to address these factors in future studies.

In conclusion, although there are many questions that remain to be resolved, there is compelling evidence that CBGT added to standard treatment is an effective method in the management of psychotic disorders such as schizophrenia or schizoaffective disorder. Even though this method does not seem to be economical since it has to be administered by trained personnel and the therapies consume longer time than medication, the evidence that CBGT decreases the number and duration of admissions indicates cost-effectiveness. Moreover, the fact that short-term interventions yielded positive results increases the feasibility of this method for routine use.

TABLE 1. Methodological Characteristics of CBT Studies

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Andres et al. (2000)	ICD-10 Schizophrenia / schizoaffective disorder 32 outpatients (21 male, 11 female)	ST + CBGT (17)	PE COP PST	Yes	No	No	Pre-, post-treatment 6-12-18. months: SCI, SCQ, ICQ, BPRS, SANS, SIS	?	-Post treatment measures; ST+CBGT = ST+BGT (significant improvement for both groups)	BPRS 1.01 SANS 1.46 SCQ .32
		ST + BGT (15)								
Andres et al. (2003)	ICD-10 Schizophrenia spectrum disorders 32 outpatients (21 male, 11 female)	ST + CBGT (17)	PE COP PST	Yes	No	No	Pre- and post-treatment 6-12-18 months: KQ, SCQ, SCI, FQCI, CSQ, BPRS, SANS, SIS	?	-Post treatment for symptoms and relationships: ST+CBGT = ST+BGT -KQ; ST+CBGT > ST+BGT	?
		ST + BGT (15)								
Barrowclough et al. (2006)	DSM-IV Schizophrenia/ schizoaffective disorders 113 outpatients (82 male, 31 female)	ST + CBGT (57)	PE COP CR	No	Yes	No	Pre- and post-treatment-12 months: HARS, SFS, RSES, BHS, PANNS, GAF	Follow-up CBGT:5 ST:10	Post treatment measures for symptoms and relapses: ST +CBGT=ST	Self-esteem 0.3
		ST (56)								
Bechdolf et al. (2004)	ICD-10 Acute phase schizophrenia /other psychotic disorders 88 inpatients (48 female, 40 male)	ST + CBGT (40)	PE COP CR	No	Yes	Yes	Pre- and post-treatment – 6 months: PANSS, compliance with medical treatment	CBGT: 9 PST:8	-Post treatment and follow-up measures for all symptoms; ST+CBGT = ST+PE Relaps and compliance; ST+CBGT>ST+PE	?
		ST + PE (48)	PE							
Bechdolf et al. (2010)	ICD-10 Schizophrenia 88 inpatients (48 female, 40 male)	ST+CBGT (40)	COP PST	No	Yes	No	Pre-treatment, 24 months: PANNS, hospitalization, compliance with medical treatment	24	Follow-up measures for symptoms and compliance to medical treatment; ST+CBGT = ST+PE Decrease in hospitalization; ST+CBGT> ST+PE	CBGT 0.25 PE 0.29
		ST+PE (48)	PE							

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Borras et al. (2009)	ICD-10 Schizophrenia, non-affective psychosis 54 inpatients	ST+CBGT (28) ST (26)	COP	No	Yes	No	Pre- and post-treatment, 3 months: PANNS, ATQ, SERS, CS	11	Post treatment and follow-up measures; ST+CBGT>ST	?
Bradshaw (1993)	DSM-III-R Schizophrenia 16 outpatients (9 female, 7 male)	ST + CBGT (8) ST + PST (8)	PE PSST CR PST	No	Yes	No	Pre- and post-treatment: GAF 1 year follow-up: Number of hospitalization, duration of hospitalization	COP (1) PST (1)	GAF: ST+CBGT> ST+PST Follow-up measures for hospitalization: ST+CBGT < ST+PST	?
Combs et al. (2007)	SCID-P Schizophrenia spectrum disorders 28 inpatients (21 male, 7 female)	ST + PSST (18) ST + COP (10)	PE CR COP PST	No	Yes	Yes	Pre-treatment and post-treatment: PANSS, SFS	PSST%4 COP %10	Negative and positive symptoms; ST + SBE= ST + COP Aggression, cognitive flexibility ST + SBE> ST + COP	PANNS .08
Dannahy et al. (2011)	ICD-10 Schizophrenia and schizoaffective disorders 62 outpatients Gender is not specified	ST+CBGT (no control groups)	PE COP CR	No	No	No	Pre- and post-treatment, 1 months: CORE-OM (general symptomatology) Likert items for voices (opposition, intensity, control)	1 months: 12	Post-treatment and 1 month follow-up; Significant improvement on distress and control about voices.	.53
Drury et al. (1996)	WHO Acute phase non-affective disorders 40 inpatients (25 male, 15 female)	ST + individual + group CBT(20) ST + SUT (20)	COP CR	Yes	Yes	Yes	Pre-treatment, every week, post-treatment, 9 months: PAS, PSE	BGT (1) CBGT (2)	Hallucinations and delusions; ST+CBGT > ST+SUT Deorganization and negative symptoms: ST+CBGT = ST+SUT Follow-up; ST+CBGT = ST+SUT	0.9

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Drury et al. (2000)	WHO Acute phase non-affective disorders 34 inpatients (17 female, 17 male)	ST + individual + group CBT (17) ST + SUT (17)	COP CR	Yes	Yes	Yes	4 and 5 year follow-up: PAS, IS, PBIQ	9	Hallucinations and delusions, insight, relaps; ST+CBT = ST+SUT Control of illness; ST+CBT > ST+SUT	?
Eckman et al. (1992)	DSM-III-R Schizophrenia 41 male inpatients and outpatients	ST + PSST(20) ST + SUT (21)	PE COP PSST	No	Yes	Yes	Pre- and post-treatment and 1 year follow-up: SANS, BPRS	Follow-up: PSST(13) SUT (11)	*Post-treatment and 1 year follow-up: Compliance to medical treatment, hallucinations, delusions, negative symptoms; ST+PSST > ST+SUT	?
Favrod et al. (2010)	DSM-IV-R Schizophrenia and schizoaffective disorders 25 outpatients	ST+CBGT (No control groups)	CR PST PSST	No	No	No	Pre-treatment and post-treatment; PSYRATS, PANNS, SUMD	7	Delusions decreased, Insight relating to delusions increased	?
Gledhill et al. (1998)	DSM-III-R Schizophrenia 4 outpatients (2 male and 2 female)	ST+CBGT (No control groups)	PE COP	No	No	No	Pre- and post-treatment ve 1 months: PAS,BDI,BHS, RSES, PSAS, KQ, Therapy Satisfaction Scale	No	All patients measures decreased in isolation, depression and knowledge relating to schizophrenia, self-esteem improved, Coping strategies improved in a half of the patients	?
Goldberg et al. (2007)	Schizophrenia spectrum disorders chronic- 24 outpatients (9 female, 15 male)	ST + CBGT (No control groups)	PE COP	No	No	No	Pre- and post-treatment: PANNS, SCL-90	8	Psychotic symptoms reduced.	.52
Gumley et al. (2006)	DSM-IV Schizophrenia and other psychotic disorders 144 outpatients (105 male, 39 female)	ST + CBGT (72) ST (72)	PE COP CR	No	Yes	No	Pre-treatment, 3 -6- 12.months: PBIQ, RSES	?	loss of belief and self-esteem at 12 months; ST+CBGT > ST	?

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Haddock et al. (2009)	DSM-IV Schizophrenia and schizoaffective disorders 77 outpatients and inpatients (66 male, 11 female)	ST+CBGT (38)	PE COP PST	No	Yes	Yes	Pre-treatment, 6. week, post-treatment and 6. month, 1 year follow-up: PANNS, PSYRATS, GAF, WARS (aggression and anger)	9	Anger; ST+CBGT = ST+SAT Delusions and aggression; ST+CBGT > ST+SAT	?
		ST+SAT (39)								
Halperin et al. (2000)	schizophrenia + comorbid social anxiety disorders 20 outpatients (14 male, 6 female)	ST + CBGT ST	PE CR	No	Yes	No	Pre- and post-treatment – 6 weeks follow-up: BSPS, CDS, SIAS, Q-LESS-Q, AUDIT, BSI	4	All measures for post-treatment; ST+CBGT > ST Follow-up; ST+CBGT > ST	?
Kemp et al. (1996)	Acute phase psychotic disorders 47 outpatients (24 female, 23 male)	ST + CBGT (25) ST + SUT (22)	PE COP	No	Yes	Yes	Pre- and post-treatment – 6 months: BPRS	6 months: 7	Post-treatment: compliance, insight; ST+CBGT > SUT	?
Kingssep et al. (2003)	MINI-Plus Schizophrenia + comorbid social anxiety disorders 33 outpatients (23 male, 10 female)	ST + CBGT (n=16) ST (n=17)	PE COP CR	No	Yes	Yes	Pre- and post-treatment and 2. months: SPS, SSS, SIAS, BENE, CDS, Q-LESS-Q	8	*Post-treatment and 2 months; All measures; ST+CBGT > ST	SIA. 0.64 SSS 1.29
Lysaker et al. (2009)	DSM-IV Schizophrenia and schizoaffective disorders 100 outpatients (85 male, 15 female)	ST+ individual and group CBT (50) ST+ SUT (50)	CR PSST	No	Yes	Yes	Pre- and post-treatment: PANNS WBI (work performance)	?	Duration of work ve work performance ST+BBGT>ST+SUT	?

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measures	Drop-out	Results	E.S.
Malik et al. (2009)	ICD-10 Schizophrenia 422 inpatients	ST+CBGT (257) ST (165)	PE COP CR	Yes	Yes	Yes	Pre-treatment, 5, 12 and 24 months: Relapse rate, duration of rehospitalization, rate of find a job	No	24 months: Relaps, hospitalization, find a job; ST+CBGT>ST	?
Mann et Chong (2004)	DSM-IV Schizophrenia 50 inpatients (38 male and 12 female)	ST + CBGT ST + PE	PE COP PE	No	Yes	Yes	Pre- and post-treatment: PANNS, Life Skills Profile 1 months; Duration of staying at hospital	No	Hallucination and functioning; ST+CBGT> ST+PE	?
Moritz et al. (2011)	MINI Schizophrenia 36 inpatients and outpatients (28 male, 8 female)	ST+CBGT (18) ST (18)	CR PST PSST	No	Yes	Yes	Pre- and post-treatment: PANNS PSYRATS Q-LESS-Q	?	PANNS; ST+CBGT=ST PSYRATS delusions and Q-LESS-Q; ST+CBGT>ST	1.49
Mortan et al. (2011)	DSM-IV Schizophrenia, schizoaffective disorder 12 male inpatients	ST+CBGT (7) ST (5)	PE COP CR PST	No	No	No	Pre- and post-treatment, one-year follow-up: HDRS, HARS, BDI, BAI, BHS, SAPS, SANS, KQS, RSES, PSAS	No	Post-treatment and one year follow-up hallucinations, SAPS total, SAPS delusions, SANS, HAO; ST+CBGT>ST	No
Penn et al. (2009)	DSM-IV Schizophrenia, schizoaffective disorder 65 outpatients (33 male, 32 female)	ST+ CBGT ST+ SUT	PE, COP, CR	No	Yes	Yes	Pre- and post-treatment, 3 and 12 months; PSYRATS, BAVQ-R, PANNS, SFS	12 months 14	12 months; PANNS total: ST+CBGT> ST+SUT BAVQ-R, PSYRATS ST+SUT> ST+CBGT	No

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Petlman & Hubbard (2000)	DSM-IV Chronic schizophrenia 9 outpatients (6 female 3 male)	ST + CBGT (No control groups)	PE COP	No	No	No	Interview observation	No	7 of patients' symptoms reduced and their power of control improved	No
Pinkham et al. (2004)	DSM-IV Chronic schizophrenia / schizoaffective disorder 11 inpatients (8 female, 3 male)	ST + CBGT (7 sessions) ST + CBGT (20 sessions)	PE COP PE COP	No	No	No	Pre- and post-treatment PSYRATS, PANNS, BHQ	1	Belief about voices, distress of voices; ST + CBGT (7) = ST + CBGT (20)	Psyrrats .72 Panns 1.11
Rathod et al. (2005)	WHO (1992) Schizophrenia 422 inpatients and outpatients (280 male, 142 female)	ST + CBGT (n=257) ST (n=165)	PE COP CR	No	Yes	Yes	Pre- and post-treatment – 1 year follow-up: SAI, CPRS, Montgomery-Asberg Depression Scale	ST (46) CBGT (40)	Post-treatment; Psychotic symptoms knowledge, compliance to treatment; ST + CBGT > ST Insight; ST + CBGT = ST 1 year follow-up; Compliance to treatment ST + CBGT > ST	?
Shelley et al. (2001)	DSM-IV Schizophrenia / schizoaffective disorders 48 inpatients Gender is not specified	ST + RPST + CBGT (n=25) ST + RPST; n=23	PE COP	No	No	No	Öntest ve sonrest: PANNS	No	PANNS; ST + CBGT > ST	?
Tarrier et al. (1993a)	DSM-III-R Chronic schizophrenia 27 outpatients Gender is not specified	ST + CBGT (n=15) ST + PST (n=12) ST (n=14)	COP PST	No	Yes	Yes	Pre- and post-treatment and 6 months: BPRS, PAS, SFS	CBGT (3) PST (1)	Psychotic symptoms; ST + CBGT = ST + PST > ST	0.35

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Tarrier et al. (1993b)	DSM-III-R Chronic schizophrenia 27 outpatients Gender is not specified	ST + CBGT (n=15) ST + PST (n=12)	COP PST	No	Yes	Yes	Post-treatment; -number of positive coping techniques used - efficiency of coping technique -accommodation of problem solving technique	CBGT (3) PST (3)	-Number of positive coping techniques and efficiency; ST+CBGT > ST+PST -Using problem solving techniques; ST+CBGT = ST+PST	?
Tarrier et al. (1998)	DSM-III-R Schizophrenia, schizoaffective disorder, delusional disorder 87 outpatients (69 male, 18 female)	ST + CBGT (n=33) ST + SUT (n=26) ST (n=28)	COP PST	No	Yes	Yes	Pre-test and 3 months: BPRS	15	Intensity and number of symptoms, number of hospitalization and duration of staying at hospital; ST+CBGT > ST +SUT > ST	?
Tarrier & Wittkowski (1999)	DSM-III-R Schizophrenia, schizoaffective disorder, delusional disorder 87 outpatient (52 male, 35 female)	ST + CBGT (n=23) ST + SUT (n=21) ST (n=26)	COP PST	No	Yes	Yes	Pre- and post-treatment – 1 year follow-up: PSE, BPRS, SANS	17	Post-treatment positive and negative symptoms; ST+CBGT > ST At follow-up for all positive symptoms; ST+CBGT > ST Negative symptoms; ST+CBGT = ST+SUT > ST	?
Tarrier et al. (2000)	DSM-IV Schizophrenia, schizoaffective disorder, delusional disorder 87 outpatients Gender is not specified	ST + CBGT (n=23) ST + SUT (n=21) ST (n=26)	COP PST	No	Yes	Yes	*Pre- and post-treatment 3 – 12 months and 2 years follow-up: PSE, BPRS, SANS Relapse and hospitalization	At post-treatment: 11 2 years follow-up: 16	- Pre- and post-treatment and 2 years follow-up Positive, negative symptoms, relapse, hospitalization; ST+CBGT=ST+SUT>ST	CBGT Pos.: .42 Neg: .54

TABLE 1. Continued

Study	Population	Treatment Groups	CBT Techniques	Family Psycho-education	Randomization	Independent Assessor	Measurement	Drop-out	Results	E.S.
Tarrier et al. (2001)	DSM-III-R Chronic schizophrenia, schizoaffective disorder, delusional disorder 87 outpatients (at post-treatment 54 male, 18 female)	ST +CBGT (n=24) ST + SUT(n=21) ST (n=27)	COP CR PST	No	Yes	Yes	Pre- and post-treatment - 3 months: PAS, BPRS, PSE, SANS, BDI, BHS	15	Thought disorders and negative symptoms; ST+CBGT > ST -Delusions; ST+CBGT = ST+SUT>ST -Hallucinations; ST+CBGT > ST+SUT>ST	CBGT Pos. 0.5
Thomas et al. (2010)	Schizophrenia, schizoaffective disorder 33 outpatients (21 male, 12 female)	ST+CBGT	PE COP CR	No	No	No	Pre- and post-treatment: PSYRATS, PANNS, SAI	5	PSYRATS, PANNS; reduced positive and total symptoms.	?
Trower et al. (2004)	ICD-10 schizophrenia and schizoaffective disorder 38 outpatients and inpatients (24 male, 14 female)	ST + CBGT (n=18) ST (n=20)	CR	No	Yes	Yes	Pre- and post-treatment (6 months), 12 months: BHQ, KQ, PSYRATS, CDS	*Post- and follow-up: -CBGT (3) -ST (3) *Follow-up: -CBGT (4) -ST (5)	Belief about power of voices, adherence to voices and depression; ST+CBGT > ST Intensity of voices, loud and content; -ST+CBGT = ST	CBGT 1.1
Valencia et al. (2007)	DSM-IV Chronic schizophrenia 82 outpatient (64 male, 18 female)	ST + PSST + AT (n=43) ST (n=39)	PSST	Yes	Yes	Yes	Pre- and post-treatment - 1 year follow-up; PANNS, SFS	ST (10) PSST (6)	-Symptoms, psychosocial and general functioning, low relapse, low hospitalization and high compliance to medical treatment; ST+PSST+AT> ST	PSST: PANNS: 2.2 SFS: 2.1
Wykes et al. (1999)	DSM-IV Schizophrenia 21 outpatients and inpatients Gender is not specified	ST + CBGT ST	PE COP	No	No	Yes	Pre- and post-treatment -3 months: PSYRATS, BPRS, IASP, BHQ, BDI, BAI, RSES	11	BPRS, Hallucinations, Insight: ST+CBGT > ST Follow-up: BPRS; ST+CBGT = ST	?
Wykes et al. (2005)	DSM-IV Schizophrenia 85 outpatients (50 male, 35 female)	ST + CBGT (n=45) ST (n=40)	PE COP	No	Yes	Yes	Pre- and post-treatment (10 weeks) 6 months: SBS, PSYRATS, RSES	Follow-up: CBGT (8) ST(7)	Intensity of hallucinations and using coping techniques; ST+CBGT = ST -Social functioning; ST+CBGT > ST	Soc. Func. .63
Yung et al. (2011)	DSM-IV Vulnerable to psychosis 193 person	ST+CBGT (43) P+CBGT (44) P+SUT (28) CG (78)	COP, CR COP, CR PE	No	Yes	Yes	Pre-treatment, 6 months: BPRS, SANS, HDÖ, GAF, YKÖ	63	BPRS: ST+CBGT = P+CBGT = P+SUT = CG SANS: P+ BGT, KG> ST+CBGT, P+CBGT	BPRS: 0.10 0.12 0.05

TABLE 2. Therapy Characteristics of CBGT

Study	Duration of Sessions	Number of Sessions	Frequency of Sessions	Number of Therapists	Number of Members
Andres et al. (2000)	90 min.	24 sessions	Twice a week	?	4-7
Andres et al. (2003)	90min.	24 sessions	Twice a week	?	4-7
Barrowclough et al. (2006)	2 hours	18 sessions	3 times a week	2	Max. 12
Bechdolf et al. (2004)	60-90 min.	16 sessions	Twice a week	1	8
Bechdolf et al. (2010)	60-90 min.	16 sessions	Twice a week	1-2	8
Borras et al. (2009)	1 hour	24 sessions	Twice a week	2	5-13
Bradshaw (1993)	90 min.	20 hours	Twice a month	2	8
Combs et al. (2007)	1 hour	18 sessions	Once a week	1-2	8-10
Dannahy et al. (2011)	90 min.	8-12 sessions	Once a week	2	6-7
Drury et al.(1996)	?	max. 6 months	8 hours per week, 4 individual, 1group	2	max. 6
Drury et al. (2000)	?	max. 6 months	8 hours per week	2	6
Eckman et al. (1992)	90 min.	6 months	Twice a week	1	20
Favrod et al. (2010)	60 min.	8 -16 sessions	Once a week	2-3	?
Gledhill et al. (1998)	1 hour	8 sessions	Once a week	1	4
Goldberg et al. (2003)	2 hours	8 sessions	Once a week	1 per 2-3 member	?
Gumley et al. (2006)	?	24-36 sessions	Once a week	1	?
Haddock et al. (2009)	?	25 sessions	2-3 times a week	?	?
Halperin et al. (2000)	2 hours	8 sessions	Once a week	?	7
Lysaker et al. (2009)	1 hour	26 sessions	Once a week	1-2	10
Kemp et al. (1996)	20-60 min.	4- 6 sessions	Twice a week	2	?
Kingsep et al. (2003)	2 hours	12 sessions	Twice a week	2	?
Malik et al. (2009)	?	6 sessions	?	?	?
Mann and Chong (2004)	?	6 sessions	Once a week	?	5
Moritz et al. (2011)	45-60min.	8 sessions	Once a week	?	6-9
Mortan et al. (2011)	90 min.	9-10 sessions	Twice a week	2	4-5
Penn et al. (2009)	1 hour	12 sessions	Once a week	2	4-7
Perlman and Hubbard (2000)	1 hour	23 sessions	1-2 times a week	2	9
Pinkham et al. (2004)	1 hour	7 sessions	Once a week	?	11
Rathod et al. (2005)	?	5 months	?	?	?
Shelley et al. (2001)	?	27-90 sessions	3-5 times a week	?	?
Tarrier et al. (1993)	?	10 sessions	Twice a week	1	5
Tarrier, Sharpe et al. (1993)	?	10 sessions	Twice a week	1	9-12
Tarrier et al. (1998)	1 hour	20 sessions	Twice a week	1	?
Tarrier and Wittkowski (1999)	1 hour	?	?	1	?
Tarrier et al. (2000)	1 hour	20 sessions	Twice a week	1	?
Tarrier et al. (2001)	1 hour	20 sessions	Twice a week	3	?
Thomas et al. (2010)	1 hour	max.24 sessions	Once a week	1	?
Trower et al. (2004)	?	13 sessions	?	1	?
Valencia et al. (2007)	max. 75min.	max.48sessions	Once a week	2	8
Wykes et al. (1999)	1 hour	6 sessions	Once a week	3	7
Wykes et al. (2005)	1 hour	7 sessions	Once a week	?	?
Yung et al.(2011)	50-60 min.	48 sessions	Once a week	2	?

Measurement: ATQ: Automatic Thoughts Questionnaire; AUDIT: The Alcohol Use Disorders Identification Test; BAI: Beck Anxiety Inventory; BDI: Beck Depression Inventory; BFNE: Brief Fear of Negative Evaluation scale; BHQ: Beliefs about Hallucinations Questionnaire; BHS: Beck Hopelessness Scale; BPRS: Brief Psychiatric Rating Scale; BSI: The Brief Symptom Inventory; BSPS: Brief Social Phobia Scale; CDS: The Calgary Depression Scale for Schizophrenia; CPRS: Comprehensive Psychiatric Rating Scale; CSCQ: Self-Control Questionnaire; CS: Coping Scale; FQCI: Freiburg Questionnaire on Coping with Illness; GAF: Global Assessment of Functioning; HADS: Hospital Anxiety and Depression Scale; HARS: Hamilton Anxiety Rating Scale; HDRS: Hamilton Depression Rating Scale; HKÖ: Hastalık Kapsamı Ölçeği; IASP: The Insight Assessment Scale in Psychosis; IS: Insight Scale; KQ: Knowledge Questionnaire; KQS: Knowledge Questionnaire for Schizophrenia; MADs: Maudsley Assessment of Delusions Scale; PANNS: Positive and Negative Syndrome Scale; PAS: Psychiatric Assessment Scale; PBIQ: Personal Belief About Illness Questionnaire; PSAS: Problem/Symptoms Assessment Scale; PSE: Present State Examination; PSYRATS: Psychotic Symptoms Rating Scales; RSES: Rosenberg Self-Esteem Scale; SAL: The Schedule for the Assessment of Insight;

SANS: Scale of Assessment Negative Symptoms; SAPS: Scale of Assessment Positive Symptoms; SBS: Social Behavioral Schedule; SCQ: Stress Coping Questionnaire; SERS: Self-esteem Rating Scale; SFS: Social Functioning Scale; SIAS: The Social Interaction Anxiety Scale; SIS: Social Interview Schedule; SPS: Short Social Phobia Scale; SSS: Short Symptomatology Scale; SUMD: The Scale to Assess Unawareness of Mental Disorder; Q-LESS-Q: The Quality of Life, Enjoyment and Satisfaction Questionnaire; WARS: The Ward Anger Rating Scale
Treatments and Techniques: CBGT: Cognitive Behavioral Group Therapy; CG: Control Group (no medical treatment or therapy); COP: Coping Skills; CR: Cognitive Restructuring; FT: Family Therapy; P: Placebo Medical Treatment; PE: Psychoeducation; PSST: Psychosocial Skills Training; PST: Problem Solving Training; RPST: Routine Psychosocial Treatment; SAT: Social Activity Treatment; SCIT: Social and Cognitive Integrative Training; ST: Standard Treatment; SUT: Supportive Therapy; WL: Waiting List
General Abbreviations: E.S.: Effect Size; WHO: World Health Organisation; ?: Not Specified
?: not specified

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