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Comparison of the Effectiveness of Metacognitive Therapy and Cognitive-Behavior Therapy on Intrusive Thoughts of Obsessive-Compulsive Disorder

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Abstract

Background: *According to WHO statistics, obsessive-compulsive disorder (OCD) is the tenth most disabling condition. Thus, this study aimed to compare the efficacy of metacognitive therapy (MCT) against cognitive-behavior therapy(CBT) on intrusive thoughts in obsessive-compulsive disorder.*

Methods: *In this study, a quasi-experimental design was used with pre-tests, post-test, and a control group. The study population was all patients who attended psychological clinics in Tehran, Iran, between August to September 2019. Using a purposeful sampling method, 24 OCD patients were selected from the study population, eight in every two experimental groups and eight in the control group. The experimental groups received 8, 120-minute sessions of therapy once a week. The study instruments were a questionnaire on demographic features and the thought-action fusion scale (TAFS). To analyze the data, inferential statistics (Multivariate Analysis of covariance (MANCOVA) by SPSS24.*

Results: *The results revealed that MCT and CBT treatments had a significant effect on variables (Pvalue<0.05). As observed, there is a significant difference in all subscales between the two groups of experiment and control in pre-test and post-test, after removing the pre-test effect (Pvalue<0.05). Moreover, findings showed that both approaches significantly differ from the control group when comparing variables between the two treatments. However, MCT treatment had the greatest effect.*

Conclusions: *Both MCT and CBT were found to be effective in reducing intrusive thoughts, though MCT had a greater reduction than CBT.*

Keywords: Metacognitive therapy, Cognitive-behavior therapy, Intrusive thoughts obsessive-compulsive disorder.
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Introduction

In terms of the nature of the disorder, OCD is characterized by intrusive, repetitive, and perturbing thoughts (such as the fear of catching a disease from touching a door handle) usually accompanied by negative feelings (fear, disgust, etc).[1] The lifetime prevalence of OCD is roughly 1%-3% and it is considered to be one of the most exhausting and costly mental illnesses. In most cases, it begins during the adolescent or young adult years and worsens chronically if left untreated. The rate of unemployment among patients with OCD is higher than in unipolar disorder, as well as the rate of maintaining stable marital relationships is lower. As per the world organization of health care, OCD ranks among the top ten most disabling diseases in terms of quality of life and loss of earnings.[2] Research continues to contend that dysfunctional cognitive beliefs and meta-cognizance are important factors in the development and maintenance of obsessive-compulsive symptoms (OCD). In the development and maintenance of obsessive-compulsive disorder, dysfunctional beliefs play a key role in the usual interventions. The belief system of individuals with OCD is typically dysfunctional. Some of these beliefs include a distorted sense of responsibility, an inability to accept uncertainty, and an excessive emphasis on thoughts.[3] There are various cognitive processes that can be referred to as metacognitive beliefs, such as thought-action fusion (TAF; thinking that actions result in the same results as thoughts; thinking that each has moral consequences). A cognitive bias is "distortions in how individuals perceive, interpret, and recall information," and is automatic (not controlled) rather than intentional. As defined by Lazarus and Folkman, coping strategies include: "constantly changing cognitive and behavioral responses in response to external and internal demands that exceed a person's capabilities.[1] Research has demonstrated that people with OCD have high levels of thought-action fusion (TAF).[4,5]

A study found that people with OCD were more likely to think their own thoughts are significant/dangerous than those of others, based on self-reported measures of TAF. Additionally, when subscale analysis was performed, OCD participants scored lower than the other groups on the likelihood measures, despite having similar high scores on the total self-report TAF.[6] Researchers previously found that negative MCQ beliefs mediated the effects of TAF-Likelihood-Oneself on OCD symptoms in a clinical-control group study. Researchers found that some behaviors, such as TAF, could evolve into more complex metacognitive beliefs, eventually leading to OCD symptoms.[7] Several studies have suggested that dysfunctional

cognitive beliefs, cognitive biases, and coping strategies are associated with OC symptoms and that these features can be addressed in order to reduce the symptoms.[1,8,9] The aim of addressing lower-order beliefs and automatic thoughts, such as worrying and ruminating, is therefore counterproductive since this merely leads to further conceptual processing. According to some researchers, the modification of a metacognitive belief regarding the significance and power of an obsession removes the need to further process this notion. So interventions are usually designed to address the metacognitive processes that maintain maladaptive patterns, rather than simply alter the content of perseverative thinking.[10]

A recent study suggests that metacognitive therapy (MCT) may be a successful treatment for obsessive-compulsive disorder (OCD). A pilot study and a single case study found MCT to be effective for OCD. In the largest uncontrolled trial,[11] 80% of OCD patients who were treated by MCT experienced clinically significant improvement at follow-up. Additionally, MCT with a group format was shown to be more effective than group cognitive behavior therapy for the treatment of OCD.[12] Recent studies suggest that MCT can be as effective as exposure and response prevention (ERP) for reducing symptoms of OCD.[13] On the one hand, group cognitive-behavioral therapy(CBT) is usually seen as a good and cost-effective alternative for an individual with OCD. The majority of studies report that both groups and individual CBT are equally effective in treating patients with OCD.[14-16] Additionally, group CBT has been shown to be effective for long periods of time (e.g., at 3- and 12-month follow-ups).[17] In a meta-analysis conducted by Schwartze et al. (2016), the effects of group therapy on OC symptoms were significantly greater than those of wait-list control groups.[18] In addition, Schwartze et al. (2016) identified that group therapy can be equally effective as individual therapy or prescription drugs.[18] In addition to cognitive behavioral therapy, more research is needed to evaluate group therapy approaches other than this.[1] As mentioned earlier, the objective of this study is to compare the efficacy of metacognitive therapy and CBT treatment for OCD patients.

Materials and Methods

This study was quasi-experimental and employed a pretest-post design with a control group. All OCD patients who live in Tehran were included in this study, and the target patients were those referred to three psychology and psychiatry clinics for treatment from August to September 2019. Using a purposeful sampling method, 24 OCD patients were selected from the study population, eight in every two of the experimental groups and eight in the control group. For this purpose, OCD patients were diagnosed through structured clinical interviews by psychiatrists. Following that, the inclusion criteria for the patients were 1- Having been diagnosed with OCD as the primary diagnosis; 2- Giving informed consent to participate in the MCT- CBT-OCD training; 3- Having never been treated psychologically for OCD; 4- Taking prescription medications for at least one year; 5- Having no severe depression (BDI>36), and 6- Having at least a high-school degree. In order to qualify as an exclusion criterion, one must contain one or more of the following: (a) present or lifetime psychotic symptoms (e.g., mania), (b) severe neurological diseases, (c) current substance dependence, and the absence of two or more training sessions. Two-time points are used to assess participants: Pre-test and 8 weeks after the pre-test (post-test). The person coordinating the study provided sequentially numbered envelopes with letters stating where patients are assigned (intervention group [MCT-CBT-OCD] or care as usual control group). In addition, participants assigned to the care as usual control group will be allowed to enroll in the MCT-CBT-OCD to improve adherence. The participants can withdraw at any time from the intervention. CBT for OCD followed the treatment approach advocated by Rachman.[19] MCT for OCD followed the treatment approach of Wells.[20] Specifically, during CBT the focus was on extensively challenging relevant cognitive belief domains whilst the focus during (Table 1) MCT was to challenge metacognitive beliefs in OCD (i.e., metacognitive beliefs about intrusions and beliefs about rituals and stop signals). Patients who underwent MCT also learned detached mindfulness as a way to deal with intrusions and postpone worry and ruminating. MCT implemented meta-cognitively focused exposure aimed at testing fusion beliefs. Treatment sessions were implemented simultaneously for both experimental groups. Patients completed the thought fusion inventory (TFI) in the final session. Treatment sessions lasted 8 weeks (120 minutes each).

Thought-Action Fusion scale (TAFS):[21] This is a 19-item self-report measure of the tendency to fuse thoughts and actions. It contains 12 items that assess moral TAF (e.g., "having a blasphemous thought is almost as sinful to me as a blasphemous action"); 3 items that assess likelihood-self TAF (e.g., "if I think of myself being in a car accident, this increases the risk that I will have a car accident"); and 4 items that assess likelihood-other TAF (e.g., "if I think of a relative/friend losing their job, this increases the risk that they will lose their job). Each item is rated on a scale from 0 (strongly disagree) to 4 (strongly agree). The instrument's psychometric properties have been described by Shafran et al.[21] between 0.85 and 0.96. Persian internal consistency and test-retest, which were 0.81 and 0.61, respectively.[22] In this study, Cronbach's alpha coefficient was obtained as 0.77.

In order to examine the effectiveness of MCT and CBT treatment on the modification of taught-action fusion scales in two groups, before and after training, multivariate covariance analysis (MANCOVA) was used. Kolmogorov-Smirnov test results indicate that the scores were normal (Pvalue>0.05). In addition, the Levene-test indicated that these subscales are homogeneous (Pvalue<0.05). A test for MCT treatment indicated homogeneity of covariance matrices (Pvalue>0.05, F(21 and 2883.5)=1.44) and a Box test for CBT treatment indicated homogeneity of covariance (P>0.05, F(6 and 4173.2)=3.4). Based on the results of the Kolmogorov-Smirnov, box, and Levene-test, a multivariate covariance analysis is established.

Table 1. Content and Treatment Sessions

Metacognitive Therapy[19]	Cognitive-Behavior Therapy[20]
Session 1: Introduction, statement of session rules, evaluation, and data collection such as the nature of obsessive signs, the introduction of emotions and their dimension, and their relationship with meta-cognitive beliefs	Session 1: Case concept of obsessive-compulsive disorder; incontinence; Introduction of obsessive-compulsive disorder, providing a familiar worksheet; Introduction of treatment and treatment rules; An explanation of clients on the number of meetings and duration of the meeting, and if an individual needs reinforcement sessions, will be added. Simplify the form of participation in treatment sessions.
Session 2: Introduction of OCD as an emotional irregularity and mapping its meta-cognitive diagram, introducing the logic of cognitive treatment of OCD meta-cognitive and therapeutic purposes, identifying and invoking negative cognitive.	Session 2: Introduction of taught-action fusion beliefs - practice, verbal challenge, and behavioral tests.
Session 3: Teaching the technique of distance from the mind of consciousness (patients learn to deal with thoughts such as clouds if they do not need to process them).	Session 3: Providing homework on fusion beliefs and exposure exercises and prevent response
Session 4: Assessing positive and negative metacognitive beliefs for modifiers about regulations taught-action fusion. Education of behavioral experiences, provide verbal re-documents for breaking the cycle of intrusive thoughts through questions about the mechanism of taught-action fusion.	Session 4: Continue to review fusion beliefs - action. The verbal challenge and behavioral testing for modifying the fusion beliefs of thought-action.
Session 5: Education to engage in rumination, repetitive concerns, and weakening the beliefs and create a more consistent and behavioral style (new processing). Explaining the difference in processing methods between normal and patient people.	Session 5: Introducing the exposure model and preventing the response to examine this metacognitive belief. Implementation of behavioral testing of exposure and preventing response. Providing homework exposure and prevention of response.
Session 6: OCD treatment approaches: Profit and loss analysis methods, postponement of ritual behaviors of attention training method 1 (ATT), and re-focusing situational attention 2 (SAR) to reduce the severity of obsessive thoughts.	Session 6: The effect of avoidance behaviors in patient life and its impact on the process of disorder. Continue to review fusion beliefs and metacognitive beliefs about stop criteria.
Session 7: Educate the patient to postpone concerns and alertness development. Reinforce behavior, exposure, and experiences in order to prevent responses.	Session 7: Introducing rumination and its impact on the treatment process. Exercise exposure to obsessive-compulsive thoughts and confrontation with avoidance situations.
Session 8: participants are prepared for closing meetings, modifying stop signs, determining criteria, alternative planning, identifying barriers, causing and fixing any problems, and finally concluding the meeting. Additionally, to browsing the meeting and the previous meeting exercises, homework was provided for each session.	Session 8: Reviewing effective techniques and logic of using them. Prevent recurrence, familiarity with fluctuations in the process of recovery, and the likelihood of returning signs and ways to deal with them. Education on how to deal with new intellectual and practical obsessions. Introducing how to use reinforcement sessions. Employment of post-test.

Results

In this study, 16 patients with a mean age of 26 years and a standard deviation of 9.6 years participated in this study. The number of male participants in the research was 11.25 and the percentage of female participants was 89.75%. The highest level of education is related to the undergraduate with 58.72 and the smallest frequency of doctoral education is 1.2.

The results showed significant effects of treatments on clients' intrusive thoughts subscales. From baseline to the end of treatment, thought-action fusion scores, thought-event fusion scores, and thought-object fusion scores all decreased significantly (Table 2).

The statistical characteristic test showed in table 3 that MCT and CBT treatments had a significant effect on variables (Pvalue<0.05). As observed, there is a significant difference in all subscales between the two groups of experiment and control in pre-test and post-test, after removing the pre-test effect (Pvalue<0.05).

As observed in table 4, there is a significant difference in all subscales between the two groups of experiment and control in pre-test and post-test, after removing the pre-test effect (Pvalue<0.05).

Table 5 shows that both approaches significantly differ from the control group when comparing variables between the two treatments. However, MCT treatment has the greatest effect.

Table 2. Descriptive characteristics of the difference in the changes in the scales of intrusive thoughts scale variable in three groups

Variable	Groups	Statistical index	Mean±SD	Kolmogorov–Smirnov test	Pvalue
Thought-Action fusion (TAF)	pre-test	MCT	171.5±24.7	0.365	0.99
		CBT	182.7±25.8	0.095	0.181
		Control	188.9±37.6	0.548	0.925
	Post-test	MCT	141.4±28.4	0.128	0.254
		CBT	164.6±27.9	0.125	0.23
		Control	184.7±33.5	0.798	0.648
Thought- Event fusion (TEF)	Pre-test	MCT	254.8±31.6	0.548	0.795
		CBT	241.7±33.7	0.177	0.05
		Control	235.9±34.8	0.115	0.2
	Post-test	MCT	191.8±34.9	0.116	24
		CBT	201.7±30.8	0.137	0.26
		Control	240.5±35.5	0.145	0.21
Thought- Object fusion (TOF)	Pre-test	MCT	211.8±34.7	0.105	0.22
		CBT	222.9±33.9	0.115	0.2
		Control	219.7±32.5	0.087	0.21
	Post-test	MCT	184.4±29.7	0.455	0.986
		CBT	200.9±31.7	0.594	0.872
		Control	225.6±33.2	0.536	0.937

Table 3. Multivariate covariance analysis of F ratios for the interactive effect of MCT and CBT treatment on intrusive thoughts scales

Variable	Presumptions	Value	F	df1	Df2	Pvalue
MCT	Pillai's trace	0.89	3.7	3	23	0.001
	Wilk's lambda	0.05	3.7	3	23	0.001
	Hotelling's trace	34.8	3.7	3	23	0.001
	Roy's greatest root	34.8	3.7	3	23	0.001
CBT	Pillai's trace	0.36	1.6	6	17	0.19
	Wilk's lambda	0.63	1.6	6	17	0.19
	Hotelling's trace	0.58	1.6	6	17	0.19
	Roy's greatest root	0.58	1.6	6	17	0.19

Table 4. Test of covariance analysis under intrusive thoughts scales

Variable	Variables	SS	MS	F	df1	Pvalue
MCT	Thought-Action fusion (TAF)	37.7	37.7			0.001
	Thought- Event fusion (TEF)	45.8	45.8			0.001
	Thought- Object fusion (TOF)	24.5	24.5			0.21
CBT	Thought-Action fusion (TAF)	206.5	206.5			0.001
	Thought- Event fusion (TEF)	216	216			0.02
	Thought- Object fusion (TOF)	163.6	163.6			0.05

Table 5. LSD post hoc test for determining the effect of a more effective method on research variables

Variable	Group1	Group2	Mean differences	SD	Pvalue
Thought-Action fusion (TAF)	MCT	CBT	-23.2	0.5	0.041
		Control	-43.3	-5.2	0.001
	CBT	MCT	23.2	-0.5	0.041
		Control	-20.1	-5.6	0.001
	Control	MCT	20.1	5.6	0.001
		CBT	43.3	5.2	0.001
Thought-Event fusion (TEF)	MCT	CBT	-9.9	4.1	0.001
		Control	- 48.7	-6.0	0.041
	CBT	MCT	9.9	-4.1	0.001
		Control	-38.8	-4.7	0.001
	Control	MCT	48.7	6.0	0.041
		CBT	38.8	4.7	0.001
Thought-Object fusion (TOF)	MCT	CBT	-16.5	-2	0.001
		Control	-41.2	-3.5	0.041
	CBT	MCT	16.5	2	0.001
		Control	-24.7	-0.5	0.041
	Control	MCT	41.2	3.5	0.001
		CBT	24.7	0.5	0.001

Discussion

The current randomized controlled trial is the first one to examine the comparative effects of metacognitive training and cognitive-behavior therapy on patients with OCD (MCT-CBT-OCD). The MCT-OCD treatment offers two key advantages (1) it is more easily disseminated (e.g., compared to CBT), and (2) it is a widely accepted and effective treatment for patients with OCD. A review of results in the present study indicates that metacognitive therapy (MCT) has been more effective in reducing symptoms in patients suffering from OCD. Furthermore, the MCT-OCD includes various elements of CT, making it a very comprehensive program. It was derived from the approach and presentation of the metacognitive training for psychosis and its disorder-specific versions, which aimed to blend the CBT and the metacognitive training approaches.[1] This finding is consistent with Miegel et al,[1] Melchior et al,[10] Papageorgiou et al,[12] who found clinically significant improvement for all OCD patients treated with metacognitive therapy. Wells argues that MCT is an equally effective treatment for patients with a variety of OCD presentations and this study has also revealed that MCT is an effective treatment for obsession subtype.[20] The results of MCT showed that dysfunctional beliefs can be reduced. In light of this finding, one could argue that metacognitive therapy has helped improve dysfunctional thoughts by reducing rumination and associated positive and negative beliefs, which help maintain intrusive thoughts. Based on our study, CBT is effective in reducing intrusive thoughts, which is consistent with other studies. CBT focuses on systematic biases in thinking style, thinking errors, and negative cognitive attributes.[23]

Moreover, according to the metacognitive perspective, thought fusion beliefs also play a vital role in causing and predicting OCD symptoms without any involvement of metacognitive beliefs. According to Wells,[9] the intensity of thought fusion beliefs plays a crucial factor in negatively evaluating intrusive thoughts and inactivating other metacognitive beliefs about rituals and stop signals. As a result, symptom reduction is directly related to changes in thought fusion beliefs during metacognitive therapy.[24] As demonstrated by similar low attrition rates, a lack of significant differences in the number of sessions attended and patients' recommendations for treatment, both group interventions were highly accepted and satisfied by patients. The MCT cohort, however, showed higher effects than the CBT cohort, and the overall ratings of the patients' overall improvement coupled with the treatment response rates suggest that the patients who received MCT benefited more.[12] It was found that the MCT cohort benefited significantly more over the 12-week course than the CBT cohort even after controlling for important pre-treatment variables like age, gender, the number of diagnoses, the severity of depression, and medication use.[12] People who hold strong thought fusion beliefs have the tendency to interpret their thoughts as irrational, according to cognitive models. According to this theory, high-scoring people with thought fusion beliefs are often extremely responsible and magical thinkers.[25] In accordance with the metacognitive model, treatment should focus exclusively on changing patients' beliefs regarding the significance and power of intrusive thoughts and the need for rituals, rather than addressing the content of obsessions and compulsions. Cognitive therapy and metacognitive therapy (MCT and CT) utilize similar tools, such as verbal reattribution and behavioral experiments, but the two approaches have very different purposes. In contrast, modifying metacognitive beliefs about the power and meaning of obsessions could eliminate the need for further conceptualization. Interventions are, therefore, explicit in addressing the metacognitive processes that sustain the continued maladaptive processing in place of trying to change the content of perseverative thinking (i.e. appraisals).[10]

The current findings need to be interpreted in the context of the following limitations: First, all data in this study were collected through self-reporting. Second, one should consider the sample size of the study when assessing the significant effects of the assessed variables. Third, the study emphasized only the treatment of two therapy approaches, thus ignoring the effect of follow-up on maintaining the results. The results of this study suggest that the primary goal of psychological treatment for OCD symptoms might be to promote alternative ways of responding to these metacognitive beliefs.

In conclusion, both MCT and CBT were effective interventions when delivered as group treatments in a naturalistic clinical setting. This research found that MCT appeared to show some advantage over CBT.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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