

Study of effectiveness of brief cognitive behavioral therapy for auditory hallucinations in schizophrenia

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Introduction

A growing body of evidence supports the use of cognitive behavioral therapy (CBT) for the treatment of schizophrenia. Auditory hallucinations are a common feature in schizophrenia that persists as a distressing symptom even after adequate pharmacotherapy regimen. Combining pharmacotherapy with brief CBT may reduce the severity of symptoms through decreasing the distress caused by the hallucinations.

Aim

The aim of this study was to evaluate the effectiveness of brief individual CBT for auditory hallucinations combined with treatment as usual (TAU) compared with TAU only in a sample of Egyptian schizophrenic patients referred to the Outpatient Clinic of El Hadara University Hospital.

Patients and methods

A total of 40 patients diagnosed with schizophrenia referred to the outpatient clinic of El Hadara University Hospital were randomly assigned into two groups: group I received brief CBT for auditory hallucinations combined with TAU, and group II received TAU only. Brief CBT for auditory hallucinations was delivered on eight sessions of 45 min each with a frequency of once per week. Positive and Negative Syndrome Scale (PANSS) was assessed before and after therapy in both groups and outcome was compared.

Results

On comparing the pre-assessment scores with the post-assessment scores of group I after 8 weeks of brief CBT for auditory hallucinations, a significant symptom reduction was observed for the PANSS positive (–18.31%, $P < 0.001$), negative (–16.67%, $P < 0.001$), general symptoms (–16.53%, $P < 0.001$), and total (–16.53%, $P < 0.001$) scores. Moreover, on comparing group I with group II after 8 weeks of brief CBT for auditory hallucinations, a significant symptom reduction was observed for the PANSS positive ($P < 0.001$), negative ($P = 0.008$), general symptoms ($P < 0.001$), and total ($P < 0.001$) scores.

Conclusion

Brief CBT for auditory hallucinations was found to be effective in reducing symptom severity in schizophrenia

Keywords:

schizophrenia, auditory hallucinations, brief cognitive behavioral therapy

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Introduction

Although pharmacological treatment remains the first-line treatment for schizophrenia, most patients with schizophrenia experience disabling impairment even after benefiting from antipsychotics, including residual auditory hallucinations. It was noted that 10–60% of patients experience psychotic symptoms that are resistant to medication. In addition, medication adherence with antipsychotics is relatively poor. Antipsychotic Trials of Intervention Effectiveness (CATIE) reported nonadherence rates of 60% for every treatment examined (Carvajal, 2004; Lehman *et al.*, 2004; Lieberman *et al.*, 2005; Swartz *et al.*, 2007).

Auditory hallucinations are a common feature in schizophrenia. In fact, over 60% of people with a diagnosis of schizophrenia experience a hallucination

at some point of time over the course of their illness. Some of the problems that are frequently associated with auditory hallucinations include perplexity, demoralization, exhaustion, anger, anxiety, shame, sadness, and increased negative symptoms. Often, patients with auditory hallucinations decide to hide away from social interaction and normal day-to-day duties and activities. Such patients rarely utilize effective coping strategies for these symptoms. Interestingly, many patients hear positive voices, which can be benign or even encouraging. Patients rarely request help with these types of voices; however, it is usually

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the case that when negative voices start to improve, positive voices also diminish. Combining medications with brief cognitive behavioral therapy (CBT) for auditory hallucinations might help in improving the residual distressing voices. CBT for psychosis differs in that it requires the therapist to adjust the content, level of complexity, and pacing of sessions to the patient's abilities and arousal levels, offering a choice of location and/or shorter sessions, and thus giving the patient more support in sessions (Trower *et al.*, 2004; van der Gaag *et al.*, 2012).

Chadwick and Birchwood's ABC model views hallucinations as problems only to the degree that they result in negative interpretations 'beliefs' (Bs) and are accompanied by emotional distress and behavioral disturbance 'consequences' (Cs). Therefore, according to this model, the core goals of CBT for psychosis are to decrease emotional distress and behavioral disturbance through cognitive change. According to this model, patients who hear voices view them as omnipotent. Beliefs about the voices' identity lead to the patients' interpreting them as being either benevolent or malevolent. The link between emotional and behavioral reactions (engagement, resistance, and indifference) and appraisals within the cognitive model are bidirectional (Birchwood and Chadwick, 1997; Chadwick *et al.*, 2000).

Refinement of the CBT model of voices suggested that the ways in which these appraisals develop may be the result of underlying schemata and metacognitive biases (Andrew *et al.*, 2008; Paulik, 2012).

Brief CBT for auditory hallucinations might help in decreasing symptom severity through the decrease in distress by the voices by improving the patient's self-esteem, reducing depression, anxiety, and worry, increasing activities, and structuring the week. This study demonstrates how brief CBT for auditory hallucinations can be effective in reducing the severity of schizophrenia symptoms.

Aim

The aim of this study was to evaluate the effectiveness of brief individual CBT for auditory hallucinations combined with treatment as usual (TAU) compared with TAU only in a sample of Egyptian schizophrenic patients referred to the Outpatient Clinic of El Hadara University Hospital.

Patients and methods

Patients

The study included 40 patients with schizophrenia with persistent symptoms despite adequate antipsychotic

medication referred by consultant psychiatrists to the Outpatient Clinic of El Hadara University Hospital. The 40 schizophrenic patients were divided into two groups. Group I included 20 patients with schizophrenia who received the brief sessions, and group II included the other 20 patients with schizophrenia who received the TAU. All participants were already on antipsychotics converted to chlorpromazine equivalent. Inclusion criteria were as follows:

- (a) Diagnosis of schizophrenia;
- (b) Both sexes between 18 and 50 years of age;
- (c) Current auditory hallucinations in the form of voices, occurring at least once per week;
- (d) History of auditory hallucinations for at least 6 months;
- (e) A score of 4 or greater and less than 7 on the subscale of Positive and Negative Syndrome Scale (PANSS) for hallucinations; and
- (f) Compliance with therapeutic doses of antipsychotic medications for at least 6 months.

Exclusion criteria were as follows:

- (a) Reporting organic illness;
- (b) Previous exposure to CBT; or
- (c) Presence of comorbidities.

Therapeutic intervention

The brief CBT for auditory hallucinations was delivered to group I (20 patients) on an individual basis for eight sessions once weekly. Each session lasted 45 min. The whole therapy duration for each studied patient was 2.5 months. The duration of the whole study was 2 years. Four patients dropped out of therapy during the study period in the first 2–3 sessions and were replaced by others. The brief CBT for auditory hallucinations was derived from the therapist manual of CBT for psychotic symptoms published since 2003 by the center for clinical interventions, and from the Arabic translation of the book cognitive therapy for delusions voices and paranoia. The sessions were also derived from the principles and strategies developed by Beck and Rector (2000), Kingdon and Turkington (2005), Fowler and Kuipers (1995), Chadwick *et al.* (1996), Rector (2005), Asaad (2009), and Smith (2003).

The sessions were as follows:

- (1) Engagement and psychoeducation.
- (2) Assessment of voice characteristics using the Arabic edition of the Cognitive Assessment Sheet of Voices present in the translated Arabic edition of 'Cognitive Therapy for Delusions and Paranoia', voice diary.
- (3) Coping strategies for voices I.

- (4) Coping strategies for voices II.
- (5) ABC model for voices, disputing beliefs about voices.
- (6) Behavioral experiments on voices and beliefs.
- (7) Behavioral skills training (activity scheduling, graded task assignment, calming technique).
- (8) Self-management planning.

Data collection and examination

- (1) Sociodemographic data such as age, sex, educational level, marital status, current work status, family history of psychiatric disorders, age of onset of schizophrenia, duration of illness, and duration of hearing voices.
- (2) Medical and psychiatric history.
- (3) Psychiatric assessment using a semistructured tool (DSM-IV-TR) (American Psychiatric Association, 2000).
- (4) Clinical neurological examination.

Psychometric measure

Positive and Negative Syndrome Scale

The PANSS is a standardized observer-based measure to assess the presence and severity of symptoms of schizophrenia. It is an interview-based measure of positive and negative psychotic symptoms and other symptoms associated with psychosis, on three scales (positive, negative, and general), comprising 30 seven-point items. The construct and criterion validity have been demonstrated and its sensitivity to treatment effects has made it one of the primary outcome measures in trial studies. The positive syndrome scale was used to index positive symptoms, and hallucination item (P3) was used for auditory hallucinations. The PANSS shows excellent inter-rater reliability and validity. The rater was trained in the use of PANSS before the beginning of the study in a previous multicenter drug trial (Kay *et al.*, 1987).

Statistical analysis (Di Zio *et al.*, 2007)

Data were fed into the computer and analyzed using IBM SPSS software package (version 20.0; IBM, Chicago, Illinois: SPSS Inc, USA). Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, SD, and median. Comparison between different groups as regards categorical variables was made using the χ^2 -test. When more than 20% of the cells have expected count less than 5, correction for χ^2 was conducted using Fisher's exact test or Monte Carlo correction. The distributions of quantitative variables were tested for normality. If it revealed normal data distribution, parametric tests was applied. If the data were abnormally distributed, nonparametric tests

were used. For normally distributed data, comparison between two independent populations was made using the independent *t*-test, and the paired *t*-test was used to analyze two paired data. For abnormally distributed data, comparison between two independent populations was made using the Mann-Whitney test. To compare the different periods the Wilcoxon signed-ranks test was applied. Significance of the obtained results was judged at the 5% level (Kirkpatrick and Feeney, 2012).

Results

Table 1 shows the demographic characteristics of the two studied groups. Both groups were well matched as regards the demographic data (sex, age, marital status, educational level, current work status, and family history).

As regards illness characteristics (Table 2), in group I, age of onset ranged between 16.0 and 34.0 years, the number of previous hospital admissions ranged from 0 to 5, the duration of illness ranged from 3.0 to 16.0 years, and the duration of hearing voices ranged from 1.0 to 10.0 years. In group II, age of onset ranged between 16.0 and 35.0 years, the number of previous hospital admissions ranged from 0 to 5, the duration of illness ranged from 3.0 to 22.0 years, and the duration of hearing voices ranged from 3.0 to 15.0 years.

Both groups were well matched as regards the illness characteristics (age of onset, number of admissions, and duration of illness) except for the duration of hearing voices, which was longer in group II (the control group) compared with group I.

On comparing the preassessment scores with the postassessment scores of group I after 8 weeks of brief CBT for auditory hallucinations, a significant symptom reduction was observed for the PANSS positive (-18.31%, $P < 0.001$), negative (-16.67%, $P < 0.001$), general symptoms (-16.53%, $P < 0.001$), and total (-16.53%, $P < 0.001$) scores.

Moreover, on comparing group I with group II after 8 weeks of brief CBT for auditory hallucinations, a significant symptom reduction was observed for the PANSS positive ($P < 0.001$), negative ($P = 0.008$), general symptoms ($P < 0.001$), and total ($P < 0.001$) scores (Table 3).

Discussion

To the best of our knowledge, this study is the first trial on brief CBT for auditory hallucinations for people with schizophrenia in Egypt.

Table 1 Comparison between the two studied groups according to demographic data

Demographic characteristics	Group I (n = 20) [N (%)]	Group II (n = 20) [N (%)]	Test of significance	P
Sex				
Male	12 (60.0)	12 (60.0)	$\chi^2 = 0.0$	1.000
Female	8 (40.0)	8 (40.0)		
Age				
Minimum–maximum	19.0–46.0	20.0–47.0	$t = 0.219$	0.828
Mean \pm SD	31.05 \pm 7.90	30.50 \pm 7.95		
Median	29.50	29.50		
Marital status				
Single	14 (70.0)	14 (70.0)	$\chi^2 = 0.454$	1.000 ^a
Engaged	3 (15.0)	3 (15.0)		
Married	2 (10.0)	2 (10.0)		
Divorced	1 (5.0)	1 (5.0)		
Education				
High school	5 (25.0)	6 (30.0)	$\chi^2 = 0.547$	1.000 ^a
University	13 (65.0)	13 (65.0)		
Diploma	2 (10.0)	1 (5.0)		
Currently working				
Yes	11 (55.0)	14 (70.0)	$\chi^2 = 0.960$	0.327
No	9 (45.0)	6 (30.0)		
Family history				
Negative	9 (45.0)	9 (45.0)	$\chi^2 = 0.0$	1.000
Positive	11 (55.0)	11 (55.0)		

MC: Monte Carlo test.

Table 2 Comparison between the two studied groups according to illness characteristics

Illness characteristics	Group I (n = 20) [N (%)]	Group II (n = 20) [N (%)]	Test of significance	P
Age of onset				
Minimum–maximum	16.0–34.0	16.0–35.0	$t = 0.624$	0.536
Mean \pm SD	21.70 \pm 5.69	20.70 \pm 4.35		
Median	19.0	19.0		
Number of admissions				
0	8 (40.0)	9 (45.0)	$\chi^2 = 5.251$	0.375 ^a
1	3 (15.0)	7 (35.0)		
2	4 (20.0)	1 (5.0)		
3	2 (10.0)	0 (0.0)		
4	2 (10.0)	2 (10.0)		
5	1 (5.0)	1 (5.0)		
Minimum–maximum	0.0–5.0	0.0–5.0	$Z = 0.825$	0.410
Mean \pm SD	1.50 \pm 1.61	1.10 \pm 1.52		
Median	1.0	1.0		
Duration of illness (years)				
Minimum–maximum	3.0–16.0	3.0–22.0	$Z = 0.041$	0.968
Mean \pm SD	9.35 \pm 3.77	9.80 \pm 5.48		
Median	9.0	9.0		
Hearing voices duration (years)				
Minimum–maximum	1.0–10.0	3.0–15.0	$Z = 2.286^*$	0.022 [*]
Mean \pm SD	4.70 \pm 2.56	7.0 \pm 3.28		
Median	4.0	7.0		

MC: Monte Carlo test.

Brief individual CBT for auditory hallucinations combined with TAU is effective for reducing symptom severity in patients with symptoms in the mild-to-moderate range on the PANSS. This is consistent with the study by Ansari and Jahan (2015) and Habib *et al.* (2015), who showed a statistically significant improvement in hallucinations. Zanello *et al.* (2014)

and Staring *et al.* (2013) showed a significant reduction in PANSS.

The present study results are also consistent with those of Thomas *et al.* (2011), Mortan *et al.* (2011), Startup *et al.* (2005), and Tarrier *et al.* (2004), who found a significant reduction in the severity and frequency

Table 3 Comparison between the two studied groups according to the four subscales of Positive and Negative Syndrome Scale

PANSS subscales	Group I (n = 20)		Group II (n = 20)	
	Before brief CBT	After brief CBT	Start of the study	After 8 weeks
Positive PANSS				
Minimum–maximum	17.0–24.0	11.0–22.0	17.0–25.0	17.0–25.0
Mean ± SD	20.60 ± 2.33	16.85 ± 2.80	21.30 ± 2.43	21.30 ± 2.43
Median	20.0	16.0	20.0	20.0
P_1		<0.001*	–	–
$t(P)$			0.931 (0.358)	5.372* (< 0.001*)
Negative PANSS				
Minimum–maximum	17.0–28.0	13.0–26.0	14.0–28.0	14.0–28.0
Mean ± SD	22.70 ± 3.53	18.85 ± 3.33	22.0 ± 3.83	22.0 ± 3.83
Median	24.0	18.50	23.0	23.0
P_1		<0.001*	–	–
$t(P)$			0.602 (0.551)	2.778* (0.008*)
General PANSS				
Minimum–maximum	35.0–53.0	28.0–50.0	32.0–62.0	32.0–62.0
Mean ± SD	44.40 ± 5.40	37.15 ± 7.01	46.0 ± 6.69	46.0 ± 6.69
Median	44.50	35.50	45.0	45.0
P_1		<0.001*	–	–
$t(P)$			0.832 (0.411)	4.084* (< 0.001*)
Total PANSS				
Minimum–maximum	73.0–105.0	60.0–93.0	71.0–110.0	71.0–110.0
Mean ± SD	87.20 ± 9.46	72.85 ± 10.43	88.70 ± 10.70	88.70 ± 10.70
Median	85.0	69.0	88.0	88.0
P_1		<0.001*	–	–
$t(P)$			0.470 (0.641)	4.745* (< 0.001*)

CBT, cognitive behavioral therapy; PANSS, Positive and Negative Syndrome Scale.

of hallucinations. The present study results are in agreement with those of Rector *et al.* (2003), Wiersma *et al.* (2001), Shelley *et al.* (2001), and Tarrier *et al.* (1998), who observed a significant improvement in the positive, negative, and general symptom scales of the PANSS.

Brief individual CBT for auditory hallucinations combined with TAU is effective for reducing symptom severity in patients with symptoms in the mild-to-moderate range on the PANSS. It is unlikely that this reduction was caused by medication alone; patients in group I and group II were receiving medication before the start of the study. Group I showed a significant reduction in symptom severity on the four subscales of PANSS after the eight sessions of brief CBT for auditory hallucinations, whereas group II showed no change in PANSS subscale scores at the end of the study, suggesting that pharmacotherapy alone can improve the symptoms of schizophrenia up to a point, after which improvement plateaus and no more improvement can be obtained. However, the addition of brief CBT for auditory hallucinations in group I lead to further improvements compared with group II. Brief CBT for auditory hallucinations tackles the psychosocial factors perpetuating voices through helping the patient in achieving a sense of control, coping strategies, and changing his or her beliefs as regards the voices, whereas pharmacotherapy tackles the biological factors.

The results of the present study are not in agreement with those of Birchwood *et al.* (2014), who found no significant improvement in PANSS after the application of CBT for commanding hallucinations. May be the commanding type is more biologically determined than psychosocially (Birchwood *et al.*, 2014).

Moreover, the present study results are not in agreement with those of Garety *et al.* (2008) and Wykes *et al.* (2005), who found no significant effects on psychotic symptoms as measured using the PANSS total, positive, negative, or general psychopathology subscales in the CBT group. However, significant effects were found on depression, delusional distress, and social functioning (Wykes *et al.*, 2005; Garety *et al.*, 2008).

CBT for psychosis was not designed primarily to treat positive psychotic symptoms *per se*, but the objective of CBT for psychosis was to increase coping strategies to deal with the illness. Those results raise the importance that the next generation of trials of CBT should include bigger sample size, and should widen the scope of goals of CBTp to include both the reduction of psychotic symptoms and changing the affect and behavior. The amelioration of the psychotic symptoms should not be the only goal of CBT for psychosis. This proposal is consistent with the CBT for psychosis model by Rector *et al.* (2011) that considers

a reduction in vulnerability to psychotic 'disorder' a possible secondary goal of CBTp, addressed through a primary reduction in stress-vulnerability processes. Moreover, CBT therapists need to be well experienced for the effect of the CBT to be remarkable (Rector *et al.*, 2011).

Conclusion

Brief CBT for auditory hallucinations was found to be effective in reducing symptom severity in schizophrenia.

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Conflicts of interest

There are no conflicts of interest.

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