

THE EVALUATION OF THE EFFECTIVENESS OF COGNITIVE BEHAVIOURAL THERAPY IN CASES WITH ONGOING SYMPTOMS OF OBSESSIVE COMPULSIVE DISORDER IN SPITE OF USING PSYCHOTROPIC DRUGS

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Abstract :	<p>Objective: The aim of the study is to evaluate the effectiveness of cognitive behavioural therapy in cases with ongoing symptoms of OCD inspite of using psychotropic drugs. Method: In this study 39 people, diagnosed and shown mild, moderate and severe symptoms of OCD desipte having used psychothropic medicine for 12 weeks, got CBT. Additionally, before therapy, 5th therapy sessions and 10th therapy sessions level of OCD symptoms, depression, anxiety and level of obsessive beliefs are compared. 30 patients completed therapy protocol. After one year, repeated measurements were made with 20 participants to determine whether effectiveness of the therapy was continuing, and pretest, posttest and follow-up measurements were compared. Yale-Brown Obsessive Compulsive Scale, Beck Depression Scale, Beck Anxiety Inventory and Obsessive Beliefs Questionnaire-44 was used to collect data. Result: Conducted analysis indicate noticeable differences between level of OCD symptom, depression and anxiety. These differences were observed in assessment results of pre-test, 5th therapy session and 10th session In comparison of follow-up measurements, there was a difference between pre-test and follow-up measurements. There was no differentiation between post-test and follow-up measurements, except for Y-BOCS measurements. Conclusion: Findings would contribute to the widespread and effective use of Cognitive Behavioral Therapy in OCD treatment.</p>
Keywords :	cognitive behavioral therapy; obsessive compulsive disorder; treatment effectiveness

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Objective: The aim of the study is to evaluate the effectiveness of cognitive behavioral therapy in cases with ongoing symptoms of OCD in spite of using psychotropic drugs.

Method: In this study 39 people, diagnosed and shown mild, moderate and severe symptoms of OCD despite having used psychotropic medicine for 12 weeks, got CBT. Additionally, before therapy, 5th therapy sessions and 10th therapy sessions level of OCD symptoms, depression, anxiety and level of obsessive beliefs are compared. 30 patients completed therapy protocol. After one year, repeated measurements were made with 20 participants to determine whether effectiveness of the therapy was continuing, and pretest, posttest and follow-up measurements were compared. Yale-Brown Obsessive Compulsive Scale, Beck Depression Scale, Beck Anxiety Inventory and Obsessive Beliefs Questionnaire-44 was used to collect data.

Result: Conducted analysis indicates noticeable differences between level of OCD symptoms, depression and anxiety. These differences were observed in assessment results of pre-test, 5th therapy session and 10th session. In comparison of follow-up measurements, there was a difference between pre-test and follow-up measurements. There was no differentiation between post-test and follow-up measurements, except for Y-BOCS measurements.

Conclusion: Findings would contribute to the widespread and effective use of Cognitive Behavioral Therapy in OCD treatment.

Key Words: cognitive behavioral therapy; obsessive compulsive disorder; treatment effectiveness

Introduction

Obsessive Compulsive Disorder (OCD) is a disorder classified under the "Obsessive Compulsion and Related Disorders" heading in the DSM-V (American Psychiatric Association, 2013). Obsessions have been defined in the DSM-V as repeating and continuous thoughts, impulses, or images that are sometimes experienced as if they were unwanted or forced and that cause marked anxiety or distress in many individuals experiencing them. Compulsions have been defined in the same guide as repeating behaviors or mental actions that arise as a reaction to obsessions which the individual feels forced to rigidly repeat according to certain rules (American Psychiatric Association, 2013).

OCD, which has an incidence over twice the incidences of schizophrenia and bipolar disorder, has been reported to disrupt the quality of life and functionality of individuals much more than many chronic diseases do (Eisen *et al.*, 2006; Hollander *et al.*, 1996; Koran *et al.*, 1996; Rosa *et al.*, 2012). The World Health Organization (1999), in turn, has reported OCD to come tenth among the physical and psychological disorders negatively affecting functionality. Besides, it was reported that the family life and professional, academic, and social functionality of people suffering from OCD to be negatively affected (Hollander *et al.*, 1996; Stein *et al.*, 1996; Newt & Rachman, 2001; Acukhekian & Maracy, 2003). The permanent treatment of OCD is necessary to increase both the functionality and quality of life of affected individuals.

Epidemiological studies on OCD have shown the disorder to be chronic in 60 to 85% of the cases and full recovery (being asymptomatic) to be achieved in only 20% of cases (Angst *et al.*, 2004; Perugi *et al.*, 1998; Skoog and Skoog, 1999). Additionally, the psychotropic medicine treatments used in clinical psychiatric practice have been reported to cause a betterment between 30 to 60% in OCD symptoms (Hurley *et al.*, 2002). These results show that full recovery in OCD cannot be achieved only through psychotropic medication. Especially in the last two decades, cognitive models including non-functional beliefs and thoughts playing important roles in the presentation and prognosis of OCD and cognitive behavioral treatment approaches based on the basic principles of those models have markedly increased attention given to this disorder (Karancı and Gençöz, 2012). Many scientific studies examining the effectiveness of such therapies and meta-analysis studies evaluating those scientific studies have all shown CBT to be an effective method in the treatment of OCD (Abramowitz 1996, 1998; Cottraux *et al.* 2001; Emmelkamp *et al.*, 1988; Fisher and Wells 2005; Foa and Kozak 1996; McKay *et al.*, 2015; Olatunji *et al.*, 2013; Öst *et al.*, 2015; Van Oppen *et al.*, 1995; Whittal *et al.*, 2005).

Although all approaches focus on different cognitive structures in the cognitive behavioral model of OCD, the erroneous evaluation of obsessional thoughts and impulses and meta cognitions increasing the intensity and frequency of these intrusive thoughts have been reported to be the primary cognitive processes in the emergence and continuation of OCD (Clark *et al.*, 2003). The method of cognitive therapy basically includes encouraging patients to detect their nonrealistic beliefs (cognitive and meta cognitive) related to obsession, examining those beliefs and developing alternatives, and performing behavioral experiments to test the accuracy of those non-functional, irrational beliefs. CBT including exposure is an effective method in the treatment of OCD (McKay *et al.*, 2004). In many studies comparing the effectiveness of ERP and cognitive therapy in OCD, cognitive therapy has been shown to be at least as effective as ERP (Cottraux *et al.*, 2001; Fisher and Wells 2005; Van Oppen *et al.*, 1995; Whittal *et al.*, 2005).

Comorbidities are known to have effects on the exacerbation of OCD symptoms and OCD becoming chronic (Hofmeijer-Sevinkab *et al.*, 2013). The most common comorbidities in OCD are anxiety disorders and mood disorders (Angst *et al.*, 2005; Ruscio *et al.*, 2010). In the preliminary measurements of a follow up study conducted by Zitterl *et al* (2000), 72.9% of OCD patients were found to exhibit depressive symptoms. Epidemiological studies have reported anxiety disorders to have a comorbidity incidence of 75% in OCD patients, while this between 30 and 75% for depression (Clark, 2004; Millet *et al.*, 2004; Ruscio *et al.*, 2010). On the other hand, effectiveness studies showed a decrease in depressive symptoms and anxiety symptoms and significant decreases in OCD symptoms, and reported significant improvements in functionality and quality of life (Anand *et al.* 2011; Foa *et al.* 2013; Simpson *et al.* 2013; Foa *et al.* 2015; Vyskocilova *et al.* 2016).

Follow up studies constitute an important part of effectiveness studies. However, because of the length of the follow-up duration, difficulties in reaching and follow-up patients may arise in such studies (LaMorte, 2016). This has caused studies evaluating the long term effectiveness of CBT to be more scarce in literature compared to short term effectiveness studies. Additionally, it is important to understand how much patients completing CBT protocols keep the benefits they gain in the long term or how much they relapse (DiMauro *et al.*, 2012). For example, according to a follow up study conducted by Anand *et al* (2011), OCD patients receiving 20 to 25 sessions of CBT in a three-month period were evaluated in the beginning, after treatment, and in three, six, and twelve month follow ups. Twenty six patients

completed the treatment and the rate of positive treatment response was found to be 74% at the end of treatment, 64% in the third month, 64% in the sixth month, and 61% in the twelfth month.

CBT interventions can be seen to be studied in various aspects in Turkey when the literature is examined. However, only two of those articles were focused on the effectiveness of CBT on OCD in Turkey (Kuru and Türkçapar, 2013; Şafak *et al.*, 2014), and only one stressed the importance of formulation in CBT interventions (Lapsekili and Ak, 2012). However, no studies examining the effect of CBT interventions on obsessive beliefs could be found among the studies examining the effectiveness of CBT on OCD in Turkey. Thus, researching the effect of CBT, which is an effective treatment method in OCD, on obsessive beliefs in Turkish culture was thought to be necessary.

Taking all those points into consideration, the main aim of this study was to evaluate the effectiveness of OCD specific CBT in decreasing OCD symptoms. For this purpose, the hypotheses of the study are; (i) CBT interventions will also be effective on cognitive beliefs (the importance/control of thoughts, responsibility/threat perception, and perfectionism/certainty) that are effective in the emergence and persistence of OCD, (ii) CBT interventions will be effective in reducing the levels of depression and anxiety, both of which are well known to accompany OCD, and (iii) CBT, which is used as a treatment method in OCD, will have a long-term effectiveness on OCD symptoms.

Method

Sample

The sample of this study consisted of adult individuals between 18 and 65 years of age diagnosed with OCD presenting at the Psychiatry Clinic of the Ankara Numune Training and Research Hospital who had Y-BOCS (a measurement tool widely used in determining the severity of OCD symptoms) scores of at least 18 despite receiving psychotropic medicine treatment for at least three months (12 weeks). Additionally, the primary diagnosis of the patient being OCD, the patient not having a diagnosis in the schizophrenic spectrum disorders or bipolar mood disorders categories, the patient not being mentally retarded, and the patient being graduated from at least elementary school were determined as prerequisites of participation. 52 people were included in the scope of the study, and 39 of those met inclusion criteria. Nine of the 39 patients whose treatment process was started left therapy in various phases of treatment and the remaining 30 completed the 10 session CBT protocol. This process took eight

months. 20 patients could be reached for follow up measurements and the necessary measurements were repeated. The patients were informed on the phases of the study in a detailed manner, and gave written consent. The demographic characteristics of the patients were given in Table 1.

Table 1.

The Phases of the Study

First, an application for the study was made to the Near East University Institute of Social Sciences and ethical board permission was taken. Then, patients presenting at the Ankara Numune Training and Research Hospital were evaluated with regard to the presence of OCD by the resident psychiatry specialist according to the diagnosis criteria of the DSM-V. Voluntary patients who fulfilled inclusion criteria were included in the data collection phase. Before therapy, the Yale-Brown Obsession Compulsion Scale (Y-BOCS) was applied to the patients by a psychiatry specialist independent from the study. Since the Socio demographic information form, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), and Obsessive Beliefs Scale-44 (OBS) were self-report scales, they were filled out by the patients themselves. The same battery of tests was applied after the completion of the 5th and 10th therapy sessions and in the follow up study. Studies generally show CBT to take effect in many disorders after 6 to 8 sessions (Beck, 2011). For this reason, a 10 session psychotherapy process was thought to be sufficient to test the effectiveness of CBT on OCD.

CBT for OCD was applied by a psychotherapist with an Academy of Cognitive Therapy therapist certificate and European Association of Cognitive Behavioral Therapy (EABCT) accreditation certificate, who was also the first author of the study. In the evaluation interview conducted by the psychotherapist, the compulsions, neutralizations, avoidance and security behaviors of the patients were identified, and corresponding case formulations were formed. The therapy sessions were conducted according to the David A. Clark (2004) model with CBT sessions that took 45 to 120 minutes (sessions that took more than 45 minutes were sessions where in session ERP applications were performed).

The Psychotraining and Cognitive Restructuring Sessions (Sessions 1 and 2):

First, the obsessions of the clients, their erroneous evaluations regarding these obsessions, and/or their metacognitions were determined according to the CBT model of OCD. It was stressed and further shown through cognitive techniques that the phenomena causing emotional distress were not obsessions but cognitions and metacognitions regarding over

responsibility, perfectionism, excessive importance, control, intolerance to uncertainty, drawing conclusions from emotions, and erroneous evaluations regarding threats. The compulsive behaviors undertaken by the clients to remove emotional distress, neutralizations, avoidance and security behaviors were identified, and how these provided fleeting relief but increased long term discomfort was examined by formulating these concepts through the cognitive formulation of OCD with the participation of the clients.

In the following process, interventions towards the normalization of obsessions were performed. For example, study data exhibiting how widespread obsessions similar in context to those seen in OCD were in the normal population was examined, and how the phenomenon causing distress was not obsessional thoughts crossing the mind but evaluations regarding those thoughts was studied with examples. The aim of this interventions was to normalize obsession and draw the focus of the clients from obsessions to erroneous evaluations.

In order to show the negative effect of efforts to control obsessions, the “camel effect experiment” was conducted. The first phase of this experiment was to tell the clients “Only think about the camel for two minutes and let nothing else but the camel enters your mind”. The second phase was to tell the clients “think whatever you want but do not let anything related to the camel cross your mind for two minutes”. The results of this experiment were evaluated with the clients.

Cognitive restructuring, testing empirical hypotheses, and ERP applications (Sessions 3 to 8):

In this phase, cognitive intervention techniques towards determining and changing the cognitions and metacognitions of the clients regarding over responsibility, perfectionism, excessive importance, control, intolerance to uncertainty, drawing conclusions from emotions, and erroneous evaluations regarding threats were applied. Additionally, the clients were prepared for the ERP application in this phase, the mental control strategies, compulsions, and the effects of avoidance behaviors examined in the previous phase were repeated, and the first ERP applications and behavioral experiments were conducted. After discussing the function and operation of the ERP method, a hierarchy of the conditions that most disturbed the clients and elicited avoidance were mapped, and ERP applications were started beginning from the condition that least disturbed each client. Nothing that could constitute a risk for the health of the clients was included in the exposure application. The fact that the ERP method was the most effective intervention for OCD was stressed. During exposure applications, the therapist modeled emerging behavior as much as it was possible. The ERP applications were introduced to the clients as an experimental test regarding their erroneous evaluations or beliefs. The ERP

applications continued until the distress experienced by each client was minimized. Most applications took at least 90 minutes. After each exposure application, the results of this experience were evaluated with the participation of the client. How the treatment process would continue and the effect and importance of ERP were discussed. The ERP applications were given to the clients as homework, and how the applications would be performed was explained in a detailed manner.

Relapse prevention phase (9th and 10th sessions):

ERP applications were continued in this phase. Additionally, the cognitive behavioral model of OCD was reexamined under the light of the experiences of the clients regarding ERP applications, reinforcing the clients' understanding of the model. The clients were explained how they would cope with the reemergence of their obsessions through reminding them of their experiences during the applications of the therapy process, and written guidelines on the subject were provided. Possible triggers were identified and how to cope with those situations was discussed. The importance of avoidance behavior was stressed.

Tools

The Demographic Information Form

The Demographic Information Form prepared by the researcher within the context of the study included demographic information pertaining to the patients and the clinical characteristics pertaining to their disorders. The form consisted of 13 items. Demographic information collected included sex, age, date of birth, education level, marital status, number of offspring (if present), cohabitation partners, occupation, and employment status. Information collected on the clinical characteristics of the patients included disease symptoms, when the disease started, first date of presentation for treatment, hospitalization status, psychiatric medication used, and the duration of using such medication.

The Yale-Brown Obsessive Compulsive Scale-Y-BOCS

This is a semi structured scale developed by Goodman et al (1989) to measure the type and severity of Obsessive Compulsive symptoms. The scale consists of 19 items. However, only the first 10 items are used to determine the severity of obsessions and compulsions. Each item is scored between 0 and 4. The Turkish adaptation of the scale was performed by Karamustafaloğlu *et al* (1993) and the scale was tested for validity and reliability in Turkish by Tek *et al* (1995). In the Turkish reliability study of the scale, its Cronbach alpha coefficient was found to be 0.81 (Karamustafaloğlu *et al.*, 1993). According to the Y-BOCS, 10 to 17

points indicate mild OCD, 18 to 29 points indicate moderate OCD, and scores of 30 and above indicate severe OCD (Kuru and Türkçapar, 2013).

The Beck Depression Inventory (BDI)

The BDI is a 21 item scale developed by Beck et al (1961). Its Turkish adaptation was performed by Hisli (1988) and yielded a reliability coefficient of 0.61. Each item in the scale is scored between 0 and 3 points. The maximum score that can be attained from the scale is 63. Scores of 17 and above indicate a 90% possibility of clinical depression (Hisli, 1988).

The Beck Anxiety Inventory (BAI)

The BAI is a 21 item self-report inventory developed by Beck *et al* (1988) to determine the intensity of anxiety symptoms. Each item in the scale is scored between 0 and 3. Scores that can be taken from the scale vary between 0 and 63. The Turkish validity and reliability study of the scale was performed by Ulusoy and his colleagues (1998). The internal consistency coefficient of the scale (Cronbach alpha) was found to be 0.93 for the Turkish version, and item total score correlations were found to vary between 0.45 and 0.72 (Ulusoy *et al.*, 1998). No cut point could be determined in the aforementioned study. Higher scores taken from the scale indicate increased anxiety levels.

The Obsessive Beliefs Questionnaire (OBQ-44) revised form

The Obsessive Beliefs Questionnaire was developed by the Obsessive Compulsive Cognitions Working Group (2005). The questionnaire is a 7 way likert type scale with 44 items. It aims to measure 6 cognitive fields specific to OCD under three categories (importance/control of thoughts, responsibility/threat perception, and perfectionism/certainty). The Turkish adaptation of the scale was performed by Boysan *et al* (2010). The internal consistency coefficients of the scale were found to be 0.88 for the Responsibility/Threat expectation and Perfectionism/Certainty sub dimensions, 0.86 for the Importance/Thought Control sub dimension, and 0.95 for the whole scale (Boysan *et al.*, 2010). No cut point was designated for the scale.

Statistical Analysis

In the first phase of the study, statistical analyses were conducted with 30 patients who completed the 10 session therapy process. A follow up study was conducted to determine whether the effectiveness of the intervention program continued a year after the therapy process. Only 20 participants out of 30 could be reached for follow up measurements, and thus follow

up analyses were conducted with the data obtained from these patients. Study data was computerized and evaluated using the “SPSS for Windows 22.0” program. Descriptive statistics were given as mean values, standard deviation (minimum-maximum), frequency distributions, and percentages. Since certain variables did not exhibit normal distribution, the Friedman test was used in statistical comparisons between three dependent groups. When a significant difference was detected, the Wilcoxon Signed Ranks Test with Bonferroni corrections was used in post hoc dual comparisons. The relationships between variables were evaluated using the Spearman Correlation Test. The Cohen’s d formula of $r = d \div \sqrt{(D^2 + 4)}$ was used to measure effect size (Cohen, 1988). In the evaluation of the analyses, the level of statistical significance was taken as $p < 0.05$.

Results

The Clinical Characteristics of the Patients

39 patients were provided with CBT within the context of the study. The clinical characteristics of the patients included in the process were given in Table 2 (type of obsession, secondary obsession, type of compulsion, secondary compulsion data).

Table 2.

As seen in Table 2, the most common type of obsession among the patients diagnosed with OCD was contamination obsession with a rate of 53.8%. 51.3% of the patients exhibited a secondary obsession. The most common secondary obsessions were doubt with a rate of 25.0% and contamination with a rate of 25%. Additionally, a large majority (94.4%) of the patients diagnosed with OCD exhibited compulsions. The most common compulsion was found to be cleaning/washing with a rate of 53.8%. 38.5% of the patients exhibited a secondary compulsion. The most common secondary compulsion was repeating-control with a rate of 40.0%. 76.9% of the patients diagnosed with OCD exhibited avoidance behavior.

The results of the pretest, post 5th session measurement, and posttest

During the CBT process, 9 patients dropped off, and the study was completed with 30 patients. The comparisons of the Y-BOCS, BDI, and BAI scores of the patients who completed the CBT process in the pretest (before therapy), post 5th session measurement, and posttest (after the tenth session) were given in Table 3.

Table 3.

As a result of the Friedman Test conducted to determine whether there was a difference between the Y-BOCS scores of the 30 patients diagnosed with OCD in the pretest, post 5th session measurement, and posttest, a statistically significant difference was found ($X^2=53.96$, $p<0.05$). As a result of the post hoc dual comparisons conducted to determine between which measurements the difference occurred, a statistically significant decrease in Y-BOCS scores was found ($p<0.05$). As seen in Table 3, statistically significant differences between the pretest, post 5th session measurement, and posttest BDI ($X^2=57.61$, $p<0.05$) and BAI ($X^2=32.63$, $p<0.05$) scores of the patients were found. As a result of the post hoc dual comparisons conducted between the BDI and BAI scores of the patients in the pretest, post 5th session measurement, and posttest, a statistically significant decrease in BDI and BAI scores in the measurements performed after the 5th and 10th sessions was found compared to their scores in the pretest ($p<0.05$). When the scores taken in the measurements after the 5th and 10th sessions were compared, a statistically significant decrease in the measurement after the 10th session was found ($p<0.05$).

The comparison of the OBQ-44 scores of the 30 patients diagnosed with OCD in the pretest, post 5th session measurement, and posttest was given in Table 4.

Table 4.

As a result of the Friedman Test conducted to determine whether there was a difference between the OBQ-44 scores of the 30 patients diagnosed with OCD in the pretest, post 5th session measurement, and posttest, a statistically significant difference was found ($X^2=47.26$, $p<0.05$). The same analysis was conducted for the sub dimensions of the scale, and differences in sub dimension scores were found as well. These were the responsibility/threat ($X^2=41.86$, $p<0.05$), perfectionism/certainty ($X^2=37.49$, $p<0.05$), and thought importance/control sub dimensions ($X^2=40.22$, $p<0.05$). As a result of the post hoc dual comparisons conducted between the OBQ-44 scores of the patients in the pretest, post 5th session measurement, and posttest, a statistically significant decrease in responsibility/threat, perfectionism/certainty, and thought importance/control sub dimension and total scale scores in the measurements performed after the 5th and 10th sessions was found compared to their scores in the pretest ($p<0.05$). When the scores taken in the measurements after the 5th and 10th sessions were compared, a statistically significant decrease in the measurement after the 10th session was found ($p<0.05$).

Taking into consideration all patients, including those abandoning treatment, in analyses has become a standard for treatment effectiveness studies (Gadbury *et al.*, 2003). A statistical

analysis was conducted by transferring the Y-BOCS, BAI, and BDI scores of the patients who abandoned treatment through the Last Observation Carried Forward (LOCF) method. As a result of this analysis, statistically significant differences in the pretest, post 5th session, and posttest Y-BOCS ($X^2=55.653, p<0.05$), BAI ($X^2=32.638, p<0.05$) and BDI ($X^2=59.203, p<0.05$) scores were found.

The results of the pretest, posttest, and follow up study measurements

The comparison of the Y-BOCS, BDI, and BAI scores of the twenty patients who provided follow up measurements in the pretest, posttest, and one year follow up measurements was given in Table 5.

Table 5.

Statistically significant differences in the Y-BOCS, BDI, and BAI scores of the 20 patients diagnosed with OCD were found in the pretest, post 5th session measurement, and posttest (respectively: $X^2= 33.27$; $X^2= 20.34$; $X^2=10.97, p<0.05$). As a result of the post hoc dual comparisons conducted to understand between which measurements the differences occurred, a significant difference between pretest and follow up measurements was found ($p<0.05$) while no statistically significant difference could be found between posttest measurements and one year follow up measurements ($p>0.01$ for Y-BOCS, $p>0.05$ for BDI, and BAI). Accordingly, it is possible to say that the decrease in Y-BOCS, BDI, and BAI scores was sustained for a year after the application.

The comparison of the pretest, posttest, and follow up OBQ-44 scores of the 20 patients who completed the CBT process and provided follow up data was given in Table 6.

Table 6.

Statistically significant differences in the OBQ-44 total, responsibility/threat ($X^2= 16.48, p<0.05$), perfectionism/certainty ($X^2= 11.87, p<0.05$), and thought importance/control ($X^2=18.56, p<0.05$) sub dimension scores of the 20 patients diagnosed with OCD were found in the pretest, post 5th session measurement, and posttest. As a result of the post hoc dual comparisons conducted to understand between which measurements the differences occurred, a significant difference between pretest and follow up measurements was found ($p<0.05$) while no statistically significant difference could be found between posttest measurements and one year follow up measurements ($p>0.05$). Accordingly, it is possible to say that the decrease in OBQ-44 total and responsibility/threat, perfectionism/certainty, and thought importance/control sub dimension scores was sustained for a year after the application.

Discussion

The aim of the current study was to investigate the effectiveness of CBT for OCD in decreasing OCD symptoms. Data of the study was collected at 3 different times (pre-test, post-test and follow up) and comparisons were made using scores taken Y-BOCS, BDS, BAI and OBQ-44.

OCD could be more prevalent in males during childhood, however, it is encountered more in females during puberty and adulthood. Males have a tendency for describing their symptom onset at early ages, on the other hand, females usually report onset of their symptoms in the later ages such as pregnancy or after adolescence (Mathes, Morabito & Schmidt, 2019). Besides, from the point of sex incidence of OCD, the study carried out with university students in Turkey presented that males demonstrated a little lower OCD symptom rates compared to females (Yoldaşcan *et al.*, 2009). In the current study, the sample was examined with regard to demographic and clinical characteristics and it was seen that the majority of the sample consisted of female patients and patients with contamination obsession. Epidemiological studies performed with clinical samples have shown that females exhibit OCD in slightly higher rates compared to males and that even though non diagnosed semi clinical samples show no gender difference, contamination type OCD is more widespread among females (Rasmussen and Eisen, 1992; Labad *et al.*, 2008; Grabe *et al.*, 2000). Therefore, it can be said that gender and/or sex may have a role in the onset and severity of OCD symptoms. The source of this differentiation might be derived from biological, cultural and environmental factors (Tripathi *et. al*, 2018). For biological aspect, one of the hypothesis claims that ovarian hormones might have a critical function in the pathogenesis of OCD, by this way, women are much more likely to be at risk of developing OCD during or after they experience hormonal changes such as menstrual period and pregnancy (Labad *et al.*, 2005; Fontenelle, Mendlowicz & Versiani, 2006; Russell, Fawcett & Mazmanian, 2013). Thus, more research with regard to cultural, biological and environmental component might be influential in understanding sex as well as gender differences in OCD.

Nine of the 39 patients who were included in the study and started the psychotherapy application (23.1%) left therapy. The drop off rate of treatment in the presented study is similar to those reported in the literature (Franklin and Foa, 2002). When the pre therapy and post 10th session scale scores of the patients who completed the 10 session OCD specific CBT process were examined, statistically significant decreases in Y-BOCS, BAI, and BDI scores were found. The effect size was found to be high for Y-BOCS scores among the patients who completed the

therapy process. Under the light of those findings, CBT can be said to be a very effective method in correcting and decreasing OCD, depression, and anxiety symptoms. This finding was in compliance with studies researching the effectiveness of CBT in OCD (Cottraux *et al.*, 2001; Fisher and Wells 2005; Katz *et al.*, 2018; Olatunji *et al.*, 2013, Öst *et al.*, 2015; Van Oppen *et al.*, 1995; Whittal *et al.*, 2005). Our findings showed that the decreases in Y-BOCS, BDI, and BAI scores were statistically significant even after the 5th session compared to pre therapy levels. Studies generally indicate that CBT is effective in most disorders in 6 to 8 sessions (Beck, 2011). Under the light of those findings, CBT techniques can be said to provide improvements in OCD within a short time. Literally, CBT is defined as a structured, limited by time and guided approach that is carried out to treat great numbers of symptoms as well as mental disorders (Fenn & Bryne, 2013). In fact that CBT, as a therapy method, can change symptoms of the patients significantly has been scientifically proven by scientific studies, and APA (2017) also puts emphasis on that. Based on these studies, APA (2017) asserts that for the treatment of OCD, CBT has a different place than other therapeutic methods. It can be thought that the basic mechanism and mediating components of CBT are to adapt learning theories and cognitive psychology principles to psychotherapy and intervene with dysfunctional and disruptive behaviors and thoughts (Güven & Gökçe, 2018). CBT is a kind of structured therapy which claims that thought process determines what s person feels and how a person acts (Özcan & Gül-Çelik, 2017). Grounded on the philosophy of cognitive psychology and learning theories, CBT comprises behavioral and cognitive methods as well as problem solving skills (Özcan & Gül-Çelik, 2017). It can be said that the therapeutic effect of CBT consists of mechanisms targeting changes in cognition and behavior, and its mediator components are factors that cause this change (Beşiroğlu, 2016; Güven & Gökçe, 2018). The cognitive mechanism that predicts the therapeutic effect in CBT includes perceptions, interpretations and interpretations of the person, his/her environment, experiences and future (Güven & Gökçe, 2018). These are the cognitive structures formed by the person's automatic thoughts, intermediate beliefs and rules, basic beliefs and distortions associated with these cognitions, which are dysfunctional and maladaptive (Beşiroğlu, 2016).

Studies in literature have generally shown depression is usually comorbid to OCD (Brown *et al.*, 2001). In a CBGT effectiveness study conducted by Şafak *et al* (2014), significant decreases in the BDI scores of OCD patients were also found. The decrease in the BDI scores of the patients diagnosed with OCD included in our study generally complies with findings in the literature. Additionally, the decrease in BDI scores might indicate that the

depression seen in OCD is specific to OCD rather than constituting primary depression. Furthermore, females with OCD also tend to report significantly higher depression (Mathes, Morabito & Schmidt, 2019). At this point, considering that OCD is more common in adult women, this depression was thought to be specific to OCD.

Although OCD is held separate from anxiety disorders in the DSM-5, the emotional distress described by people suffering from OCD is usually anxiety. All studies researching the effectiveness of CBT on OCD have discussed anxiety levels as a standard process (Abramowitz 1996, 1998; Cottraux *et al.*, 2001; Emmelkamp *et al.*, 1988; Fisher and Wells 2005; Foa and Kozak 1996; McKay *et al.*, 2015; Olatunji *et al.*, 2013, Öst *et al.*, 2015; Van Oppen *et al.*, 1995; Whittal *et al.*, 2005). Besides, López-Solà and her colleagues (2016) asserted that anxiety is one of the remarkable etiological factors in the development of OCD. One of the hypotheses of our study was that CBT would have an effect on the anxiety symptoms of patients diagnosed with OCD. The anxiety levels of the patients who attended therapy in our study as measured by the BAI decreased after the 10th session in a statistically significant manner compared to pre therapy levels. This finding is also in compliance with the literature on the subject (Cottraux *et al.*, 2001; Emmelkamp *et al.*, 1988; Olatunji *et al.*, 2013; Whittal *et al.*, 2005). In OCD, a person may exhibit compulsive behaviors to cope with the anxiety brought on by obsessive thoughts (Luigjes *et al.*, 2019). Compulsions reduce the anxiety caused by obsessions by preventing the individual from encountering obsessions, and these behaviors are learned and practiced repetitively (Luigjes *et al.*, 2019). For this reason, it was thought that the intervention of CBT on obsessive thoughts also reduced anxiety. Also, Tolin (2010) suggested that meta-analytic findings demonstrated that for treatment of anxiety disorders, CBT is one of the most efficient psychotherapies.

The OCDWG (2005) developed the OBQ-44 form according to studies in the literature to measure six cognitive fields specific to OCD under three categories. This scale has then been used in several studies. For example, in a study researching the effect of personal differences on treatment response with 93 patients receiving CBT, high OBQ-44 scores were found to be related to high post treatment symptom severity (Katz *et al.*, 2018). In another study conducted by Konkan *et al.* (2012), the OBQ-44 total and sub dimension scores obtained from the OCD group were compared to the scores of the control group and both OBQ-44 total scores and the scores of the “perfectionism/intolerance to uncertainty”, “exaggerated responsibility/exaggerated threat perception”, and “importance given to thoughts/thought control” sub dimensions were found to be higher in the study group compared to the control

group in a statistically significant manner. In our study, the OBQ-44 was used to determine OCD related cognitive belief fields, and the patients were seen to receive high OBQ-44 total scores and “perfectionism/intolerance to uncertainty”, “exaggerated responsibility/exaggerated threat perception”, and “importance given to thoughts/thought control” sub-dimension scores before therapy. The high scores of the patients were expected considering the nature of OCD, and all of those findings support the cognitive model of OCD.

According to the cognitive model of OCD (Salkovskis, 1985; Clark, 2004), obsessions and subsequent compulsions are closely related to the person's dysfunctional beliefs; a biased and distorted interpretation of one's thoughts causes obsessions. Emotional and behavioral reactions of a person to a situation are related to a person's perceptions and interpretation concerning that situation (Beck, 2011). Therefore, the thinking pattern of a person may cause development and continuing of many psychological problems (Beck, 2011). Thus, it is clear that there is a bond between beliefs and OCD. At the same time, it is obvious that CBT is effective to decrease obsessive beliefs (Storchheim & Mahony, 2006; Katz, Laposa & Rector, 2018). The statistically significant decrease in the OBQ-44 scores of the patients after completing the CBT protocol shows the success of therapy in fighting obsessive beliefs. It was thought that this situation was related to the intervention of the person's obsessive thoughts and erroneous interpretations in psychotherapy.

Follow up studies follow up the wellbeing of patients after durations such as 6 months or a year make important contributions to literature and the application field. However, because of the length of the follow up duration, difficulties in reaching and follow up patients may arise in such studies (LaMorte, 2016). This has caused studies evaluating the long term effectiveness of CBT to be more scarce in literature compared to short term effectiveness studies. Additionally, it is important to understand how much patients completing CBT protocols keep the benefits they gain in the long term or how much they relapse (DiMauro *et al.*, 2012). This study was thus thought to have an effect on making CBT interventions more widespread in the treatment of patients diagnosed with OCD. The findings of the follow up study showed that the effects of CBT on the symptoms of the disease continued after a year even if they diminished somewhat. Although there was an increase in the scale scores of the patients throughout the follow up process, the scores remained well below their starting values. These findings are also in compliance with literature (Simpson *et al.*, 2004; Anand *et al.*, 2011; DiMauro *et al.*, 2013, Olatunji *et al.*, 2013). For example, according to a follow up study conducted by Anand *et al* (2011), OCD patients receiving 20 to 25 sessions of CBT in a three-month period were

evaluated in the beginning, after treatment, and in three, six, and twelve month follow ups. Twenty six patients completed the treatment and the rate of positive treatment response was found to be 74% at the end of treatment, 64% in the third month, 64% in the sixth month, and 61% in the twelfth month.

The lack of a control group can be considered an important limitation of the study. Although it is thought that the lack of a control group made it impossible to observe the effect of time on OCD symptoms, OCD is a condition that has a low possibility of improvement without intervention and that may become chronic with varying symptoms if left untreated (Mataix-Cols *et al.*, 2002). Additionally, Foa and his team (2005) have found the placebo response of OCD to be very low. Still, future studies examining pretest posttest and follow up findings with a study group and a comparison group formed of a waiting list would increase the strength of the study.

As a result, the effectiveness of OCD specific CBT on decreasing OCD symptoms was examined in this study. Our study is thought to contribute to the development and widespread use of OD specific CBT techniques and thus contribute to the effective treatment of OCD, which greatly disrupts the functionality and quality of life of individuals.

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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Table 1. The demographic characteristics of the patients

<i>Certain descriptive characteristics of the patients diagnosed with OCD (n=39)</i>	
Age (years), Mean.±SD (min-max)	29.6±9.3 (19-49)
≤23 years, N (%)	13 (33.3)
24-32 years, N (%)	13 (33.3)
≥33 years, N (%)	13 (33.3)
Sex, N (%)	
Male	14 (35.9)
Female	25 (64.1)
Marital status, N (%)	
Married	12 (30.8)
Single	27 (69.2)
Employment status, N (%)	
Employed	18 (46.2)
Unemployed	9 (23.1)
Student	12 (30.8)
Education level, N (%)	
Elementary	2 (5.1)
Middle	2 (5.1)
High	10 (25.7)
University student	9 (23.1)
University	16 (41.0)
Duration of education, Mean.±SD (min-max)	13.3±2.7 (5-16)
Disease Duration (years), Mean±SD (min-max)	
≤3 years, N (%)	11 (28.2)
4-6 years, N (%)	14 (35.9)
≥7 years, N (%)	14 (35.9)
Treatment Duration (months), Mean±SD (min-max)	30.8±32.5 (4-192)
≤12 months, N (%)	15 (38.5)
13-36 months, N (%)	16 (41.0)
≥37 months, N (%)	8 (20.5)

Table 2. The clinical characteristics of the patients

<i>The clinical characteristics of the patients diagnosed with OCD N (%)</i>	
Obsession Type(n=39)	
Contamination	21 (53.8)
Doubt	5 (12.8)
Sexual	4 (10.3)
Religious	3 (7.7)
Symmetry	2 (5.1)
Numbers	2 (5.1)
Harm	2 (5.1)
Secondary Obsessions 20 (51.3)	
Secondary Obsession Type(n=20)	
Doubt	5 (25.0)
Contamination	5 (25.0)
Harm	3 (15.0)
Religious	2 (10.0)
Symmetry	2 (10.0)
Sexual	2 (10.0)
Numbers	1 (5.0)
Compulsions 37 (94.9)	
Compulsion type(n=39)	
Cleaning/washing	21 (53.8)
Prayer-repentance	4 (10.3)
Mental	6 (15.4)
Counting	3 (7.7)
Repeating-control	3 (7.7)
Correcting	2 (5.1)
Secondary compulsions 15 (38.5)	
Secondary Compulsion Type (n=15)	
Repeating-control	6 (40.0)
Cleaning/washing	3 (20.0)
Prayer-repentance	2 (13.2)
Counting	1 (6.7)
Mental	1 (6.7)
Correcting	1 (6.7)
Asking-researching	1 (6.7)
Avoidance	
Yes	30 (76.9)
No	9 (23.1)

Table 3. The comparisons of the Y-BOCS, BDI, and BAI scores of the patients who completed the CBT process in the pretest, post 5th session measurement, and posttest (n=30).

	Y-BOCS		BDI		BAI	
	Mean±SD (min-max)	Mean rank	Mean±SD (min-max)	Mean rank	Mean±SD(min- max)	Mean rank
Pretest	27.7±5.2 (19-38) ^{bc}	3.00	23.8±10.0 (2-44) ^{bc}	2.98	22.1±14.8 (1- 53) ^{bc}	2.73
5th session	12.5±5.8 (2-27) ^c	1.87	13.2±7.2 (0- 28) ^c	1.95	14.0±9.4 (1- 35) ^c	1.98
Posttest	6.7±3.6 (1- 16)	1.13	7.2±6.6 (0- 21)	1.07	9.7±7.5 (0-27)	1.28
χ^2	53.966		57.617		32.638	
P	<0.001**		<0.001**		<0.001**	
w	0.89		0.96		0.54	

¹Friedman Test; ^bPost-hoc dual comparisons yielded significant difference to “5th session”; ^cPost-hoc dual comparisons yielded significant difference to “10th session”; *p<0,05; **p<0,01.

Table 4. The comparison of the OBQ-44 scores of the 30 patients diagnosed with OCD in the pretest, post 5th session measurement, and posttest (n=30)

	Obsessive Beliefs Questionnaire					
		Responsibility / threat	Perfectionism certainty	Thought importance control	OBQ Total	
Pretest	Mean±SD (min- max)	70.1±19.3 (30-105) ^{bc}	73.6±24.2 (24-112) ^{bc}	45.0±15.9 (14-74) ^{bc}	187.5±51.0 (84-277) ^{bc}	
	Mean rank	2.87	2.80	2.82	2.93	
5th session	Mean±SD (min- max)	51.2±19.1 (21-95) ^c	56.0±20.4 (24-100) ^c	31.7±14.0 (12-67) ^c	139.6±47.7 (64-262) ^c	
	Mean rank	1.93	1.97	1.98	1.90	
Posttest	Mean±SD (min- max)	41.2±16.7 (16-75)	46.2±19.0 (16-88)	23.6±12.2 (12-56)	110.9±43.6 (45-208)	
	Mean rank	1.20	1.23	1.20	1.17	
χ^2	41.867		37.492		47.267	
P	<0.001**		<0.001**		<0.001**	
w	0.69		0.62		0.78	

¹Friedman Test; ^bPost-hoc dual comparisons yielded significant difference to “5th session”; ^cPost-hoc dual comparisons yielded significant difference to “10th session”; *p<0,05; **p<0,01.

Table 5. The comparison of the Y-BOCS, BDI, and BAI scores of the twenty patients who provided follow up measurements in the pretest, posttest, and one year follow up measurements (n=20)

	Y-BOCS		BDI		BAI	
	Mean±SD (min-max)	Mean rank	Mean±SD (min-max)	Mean rank	Mean±SD(min- max)	Mean rank
Pretest	27.3±5.1 (17-38) ^{bc}	3.00	21.6±10.8 (2-44) ^{bc}	2.73	19.8±16.1 (1-53) ^{bc}	2.58
Posttest	6.0±3.4 (1-14)	1.27	6.0±6.4 (0-20)	1.35	9.4±8.3 (0-27)	1.60
Follow up	10.3±8.1 (0-30)	1.73	10.6±10.5 (0-27)	1.93	10.0±10.8 (0-32)	1.83
χ^2	33.273		20.347		10.974	
P	<0.001**		<0.001**		<0.001**	
w	0.83		0.50		0.27	

¹Friedman Test; ^bPost-hoc dual comparisons yielded significant difference to “posttest”; ^cPost-hoc dual comparisons yielded significant difference to “follow up measurement”; *p<0.05; **p<0,01.

Table 6. The comparison of the pretest, posttest, and follow up OBQ-44 scores of the 20 patients who completed the CBT process and provided follow up data

		Obsessive Beliefs Questionnaire			
(n=20)		Responsibility / threat	Perfectionism / certainty	Thought importance / control	OBQ Total
Pretest	Mean±SD (min- max)	67.1±19.5 (30-100) ^{bc}	68.2±22.9 (24-111) ^{bc}	46.0±17.2 (14-74) ^{bc}	179.5±52.0 (84-277) ^{bc}
	Mean rank	2.65	2.60	2.75	2.65
Posttest	Mean±SD (min- max)	40.9±16.8 (16-75)	45.6±20.0 (16-88)	23.0±11.7 (12-56)	109.3±43.2 (45-208)
	Mean rank	1.38	1.58	1.54	1.40
Follow up measurement	Mean±SD (min- max)	48.7±25.1 (16-107)	50.9±28.9 (18-111)	27.3±15.3 (12-64)	127.0±66.5 (47-282)
	Mean rank	1.98	1.83	1.80	1.95
χ^2		16.481	11.870	18.564	15.700
P		<0.001**	<0.001**	<0.001**	<0.001**
w		0.41	0.29	0.46	0.39

¹Friedman Test; ^bPost-hoc dual comparisons yielded significant difference to “posttest”; ^cPost-hoc dual comparisons yielded significant difference to “follow up measurement”; *p<0.05; **p<0,01.

