Research Paper

The Effectiveness of Cognitive-behavioral Therapy Based on Mindfulness of Psychological Distress and Tolerance of Ambiguity on COVID-19 Obsession Disorder
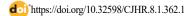
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ABSTRACT

Background: A high incidence of obsessive behaviors has been reported during the COVID-19 pandemic.

Objectives: This study was carried out to estimate the effectiveness of cognitive-behavioral therapy based on mindfulness of psychological distress and tolerance of ambiguity in patients with COVID-19 obsession.

Materials & Methods: The present pretest-posttest study with a control group was conducted on patients with COVID-19 obsession in 2021. The required information was collected using the COVID-19 obsession scale, a short form of psychological distress, and a tolerance of ambiguity questionnaire. The experimental group obtained ten 90-minute classes of cognitive-behavioral therapy based on mindfulness. The adjusted post-test scores were compared using an analysis of covariance.

Results: The Mean±SD age of participants in the experimental and control group was 31.84±4.68 and 34.09±7.05 years, respectively. Cognitive-behavioral therapy based on mindfulness significantly reduced anxiety (F=41.99, P=0.001, η^2=0.63), depression (F=27.19, P=0.001, η^2=0.53), stress (F=26.92, P=0.001, η^2=0.52), and increases tolerance of ambiguity (F=31.63, P=0.001, η^2=0.57), in patients with COVID-19 obsession disorder.

Conclusion: The findings indicated that cognitive-behavioral therapy based on mindfulness appreciably improves the mental health of sufferers with COVID-19 obsession. Considering the long-term effects of COVID-19, psychology and counseling facilities should take measures to become aware of and treat vulnerable groups.

Keywords: COVID-19, Obsessive behavior, Ambiguity

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1. Introduction

The coronavirus disease 2019 (COVID-19) became detected in the Chinese metropolis of Wuhan on December 31, 2019, and was declared a worldwide pandemic on March 11, 2020 [1]. To reduce the unfold of COVID-19, drastic measures and strict restrictions were taken. Many governments encouraged their residents to stay at home or enforced quarantine legal guidelines, leaving home only for essential reasons such as shopping for meals or medicine and going to work [2]. The media and the arena of health corporations believe that these strict measures have led to sensible obsessions for many people around the world due to concerns about health, financial security, or a model of new existence conditions [3]. The findings of Abba-Aji et al. [4] indicated a prevalence of 60.3% of obsessive-compulsive disorder (OCD) during COVID-19. Also, many people suffer from high anxiety and stress due to obsessive thoughts and behavior. The results of Loosen et al. [5] also showed that people who were looking for a lot of information about the symptoms, signs, and number of COVID-19 sufferers had high depression and anxiety, which led to an increase in their fear of COVID-19.

One of the most common consequences of the spread of coronavirus 2019 is anxiety, depression, and stress, which are directly related to the obsession with COVID-19 [6]. During the outbreak of COVID-19 and as a result of no definitive treatment, many people suffer from fear, stress, and depression if there are symptoms of the disease [7]. If these symptoms exist in most situations, it becomes psychological distress. Psychological distress is defined as a state in which a person is emotionally troubled, characterized by symptoms of stress, anxiety, and depression [8]. Several elements along with the history of underlying disease, gender, age, and occasional stage of schooling can predict psychological misery in chaotic and demanding situations [9]. The huge unfold of COVID-19, as well as strict measures and laws to control it, have precipitated adjustments in people's lifestyles, and social and occupational interactions, which in itself is taken into consideration as anxiety-scary [10, 11]. Pan et al. [12] investigated mental health, anxiety, depression, and OCD during the COVID-19 pandemic. The findings showed that the severity of people's disorders increased significantly during the outbreak of COVID-19. Also, there was a significant relationship between obsession, anxiety, and depression, which reduced people's mental health. In a review study, Pinciotti et al. [13] investigated mental health and OCD during the COVID-19 pandemic. The results showed that people who suffer from practical obsessions are very vulnerable to problems and their mental health is at risk. Also, during the outbreak of COVID-19, many patients stopped their treatment and the symptoms of their disorder significantly increased [13].

Ambiguity tolerance is defined as the way a person faces a complicated and incomprehensible situation [14]. A person with low ambiguity tolerance feels uncomfortable as quickly as he or she faces a complex and tough situation. Due to the defective cognitive cycle, he or she is unable to discover an appropriate solution and withdraws from the undertaking after some time [15]. In most cases, these people experience anxiety, stress, and mental conflict in ambiguous situations and fail to evaluate new situations. However, humans with excessive ambiguity tolerance are more likely to discover an appropriate and logical technique to avoid ambiguous situations [16]. People with high ambiguity tolerance have a suitable cognitive style that makes them understand complex and difficult situations more deeply. On the other hand, people with low ambiguity tolerance experience many problems in dealing with anxiety-provoking situations [17]. Tolerance of ambiguity supports creative conduct and permits human beings to address complicated troubles. Humans with low ambiguity tolerance avoid going through ambiguous issues [18].

Intolerance of ambiguity can cause the formation of a motivating pressure that may be related to intellectual and practical obsessions [19]. During the COVID-19 pandemic, people with a high intolerance of ambiguity suffered from anxiety and obsession [20]. Korte et al. [21] investigated uncertainty intolerance and health anxiety during the COVID-19 pandemic. Studies have shown that people who have low ambiguity tolerance have high health anxiety in the face of illness and problems. Petrocchi et al. [22] investigated uncertainty intolerance, distress, and risk-taking during the outbreak of COVID-19. The obtained results showed that people with low ambiguity tolerance have high distress, reducing their mental health. Also, risk-taking as a protective factor can improve the tolerance of ambiguity in people.

Among diverse psychological treatments, cognitive behavioral therapy based totally on mindfulness is one of the most comprehensive strategies to improve practical OCD [23]. In this treatment, patients are taught to monitor their thoughts with a broader perspective and have a decentralized relationship with their mental content [24]. In the method of mindfulness, a person is told to keep calm, their thoughts are not supposed to become reality and are only in their minds [25]. Over time, a person re-

alizes that something bad is not going to happen, and by having a conscious mind, he can have complete control over his life without anxiety [26]. During the COVID-19 pandemic, some studies were conducted to assess the effectiveness of cognitive behavioral therapy based totally on mindfulness on patients' anxiety and obsessions [27, 28]. But so far, no study in the area of COVID-19 was conducted in Iran. Therefore, this study was performed to investigate the effectiveness of cognitive-behavioral therapy based on mindfulness of psychological distress and tolerance of ambiguity in patients with COVID-19 obsession disorder.

2. Materials and Methods

Study type and study population

The current study was a pre-test and post-test with the control group design. The study was conducted on patients with OCD referred to psychological and counseling clinics in Tehran province in 2021. After the implementation of the COVID-19 obsession questionnaire, those patients with a score of 7 or above on the questionnaire were included in the study. Among these humans, 30 sufferers were divided into experimental (n=15) and control groups (n=15). The inclusion criteria were access to the Internet, not suffering from a serious illness, not using psychiatric drugs, and personal satisfaction. Also, the criteria for exiting the study were failure to answer the questions, worsening of the intensity of obsession, and absence of more than 2 sessions in therapy sessions.

Measures

COVID-19 Obsession Scale: The COVID-19 Obsession Questionnaire is a 4-item, single-factor scale designed to measure disturbing thoughts around COVID-19 [29]. Participants were asked to rate the extent to which they have experienced each condition in the past two weeks using a Likert scale ranging from not at all (score 0) to very much (score 4). The minimum possible score was 0 and the maximum score was 16. A total score of 7 and above indicates obsessive thinking about COVID-19. According to previous studies, the COVID-19 obsession scale has favorable internal consistency according to Cronbach's alpha=0.85 [30]. Bagheri Sheykhabgafshe et al. [30] reported the content validity index and the content validity ratio of the questionnaire as 0.88 and 0.91, respectively, which show the optimal content validity of the questionnaire for COVID-19 obsession. Also, Cronbach's alpha coefficient of this questionnaire was 0.82. In the present study, Cronbach's alpha coefficient of this questionnaire was 0.83.

Short form of Psychological Distress Scale: To check the concurrent validity of the scales, the short form of depression, anxiety, and stress questionnaire was used. The short form of the psychological distress scale consists of 21 questions and three subscales of depression, anxiety, and stress [31]. Each subscale includes 7 questions that are graded on a Likert scale from zero to three. Participants were asked to rate the extent to which they have experienced each state in the past week using a Likert scale from "not at all" (0) to "a lot" (3). The minimum possible score was 0 and the maximum was 21. Participants who score high have more psychological distress. According to Pournaghash Tehrani et al. [32], test-re-test reliability for the whole scale and subscales of stress, anxiety, and depression were 0.91, 0.79, 0.80, and 0.81, respectively. Also, Cronbach's alpha reliability coefficient was 0.85 for depression, 0.75 for anxiety, and 0.87 for stress. In another study [33] Cronbach's alpha coefficient of depression, anxiety, and stress were 0.82, 0.78, and 0.84. In this study, Cronbach's alpha coefficient of the scale for anxiety, depression, and stress components was 0.86, 0.81, and 0.82 respectively.

Tolerance of Ambiguity Questionnaire: This questionnaire was created by McLain in 1993 to evaluate ambiguity tolerance, which included 22 items. Answering was based on a 5-option Likert scale ranging from strongly agree (1) to strongly disagree (5). The short version of this questionnaire has 13 items, which was also used in this research [34]. Scores range from 13 to 65. The higher score indicates a higher ambiguity tolerance. McLain reports internal reliability of 0.82 to 0.86 for this scale. In the current study, Cronbach's alpha coefficient of this questionnaire was 0.81.

Intervention protocol

Cognitive-behavioral therapy primarily based on mindfulness was designed according to the protocol of Hershfield and Corboy. Before the implementation of the intervention, the questionnaires were administered to the sufferers as pre-test scores. Then the participants of the experimental group received cognitive-behavioral therapy based on mindfulness in a mental clinic for 8 classes of ninety minutes over two months. At the same time, the contributors of the control organization did not receive any psychological treatment or training. To prevent the probability of contamination, the participants of the intervention group had been asked not to speak about the content of the sessions with each other. After the completion of the classes, the contributors of each group were evaluated through the use of measuring tools. A brief de-

Bagheri Sheykhangafshe, et al. Cognitive-behavioral Therapy on COVID-19 Obsession Disorder. Caspian J Health Res. 2023; 8(1):1-10

3

scription of the intervention of cognitive-behavioral remedy based on mindfulness is presented in Table 1.

Statistical analysis

Data were described using Mean±SD or frequency and percent. The normal distribution of continuous variables was assessed using the Shapiro-Wilk test. Multivariate analysis of covariance (MANCOVA) was used to evaluate the efficacy of cognitive-behavioral therapy based on mindfulness of psychological distress and tolerance of ambiguity in patients with COVID-19 obsession. All statistical analysis was performed by SPSS software version 24.

3. Results

The Mean±SD age of participants in the experimental group and control group was 31.84±4.68 and 34.09±7.05 years, respectively. Table 2 shows the demographic information of participants indicating no significance between the two groups.

The Mean±SD of pre-test-post-test scores of psychological distress and tolerance of ambiguity in patients with COVID-19 obsession in the experimental and control groups are presented in Table 3. According to Table 3, there was no significant difference in the pre-test score of the two experimental and control groups.

The results of the Levin test to examine the homogeneity of variance of dependent variables in groups showed that the variance of psychological distress (F=2.03, P=0.165), and tolerance of ambiguity (F=1.58, P=0.219) were equal in the groups. The results of the Box test to evaluate the equality of the covariance matrix of dependent variables between the experimental and control groups also showed that the covariance matrix of the dependent variables is equal (Box M=12.62, F=1.06, P=0.386). Also, the results of the Chi-square-Bartlett test to examine the sphericity or significance of the relationship between psychological distress and tolerance of ambiguity showed that the relationship between them is significant (χ^2=88.62, df=9, P<0/01). The homogeneity of regression coefficients was examined through the interaction of dependent variables and independent variables (intervention method) in the pre-test and post-test.

Table 1. Summary of online cognitive-behavioral therapy based on mindfulness training sessions

Title	Targets	Content	Home Works
History	Collecting patient information/familiarizing the patient with the treatment process	Collect information related to obsessions/insurance assessment/treatment logic	self-review
Self-awareness	Maintain focus/practice paying attention to the pleasant things in life	Maintain focus/practice to do the enjoyable things in life	Practice eating raisins
Encounter	The patient's attention to obsessive rituals and increasing ability to deal with these rituals	Supervision of the review/explanation of the implementation of the visual encounter/teaching the rules to prevent misconduct	Visual confrontation and avoidance Performing rituals
Being in the moment without judgment	The patient's attention to how to be in the present moment/seeing and hearing events without judging them	Teaching how to see and hear without judging	Practicing self-awareness and Encounter
Resilience	Strengthening the patient's resilience in practicing visual confrontation and controlling her anxiety	Visual Encounter practice/prevention of returning to the baseline/review of past exercises	Visual confrontation practice
Focus on breathing	Physical relaxation through adjusting the rhythm of inhalation and exhalation to help endurance	Revision of past exercises/meditation training number four/breathing training	Meditation exercise number four/exercise Breathing/meditation practice number five
Dexterity	Acquiring skills in homework to prevent the return of the disease	Acquiring skills in homework to prevent the return of the disease	Acquiring skills in homework to prevent the return of the disease
Summary	Preparing patients to internalize exercises/presence of mind and use it in daily life to deal with obsessions	General review of meetings and discussions on how to continue the order established in meetings in everyday life	Practice observing the relationship between activity and mood

Bagheri Sheykhangafshe, et al. Cognitive-behavioral Therapy on COVID-19 Obsession Disorder. Caspian J Health Res. 2023; 8(1):1-10

Table 2. Demographic information of study participants in the experimental and control groups

Demographic Information		No. (%)		P
		Intervention	Control	
Gender	Male	7(46.6)	6(40.0)	0.059
	Female	8(53.4)	9(60.0)	
Marital status	Married	10(66.6)	11(73.4)	0.085
	Single	5(33.4)	4(26.6)	
Job	Freelance job	9(60.0)	10(66.6)	0.064
	Government job	6(40.0)	5(33.4)	
Education	Diploma	7(46.6)	6(40.0)	0.054
	Bachelor's	4(26.6)	4(26.6)	
	Masters	4(26.6)	5(33.4)	

Table 3. Descriptive indices of study's variables in control and experimental groups

Variables	Groups	Mean±SD		P¥
		Pre-test	Post-test	
COVID-19 Obsession	Intervention	11.47±2.03	9.12±1.87	0.001
	Control	11.19±1.59	11.23±1.92	0.387
	P£	0.952	0.001	
Depression	Intervention	16.40±1.56	13.53±2.37	0.001
	Control	16.33±1.98	16.54±1.27	0.082
	P£	0.904	0.001	
Anxiety	Intervention	16.93±1.52	14.41±2.31	0.001
	Control	16.86±1.84	17.06±1.93	0.335
	P£	0.891	0.001	
Stress	Intervention	15.86±1.75	13.42±2.19	0.001
	Control	15.73±1.39	16.02±1.48	0.217
	P£	0.779	0.001	
Tolerance of Ambiguity	Intervention	36.53±3.58	40.14±3.87	0.001
	Control	36.42±4.62	36.42±4.26	0.334
	P£	0.961	0.012	

P¥ was reported from within-group comparison; P£ was reported from between-group comparison.

Bagheri Sheykhangafshe, et al. Cognitive-behavioral Therapy on COVID-19 Obsession Disorder. Caspian J Health Res. 2023; 8(1):1-10

5

Table 4. Comparison of post-test marginal mean scores between the two groups

Dependent Variables	Groups	Adjusted Mean	95% CI	F	P	Eta Squared
Depression	Intervention	13.49	12.80-14.18	41.99	0.001	0.63
	Control	16.57	15.88-17.26			
Anxiety	Intervention	14.36	13.60-15.13	27.19	0.001	0.53
	Control	17.10	16.33-17.86			
Stress	Intervention	13.34	12.57-14.10	26.92	0.001	0.52
	Control	16.05	15.29-16.82			
Tolerance of Ambiguity	Intervention	40.19	39.19-41-19	31.63	0.001	0.57
	Control	36.34	35.34-37.33			

CI; Confidence interval

The interaction of these pre-tests and post-tests with the independent variable was not significant and indicated the homogeneity of the regression slope. Therefore, all assumptions of MANCOVA were met. Table 4 shows the results of MANCOVA for comparison between the two groups. The marginal post-test score adjusted for baseline covariate showed that there was a significant difference between the two groups in terms of depression (F=41.99), anxiety (F=27.19), stress (F=26.92), and tolerance of ambiguity (F=31.63) at the level of 0.001. As a result, cognitive behavioral therapy based on mindfulness significantly decreased depression, anxiety, and stress, and increases tolerance of ambiguity in patients with COVID-19 obsession disorder.

4. Discussion

The findings of the current study on sufferers of COVID-19 obsession revealed that cognitive-behavioral therapy based totally on mindfulness extensively reduced depression, anxiety, and stress. The findings are consistent with previous studies [26-28].

Mindfulness therapy with constant monitoring and non-judgmental emotions associated with tension, without looking to get away or avoid them, can reduce emotional reactions which can be normally provoked via tension symptoms [27]. One of the mindfulness abilities that may assist in this regard is recognition. The connection between popularity and exchange is a valuable concept in common psychotherapy discussions. Mindfulness training makes sufferers be given that panic attacks can also occur on occasion, are fleeting, and are not dangerous, and although they're unsightly, they ought to be tolerated and must now not avoid [23].

Ojalehto et al. [10] investigated the role of anxiety sensitivity, obsession, and attention to the body in the anxiety of COVID-19. The findings showed that having obsessive symptoms, anxiety sensitivity, and paying attention to the body caused the aggravation of COVID-19 anxiety in people. In another study, Yalçın et al. [11] examined health anxiety, obsession, sleep quality, and negative consequences of COVID-19. The obtained results showed that people with health anxiety had a high level of obsession, which reduced the quality of their sleep. Also, having an obsession brought a lot of negative psychological and physical consequences for the person.

The findings of the present study indicated that cognitive-behavioral therapy based on mindfulness significantly increases ambiguity tolerance in patients suffering from COVID-19 obsession. These results are in line with the research done [21, 22].

Mindfulness-based interventions are primarily based on three components: avoiding judgment, raising awareness, being focused on the gift moment, and helping people procedure their cognitive, physiological, and behavioral activities [27]. Conscious awareness of thoughts, emotions, and physiological states makes people examine, manipulate themselves, and free themselves from spontaneous thoughts [24]. Within the technique of mindfulness, people cope with bad emotions as a result of the disorder and represent it mentally in the direction of their lifestyle, and rather than emotional inhibition, they are given it and use extra adaptive techniques. Thus, emphasizing aware interest in the prevailing and being exposed to unpleasant emotions and mind, and no longer keeping off emotions causes cognitive changes and increases tolerance of ambiguity in the patient [28].

Mindfulness education facilitates patients to reduce pressure and cope higher with their infection, therefore it can impact the level of ambiguity tolerance by empowering patients to re-compare pressure triggers [23].

Wheaton et al. [19] examined the role of intolerance of ambiguity in predicting OCD and health anxiety during the COVID-19 pandemic. The findings showed that there's a significant correlation between intolerance of ambiguity and health anxiety and obsession. Those who don't have a terrific ambiguity tolerance when it comes to the created situations suffered from high COVID-19 obsession. In another study, Pogorilska et al. [20] examined the role of intolerance of ambiguity in the mental health of human beings at some point during the COVID-19 pandemic. The findings showed that individuals who had a high intolerance of ambiguity suffered from health tension, obsession, fear, depression, misery, and exhaustion, which may threaten the immune system.

5. Conclusion

The findings showed that cognitive-behavioral therapy based totally on mindfulness extensively reduced anxiety, depression, and stress and increased tolerance of ambiguity in sufferers with COVID-19 obsession. Since mental health and patients' intolerance of ambiguity are some of the important reasons for the aggravation of the symptoms of OCD, improving mental health plays a crucial role in stopping and controlling OCD's symptoms. The study suffers from some limitations including a lack of random allocation of the individuals, and the impossibility of controlling for the social, academic, and economic status of the participants which may induce selection bias and confounding of the result, respectively. So, the generalizability of the result should be made cautiously. Also, we did not perform a longer duration of follow-up for evaluating the persistent effects of the intervention.

Ethical Considerations

Compliance with ethical guidelines

The current study was approved by the Ethics Committee of Baqiyatallah University of Medical Sciences (Code: IR.BMSU.REC.1399.139).

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interests.

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7

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Bagheri Sheykhangafshe, et al. Cognitive-behavioral Therapy on COVID-19 Obsession Disorder. Caspian J Health Res. 2023; 8(1):1-10

9

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