The Effectiveness of Cognitive-Behavioral Stress Management Training on Anxiety and Depression in the COVID-19 Patients of Masih Daneshvari Hospital

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Abstract

Background: COVID-19 is not just a severe threat to the human body but can also jeopardize mental health. Thus, the prevalence of anxiety and depression has increased during the COVID-19 pandemic.

Objectives: The present study aimed to evaluate the effectiveness of cognitive-behavioral stress management training on the anxiety and stress of COVID-19 patients in Masih Daneshvari Hospital, Tehran, Iran.

Methods: The present study used a quasi-experimental pretest-posttest design with a control group. The population included all COVID-19 patients in Masih Daneshvari Hospital in April-May 2021, of whom 120 patients were selected using the convenience sampling method and randomly divided into an experimental group (60 participants) and a control group (60 participants). The data were collected using the Corona Disease Anxiety Scale (CDAS) by Alipour et al. and Beck's Depression Inventory. The collected data were analyzed using the COVARIANCE analysis in SPSS24.

Results: The results showed that cognitive-behavioral stress management training significantly affected the COVID-19 patients of Masih Daneshvari Hospital.

Conclusions: There was a significant implication for counselors and psychologists. Cognitive-behavioral stress management training reduced anxiety and depression in COVID-19 patients and improved mental health.

Keywords: Cognitive-Behavioral Stress Management Training, Anxiety, Depression

1. Background

In 2019, the world witnessed the spread of an emerging infectious virus called coronavirus disease (COVID-19) or new coronavirus (a type of acute respiratory syndrome), whose epidemic was first reported in China. The World Health Organization (WHO) declared this disease a crisis that threatens the health of all people worldwide (1). So far, the spread of this disease has not been completely stopped and is spreading in different regions of the world (2, 3). Some studies have shown that the spread of COVID-19 has caused mental health problems. For example, Qiu et al. (2020) showed that people experienced mental health problems such as distress, stress, depression, and anxiety during the quarantine caused by the spread of COVID-19. In addition, this research showed that more than half of people experience moderate to high anxiety (3). The relationship between disease epidemics and anxiety, stress, and post-accident injuries in people has been proven during past epidemics (4).

In the first place, more attention is paid to physical health during the disease crisis, and less attention is paid to other aspects of health, including mental health and psychological problems accompanying these crises. The COVID-19 epidemic adversely affects people's mental health and physical injuries (5). In China, 35.1% of people

in a study had a general anxiety disorder, 20.1% had a depression disorder, and 18.2% had a sleep disorder during the COVID-19 epidemic ([6]). Another study showed that during this period, 25% of patients had symptoms of mild to severe anxiety ([7]). Unpredictability and uncertainty about the time to control the disease, the seriousness of the disease risk, and wrong information among people in society are stressful factors that can cause anxiety and depression in become people ([8]).

Therefore, it is essential to use a method to moderate the symptoms of anxiety and depression during COVID-19. Applying this method can provide immediate intervention in the crisis of anxiety and depression of COVID-19 in these conditions. As a result of the third wave of COVID-19 spreading, negative beliefs and constant anxiety have become more intense. The popular belief of being infected with COVID-19 has been strengthened with the beginning of the cold season. Organizations are necessary to identify people with COVID-19 anxiety symptoms, identify influential factors, and prioritize psychological interventions.

2. Objectives

The present research was conducted to teach stress management using cognitive behavioral methods on the anxiety and depression of COVID-19 patients of Masih Danshuri Hospital.

3. Methods

This study used a pretest-posttest design with a control group regarding its goals and the researcher's control over the research variables. The population included all COVID-19 patients in Masih Daneshvari Hospital, Tehran, during the spring and summer of 2021. Then, 120 patients were selected based on the convenience sampling technique using coronavirus-related depression and anxiety scales and clinical interviews and were randomly divided into an experimental group (60 participants) and a control group (60 participants). Having at least a high school diploma, being in the range of 25 - 55, and indicating informed consent to participate in the study by COVID-19 patients who were not hospitalized and treated as outpatients were the inclusion criteria. However, suffering from psychiatric disorders was the exclusion criterion of the study.

First, the anxiety and depression scales were emailed to the participants (or an acquaintance with a sufficient literacy level) and collected by email for the correction stage. The therapy sessions designed for the 60 experimental group participants included two sessions a week for each patient. The sessions were held in precisely the same way for all participants. During each session, the therapist established a video call with a particular participant using WhatsApp or Instagram at the specified time and trained them in the techniques. In other words, each session consisted of a mutual interaction in which the intended techniques were taught to the participants online. The person rehearsed them several times under the therapist's supervision during the video call to ensure the participants learned the techniques accurately. At the end of the session, the therapist would answer any questions or doubts, and the participants would receive their homework. When a file needed to be sent/received, this was carried out using emails, Telegram, or WhatsApp. The anxiety scale was resent to the members of the experimental and control groups by the end of the therapy sessions, and then it was collected. According to ethical considerations, the control group members were placed on a waiting list to begin therapy after the study. The cognitive-behavioral stress management sessions were designed based on the Anxiety and Depression Therapy Scheme ([9]) in six 90-minute sessions held twice weekly. Each session would begin by reviewing the objectives of the previous session and end by giving some examples and setting the participants' homework.

3.1. The Corona Disease Anxiety Scale (CDAS)

The instrument was developed and validated by Alipour et al. ([9]) to assess anxiety arising from the spread of COVID-19 in Iran. The ultimate version of the instrument consists of 18 items and two components. Items 1 - 9 assess mental symptoms, while items 10 - 18 examine physical ones. The instrument is scored on a 4-point Likert scale, including 0 = never, 1 = sometimes, 2 = most of the time, and 3 = always. Thus, the highest and lowest scores of the instrument range from 0 to 54, respectively. A higher scale score indicates more significant anxiety levels in people. Moreover, the cut-off point of the questionnaire was determined at 27. Alipour et al. ([9]) determined the instrument's reliability for the first and second factors at 0.879 and 0.861, respectively, using Cronbach's Alpha. In addition, the criterion-related

validity of the questionnaire was determined by relating the instrument to the GHQ-28 questionnaire. The results showed that the correlations between the total scores of the CDAS and GHQ-28 questionnaires and their anxiety, physical symptoms, disruptions in social functions, and depression were determined at 0.483, 0.507, 0.1418, 0.333, and 0.269, respectively. All of the above coefficients were significant at $P < 0.01$.

3.2. Beck's Depression Inventory

Beck's Depression Inventory is one of the most prevalent scales used to measure depression, released by Aaron Beck et al. (1961). The questionnaire is designed to assess the feedback and symptoms of patients with depression. The items are typically developed according to the observation and summation of the commonplace attitudes and symptoms among depressed patients. In other words, the materials and their weights are determined logically. In general, the questionnaire focuses more on cognition than on depression symptoms. Beck's Depression Inventory is a self-report test, which can be completed in five to ten minutes. The items comprise 21 clauses related to various symptoms, which are related to sadness, pessimism, incompetence and failure, guilt, disturbed sleep, loss of appetite, and auto-phobia (to name but a few). In other words, two items deal with emotions, 11 items with cognition, two with explicit behaviors, five with physical symptoms, and one with interpersonal symptoms. Respondents should score the items on a 5-point Likert scale (from 0 to 3). The minimum and maximum scores in the test are 0 and 63, respectively. Adding up an individual's scores across the items is a direct way to obtain their scores. The following scores indicate the overall level of depression: 0 – 13 = no or minor depression, 14 – 19 = minor depression, 20 – 28 = moderate depression, 29 – 63 = major depression. However, scores below four indicate the probable denial of depression, smiling depression, and less-than-normal scores, even in the case of healthy people. On the other hand, very high scores–even among people with major depression–indicate probable exaggeration, histrionic personality, or borderline personality disorders. Some researchers have suggested that 18 should be considered the cut-off point, and it has been argued that the score can accurately detect and classify 92% of the patients with major depressive disorder. Beck et al. (10) determined the internal consistency reliability of the scale in the range

of 0.62 to 0.73. Additionally, Fata determined the scale's Cronbach's Alpha coefficient and one-week test-retest reliability at 0.91 and 0.96, respectively, in a study of 94 Iranian participants (11). The data were analyzed using the COVARIANCE analysis in SPSS24.

4. Results

The participants were 120 COVID-19 patients in Masih Daneshvari Hospital whose ages were 8.3%, 12.5%, 16.7%, 20.8%, and 41.7% $<$ 20, 20 - 30, 30 - 40, 40 - 50, and $>$ 50 years, respectively. Moreover, 70 participants (58.33%) were males, and 50 (41.47%) were females. The participants' demographic information showed that 4.2%, 12.5%, 16.7%, 25%, and 41.7% were illiterate in primary school, junior high school, high school, and higher education degrees, respectively. Furthermore, 50 participants (41.67%) were married, and 70 participants (58.33%) were single (Table 1).

Table 1. Demographic Characteristics of the Participants in the Present Study

Variables	Frequency, No. (%)
Age (y)	
< 20	10 (8.3)
20 - 30	15 (12.5)
30 - 40	20 (16.7)
40 - 50	25 (20.8)
> 50	50 (41.7)
Gender	
Male	70 (58.3)
Female	50 (41.7)
Education level	
Illiterate	5 (4.2)
Primary school	15 (12.5)
Junior high school	20 (16.7)
High school	30 (25)
Higher education degrees	50 (41.6)
Marital status	
Married	50 (41.7)
Single	70 (58.3)
Employment status	
Employed	36 (30)
Unemployed	84 (70)
Total	10 (100)

The assumptions of COVARIANCE analysis, including normality, linearity, multicollinearity, variance

homogeneity, and slope homogeneity, were investigated. The results of the Kolmogorov-Smirnov test showed that all variables, both during the pretest and posttest stages, had normal distributions (P ≥ 0.05). Moreover, the linearity of the relationship between the dependent variables showed a linear relationship between the pretest and post-test scores of COVID-19 anxiety and depression (Table 2).

The results of Wilks's Lambda showed that the effect of the group on the combination of the investigated variables was significant (Wilks's lambda = 0.05, F = 282.48, P < 0.001). In other words, a significant difference was observed between the experimental and control groups in at least one of the dependent variables (COVID-19 anxiety and depression) (Table 3).

According to Table 4, the modified means of COVID-19 anxiety in control and experimental groups were 29.14 and 25.09, respectively. Therefore, the modified mean of COVID-19 anxiety in the post-test scores of the experimental group was significantly lower than that of the control group. In other words, the cognitive-behavioral intervention effectively reduced COVID-19 patients' anxiety.

Based on Table 4, the modified means of depression in the control and experimental groups are 39.04 and 33.32, respectively, showing that the modified mean of depression in the experimental group was significantly below that of the control groups. Thus, the cognitive-behavioral intervention effectively reduced COVID-19 patients' depression.

5. Discussion

This study investigated the effectiveness of cognitive-behavioral stress management training on the anxiety and depression of COVID-19 patients in Masih Daneshvari Hospital. The results showed that cognitive-behavioral stress management training significantly affected the anxiety of COVID-19 patients in Masih Daneshvari Hospital. This result was in line with that reported by Owens et al. (12), Newby et al. (13), Gratzer et al. (14), Axelsson et al. (15), and Newby and McElroy (16). However, the results contradicted the findings of Waite et al. (17) and Wright et al. (18). Moreover, in line with this study, Drew et al. (19) reported a significant reduction in anxiety after performing a cognitive-behavioral stress management program. Antoni et al. (20), Lee et al. (21),

Srivastava et al. (22), Jandaghi et al. (23), and Dehshiri (24) pointed to the same result. Furthermore, other studies like Rezaee et al. (25), Hamid (26), Dehghani et al. (27), and Mirzaee et al. (28) reported that anxiety decreased as a result of performing a cognitive-behavioral stress management intervention.

A reason for the effects of cognitive-behavioral stress management training on reducing anxiety symptoms is helping ease concerns. Concerns in worried people act as a way to create internal stimuli and increase their arousal so that they may feel less tiredness and boredom. For this reason, people with chronic tiredness and boredom typically report feeling anxiety; thus, it can be argued that reducing the rate of anxiety is likely to result in reduced fatigue (29). Moreover, cognitive-behavioral stress management training can help people by offering a set of cognitive strategies like discovering cognitive distortions and thoughts for anxiety, cognitive restructuring, boosting soliloquies to cope effectively, behaviors like exposure and role play, teaching coping strategies, and increasing self-control and problem-solving skills. In other words, the training mainly focuses on treating anxiety disorders by endeavoring to detect and modify anxiety-building and ineffective soliloquies and replacing them with coping soliloquies. Thus, gradual exposure is required to vague and potentially threatening conditions, something that takes place in cognitive-behavioral stress management training (30). Berger and Segal believe that participation in cognitive-behavioral stress management sessions gives people much information to respond to stress, learn logical soliloquies applicable in stressful situations, and become familiar with cognitive restructuring in emotional problems (31).

Training patients in cognitive-behavioral stress management techniques can reduce their illogical fears and improve their anxiety symptoms. Thus, the results indicated that the investigated patients were anxious, and cognitive-behavioral stress management training could reduce anxiety.

In addition, the results showed that cognitive-behavioral stress management training significantly affected the depression of COVID-19 patients in Masih Daneshvari Hospital. This was in line with the findings of Grayson et al. (32), Nikelkik and Kuijpers (33), Janusk et al. (34), and Reibel et al. (35). Askey-Jones et al. (36) performed a cognitive-behavioral stress management program on a group of COVID-19 patients and observed

Table 2. The Descriptive Characteristics of the Investigated Variables According to the Groups and Intervention Types

Variables	Mean ± SD	
	The Cognitive-Behavioral Stress Management Group	The Control Group
COVID-19 anxiety		
Pretest	29.66 ± 2.46	30.20 ± 2.79
Posttest	24.63 ± 2.37	29.60 ± 2.88
Depression		
Pretest	38.63 ± 2.45	39.20 ± 2.89
Posttest	32.93 ± 2.04	39.43 ± 3.03

Table 3. The Indicators of the Multivariate COVARIANCE Analysis for COVID-19 Anxiety and Depression

Indicators	Value	F	df	Error df	P	ETA	Power
Pillai's trace	0.94	282.48	2	114	$0.001 \geq P$	0.94	1
Wilks's lambda	0.05	282.48	2	114	$0.001 \geq P$	0.94	1
Hoteling effect	15.99	282.48	2	114	$0.001 \geq P$	0.94	1
Roy's largest root	15.99	282.48	2	114	$0.001 \geq P$	0.94	1

Table 4. The Results of the Bonferroni Post-hoc Test to Compare the Modified means of the Experimental and Control Groups Concerning Their Posttest COVID-19 Anxiety Scores

Variable and Compared Groups	Modified Means	Difference Between the Means	SD	P
COVID-19 anxiety				
Experimental-control	25.09 - 29.14	- 4.05	0.32	0.001
Control-experimental	29.14 - 25.09	4.05	0.32	0.001
Depression				
Experimental-control	33.32 - 39.04	-5.72	0.24	0.001
Control-experimental	39.04 - 33.32	5.72	0.24	0.001

a significant reduction in the patients' depression six months after the intervention, though their anxiety and tiredness did not change during the period. The spread of the disease and the following social distancing regulations led to loneliness and reduced relationships and social support. Depressive symptoms can be created or intensified by this. The lack of definitive treatment or preventive measures spreads depression across societies (37).

5.1. Limitations

This study was cross-sectional, and more accurate results could be obtained from longitudinal studies in this field. Another limitation of this research was the small population and the study sample of COVID-19 patients of Masih Deneshvari Hospital in Tehran. Consequently, the results cannot be generalized to the entire Iranian society. The use of self-report tools, lack of treatment follow-up, and available sampling were other limitations of this research.

5.2. Conclusions

Based on the results, cognitive-behavioral stress management training significantly affected the anxiety of COVID-19 patients. Therefore, the results had significant implications for counselors and psychologists. In addition, this method is recommended to reduce anxiety and depression in COVID-19 patients and, consequently, enhance mental health.

Footnotes

Conflict of Interests: Authors confirm that this study has no relevant financial or non-financial competing interests.

Ethical Approval: The study protocol was approved by the Ethics Committee of Shahid Beheshti University of Medical Sciences, Tehran, Iran (Ethic code: IR.SBUMS.REC.1401.576).

Funding/Support: This study was supported by Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Informed Consent: Verbal consent was obtained from the participants to participate in the present study.

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