

The Effectiveness of Cognitive Analytic Therapy on the Severity of Symptoms in Patients with Obsessive-Compulsive Disorder

Isaac Rahimian Boogar^{1*}, Ali Mohammad Rezaei², Azita Yosefi³

1. Department of Clinical Psychology, Faculty of Psychology & Educational Sciences, Semnan University, Semnan, Iran.

2. Department of Educational Psychology, Faculty of Psychology & Educational Sciences, Semnan University, Semnan, Iran.

3. Department of Psychology, Faculty of Humanities, Sciences & Researches Branch, Islamic Azad University, Semnan, Iran.

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ABSTRACT

Objective: Obsessive-compulsive disorder at clinical levels has elevated symptoms that result in deteriorated psycho-social functions. This study was aimed to examine the effectiveness of cognitive analytic therapy on symptoms severity of obsessive-compulsive disorder.

Methods: This exploratory empirical study was a clinical trial that used quasi-experimental design to systemically investigate the differences in the obsessive-compulsive symptoms before and after one psychotherapeutic intervention. Twenty patients with obsessive compulsive disorder were chosen among patients who resided in Ravan-Sabz Center of Psychiatric Rehabilitation in Semnan City, Iran from 2012 to 2013. The patients were selected by inconvenience sampling and randomly assigned to experimental and control group. Participants initially completed the Socio-demographic Questionnaire and interviewed by the Structured Clinical Interview for DSM-IV-TR Axis I Disorders. Then, the Yale-Brown Obsessive-Compulsive Scale was administered in baseline, post-treatment and follow-up. Treatment group merely received 16 sessions of group cognitive analytic therapy and eventually both groups were assessed in post-treatment and a three-month follow-up.

Results: Mixed analysis of variance with repeated measures showed that symptoms severity of obsessive compulsive disorder was significantly decreased at post-treatment and three-month follow-up in the treatment group as compared to the control group ($F_{1,18}=15.05, P<0.001$). The interaction of intervention and factor of time resulted in decreased symptoms severity in post-treatment and follow-up ($F_{2,36}=22.53, P<0.001$).

Conclusions: The group cognitive analytic therapy is an effective and long-standing therapy for symptoms management of obsessive compulsive disorder. Moreover, these results have some implications for clinical practice including the necessity for further randomized controlled trials in order to verify the findings.

1. Introduction

Obsessive-Compulsive Disorder (OCD) as a prevalent psychiatric disorder with a life span prevalence of 2% to 3%, was characterized by recurring intrusive impulses or obsessions and repetitious behavioral or compulsions that habitually takes a chronic course (Subramaniam, Abidin, Vaingankar, & Chong, 2012; Abramowitz, Taylor, & McKay, 2009). This disorder has similar clinical rates of

prevalence in Iran and causes important trouble or interference with psycho-social functioning (Akrami, Kalantari, Oreyzi, Abedi, & Maroofi, 2010). This disorder especially with higher symptoms severity leads to clinically important distress and functional deterioration in general population (Skapinakis et al., 2013).

Obsessive-compulsive symptom severity was accompanied with diminished psychological health, adverse psycho-social functioning and inappropriate health-related

* Corresponding Author:

Isaac Rahimian Boogar, PhD

Address: Department of Clinical Psychology, Faculty of Psychology & Educational Sciences, Semnan University, Semnan, Iran.

E-mail: i_rahimian@semnan.ac.ir

quality of life with an emphasis on the tailored intervention (Abramowitz, Taylor, & McKay, 2009.) Psychotherapeutic interventions, in general, are the principal therapeutic procedures for severity and course management of obsessive-compulsive disorder (Mancuso, Faro, Joshi, & Geller, 2010). Also, Cognitive-Analytic Therapy (CAT) is a brief (8-25 sessions) psychotherapeutic intervention, which has been verified effective for patients with different psychopathologies (Clarke, Thomas, & James, 2013; Rayner, Thompson, & Walsh, 2011).

CAT integrates theoretical concepts and practical methods from cognitive, psychodynamic and behavioral approaches in an active, tailored and collaborative manner, on the basis of reformulations of the presenting symptoms (Ryle & Kerr, 2002). CAT is a cost-effective therapeutic intervention for Obsessive and compulsive symptoms with additional benefits (Protogerou et al., 2008; Shine & Westacott, 2010). CAT was proven to be an effective main intervention causing a rapid rate of improvement and recovery from symptoms (Shine & Westacott, 2010). In comparison with valid clinical practices, Cognitive Analytic Therapy would operate better meaningfully for diminishing underlying psychopathologies, maladaptive behaviors and to enhance social and vocational functioning (Kellett, Bennett, Ryle, & Thake, 2013).

Despite the clearness of the CAT formulation and stages of change for patients with OCD and the acceptance of the CAT procedure, there are too little researches of the effectiveness of this treatment in routine clinical practice (Rayner et al., 2011; Mulder & Chanen, 2013). Effectiveness and efficacy of the CAT for psychiatric disorders was proven by qualitative clinical case studies, field studies, evidence-based and randomized controlled trials about the suitability of this treatment in routine clinical practice (Ryle & Kerr, 2002; Marriott & Kellett, 2009). CAT has been recommended as a possible treatment option for OCD as a collection of severe obsessions, severe compulsions, symptom interference, avoidance and symptoms resistance (Protogerou et al., 2008; Fozooni, 2010).

Up to the present moment, research lines into possible changes in the severity symptoms in patients with obsessive-compulsive disorder after psychotherapeutic intervention has mainly been limited to small and short-term results. This condition has led several researchers to recommend additional investigation on stable and long-term changes of the symptoms on the basis of new directions in psychotherapy (Hepple, 2012; Eisen et al., 2013). Cognitive analytic therapy attempts to comprehend and improve self limiting and chronic patterns of affective expression, ritual behaviors/tries, and long-standing obsessions, find the principal

emotional models of relating to others and oneself and their relationship to the patient's presenting difficulty or obvious distress (Ryle & Kerr, 2002).

Therefore, cognitive analytic therapy by addressing the main processes underlying basic personality disorders has the capability for treating the surrounding symptoms such as obsessive thoughts, panic attacks, ruminative/negative thoughts and compulsive tendencies (Kellett, 2007; Tzouramanis et al., 2010). This study is rare regarding its use of a randomized clinical trial design to investigate the responsiveness of patients with OCD to CAT under routine clinical practice situations, during the therapy course and the follow-up length in Iran. This study was aimed to examine the effectiveness of cognitive analytic therapy on symptoms severity in patients with obsessive-compulsive disorder in outpatient treatment setting.

1. Methods

This study is a clinical trial with a control group that used the quasi-experimental design to examine the differences in the severity of symptoms as dependent variables for patients with obsessive-compulsive disorder before and after one course of group cognitive analytic therapy as independent variable in a systematic manner in terms of three measures of pre-treatment, post-treatment and follow-up.

Participants

Statistical population was patients with obsessive-compulsive disorder who attended to Ravan-Sabz Center of Psychiatric Rehabilitation in Semnan City, Iran from 2012 to 2013. Participants have a range of age from 28 to 40 years old with the mean of 37.65 ± 3.72 and were fluent in Persian. All 20 participants met DSM-IV-TR diagnostic criterion for obsessive-compulsive disorder based on the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID) and pharmacotherapy was prescribed by psychiatrists in Ravan-Sabz Center.

Firstly, among the statistical population, 24 patients (12 male and 12 female) with obsessive compulsive disorder were selected by inconvenience sampling and in equivalent sample size randomly assigned to experimental group and control group. In intervention phase, two male and one female were dropped out from treatment group prior to the termination of the study. Also, one male didn't participate in post-test and follow-up in the control group. Therefore, ultimate participants in this study for treatment group was 9 patients (4 male and 5 female) and in control group was 11 patients (5 male and 6 female) totally including 20 participants who stayed throughout the study up to the follow-up.

Inclusion criteria were the exact diagnosis of chronic obsessive-compulsive disorder for at least 2 years, receiving the medications for OCD by same psychiatrist, and participation in ACT model. Exclusion criteria were comorbid psychiatric disorders, substance abuse, general medical conditions, serious primary Axis I and Axis II disorders that should be the primary focus of therapy and receiving at least 2 sessions of different psychotherapeutic interventions elsewhere or have ceased psychotherapeutic interventions in the last 3 months prior to enrolling in the study.

Three potential participants before the beginning of study were excluded based upon these criteria. All participants consumed medications prescribed by psychiatrists for the control of OCD before the study. The Two groups received the same medication so that, its kind, dosage, duration and consumption conditions were controlled by researchers for both groups. For controlling the effects of the medication administered, all participants in the two groups similarly consumed 20 mg of Fluoxetine and Clomipramine prescribed by the one psychiatrist and they were reminded of the time they were supposed to take their medication via messages regularly. Also, both groups matched in literacy, age and gender.

The study performed by trained and skilled clinical practitioners as part of the dissertation of the MSc. degree in Clinical approved by postgraduate committee of Semnan University of Researches & Sciences and was registered by Iranian Center of Clinical Trial. Consistent with ethical standards of Helsinki Declaration, all participants donated written informed consent for the participation in the study and conflict of interest does not exist. Authors had active contribution in the study designing, study fulfillment, data analysis and manuscript preparation and reporting.

Procedure

Data were collected the routine clinical practice at three points: baseline, discharge of intervention (post-treatment), and three-month follow-up after discharge phase by trained researchers. Participants in the two group initially completed the Socio-demographic Questionnaire and were interviewed by the Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID) by trained clinicians, then the Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) as a measure of symptoms severity were administered in baseline (pre-treatment), 4 months afterwards (post-treatment) and 3 months after the intervention termination (follow-up). Among two groups, after baseline assessment the treatment group only received 16 sessions of group cognitive analytic therapy (one fifty-minute weekly session) and control group didn't received any intervention, then both groups were assessed

by outcome measures in 4 months from baseline and also 3 months later all of them followed by stability of outcome changes.

Intervention

The intervention performed on the basis of five stages in CAT in 16 sessions as was consistent with the CAT manual (Ryle, 1991, 1995). The timetable and summary of CAT contents on the basis of sessions sequence was presented here.

Session 1 included initial assessment, gathering the patient's story and giving information for the patients about the nature, strategies and process of CAT, reformulation, providing the target problem lists, raising the patient's insight and understanding the sources of difficulties in collaboration with the therapist. Session 2 was contained reformulation based upon talking and writing about patient's personal history and recording the disease history by using open questioning and tailored methods, working with the patients on constructing a list of the principal problems (target problems). Session 3 involved reformulation based upon incidence and appearance trend of the problems and disorder symptoms, identifying the principal repetitive maladaptive cycles of thoughts and behaviors that the patient is experiencing in a collaborative manner. Session 4 comprised of the reformulation based upon dysfunctional thoughts, belief systems and patient's behaviors with concentration on intrusive obsessive images and identification of repetitive cycle of behaviors, and writing the reformulation letter to patients.

Session 5 was composed of providing the therapeutic goal-setting and giving the ultimate reformulation in basis of initial formulations related to problems, repetitive behaviors, belief systems, symptoms and clinical syndrome. Session 6 embraced the recognition of triggering events for obsessions and compulsions, comprehending the patient's strengths, identification of obsessive-compulsive psychopathological trends and finally drawing the diagrammatic formulation of problems. In this session, sequential diagrammatic reformulation was completed. Session 7 included the recognition of difficulties and preoccupations, identification of obsessive themes in collaborative empiricism manner, understanding the basis of the repetitive thoughts and behaviors, revision on severity and consequences of disease symptoms.

Session 8 contained the recognition of and the challenge with long-standing, prominent and acquired patterns of behaviors via emphasis on interpersonal aspects of OCD, evaluating the reformulation process of OCD generation, educating the revision techniques for dysfunctional procedures and alteration in obsessive tendencies and obsessive-compulsive life style.

Session 9 involved recognition in appraisal procedures of signs/symptoms and modifying the performed revisions by patients, cognitive reframing, educating patients for altering the events and conditions that actively affect the obsessions and compulsions, and patient's encouragement for outcome monitoring. Session 10 comprised procedural revision based upon recognizing the effects of patient's emotions and behaviors on OCD symptoms, recognition of intrusive thoughts, increasing awareness about perpetuating the long-standing schemata relating to obsessions such as control and guilt sensation, and educating the patients in tailored techniques for controlling these problems.

Session 11 included procedural revision on basis of identification and drawing the procedural diagram about emotive-behavioral avoidance validation by patients and evaluating and modifying the negative automatic thoughts with obsessive contents. Session 12 embraced procedural revision about evaluating the manner of client's present status, increasing the insight about core problems related to OCD, and educating the proper manners for confirmation and fixation of appropriate alternatives for obsessive thoughts and compulsive tendencies, also tailor-made interventions were applied.

Session 13 involved procedural revision in interpersonal roles and social backgrounds that related to intensification of OCD symptoms, modifying these roles and reinforcing the constructive social support. Session 14 contained procedural revision in accord with helping the patients for identification of main sources of functional schemata, recognition the pitfall/obstacles for healthy development and educating techniques for managing them, and educating the relapse preventive strategies about obsessions and compulsions. Session 15 embraced procedural revision by raising the insight and informing the patients about developmental course of their problems, establishing the proper strategies for preoccupation reducing, life management and redefinition of life style, shifting the patients to termination and acquiring maintaining strategies for applying the techniques of ACT that were presented.

Finally, session 16 is composed of preparing the patients for treatment termination, summarizing all sessions of the therapy course, writing the Good By letter to patients, and stabilizing the maintaining procedures of CAT related therapeutic changes that were enquired in the therapy duration. In the final session (sixteen) goodbye letters were exchanged between the patient and therapist that summarized and revealed main changes that had obtained the importance of the termination, and the forward challenges beyond the treatment. At the end of all sessions, the therapist set homework include filling in a scale for depicting frequent maladaptive

procedures and drawing patient's procedural life, monitoring the target problems and behaviors/feelings that trigger them by keeping a diary and also tailored techniques for controlling them.

Measures

Socio-demographic questionnaire

All participants were assessed by a Semi-structured Questionnaire Form that characterizes age, gender, educational level, marital status, occupational status, and previous medical conditions history of the cohorts. In this form, OCD patients were also assessed regarding duration of disorder, kind of obsessions and compulsions, treatment duration, comorbidity and medication taken.

The Structured Clinical Interview for DSM-IV-TR Axis I Disorders (SCID)

All participants interviewed by the Structured Clinical Interview for DSM-IV-TR Axis I Disorders as an initial assessment to ensure a diagnosis of OCD (First, Spitzer, Gibbon, & Williams, 2002). This interview was conducted in a completely structured way in the predefined order and the interviewer devotedly asked the pre-formulated questions (First, Gibbon, Spitzer, & Williams, 2002). The interviewer was permitted to inquire for additional information, and to change the rating if pertinent new information be revealed during the interview process. The mean length of the full interview was 90 minutes. In this study, an experienced psychiatrist supervised the execution of the interview and the attainment to the DSM-IV-TR diagnosis so that prevent diagnostic errors. Internal consistency with Cronbach's α for SCID has been determined in the range of 0.77 to .88 (First, Spitzer, Gibbon, & Williams, 2002).

Yale-Brown Obsessive Compulsive Severity Scale (YBOCS)

The Yale-Brown Obsessive-Compulsive Scale (YBOCS) was used to assess obsessive compulsive symptoms severity. The YBOCS was regarded like the "gold standard" for assessing the severity and intensity of OCD symptoms and treatment response among adults (Goodman et al., 1989; Rosario-Campos et al., 2006). The YBOCS, a well-known, famously used instrument be composed of a 74-item clinician-rated symptom scale and a quantitative forty-point severity scale with established validity and reliability (Goodman et al., 1989). This scale is a semi-structured interview and will be assessed by a clinician that include 10 core items, 5 assessing time, distress, interference, control of obsessions and resistance (items 1–5), and 5 interchange-

able items assessing compulsions (items 6–10). The content classes for obsessions contain Contamination, Aggressive, Sexual, Symmetry/Exactness, Hoarding/Saving, Somatic and Religious. The compulsive categories comprise Checking, Washing/Cleaning, Counting, Repeating, Hoarding and Ordering or Arranging. The scores of YBOCS severity in a five-point likert-type scale range from 0 (no symptoms) to 4 (severe symptoms), and yield a total severity score (range from 0–40) with a cut point score ≥ 16 revealing clinically important symptoms (Storch et al., 2010).

In a sample of 130 adult patients with obsessive-compulsive disorder, the YBOCS-II Severity Scale demonstrated robust internal consistency ($\alpha=0.89$), test-retest reliability and inter-rater reliability (intra-class correlations >0.85). Exploratory factor analysis showed a 2 factor solution in accordance with the Obsessive and Compulsive Severity subscales. Construct and content validity was affirmed by higher correlations with both clinician's assessments of OCD symptom intensity and measures of depressive and worry symptoms (Storch et al., 2010). This scale has good test-retest reliability, internal consistency and inter-rater reliability in Iran (Hosseini, Zarghami, Moudi, & Mohammadpour, 2012).

Statistical analyses

For data analysis, mixed analysis of variance with repeated measures by SPSS-18 software was conducted to compare scores on the OCD severity at baseline (pre-treatment), post-treatment (following the intervention) and follow-up (three-month later) between two groups.

3. Results

The mean age of all participants was 37.65 ± 3.72 (range: 30–45). Also, the mean age for treatment group was 37.78 ± 5.38 (range: 31–44) and for control group was 36.36 ± 5.9 (range: 30–43). In terms of Tests of Within-Subjects Effects, there are 3 time measurement of OCD severity scores of pre-treatment, post-treatment and follow-up (3 months after the treatment). About the Tests of Between-Subjects Effects, treatment group had 9 participants (4 males and 5 females) and

control group had 11 participants (5 males and 6 females). The means and standard deviations of OCD severity scores are presented in Table 1.

Initially, test assumptions were examined. Box's Test of Equality of Covariance Matrices (Box's $M=11.07$) showed that the observed covariance matrices of the dependent variables are equal across groups ($F_{6,2068}=1.50$, $P=0.174$). Also, Levene's Test of Equality of Error Variances showed that the error variance of the dependent variable is equal across groups (for pre-treatment: $F_{1,18}=0.540$, $P=0.472$; for post-treatment: $F_{1,18}=1.808$, $P=0.195$ and for follow-up: $F_{1,18}=3.734$, $P=0.069$). In addition, results of Mauchly's Test of Sphericity (0.974 , $P=0.797$) confirmed the Sphericity assumption, that indicate the assumptions for application of mixed analysis of variance are established.

According to mixed analysis of variance by Tests of Between-Subjects Effects (Table 2), the reduction in YBOCS total scores was significantly larger overall dependant on the treatment group, so that in the post-treatment and follow-up periods the scores of treatment group was decreased in comparison with control group ($F=15.05$, $df_1=1$, $df_2=18$, $P<0.001$). Also, Bonferroni t test showed that the treatment and the control group don't significantly differ in pre-treatment ($P>0.05$), while the difference is statistically significant in post-treatment and follow-up. The post-treatment and follow-up means (17.78 and 14.56 respectively) for treatment group were significantly lower than the post-treatment and follow-up means (27.91 and 29.09 respectively) for control group ($P<0.05$). That is, CAT model was effective in decreased severity of OCD symptoms in the treatment group.

In accord with the Tests of Within-Subjects Effects about difference among three-time measurement (factor of time) between the two groups, the YBOCS scores were significantly diminished in the treatment group than in the control group at any time-point following the treatment ($F_{2,36}=40.62$, $P<0.001$). Also, the mixed analysis of variance revealed that the interaction of treatment (intervention) and treatment period (factor of time) resulted in a decreased YBOCS total scores ($F_{2,36}=22.53$, $P<0.001$). According to the table 1, compared with baseline (Pre-treatment), the YBOCS

Table 1. Mean (SD) of OCD severity scores for pre-treatment, post-treatment and follow-up in groups.

Variable	Group	Number	Pre-treatment	Post-treatment	Follow-up
			Mean (SD)	Mean (SD)	Mean (SD)
OCD severity	Treatment	9	29.11 (5.58)	17.78 (4.15)	14.56 (3.91)
	Control	11	30.73 (5.71)	27.91 (5.32)	29.09 (7.66)
	Total	20	30.00 (5.56)	23.35 (6.99)	22.55 (9.62)

Table 2. Results of mixed analysis of variance for 3 time measurement of OCD severity scores in two groups.

Source	Ss	df	Ms	F	P	Partial ETA squared
Tests of between-subjects effects						
Treatment	1139.80	1	1139.80	15.05	0.001	0.455
Error	1363.47	18	75.75			
Tests of within-subjects effects						
Factor	769.90	2	384.95	40.62	0.005	0.693
Factor * treatment	427.04	2	213.52	22.53	0.005	0.556
Error (factor)	341.20	36	9.48			

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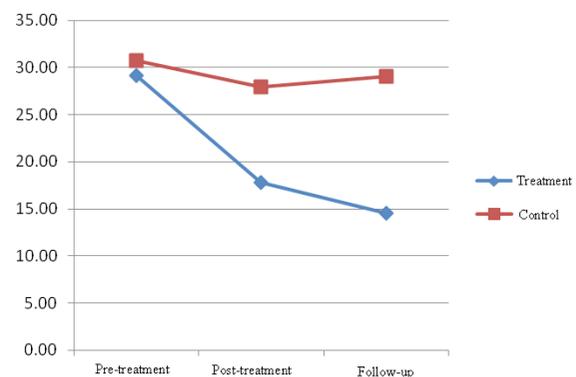
scores were significantly decreased only in the treatment group in month 3 (post-treatment) and in month 6 follow-up ($P < 0.001$). Results of pair wise comparisons by Bonferroni t test showed that decreasing in the post-treatment and follow-up means (17.78 and 14.56 respectively) in comparison with the pre-treatment mean (29.11) was statistically significant in treatment group ($P < 0.05$), but, this mean comparisons (30.73, 27.91 and 29.09 respectively for pre-treatment, post-treatment and follow-up) in control group aren't statistically significant ($P > 0.05$) and means of control group in 3 phases didn't significantly change (Table 2). Also, these changes from post-treatment to follow-up aren't statistically significant in both groups ($P > 0.05$). In other words, these results are indicating the effectiveness of CAT on reduction of OCD severity. Mean difference of OCD severity in two groups during 3 measurement phases (Pre-treatment, Post-treatment and Follow-up) was presented in Figure 1.

4. Discussion

This study was performed to investigate the effectiveness of cognitive analytic therapy on symptoms severity in patients with obsessive-compulsive disorder in one Iranian outpatient sample. Results showed that between the two groups, the YBOCS scores were significantly lower in the treatment group than in the control group at any time-point after intervention (post-treatment and follow-up). Thus, cognitive analytic therapy is an effective treatment for managing of the symptoms severity in obsessive-compulsive disorder. This study in accordance with previous researches demonstrate that cognitive analytic therapy can be used to control most important OCD symptoms with higher therapeutic response and recovery rates, better adherence, decreased OCD symptom severity rapidly, and with improved psycho-social function in patients with OCD (Protogerou et al., 2008; Hepple, 2012; Lack, 2012).

In the one study, Fozooni (2010) concluded that cognitive analytic therapy as a brief integrative therapy in a structured, active and collaborative manner established upon diagrammatic and written reformulations of the presenting symptoms is an effective treatment for most psychiatric disorders. Also, Clarke, Thomas and James (2013) showed that CAT with an emphasis on the relational origins, personality characteristics and the background of psychopathology is well capable to reducing the symptoms.

Various factors might be accountable for why CAT reduces severity of OCD quickly, although this result is supported with clear evidence. First, CAT may set a suitable therapeutic target order from permanent characteristics of OCD including fear to intrusive thoughts/obsessions and then to compulsions/rituals. Second, the education of disease managing skills may be the proper methods in CAT for treatment of OCD. Third, CAT may play a fundamental role in OCD reduction because initially symptoms are controlled with pharmacotherapy. Fourth, in accord with the model of Dunn, four important ingredients of OCD that can be addressed with CAT recognized as intrusive obsessions, wrong



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Figure 1. Mean differences in OCD severity scores in both treatment and control group during three-time measurement.

appraisal, being afraid of negative events, and compulsive behaviors (Dunn, 2009). One target of CAT is to break down the reinforcing associations between intrusive obsessions, negative occurrences, and compulsive behaviors, which is obtained by using problem-focused and appraisal-focused coping strategies in this treatment model. As Ryle and Kerr noted engaging with the patient in an active process of descriptive reformulation, forcefully alliance-generating undertaking, and collaborative effort to modify the identified troublesome procedures are the most therapeutic elements of CAT for treatment of OCD (Ryle & Kerr, 2002).

In line with other results, our findings indicate that the symptoms severity of OCD can be decreased in the combination of the CAT with pharmacotherapy. According to the opinion of Hertenstein et al. (2013) psychotherapies that were based on cognitive-behavior techniques in combination with pharmacotherapy were more effective in symptoms management and quality of life improvement in outpatient and inpatient treatment settings for obsessive-compulsive disorder. Also, Jones, Annesley and Gilley suggested that CAT alone and also in combination with pharmacotherapy may be modifying the personality-related core traits and is capable to diminish the severity of psychiatric symptoms such as seen in patients with OCD (Jones, Annesley, & Gilley, 2012).

The present study shows that patients with OCD suffer from high symptoms severity improved over 4 months course of CAT and this improvement lasts for 3 months follow-up in comparison with control group. So, the YBOCS scores were significantly lower in the treatment group than in the control group at any time-point after intervention (post-treatment and follow-up). Thus, CAT is an effective treatment for managing of the symptoms severity in OCD. These results would indicate the demand for the planning of new and more effective interventions to decrease the symptoms severity and to improve the quality of life in patients with OCD.

To the best of our understanding, the present study repetitively was administered a psychological intervention in patients with OCD over a four-month course. Thus, our results enlarge antecedent researches by supplying facts on long-term changes of OCD symptoms. Using a control group, covering the clinical study with a 3-month follow-up, control for medication, using structured interview for OCD diagnosis, using the appropriate measures of OCD severity and selection of the representative sample were the most important strengths in this study. Nonetheless, several important limitations needed to be considered in generalization of the conclusion.

First, deductions about causal relationships between the execution of CAT and following outpatient treatment, psycho-social improvement, and symptomatic alterations cannot be depicted from these findings because of sampling process and inclusion and exclusion criteria. Second, the sample size for group treatment is relatively small, which diminishes the power of the data analysis. Also, data collection was obtained from only one outpatient institution. Thus, a multicenter clinical trial with independent raters and longer-term treatment studies is required to additionally determine the efficacy of CAT. Third, lack of detailed information about therapeutic adherence of participants may result in bias in process of deducting and study report-writing. Finally, lack of clinical significance calculation in this study is an important shortcoming that should be an issue for consideration in future studies.

Future studies are required to further extricate the influence of separate changes in psychopathological course on long-term alterations in the OCD severity. Moreover, it remains possibly that we overrated reductions of OCD severity, as our study may be suffered from a self-reported measure of data gathering. Also, given the higher comorbid disorder rates seen in OCD patients, it is significant to inspect what effects that this issue has on psychotherapy course. In summary, our preliminary study suggests CAT has a capability for long-standing effective treatment of OCD. Additional multicenter clinical trials and studies with various cultural backgrounds are required.

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