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# Effectiveness of a Cognitive-Metacognitive Intervention on Obsessional Beliefs and Depressive Symptoms in a Clinical OCD Population

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## Abstract

Obsessive Compulsive Disorder (OCD) is often comorbid with depressive symptoms, which makes it difficult to present clinically and reduces the quality of life. In this study, an 8 week integrative cognitive metacognitive therapy (CMT) that focused on the treatment of obsessional beliefs and the severity of depressive symptoms using the Hamilton Depression Rating Scale (HAM D) were rated in persons with OCD. The fifty participants diagnosed with OCD under DSM 5 were chosen at random and placed into the intervention group, where they were exposed to structured CMT, and the control group, where they received treatment as usual (TAU). Some of the measures were the Obsessive Beliefs Questionnaire 44 (OBQ 44) and HAM D at pre treatment, post treatment, and 3 month follow up. Findings indicated that there were considerable decreases in obsessive beliefs and depression symptoms in the intervention group as compared to the controls, and hence the efficacy of integrated cognitive metacognitive strategies in clinical outcomes in comorbid OCD and depression.

**Keywords:** Obsessive Compulsive Disorder; Depression; Cognitive-metacognitive intervention

## 1. Introduction

Obsessive Compulsive Disorder (OCD) is a long-term and noncurable psychiatric condition, where intrusive thoughts (obsessions) and repetitive actions or mental processes (compulsions) are observed to eliminate distress or to avoid the feared consequences (American Psychiatric Association [APA], 2013). OCD is a chronic condition with 2-3 percent lifetime prevalence, high rates of functional impairment and poor quality of life, and high comorbidity especially with mood disorders (major depression) (Ruscio et al., 2010; Overbeek et al.,2005). It has been shown that depressive symptoms are comorbid in all as many as 50 percent of patients with OCD, which worsens the severity of symptoms, enhances long-term chronicity and complicates treatment outcomes (Motlagh et al., 2017).

### 1.1. Cognitive Models of OCD and Obsessional Beliefs

Cognition models assume that OCD symptoms are not only perpetuated by intrusive thoughts but also maladaptive interpretations of the former which are commonly called the obsessional beliefs (Salkovskis, 1985; Wells, 2009). Such beliefs are inflated responsibility, over-estimation of threat, perfectionism, being intolerant of uncertainty and the significance/control of thoughts (Obsessive Compulsive Cognitions Working Group, 2005). Studies indicate that the beliefs are predictors of the intensity of OCD symptoms and the primary focus of cognitive-behavioral therapies (O'Connor & Aardema, 2006; Adams et al, 2012).

These areas of maladaptive cognition are assessed by the Obsessive Beliefs Questionnaire 44 (OBQ 44) model, a highly validated questionnaire that has proven to reliably differentiate between groups of clinical OCD patients and healthy controls (Obsessive Compulsive Cognitions Working Group, 2005; Wang, Wei, and Wang, 2015). The increased OBQ-44

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scores correlate with increased severity of OCD symptoms, inadequate response to treatment, and increased chances of relapse (Fisher and Wells, 2008). Therefore, attacking obsessional beliefs is a mechanically significant intervention point in the treatment of OCD.

## 1.2. Depression in OCD and Cognitive Links

Depression is a comorbidity that is most prevalent in OCD and linked to worse clinical outcomes, including a slower ERP response and increased rates of relapse (Besiroglu et al., 2007; Motlagh et al., 2017). It has been demonstrated that obsessional beliefs are not only the predictors of OCD severity but also associated with the manifestation of depressive symptoms, especially negative evaluation symptoms, guilt, and loss of control (Çağlar Çakır and Dundar, 2013; Adams et al., 2012). This, clinically, indicates that if interventions to reduce maladaptive beliefs can lead to the decrease of depressive symptoms, then two key characteristics of OCD comorbidity will be treated.

The Hamilton Depression Rating Scale (HAM-D) is a self-report instrument that has been found to have good reliability in measuring severity of depression in affective, cognitive, and somatic domains and it is long deployed in OCD studies to measure comorbid depression (Hamilton, 1960; Bagby, Ryder, Schuller, and Marshall, 2004). Multiple researches affirm that successful OCD treatment especially with the inclusion of cognitive restructuring of obsessional beliefs yields secondary improvements in HAM-D scores, which validates the transdiagnostic utility of cognitive therapies (Motlagh et al., 2017; Van Oppen, Rassin, and Janssen, 2007).

## 1.3. Cognitive-Metacognitive Interventions

Although OCD can be treated with traditional CBT using Exposure and Response Prevention (ERP), residual symptoms and comorbid depression prevail (Fisher and Wells, 2008). Metacognitive therapy (MCT) is a continuation of CBT, but it focuses on beliefs about the way one thinks (i.e. beliefs regarding the importance of thoughts, beliefs regarding the control of thoughts, beliefs regarding the uncontrollability of thoughts) (Wells, 2009). CBT and MCT may be used concomitantly to decrease obsessional beliefs and depressive rumination, which may prove a more effective intervention in comorbid OCD and depression (Fisher and Wells, 2008; van Oppen et al., 2007).

This approach is proven by empirical evidence. Indicatively, cognitive-metacognitive treatments have been demonstrated to lessen obsessive beliefs (measured in terms of OBQ 44) and depression (measured in terms of HAM-D) symptoms in clinical groups of OCD with large effect sizes and lasting effect at follow-up (Adams et al., 2012; Çağlar Çakır and Dundar, 2013). The findings highlight the significance of focusing on the cognitive and metacognitive processes during interventions on OCD especially where there is depressive comorbidity.

## 2. Methods

### 2.1. Sample

50 adults (ages 18–55, both sex) meeting DSM-5 criteria for OCD and scoring ≥8 on HAM-D (indicating at least mild depression) were recruited. Participants were randomly assigned to either the CMT intervention group (n = 25) or a TAU control group (n = 25). Exclusion criteria included psychotic disorders, active substance dependence, and intellectual disability.

### 2.2. Measures

Obsessional Beliefs Questionnaire-44 (OBQ-44): Developed by the Obsessive Compulsive Cognitions Working Group is a 44-item self-report tool assessing maladaptive belief domains (control of thoughts, importance of thoughts, responsibility, intolerance of uncertainty, threat overestimation, perfectionism). It demonstrates strong internal consistency and validity in clinical settings.

Hamilton Depression Rating Scale (HAM-D): Developed by Hamilton in 1960 is a clinician-administered 17-item scale assessing depressive symptom severity across affective, cognitive, and somatic domains. The scale is reliable and valid for measuring changes in depressive symptoms.

### 2.3. Intervention Protocol

The CMT program ran for 8 weeks, with two 90-minute sessions per week. It combined CBT and metacognitive strategies:

- Psychoeducation: Understanding OCD, depression, and underlying cognitive/metacognitive models.
- Cognitive Restructuring: Challenging maladaptive obsessional beliefs (e.g., threat estimation, perfectionism).
- Metacognitive Techniques: Targeting beliefs about thinking, thought control, and cognitive self-regulation.
- Behavioral Experiments: Gradual exposure to feared stimuli with response prevention.
- Homework Assignments: Daily practice of cognitive and metacognitive skills.
- Therapists were trained clinical psychologists.

## 2.4. Procedure and Statistical Analysis

Participants underwent OBQ-44 and HAM-D assessments at baseline, post-treatment, and 3-month follow-up. Repeated measures ANOVA and effect size (Cohen's d) were calculated to compare within- and between-group changes.

## 3. Results

**Table 1** Means and Standard Deviations of OBQ-44 and HAM-D Scores Across Groups and Time

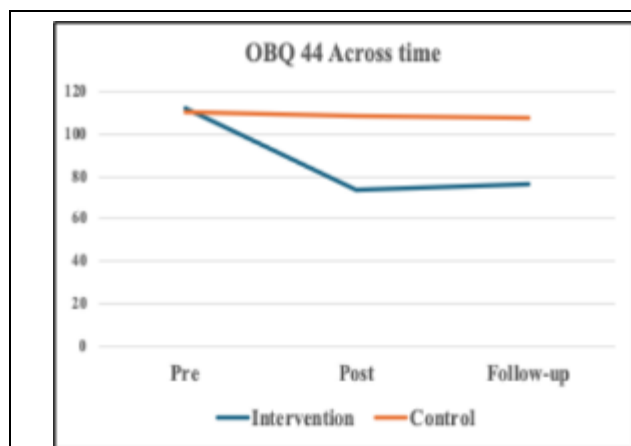| Variable | Group | Pre-Treatment M(SD) | Post-Treatment M(SD) | 3-Month Follow-Up M(SD) |
|---|---|---|---|---|
| OBQ-44 | Intervention | 112.36 (12.45) | 74.12 (10.87) | 76.08 (11.22) |
| | Control | 110.84 (13.02) | 108.92 (12.75) | 107.56 (13.11) |
| HAM-D | Intervention | 18.48 (3.56) | 9.24 (2.87) | 10.08 (3.12) |
| | Control | 17.92 (3.89) | 16.88 (3.75) | 16.56 (3.80) |



**Figure 1** OBQ-44 scores across time for intervention and control groups.
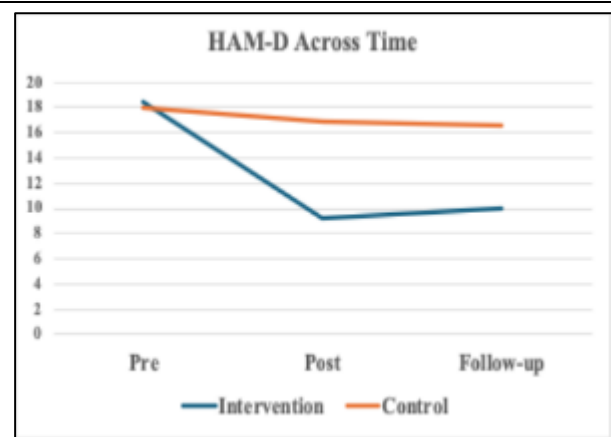


**Figure 2** HAM-D scores across time for intervention and control groups

Table 1 gives a comparison of the mean and standard deviation of obsessional beliefs (OBQ-44) and depressive symptoms (HAM-D) between the intervention and the control groups at three time intervals (that is, pre-treatment, post-treatment, and three months follow-up).

At baseline (pre-treatment), the two groups were similar. Mean score of the intervention group (112.36, SD = 12.45) and the control group (110.84, SD = 13.02) on the OBQ-44 revealed similar levels of maladaptive obsessional beliefs at the beginning of the study. Similarly, the baseline HAM-D scores were alike, the intervention group scored 18.48 (SD = 3.56) and the control group 17.92 (SD = 3.89), indicating that there were equal levels of depressive severity between the two groups.

After the treatment, the intervention group was characterized by significant decrease in the number of obsessional beliefs, as well as depressive symptoms. OBQ-44 scores significantly reduced (112.36 to 74.12, SD = 10.87) and HAM-D scores (18.48 to 9.24, SD = 2.87) showed a significant change that is of clinical significance. Control group, in contrast,

had slight changes, with the OBQ-44 scores showing the slightest decline (108.92, SD = 12.75) and the HAM-D scores declining modestly only (16.88, SD = 3.75).

The treatment gains were mostly retained by the intervention group at the three months follow-up. OBQ-44 scores were stable at 76.08 (SD = 11.22) and HAM-D scores at 10.08 (SD = 3.12) indicating the persistence of the same results of low obsessional beliefs and low rates of depressive symptoms. The control group still exhibited insignificant change, as the scores of OBQ-44 (107.56, SD = 13.11) and HAM-D (16.56, SD=3.80) were near to the baseline level.

All in all, the means pattern reveals that there was a significant and long-term decrease in both obsessional beliefs and depression in the intervention group, but there was minimal or no increase over time in the control group.

**Table 2** Repeated Measures ANOVA Results for OBQ-44 and HAM-D

| Variable | Source | F | df | p | Partial n² |
|---|---|---|---|---|---|
| OBQ-44 | Time | 142.37 | 2.96 | <0.001 | 0.748 |
| | Group | 52.84 | 1.48 | <0.001 | 0.524 |
| | Time * Group | 130.12 | 2.96 | <0.001 | 0.731 |
| *HAM-D* | Time | 95.47 | 2,96 | <0.001 | 0.666 |
| | Group | 37.63 | 1.48 | <0.001 | 0.439 |
| | Time * Group | 88.21 | 2.96 | <0.001 | 0.648 |

Table 2 gives the results of the repeated-measures ANOVA conducted to test the effect of Time, Group and the interaction (Time × Group) on obsessional beliefs (OBQ-44) and depressive symptoms (HAM-D).

In the case of OBQ-44, there was a highly significant main effect of Time, $F(2, 96) = 142.37$, $p <.001$, and a very large effect size (partial $\eta 2 =.748$) obtained, which demonstrates that the scores of the obsessional belief changed significantly over the three points of measurement. A strong primary impact of Group was also attained, $F(1, 48) = 52.84$, $p =. 001$, partial $\eta 2 =.524$, indicating that total scores of OBQ-44 were different between the intervention group and the nonintervention group. And, most importantly, the Time × Group interaction was also statistically significant, $F(2, 96) = 130.12$, $p <.001$, partial $\eta 2 =.731$, which means that the time-related pattern of change was not the same in both groups. This correlation represents the significant decrease in the OBQ-44 scores in the intervention group relative to the slight increase in the control group.

Of HAM-D, considerable effects were also discovered. The main effect of Time was strong, $F(2, 96) = 95.47$, $p <.001$, partial $\eta 2 =.666$ that showed that depressive symptoms varied considerably across time. The primary Group influence was large, $F(1, 48) = 37.63$, $p = 0.001$, partial $\eta 2 = 0.439$, which implies that there were general differences in the levels of depression between the intervention and control groups. Moreover, the Time x Group interaction was also significant and high, $F(2, 96) = 88.21$, $p < .001$, partial eta 2 =.648 which proves that the intervention group had a significantly more significant reduction in depressive symptoms over time than the control group.

The overall findings indicate that the intervention led to statistically significant and significant clinical changes in obsessional beliefs and depressive symptoms with very large effect sizes.

**Table 3** Effect Sizes (Cohen's d) for Pre-to-Post and Pre-to-Follow-Up Changes in the intervention group

| Variable | Pre to Post d | Pre to Follow-Up d |
|---|---|---|
| OBQ-44 | 3.17 | 3.00 |
| HAM-D | 2.85 | 2.73 |

Table 3 provides the effect sizes (cohen d) of change in obsessional beliefs (OBQ-44) and depressive symptoms (HAM-D) between the pre-treatment and post-treatment and between the pre-treatment and three month follow up of intervention group.

In the case of OBQ-44, the difference between the pre- and post-treatment change was extremely large (d = 3.17), which means that the maladaptive beliefs about obsessions and compulsions were reduced significantly after the treatment. The effect was extremely high at follow-up (d = 3.00) indicating that the improvement was mostly retained three months after treatment was over.

Likewise, in the case of HAM-D, the effect size between pre- and post-treatment was very high (d = 2.85), which indicates the significant decrease in depressive symptoms after the intervention. This effect was still strong after three months (d = 2.73) which indicated a long-term clinical improvement.

In general, such large effect sizes signal that the intervention resulted in strong and lasting changes in the obsessional beliefs as well as depression of the members of the intervention group, with the little loss of treatment gains across time.

## 4. Discussion

The present study evaluated the effectiveness of a structured psychological intervention in reducing obsessional beliefsand depressive symptoms among individuals with clinically significant obsessive–compulsive and depressive features, as measured by the OBQ-44 and HAM-D, respectively. The findings demonstrated substantial and sustained improvements in the intervention group compared to the control group across post-treatment and three-month follow-up assessments, indicating that the intervention was both effective and durable.

### 4.1. Reduction in Obsessional Beliefs

One of the most significant results of this research was high and persistent decrease in obsessional beliefs within the intervention group. The scores on OBQ-44 improved significantly between pre- and post-treatment and remained low at follow-up, compared to situation in the control group where there was a negligible change. The pattern was further established by the large Time x Group interaction and the very large effect sizes (d > 3.0). These findings are in line with theoretical model of the obsessive compulsive disorder (OCD) which suggests that dysfunctional beliefs, including inflation of responsibility, overestimation of threat and perfectionism, are the core maintaining factors of obsessive symptoms (OCCWG, 2003; Salkovskis, 1985).

The great effect of the intervention on obsessional beliefs is consistent with past studies that have shown the great effect of cognitive-based interventions that seek to reduce maladaptive appraisals on obsessive symptoms (Whittal et al., 2008; Wilhelm et al., 2015). Belief modification and cognitive restructuring directly confront distorted interpretations of intrusive thoughts, and thus, lessens the resultant distress and compulsive actions (Clark, 2004; Rachman, 1997). Sustained gain at follow-up indicates that these cognitive gains were internalized by the participants, resulting in more lasting resiliency against relapse.

### 4.2. Improvement in Depressive Symptoms

Additionally, the treatment group demonstrated substantial change in the severity of depression relative to pretreatment baseline HAM-D scores that decreased from moderate to mild and were maintained over three months. The large effect size magnitude (d > 2.7) further emphasizes changes that have clear treatment significance. These effects substantiate literature that supports efficacious treatment existing for individuals with maladaptive cognitions and decreased control over emotions and depressed symptomology (Beck et al., 1979; Cuijpers et al., 2013).

The close link between symptoms of obsessive-compulsive disorders and depression has been well established by research showing that depression frequently becomes a secondary consequence of intrusive thoughts, functional impairments, and emotional exhaustion associated with these disorders (Abramowitz et al., 2009; Tolin et al., 2018). The treatment likely alleviated obsessional beliefs, helping to alleviate not only the obsessions themselves but the feelings of helplessness, hopelessness, and self-blame that are so common to depressed states. Such may be the explanation for the simultaneous alleviation of symptoms on both OBQ-44 and HAM-D measures.

### 4.3. Superiority Over the Control Condition

The control group showed little change on all three measurements, while the treatment group showed dramatic declines on both symptom indices. The extremely large and highly significant interactions between Time and Group on both OBQ-44 and HAM-D indicate that these changes cannot be explained by spontaneous remission or the passage of time. This is in line with controlled trials that have found structured psychological interventions to be significantly more effective than wait-list or treatment as usual designs (Olatunji et al. 2013; Hofmann et al. 2012).

The large partial eta squared values (.648 to .748) reflect the fact that a large proportion of the variance was explained by the intervention, and there appears to be high clinical utility. These values can be compared to or exceed those found in some meta-analyses examining CB and transdiagnostic therapies for both OCD and depression (Cuijpers et al., 2016; Öst et al., 2015).

### 4.4. Maintenance of Treatment Gains

One of the major strengths of this study is its demonstration of the maintenance of treatment outcomes three months post-intervention. Although a slight increase in scores for both OBQ-44 and HAM-D was shown from post-treatment to follow-up, both scores continued to be appreciably lower from pre-test levels, thus establishing a lack of relapse. This is supported by literature that suggests cognitive and metacognitive therapies are more effective in terms of durability as they target belief systems, not symptoms (Wells, 2009; Kahl et al., 2012).

The sustainability of progress also implies that the participants might have progressed to utilize the cognitive as well as emotional regulation techniques learned during treatment in their everyday lives.

### 4.5. Clinical and Theoretical Implications

These results offer strong support for interventions that aim at core dysfunctional beliefs in OCD, including those with comorbid depression. By showing that changes in obsessional beliefs are parallel to changes in depressive symptoms, these results support the transdiagnostic view that maladaptive cognition is an important part of all emotional disorders (Harvey et al., 2004; Mansell et al., 2009).

From a clinical perspective, it seems that large effect sizes suggest that interventions such as these might be very helpful to those presenting with symptoms of obsessive–compulsive as well as depressive disorders, which is not an uncommon presentation that can be very challenging to cope with in therapy (Ruscio et al., 2010).

## 5. Conclusion

In sum, intervention showed large, statistically significant, and clinically meaningful reductions in both obsessional beliefs and depressive symptoms, with gains maintained at follow-up. Such findings emphasize the relevance of the target for maladaptive cognitive structures in the treatment of OCD and comorbid depression and strongly endorse the application of structured cognitive-based interventions in clinical practice.

### 5.1. Limitations and future directions

However, along with the powerful results, some weaknesses must be mentioned. The duration of follow-up was also limited to three months and the follow-up should be extended to establish the permanence of effects in the long term. Furthermore, the use of self-report measures (OBQ-44) and clinician-rated measures (HAM-D) might create bias on measurement. In future research, behavioral and neurocognitive measures of the change should be used and the research should also investigate whether certain belief domains (e.g. responsibility or perfectionism) are more open to change through treatment.

## Compliance with ethical standards

*Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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