A Pilot Study on the Effectiveness of a Group-Based Cognitive-Behavioral Therapy Program for Coping with Auditory Hallucinations

Oya MORTAN1, Serap TEKİNSAV SÜTCÜ2, Güzide GERMAN KÖSE3

SUMMARY

Objective: The aim of this study was to prepare a group-based cognitive-behavioral therapy program for patients with schizophrenia and other psychotic disorders coping with auditory hallucinations, and to evaluate the effectiveness of the program.

Method: The study included 12 male inpatients aged between 18 and 55 years from the Manisa Mental Health and Illness Hospital that were diagnosed with schizophrenia or schizoaffective disorder according to DSM-IV diagnostic criteria (SCID-I). The inclusion criteria were the diagnosis of schizophrenia or schizoaffective disorder, at least 1 hospitalization, the presence of auditory hallucinations, and the absence of alcohol/drug abuse/dependence, organic deficit, and mental/physical disability. In all, 7 patients received routine care plus group CBT and 5 patients received routine care alone. The group treatment program was conducted for 9-10 sessions twice a week. The patients were assessed using SAPS, SANS, the Problem/Symptom Checklist, and the Knowledge of Schizophrenia Questionnaire pre-treatment, post-treatment, and at the 1-year follow-up. The outcomes were analyzed using the Wilcoxon signed rank test.

Results: There was a significant reduction in the severity and frequency of hallucinations, delusions, distress and occupation with auditory hallucinations, negative symptoms, and anxiety in the CBT group after treatment. Additionally, post-treatment outcome in the treatment group didn't change at 1 year follow-up. In the control group, there was no difference between pre-treatment and post-treatment outcome (P < 0.05).

Conclusion: The therapy program was considered to be effective in increasing the ability to cope with auditory hallucinations and reducing their frequency for the patients with schizophrenia and schizoaffective disorder.

Key Words: Schizophrenia, schizoaffective disorder, cognitive behavioral therapy, effectiveness

INTRODUCTION

Schizophrenia and schizoaffective disorder can have severe, chronic, and negative prognoses. For a long time physicians believed that biological treatment modalities (such as drug treatment and ECT) were the most appropriate for psychotic disorders. Psychosocial treatment models were regarded as not beneficial or inappropriate for such patients. Nevertheless, the combination of drug treatment and psychosocial intervention for psychotic disorders has attracted the attention of physicians within the last few years. Cognitive-behavioral therapy (CBT) for psychotic disorders is relatively new and rarely used, as compared to other psychosocial interventions (Kingdon and Turkington 1994; Sungur and Yalnız 1995; Aker and Sungur 2001). Cognitive therapy was first used with a schizophrenic patient by Beck in 1952, who reported it was beneficial for the treatment of the patient’s resistant delusional system (Beck and Rector 2000; Beck 2002). Following this success, clinicians developed and used individual-based or group-based CBT programs for schizophrenia (Tarrier et al. 1993; Kingdon and Turkington 1994; Fowler et al. 1995). Most cognitive beha-
Behavioral group treatment programs for schizophrenia compromise psychoeducation and coping techniques. Some programs utilize problem-solving techniques in addition to coping (Bradshaw 1993; Tarrier et al. 2001). Cognitive restructuring techniques are mostly used in long-term therapies (Drury et al. 1996; Bechdolf et al. 2004). As psychotic patients are disorganized and have a low attention span, group programs are usually conducted with a small number of patients (Andres et al. 2000, 2003) and 2 group leaders (Kemp et al. 1996; Drury et al. 2000). Compared to drug treatment alone and drug treatment plus supportive treatment for schizophrenia and schizoaffective disorder, the combination of drug treatment and individual/group-based CBT is more efficient, and was reported to be effective in reducing positive and negative symptoms, increasing insight, and in preventing relapses (Garety et al. 1997; Kuipers et al. 1997; Wykes et al. 1999; Drury et al. 2000; Tarrier et al. 2000; Shelley et al. 2001; Turkington et al. 2002; Bechdolf et al. 2004).

Although CBT is being used with increasing frequency for the treatment of schizophrenia and psychotic symptoms, in Turkey its clinical use with psychotic patients is limited. Hence, there is a limited number of studies on the development and effectiveness of CBT for Turkish psychotic patients. Those that exist are usually based on psychoeducation and basic skills formation, including problem solving, communication, and medication compliance, in the absence of specific cognitive restructuring techniques (Doğan et al. 2002; Yıldız et al. 2003, 2004, 2005; Sungur et al., 2008).

The present study, therefore, aimed to develop a group-based CBT program for coping with auditory hallucinations, and to test its effectiveness in patients with schizophrenia and schizoaffective disorder. The CBT program aimed to reduce positive and negative symptoms, the frequency and severity of auditory hallucinations, patients’ beliefs in auditory hallucinations and delusions, the number of relapses and to increase the ability to cope with auditory hallucinations. Post treatment, following a decrease in psychotic symptoms and an increase in coping ability, we expected patients to be less depressed, anxious, and hopeless, with increased self-esteem, as compared to the pre-treatment period.

### METHOD

#### Sample

The study included 12 male inpatients (aged between 18 and 55 years) from the Manisa Mental Health and Illnesses Hospital that were diagnosed with schizophrenia or schizoaffective disorder according to DSM-IV diagnostic criteria (Structured Clinical Interview for DSM disorders [SCID-I]). Inclusion criteria were the diagnosis of schizophrenia or schizoaffective disorder (SCID-I), at least 1 psychotic attack and subsequent hospitalization, ongoing auditory hallucinations, and use of oral or injectable antipsychotics. Exclusion criteria included alcohol and drug abuse/dependence, organic deficit, mental/physical disability, disorganized behavior, and cognitive deterioration precluding participation in the therapy or completing the measurement scales. In all, 5 patients (mean age: 40.6 years) were given routine care (control group) and 7 patients (mean age: 44.0 years) were given CBT in addition to routine care (treatment group). All the patients were of low socio-economic status.

<table>
<thead>
<tr>
<th>Scale score</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
<th>Pre-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAPS hallucination</td>
<td>20.17 ± 9.70</td>
<td>7.33 ± 5.16*</td>
<td>21.60 ± 3.97</td>
<td>13.60 ± 8.90</td>
</tr>
<tr>
<td>SAPS delusion</td>
<td>21.67 ± 13.05</td>
<td>9.00 ± 7.15*</td>
<td>23.20 ± 10.98</td>
<td>18.80 ± 8.23</td>
</tr>
<tr>
<td>SAPS total</td>
<td>45.17 ± 20.09</td>
<td>18.17 ± 11.72*</td>
<td>48.20 ± 10.98</td>
<td>35.00 ± 17.25*</td>
</tr>
<tr>
<td>Problem frequency</td>
<td>3.83 ± 1.17</td>
<td>2.33 ± 1.21*</td>
<td>4.00 ± 1.22</td>
<td>3.20 ± 1.79</td>
</tr>
<tr>
<td>Problem belief</td>
<td>3.00 ± 1.55</td>
<td>2.33 ± 1.50</td>
<td>3.60 ± 1.95</td>
<td>2.80 ± 1.79</td>
</tr>
<tr>
<td>Problem distress</td>
<td>4.17 ± 9.87</td>
<td>2.00 ± 1.26*</td>
<td>4.00 ± 1.73</td>
<td>2.60 ± 1.34</td>
</tr>
<tr>
<td>Problem occupation</td>
<td>4.17 ± 7.5</td>
<td>2.00 ± 6.3*</td>
<td>4.80 ± 4.5</td>
<td>2.40 ± 1.14</td>
</tr>
<tr>
<td>Problem control</td>
<td>1.67 ± 1.03</td>
<td>2.83 ± 9.8</td>
<td>2.00 ± 1.22</td>
<td>3.20 ± 1.30</td>
</tr>
<tr>
<td>Problem coping</td>
<td>2.50 ± 1.52</td>
<td>3.83 ± 1.17</td>
<td>2.00 ± 1.22</td>
<td>2.60 ± 1.52</td>
</tr>
<tr>
<td>SANS total</td>
<td>14.67 ± 8.24</td>
<td>6.67 ± 3.83*</td>
<td>21.60 ± 10.45</td>
<td>17.80 ± 14.72</td>
</tr>
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<td>Knowledge Questionnaire</td>
<td>8.33 ± 1.37</td>
<td>9.83 ± 1.72</td>
<td>8.40 ± 1.52</td>
<td>8.20 ± 1.92</td>
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<tr>
<td>BDI</td>
<td>23.67 ± 13.84</td>
<td>15.17 ± 11.20</td>
<td>28.60 ± 11.70</td>
<td>16.80 ± 8.53*</td>
</tr>
<tr>
<td>HDI</td>
<td>16.17 ± 11.14</td>
<td>4.50 ± 5.89*</td>
<td>18.40 ± 7.23</td>
<td>8.80 ± 4.32*</td>
</tr>
<tr>
<td>BAS</td>
<td>26.17 ± 15.83</td>
<td>22.17 ± 11.91</td>
<td>22.60 ± 19.58</td>
<td>18.20 ± 12.50</td>
</tr>
<tr>
<td>HAI</td>
<td>15.00 ± 10.58</td>
<td>3.17 ± 2.14*</td>
<td>10.80 ± 4.76</td>
<td>8.40 ± 2.07</td>
</tr>
<tr>
<td>BHS</td>
<td>12.50 ± 5.39</td>
<td>7.50 ± 6.02</td>
<td>9.60 ± 3.21</td>
<td>8.60 ± 3.05</td>
</tr>
<tr>
<td>RSES</td>
<td>2.50 ± 2.17</td>
<td>1.00 ± 1.26</td>
<td>2.40 ± 0.89</td>
<td>1.20 ± 0.84</td>
</tr>
</tbody>
</table>

*P < 0.05
Instruments

Clinical evaluation of the 12 patients was conducted using SCID-I. Pre treatment, post treatment, and at the 1-year follow-up the patients were administered the following scales: Scale for the Assessment of Positive Symptoms (SAPS), Scale for the Assessment of Negative Symptoms (SANS), Problem/Symptom Checklist, Knowledge of Schizophrenia Questionnaire, Hamilton Depression Inventory (HDI), Hamilton Anxiety Inventory (HAI), Beck Anxiety Scale (BAS), Beck Depression Inventory (BDI), Beck Hopelessness Scale (BHS), and Rosenberg Self-Esteem Scale (RSES). They were assessed using the Knowledge of Schizophrenia Questionnaire, Problem/Symptom Checklist, and Satisfaction Scale after each session in order to measure any changes between 2 consecutive sessions. After the treatment, patients were given a therapy and therapist evaluation scale (11 item) developed by the first 2 authors. In addition, the patients’ and their families’ adjustment to the treatment were evaluated with a 6-item scale.

Procedure

The first 2 authors developed a CBT manual for increasing the ability to cope with auditory hallucinations based on the literature (Tarrier 1992; Kingdon and Turkington 1994; Fowler et al. 1995; Gledhill et al. 1998; Haddock et al. 1998; Wykes et al. 1999; Beck and Rector 2000; Aker and Sungur 2001; Yıldız 2001; Morrison 2002; Goldberg et al. 2007). We also utilized source books recommended by a reputable professor in clinical psychology and CBT. A professor of psychiatry evaluated the CBT manual and video records of the therapy sessions. Accordingly, the manualized group-based CBT program was conducted twice a week and included 9-10 sessions in total. Each therapy sessions lasted 90 minutes (including a 10-minute break).

The first 10 minutes of each session involved the evaluation of the previous session and a discussion of the homework (if any was given). During the remainder of the first half of the session the therapy agenda was discussed, then a 10-minute coffee break was taken. Discussion on the therapy agenda continued during the second half of the session. Therapy sessions ended with a presentation of new homework and feedback for the participants. The first 2 sessions involved psychoeducation and activities that target building rapport and patient engagement in the therapy. Psychoeducation included the definition of psychotic symptoms and the normalization rationale. The diathesis-stress model was presented to explain the etiology of psychosis and relapses. The aim of the psychoeducation was to improve the patients’ existing knowledge of schizophrenia and to build group cohesion.

Techniques for coping with auditory hallucinations were presented during the 3rd and 4th sessions. At this stage patients learned to utilize techniques for coping with auditory hallucinations. Techniques that helped patients cope with voices were reinforced. Patients were then taught new coping techniques, such as attention distraction and focusing. The attention distraction technique aimed to help patients shift their attention to another stimulus or activity while hearing voices, aiming to diminish the effect of hallucinations on the pati-
ents. Unlike the attention distraction technique, the focusing technique necessitated patients to focus more on the source, nature, and content of voices in order for the patients to realize the voices were not coming from the environment and could be controlled. Patients were encouraged to perform other techniques, such as arguing with or limiting the voices, and changing the voice tones to funny tones.

Therapists utilized cognitive restructuring techniques during the 5th-8th sessions. The aim was to help the patients recognize voice-inducing situations and the thoughts accompanying the voices, and to make a connection between the thoughts and voices. In this way patients could realize the voices were not coming from the environment and by changing their thoughts they could control their auditory hallucinations. Relapse prevention was targeted during the last session. All coping techniques were reviewed. The most beneficial techniques for each patient were discussed. Patients were encouraged to clarify the most beneficial coping techniques and utilize them when necessary.

As psychotic patients have a short attention span, cognitive deterioration, and social isolation, the therapists utilized extensive rewards to motivate them to continue therapy, do homework, adhere to the group rules, and reach their targets (Özden and Özsan 2001; Yildiz et al. 2004; Yildiz 2009). Patients were given individual rewards or group-based rewards for effort rather than success.

The CBT was conducted by 2 psychologists (the first and third authors) at the Manisa Mental Health and Illnesses Hospital inpatient clinic under the supervision of the second author. The psychologists were experienced in group therapy with psychotic patients. The group leader was trained in the use of CBT with child and adult patients. The therapy groups were conducted in accordance with the ethical codes of the Turkish Psychologists Association. Patients and their families were informed about the aim, duration, and content of the therapy program, and signed an informed consent form before participating in the study.

Those patients that met the inclusion criteria were assigned to combined treatment (routine care plus group based CBT) (treatment group) or routine care only (control group). If there were at least 4 psychotic patients in the inpatient clinic, these patients were assigned to the treatment group. If there were less than 4 psychotic patients at a given time, then they were assigned to the control group and their routine care continued. The inpatient clinic physicians stabilized the drug treatment of all the study participants.

The group therapy was conducted between 2008 and 2009. There were 5 patients in the first therapy group. Two patients were discharged from the hospital at the third session at the request of their caregivers. They were excluded from the study and the first group session was completed with 3 patients. Four patients participated in the second therapy group; however, 1 patient insisted on staying in the hospital due to a problematic family situation and exhibited inconsistent behaviors, and the data for this patient, which might not have been reliable, were excluded from the analysis. For the 1-year follow-up, the researchers contacted 10 patients via phone and asked them to participate in the follow-up. Some were working and some were not in the city; therefore, only 3 patients from each group participated in the follow-up and completed the assessment scales.

**Statistical analysis**

Statistical analysis was conducted using SPSS for Windows. Due to the small sample size, the pre-treatment and post-treatment outcome variables were compared using the non-parametric Wilcoxon signed rank test. Pre-treatment measures for the treatment and control groups were compared using the Mann-Whitney U test.

**RESULTS**

Mann-Whitney U test results show that there wasn’t a statistically significant difference in pre-treatment measures between the treatment and control groups (P > 0.05). Table 1 shows the mean scores and standard deviations for pre-treatment, post-treatment, and follow-up scores in the treatment and control groups, based on the Wilcoxon signed rank test.

Positive symptoms: In the treatment group there was a statistically significant difference between pre-treatment and post-treatment SAPS hallucination sub-scale scores (z = –2.207, P = 0.027), SAPS delusion sub-scale scores (z = –2.201, P = 0.028), and the Problem/Symptom Checklist frequency of voices scores (z = –2.06, P = 0.039), distress about voices scores (z = –2.264, P = 0.024), and occupation with voices scores (z = –2.32, P = 0.026). There weren’t any statistically significant differences between the pre-treatment and post-treatment scores for these variables in the control group. Table 1 shows that the hallucination, delusion, frequency of voices, distress about voices, and pre-occupation with voices scores decreased in the treatment group.

There was a statistically significant difference between pre-treatment and post-treatment SAPS total scores in the treatment group (z = –2.201, P = 0.028) and control group (z = –2.032, P = 0.042). SAPS total score in both groups decreased. In addition, the difference between pre-treatment and post-treatment Problem/Symptom Checklist belief in voices, control of voices, and coping with voices scores in both groups was not statistically significant.

Negative symptoms: Our analysis shows that pre-treatment and post-treatment SANS total scores differed at a statistically significant level in the treatment group (z = –1.992, P =
0.046), but not in the control group. Table 1 shows that the post-treatment SANS total score in the treatment group decreased.

Knowledge about schizophrenia: The analysis indicates that there wasn't a statistically significant difference between pre-treatment and post-treatment Knowledge of Schizophrenia Questionnaire scores in the treatment or control groups. As seen in Table 1, despite insignificant statistical findings, post-treatment scores in the treatment group increased, as compared to pre-treatment.

Comorbid symptoms: There was a statistically significant difference between pre-treatment and post-treatment BDI scores in the control group ($z = -2.023, P = 0.043$); post-treatment BDI score decreased, as compared to pre-treatment. Although the difference observed in the treatment group was not statistically significant, a decrease in the BDI score from pre-to post-treatment can be seen in Table 1. As compared to pre-treatment, post-treatment HAI scores in the treatment group ($z = -2.201, P = 0.028$) and control group ($z = -2.032, P = 0.042$) significantly decreased.

The difference between pre-treatment and post-treatment BAS scores in the treatment and control groups was not statistically significant; however, there was a statistically significant difference between pre-treatment and post-treatment HAI scores in the treatment group ($z = -2.032, P = 0.042$), but not in the control group. Table 1 shows that pre-treatment HAI score in the treatment group decreased post treatment. Our analysis indicates that there wasn’t a statistically significant difference between pre-treatment and post-treatment hopelessness or self-esteem scores in the treatment or control groups.

Follow up: One year post treatment the participants were invited to the hospital for follow-up, but only 3 from each group participated; as such, we did not conduct statistical analysis on the follow-up data. Table 2 shows the mean scores and standard deviations for each of the scale scores in both groups.

When patients were invited for follow-up via phone the researchers asked about and evaluated their condition by talking with the patients and with their caregivers. All the participants were contacted and evaluated via phone conversations, except for 1 patient and his caregiver. These evaluations indicated that 5 patients in the treatment group ($n = 6$) complied with their drug treatment. In all, 4 patients continued to work after discharge from the hospital and 2 patients that did not work prior to hospitalization began working. Nevertheless, the phone-based follow-up showed that 3 patients in the control group ($n = 5$) did not comply with their drug treatment and spent a limited amount of time with their family members, and 4 of them did not work.

**DISCUSSION**

The present study developed and examined the effectiveness of a manualized group-based CBT program designed to help patients with schizophrenia and schizoaffective disorders cope with auditory hallucinations. The main aim of the study was to decrease the severity and frequency of both positive and negative symptoms, and to increase the patients’ ability to cope with auditory hallucinations. Psychotic symptoms are chronic and distressful to patients, and are therefore usually comorbid with depression, anxiety, hopelessness, and low self-esteem (Beck and Rector 2000; Birchwood et al. 2002). The present study also aimed to diminish the symptoms that are comorbid with psychotic symptoms.

The frequency and distress of auditory hallucinations and patients’ pre-occupation with them, and the severity of hallucinations and delusions in general did not change significantly post treatment in the control group, whereas they did in the treatment group. Total positive symptom score significantly decreased in both groups, but its decrease was greater in the treatment group. Belief in voices, control of voices, and the ability to cope with voices did not differ post treatment in either group. The sub-scale scores’ range was small and especially for those with low pre-treatment scores comparisons did not reach the level of statistical significance. In brief, routine care plus CBT treatment was more effective in reducing the severity of positive symptoms than routine care. Additionally, there was a significant decrease in pre-treatment negative symptoms in the treatment group, but not in the control group. Many schizophrenic patients have no insight concerning the clinical symptoms of psychosis, the aversive outcomes of the symptoms, or the importance of and need for drug treatment (Danki et al. 2007). As such, interventions usually target enhancement of psychotic patients’ insight. We observed an increase in insight in the treatment group (though not at statistically significant level) and no change in the insight of the control patients. This finding was related to the fact that patients were selected on the basis of their appr opriateness to participate in CBT and their ability to collaborate with the therapists in self-evaluations; therefore, from the start of the treatment all participants had insight at some level. For instance, during pre-treatment assessment both the treatment and control group patients had a mean Knowledge of Schizophrenia Questionnaire score of 8. Moreover, the knowledge score increased at each successive session and reached 10 (maximum score that can be obtained is 12). This means that the patients’ level of knowledge of schizophrenia increased from session to session.

The literature suggests that drug plus CBT combined treatment is more effective than drug treatment alone in decreasing positive symptoms (Halperin et al. 2000; Tarrier et al. 2000, 2001; Mann and Chong 2004; England 2007, 2008).
and negative symptoms (Eckman et al. 1992; Shelley et al. 2001), and increasing insight (Kemp et al. 1996; Wykes et al. 1999; Andres et al. 2003; Rathod et al. 2005); however, 2 studies reported that both treatment modalities are similarly effective in treating schizophrenia (Barrowclough et al. 2006; Samarasekera et al. 2007). In the present study the patients’ anxiety and depression levels were assessed, both by the clinicians and the patients. Therapist evaluations of depression and anxiety indicated that the level of depression decreased in both groups, whereas only the level of anxiety decreased in the treatment group.

Self-report measures of depression and anxiety showed that the level of depression in both groups diminished, but only the level of depression decreased significantly in the control group. The level of anxiety did not significantly decrease in either group. In summary, it was assumed that anxiety and depression comorbidity would significantly diminish after a decrease in positive and negative symptoms, and enhancement of patients’ ability to cope with the symptoms; however, this assumption was not supported by the present findings. These patients lived with psychotic symptoms and their associated distress for a long time and this might have led to resistant and strongly reinforced beliefs that their condition would not change. Post treatment the sudden relief from the symptoms and enhanced ability to cope with their illness were apparently insufficient to decrease comorbid depression, anxiety, and hopelessness. It was thought that as the positive outcomes of the treatment continued these comorbid symptoms might diminish due to an increase in their quality of life.

The present study’s CBT program was similar to other studies’ programs, in terms of content and application; however, it was not exactly the same as some others and therefore its outcomes could not be reliably compared with the outcomes of previous studies. Additionally, the inclusion criteria were cognitive ability sufficient to participate in the therapy and complete the psychometric scales. Hence, the findings of the present study might not be generalizable to psychotic patients that are severely disorganized and uncooperative, or to those with severe cognitive deterioration.

In the present study, a small group of patients were followed-up 1 year post treatment. Post-treatment results in the treatment group did not change at follow-up. Because the follow-up sample was small we did not statistically compare the post-treatment scores with those obtained at the 1-year follow-up; however, we contacted all the patients at follow-up and assessed their functionality via phone conversation. The patients appeared to have had improved compliance with drug treatment and occupational/social functioning, which implies the treatment was successful. In particular, the treatment group was taught the importance of drug treatment and several techniques for coping with symptoms in order to increase their functionality via phone conversation. The patients appeared to have had improved compliance with drug treatment, whereas those in the control group did not comply with drug treatment and were not functioning normally. Patients are usually followed-up at 6 months or 1 year post treatment. Studies have shown that the positive outcome of CBT in psychotic patients was usually preserved at follow-up (Tarrier et al. 2000; Trower et al. 2004).

In addition to quantitative measure of the treatment process and outcome, we utilized clinical observations and evaluations, and verbal and written feedback about the treatment from the patients. After each group therapy session patients were provided a satisfaction scale. The mean satisfaction level of the patients for each session ranged from 6.30-7.33; as 8 is the maximum score the patients were apparently very satisfied with each session.

The clinicians evaluated the therapy’s benefit to the patients and whether or not the patients had difficulty implementing the techniques. Moreover, the clinicians considered the positive and negative effects of the therapy on the patients’ family members. Clinician evaluations indicated that those patients that learned and utilized all the therapy techniques, and had family members that positively contributed to the therapy had positive therapy outcomes at post-treatment and follow-up. Patients that learned only the coping technique, but did not comprehend the relationship between voices and thoughts, and those that did not adopt a new approach concerning the source of voices had little benefit from the therapy. Nonetheless, these patients had more positive outcomes if their families made positive contributions to the therapy process and reinforced the notion that the patients should use these new techniques after treatment. Psychotic patients can easily learn the coping techniques and their families play an important role in the therapy process. As such, we recommend increasing the number of coping sessions that target the prevention of relapses and involvement of family members in the therapy program. Moreover, for those patients with high-level cognitive ability clinicians might spend more time developing alternative explanations about voices and imagination techniques.

Psychotherapy effectiveness studies are usually demanding and time consuming; therefore, there are relatively few studies in the Turkish literature. There are studies on psychosocial interventions for schizophrenia in Turkey; however, they are limited in number and haven’t examined the effectiveness of CBT for schizophrenia. This might be related to the belief that CBT cannot be used with such patients or that it will not work with patients that have severe cognitive dysfunction, such as psychosis. Hence, the present study is the first study in Turkey that aimed to decrease auditory hallucinations and the accompanying delusions by increasing psychotic patients’ ability to cope using cognitive-behavioral techniques.
Despite its importance, the present study has some limitations. One is that the patients were not randomly assigned to the treatment group. The hospital had a large inpatient capacity, but patients that met the inclusion criteria and volunteered to participate, and/or those with permission from their family were limited in number. Even if a suitable number of patients could have been included, their physicians might not have cooperated in keeping their patients hospitalized without making any alterations to their drug treatment for a 5-week period. Moreover, hospitalization period were usually shorter than 5 weeks and, therefore, it was difficult to find at least 4 patients within a given 5-week period. When we did not find at least 4 patients that were suitable for the study, we assigned suitable patients to the control group. Furthermore, due to the above-mentioned reasons the sample was small, decreasing the reliability of the findings. We recommend additional research of group-based CBT with larger samples of psychotic patients in order to increase the reliability of the findings.

Another limitation of the study is that psychometric assessments were conducted by the therapists that conducted the therapy and not by an independent clinician. Some of the assessment scales were self-reports and some were based on clinician evaluations. Clinician evaluations usually take a long time and considering the need for the cooperation of the psychotic patients, their administration in this study context took large amount of clinicians’ time. We were unable to locate any clinicians independent of the research project that would invest the time needed to complete these assessments. The literature contains some studies in which such assessments were conducted by the study clinicians (Halperin et al. 2000; Gunley et al. 2006). Many studies utilized both clinician evaluations and patient self-reports, similar to the present study, which probably decreased the probability of biased assessment results.

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