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The Effect of Cognitive-Behavioral Intervention Package on Improving Fear Symptoms, Quality of Life and Psychological Health in Patients with COVID-19

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Abstract

Background: COVID-19 had a destructive effect on human's life. People with COVID-19 experienced high levels of depression, anxiety, and low Quality of Life (QOL). The aim of this study was to investigate the effect of the cognitive-behavioral intervention package on reducing stress, depression, and anxiety, as well as improving the QOL of patients with COVID-19.

Methods: In this randomized controlled trial, 60 patients with COVID-19 who entered the isolation ward were included and randomly divided into control and experimental groups. The experimental group entered the intervention sessions once a week for 45 minutes for eight consecutive weeks. The intervention consisted of 8 sessions of CBT which was implemented for the experimental group. Patients in the control group received routine care during this period. $DASS_{21}$, the Symptom Checklist (SCL-90), Fear of COVID-19 Scale (FCV-19S), and WHO-QOL were used to measure patients' mental health and QOL. Data analysis was performed with ANCOVA using SPSS24 software.

Results: There was no significant difference between groups in terms of $DASS_{21}$, SCL-90 and QOL before intervention ($p<0.05$). After intervention, depression symptom and QOL were significantly improved in the experimental group compared to control group ($p< 0.05$). Accordingly, the findings stated the session of intervention was effective in improving the QOL ($p<0.05$) and mental illnesses ($p<0.05$) in patients with COVID-19.

Conclusion: Our designed cognitive-behavioral intervention package can enhance the awareness and mental health of patients with COVID-19. This package as an auxiliary treatment can reduce anxiety/depression and improve QOL in patients with COVID-19. Therefore, our intervention package can serve as a useful solution for clinical settings to reduce mental health problems during crisis.

Keywords: Anxiety, COVID-19, Depression, Mental disorders

Introduction

The COVID-19 pandemic, caused by a novel coronavirus, has had a significant impact on mental health. The virus has spread rapidly, with a mortality rate of about 3%. As a result, strict restrictions such as quarantine and social distancing have been implemented. These measures, coupled with the negative news surrounding the pandemic, have led to mental health problems such as anxiety, depression, and stress. The psychological impact of COVID-19 has been particularly pronounced in individuals with existing psychiatric disorders, especially anxiety-related disorders like Obsessive-Compulsive Disorder (OCD). Additionally, there was a pressing need for effective treatments for COVID-19 (1-5).

Some studies suggest that loss of psychological interventions results in higher rates of baseline negative psychological symptoms. In a global health pandemic situation, it is especially important to provide adequate care and resources to people with chronic conditions, and disabilities as the risks of COVID-19 can affect them disproportionately (6,7). A guide published by the Red Cross describes psychological training in times of crisis. This training module is one of four items for psychological first aid that includes a set of materials on PFA. Evidence for this psychological intervention, which is based on Cognitive-Behavioral Therapy (CBT), shows that CBT based on this will significantly improve mental health status among patients and injured people (8). El Morr *et al* assessed the effectiveness of a web-based mindfulness and CBT program to reduce the symptoms of stress, anxiety, and depression, and to increase mindfulness. They reported that there were significantly reduced depression and anxiety symptoms, but no significant effect on perceived stress was observed. Furthermore, online mindfulness interventions could have an impact on addressing psychological health conditions among different populations (9). However, previous trials have sometimes reported conflicting results regarding CBT-based interventions for patients with COVID-19 (10,11). In addition, most of the previous studies have only focused on the anxiety and depression symptoms of the patients and have not paid attention to important aspects such as the Quality of Life (QOL) of the patients (11,12). Furthermore, our therapeutic program has innovations compared to previous studies, including: 1) Relaxation therapy techniques have been used in this study. 2) In our intervention session, one of the techniques used is the life style change sessions. 3) We taught problem-solving skills that are rarely mentioned in other packages. 4) One of the most important parts of CBT is correcting the patient's cognitive errors, which is rarely addressed in other packages. 5) Although in most of the related articles, CBT sessions during the COVID-19 period were online (13), we held sessions in a face-to-face manner.

Therefore, the present study was aimed at collecting first data on the effectiveness of our proposed CBT therapeutic session in decreasing some mental disorders, such as anxiety, stress, and depression symptoms. We expected that decreased mental illnesses symptoms would be associated with promoting QOL and improving social relationship, and physical and psychological health in patients with COVID-19.

Materials and Methods

A total of 60 patients with definitive diagnosis of COVID-19 admitted to the Ziaeian General Hospital from April 20 to November 20, 2020, were included in the study. Randomly, the COVID-19 patients were divided into two groups (experimental and control groups) and the participants were intervened in the order of the beds. These patients were recruited out of an initial clinical sample of about 100 treatment seekers (Figure 1). Six samples from both groups were excluded from the study and finally the analysis was performed on 48 participants.

nclusion criteria were as follows: (1) Diagnosis of COVID-19 (male or female) based on chest CT results and positive PCR test; (2) Age 18-60 years; and (3) Willingness to participate in the study. Exclusion criteria included: (1) History of severe physical or psychological problems and psychiatric disorders such as major depression disorder, substance use disorder, *etc.*; (2) Not completing the treatment sessions.

Cognitive-Behavioral Intervention Package

Generally, cognitive-behavioral intervention package allows patients to understand feelings and thoughts

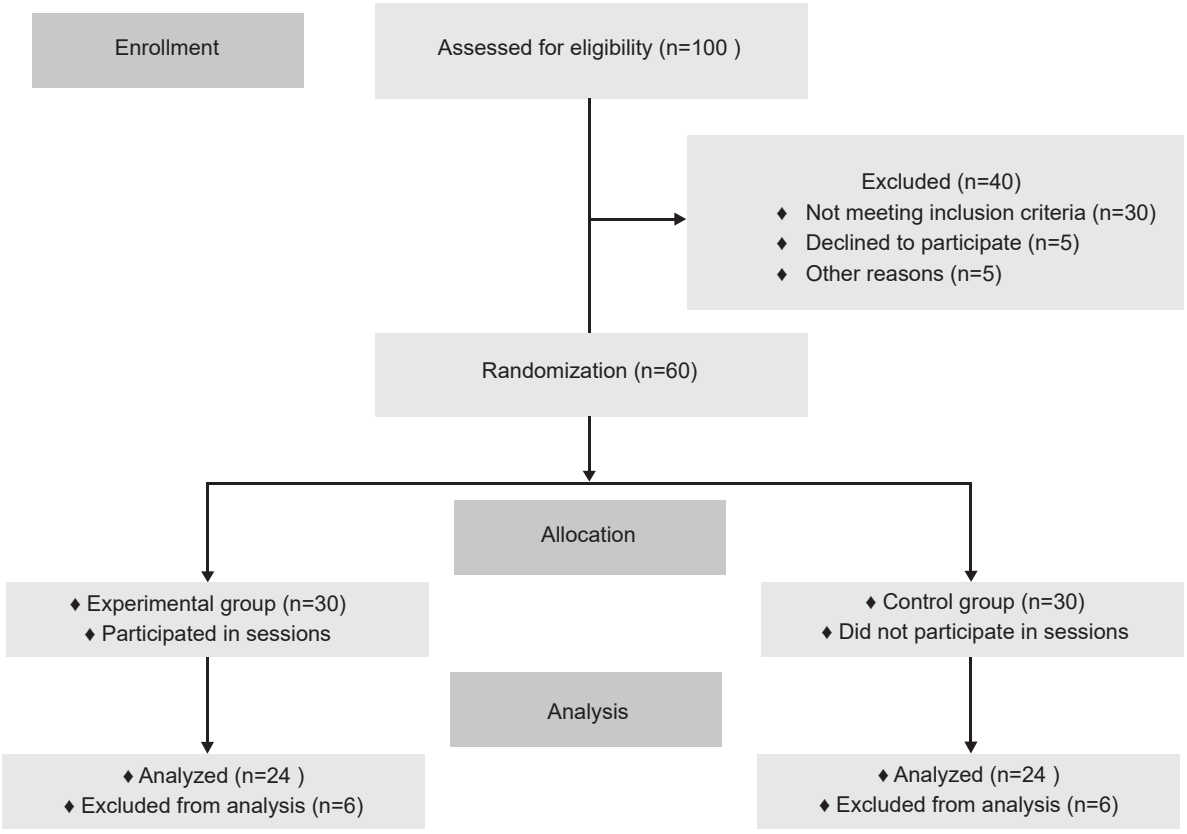

Figure 1. Consort flow diagram for our randomized clinical trial to investigate the effectiveness of proposed cognitive-behavioral intervention for patients with COVID-19.

and to learn new coping skills and ways to prevent a relapse. This package usually requires at least one month of treatment. With COVID-19, it has been suggested that the early stage of therapy should be behavioral, focusing on specific behaviors, cognitions, and situations where the COVID-19 causes the greatest difficulty. To evaluate the validity and reliability of the outcome checklist, mental health practitioners in the cognitive behavioral intervention package evaluated the tool as well as through a pilot study. Five cognitive-behavioral group therapists who were educated and were experts in CBT and crisis intervention were asked to evaluate the content of the package sessions and to comment on the clarity and suitability of the sessions. Before implementing the survey, a pilot test was also administered to three randomly selected patients to appraise the time required to finish the sessions for clarifying ambiguities and format problems, if there were any, and to evaluate each session's items. Eight sessions were held (Table 1).

These cognitive behavioral sessions were performed by two PhD clinical psychologists trained to diagnose and treat mental disorders and physical disease. The content of treatment package was adapted from various scientific literatures (14,15). Also, the content validity of the package was approved by five clinical and cognitive behavioral psychologists and psychiatrists.

Research instruments

Data were collected using the following instruments:

1. The Fear of COVID-19 Scale

The Fear of COVID-19 Scale, a 7-item scale, was designed and validated by Ahorsu *et al* and is reliable and valid in assessing fear of COVID-19 among the general population and can also be useful in allaying COVID-19 fears among individuals (16). The Fear of COVID-19 Scale has seven items with acceptable corrected item-total correlation (0.47 to 0.56) that was retained and further confirmed by significant and strong factor loadings (0.66 to 0.74). More specifically, reliability values, such as internal

Table 1. Our designed cognitive-behavioral intervention sessions to alleviate mental health problems in patients with COVID-19

Sessions	The Title of Sessions	Goal/Goals	Techniques	Practices
First session	Introducing the cognitive-behavioral package	Discussion and introduction of vicious cycle of thoughts, feelings and behaviors	a) Change in feelings b) Change in patterns of thinking	a) Control of spontaneous thoughts b) Distinguish healthy from unhealthy feelings
Second session	Treatment of depression and anxiety	a) Assessment of negative feelings b) Helping the client understand their symptoms as a part of their sickness	a) Identifying and engaging in enjoyable activities such as hobbies, social activities, and exercise	a) Engaging in pleasurable activities b) Awareness of mood and challenging negative thoughts c) Learning to manage negative emotions like fear or sadness
Third session	Relaxation training	Anxiety reduction	Jacobson's relaxation techniques performed this within 20–30 minutes per day	a) Stress reduction techniques b) Relaxation and deep breathing c) Muscle relaxation d) Positive mental imagery
Forth session	Lifestyle change techniques	Current issues related to life style skills	Overcoming weakness in social, psychological, and physical skills	a) Attention to physical health b) Change in diet c) Exercise d) Weight control e) Avoid smoking
Fifth session	Training of methods for logical analysis of thoughts	Analysis of doubt and hesitation	Record daily thoughts, emotions, and behaviors	a) Understanding of themselves, their worlds, and other people, b) Mindfulness d) Conflict resolution skills
Sixth session	Training of problem-solving skills	Learning how to solve problems	Engaging in more social activities	a) Definition of the problem b) Generation of alternative solutions c) Evaluating and selecting alternative solutions d) Implement and following up on the solution
Seventh session	Cognitive errors and methods to cope with cognitive errors	Description of cognitive errors	Methods of dealing with cognitive errors	Identify and modify the thought process in COVID-19
		Description of distorted cognitions	Cognitive restructure	Identify and modify the thought process in COVID-19
Eighth session	Prevention of relapse	Conclusion	Review the techniques	Training the necessary guides to deal with COVID-19

consistency (α=0.82) and external reliability (test–retest) (ICC=0.72) were satisfactory. Concurrent validity was supported by the Hospital Anxiety and Depression Scale (with anxiety r=0.511 and depression r=0.425) (16).

2. WHO-QOL-BREF

The WHO-QOL-BREF is a self-report questionnaire with 26 items (with a 5-point Likert-type scale) that assesses the broad domains, such as physical health, psychological health, social relationships, and examines the living environment in adults over 18. The WHO-QOL-BREF is a shorter version of the original tool that may be more convenient for use in large research studies or clinical trials. The WHO-QOL BREF has good internal consistency. Convergent validity between the WHO-QOL BREF and the Beck Depression Inventory (BDI) was statistically significant. In contrast, psychometrically, the WHO-QOL BREF seems to be a valid and reliable instrument to measure the QOL in general population (17). Yousefy *et al* reported that the Iranian version of the WHO-QOL-BREF domain scores demonstrated suitable internal reliability as well as criterion and discriminative validity. The physical health domain contributed most to the overall QOL, while the environment domain made the least contribution. Factor analysis provided evidence for construct validity of the 4-factor model of the tool. The scores of all domains discriminated between patients and normal persons; therefore, it has adequate psychometric properties and is an adequate measure for evaluating the QOL at the domain level in an adult Iranian population (18).

3. $DASS_{21}$ (Depression, Anxiety and Stress Scale)

This questionnaire consists of 21 items, with questions 3, 5, 10, 13, 16, 17, and 21 forming the depression sub-scale, questions 2, 4, 7, 9, 15, 19, and 20 the anxiety sub-scale, and questions 1, 6, 8, 11, 12, 14, and 18 the stress sub-scale. The DASS-21 has been confirmed to be a reliable and valid measure in assessing mental health in various general populations (19,20). The Persian version of DASS-21 was found to have commendable psychometric properties. It is reliable, valid, and easy to administer. Also, its utility by clinicians will enhance the diagnosis of depression, anxiety, and stress in general population (21).

4. Symptom Checklist-90-Revision (SCL-90-R)

SCL-90-R is a self-administered symptom questionnaire designed by Derogatis *et al* and has a standard Iranian version that could be used in this study. The Symptom Checklist consists of 90 items, which were divided into 9 symptom domains, including somatization, Obsessive-Compulsive Disorder (OCD), interpersonal sensitivity, anxiety, depression, phobic anxiety, hostility, paranoid ideation, and psychoticism. Each item contains one of the psychological symptoms for which a Likert spectrum is used, with values from 0 (no problem) to 4 (very serious) to describe the extent of the symptoms that individuals had experienced during the last two weeks. In this study, the Persian version of the Symptom Checklist had a Cronbach's alpha reliability of 0.95 and a split-half reliability of 0.88 (22).

Procedures

In a randomized and quasi-experimental clinical trial, from among patients in Ziaeian Hospital, 60 participants with COVID-19 were selected from the infectious ward. According to valid references, in experimental and quasi-experimental designs, the minimum sample size is 30 individuals. For this study, 30 individuals were selected for each group. All the eligible participants were assigned a code, and then individuals were randomly divided into two groups, the experimental and control groups, based on a table of random numbers. Pre-assessment and post-assessment measured changes in mental illnesses symptoms, QOL, and fear of COVID-19. This design is well-documented in clinical and counseling literature of evaluating the effects of behavioral interventions and change over time (23).

Before the study, the researchers provided an explanation of the goals and methods. All the participants were fully included in the study with personal consent, were free to leave the study at any stage, and were ensured that the data collected remained confidential, hence the names of the participants were not listed in the results. Written informed consent and assent were obtained from

the participants. In this study, the patients were blinded to treatment assignment, but those delivering treatment were not. We assessed the outcomes through questionnaires and interviews, and the assessor had no involvement in evaluating the results. Experimental group received the cognitive-behavioral package, while those in the control group only received standard individual psychotherapy. The control group was included for individual psychotherapy, in which, in the initial phase, diagnosed patients underwent an assessment to identify their interpersonal issues, and treatment goals were clarified. A therapeutic contract was formed with the patients, and in the intermediate phase, if needed, monitoring the illness indicators was conducted with a focus on ongoing psychopharmacological treatment. Assistance was provided to the patient in discussing topics related to the identified issue, exploring the patients' emotional relationship with interpersonal problems, promotion of interpersonal relationship, strategies to avoid negative thoughts and expansion of interpersonal problem-solving strategies (24). Both groups were evaluated before and after intervention. These evaluations also focused on cognitive-behavioral issues and harm reduction for underlying factors contributing to COVID-19, such as communication with family members, depending on the unique situation of each client. Six participants in the experimental and six in the control group dropped out of the study, and the remaining participants all responded to questions promptly before and after the treatment.

Data were collected from both groups at the beginning of the study and after the final session (eighth session) of the therapy. The final stage was conducted approximately two months after the intervention was completed.

Data analysis

Data analysis was done for all the participants who filled out both pretest and posttest (48 participants). Changes in primary and secondary outcomes after the intervention were compared between groups using ANCOVA (with adjustment for baseline values). In addition, the level of statistical significance was set at $p<0.05$. Also, the normality of data distribution was checked. Data are presented as number, percent,

Table 2. Socio-demographic data of the patients with COVID-19 in each experimental and control group

Sociodemographic variables	Experimental group n (%)	Control group n (%)	p-value
Gender			
Male	6 (20%)	8 (26.7%)	0.090
Female	24 (80%)	22 (73.3%)	
Age (M±SD)	40.1±11.7	45.1	0.131
Age (range)	27–60 years	20-60 years	
Marital status			
Single	13 (54.2%)	7 (29.2%)	0.070
Married	11 (45.8%)	17 (70.8%)	
Having a child			
Yes	12 (50%)	18 (75%)	0.081
No	12 (50%)	6 (25%)	
Education			
Diploma or lower	6 (25.0%)	9 (37.5%)	
Bachelor	17 (70.8%)	9 (37.5%)	0.053
MSc or higher	1 (4.2%)	6 (25%)	

mean and SD. We utilized the SPSS 24 (IBM Corp., Armonk, New York, USA), to analyze descriptive and inferential data.

Ethical Considerations

This project was approved by Tehran University of Medical Sciences (IR.TUMS.VCR.REC.1399.335), and IRCT (Iranian Registry of Clinical Trials) approved the study procedures (IRCT20200509047360N1) on May 16, 2020. All the participants were informed about the study's objectives and all provided the informed consent.

Results

In this study, women accounted for 80% of the experimental group and 73.3% of the control group. The overall mean age of the patients with COVID-19 was 42.5±11.8 years. The participants' age ranged from 20 to 60 years. Chi square or independent t test were used to compare the clinical characteristics and demographic data of the experimental and control group. The results showed no significant difference between the two groups in gender, age, marital status, and other demographic features (p>0.05, Table 2).

All the patients completed the questionnaire without data leakage. The average scores of QOL, $DASS_{21,}$ and SCL-90 for both experimental and control groups before and after intervention are reported in Table 3. Before intervention, there was no significant difference between the mean scores of SCL-90, $DASS_{21}$ and WHO-QOL-BRIEF between the two groups (p>0.05) (Table 3). However, the independent t test demonstrated that there were significant differences between groups in the average score of SCL-90, $DASS_{21}$ and WHO-QOL-BRIEF after intervention (p<0.05) (Table 3). Indeed, compared with the control group, the experimental group had reduced fear of COVID-19, depression, anxiety level, and stress, and their QOL improved after eight intervention sessions (Table 3).

The results of ANCOVA showed significant differences between the intervention and control groups in terms of fear of COVID19, QOL, depression, anxiety, and stress in the post-test stage (p<0.05) (partial eta square= 0.55, 0.2, 0.25, 0.3, 0.42 and 0.31 for fear of COVID19, depression, anxiety, stress, QOL and mental health, respectively). Therefore, our CBT could improve the health-related QOL of patients with COVID-19 (Table 4).

Table 3. Mean (SD) scores of $DASS_{21}$, QOL (quality of Life), and SCL-90 between intervention and control groups before and after intervention

Variables Groups			Intervention group (n=24)	Control group (n=24)	p-value
Fear of COVID-19		Pre	25.7±8.6	27.8±8.2	0.381
		Post	13.3±3.5	22.6±4.3	0.011
$DASS_{21}$	Depression	Pre	13.3±2.7	15.2±4.1	0.060
		Post	8.7±2.1	10.6±3.6	0.030
	Anxiety	Pre	16.5±5.7	14.7±2.8	0.201
		Post	7.9±2.7	10.9±3.3	0.011
	Stress	Pre	16.3±3.3	15.1±3.9	0.220
		Post	7.8±3.5	10.3±3.3	0.011
Total score of QOL		Pre	81.1±6.8	84.5±9.3	0.131
		Post	95.6±8.2	90.3±3.5	0.040
Total score of SCL-90		Pre	31.7±14.9	23.6±18.9	0.101
		Post	6.9±10.3	15.1±5.3	0.030

Table 4. Results of analysis of covariance (ANCOVA) on mean scores of fear of COVID19, depression, anxiety, stress, and quality of life, and mental health in posttest

Variables	Stages	Sum of squares	df	Mean squares	F	p-value	Partial eta square	Power
Fear of COVID-19	Pretest score	22.8	1	22.8	1.3	0.240	0.1	0.20
	grouping	793.9	1	793.1	47.6	<0.001	0.55	0.95
	error	649.5	39	16.6				
	total	17330	48					
Depression	Pretest score	0.03	1	0.03	0.04	0.901	0.01	0.05
	grouping	50.95	1	50.95	6.5	0.010	0.2	0.70
	error	305.5	39	7.8				
	total	4939	38					
Anxiety	Pretest score	12.7	1	12.7	1.4	0.230	0.03	0.20
	grouping	96.1	1	96.1	11.13	0.002	0.25	0.90
	error	336.35	39	8.62				
	total	4876	48					
Stress	Pretest score	39.6	1	39.6	4.1	0.060	0.11	0.59
	grouping	116.24	1	116.24	15.1	<0.001	0.3	0.96
	error	301.1	39	7.7				
	total	4615	48					
Quality of life	Pretest score	361.5	1	361.5	2.3	0.080	0.17	0.78
	grouping	1314.7	1	1314.7	28.9	<0.001	0.42	0.98
	error	17.68.6	39	45.3				
	total	419172	48					
Mental health	Pretest score	494.1	1	494.1	4.3	0.061	0.1	0.53
	grouping	1977.3	1	1977.3	17.44	<0.001	0.31	0.98
	error	4419.8	39	113.32				
	total	14500	48					

Discussion

This study assessed a therapeutic psychological session (eight sessions) for patients with COVID-19. The purpose of this study was to investigate the effects of cognitive-behavioral intervention in patients with COVID-19. The results showed that the proposed intervention package was an effective means to reduce anxiety, depression, stress, fear of COVID-19, and to improve QOL of these patients.

Taylor *et al* reported that the psychological effects of COVID-19 are likely to be more substantial than the medical effects. Their results represented that 38% of the participants experienced some degree of distress, and an additional 16% were highly distressed and likely in need of mental health services (25). Our study found that CBT could affect the QOL in patients with COVID-19. Previous studies have shown the

impact of this technique on QOL and found that crisis intervention can reduce complications and improve QOL (26,27). Seyedi *et al* also suggested that relaxation therapy can reduce fatigue and improve sleep quality in patients with COPD (28). The reason for the decrease in depression, anxiety, and stress of patients with COVID-19 after intervention may be the balance between the anterior and hypothalamic nucleus. By reducing the activity of the sympathetic nervous system, side effects of stress and anxiety can be prevented and physical and mental relaxation can be increased (29). Similar to other studies, patients in this study achieved relaxation by learning how to regularly tighten and relax muscles. Also, using positive mental imagery, they were able to change their mind and identify symptoms of stress. Considering the negative emotional effects of this disease, effective and even short-term psychological interventions for patients with this disease can prevent chronic mental illness and may also prevent disease in the patient's entourage.

To our knowledge, this study was the first to examine the efficacy of this package intervention for COVID-19 patients with psychological distress. However, more studies should be conducted with a larger sample size to increase the generalizability of the results. Although the efficacy of this method has been confirmed in addiction studies, suicide prevention, and natural disasters (15,30-33), this study was the first to use this method in patients with COVID-19.

Based on the previous studies, patients experience acute anxiety and stress after the onset of COVID-19 and the onset of symptoms due to the unknown nature of the disease, which can sometimes lead to depression and lifestyle changes (34). Lifestyle is also effective in causing psychological problems (35-37). To conclude, this intervention helps to reduce anxiety and stress among patients by teaching anxiety and depression reduction skills in the second and third sessions (relaxation training), which can lead to increased patient resilience in the face of COVID-19, and ultimately reducing patient anxiety. In the fourth and sixth sessions, an attempt was made to encourage patients to learn a lifestyle change technique and problem-solving skills to improve their QOL. Finally, given the significant reduction in stress and depression after intervention, it can be concluded that reducing the scores of these two components (stress and anxiety) will eventually lead to further reduction of depression and lifestyle changes.

In this study, relaxation programming (third session) focused on the deep breathing and positive mental imagery. Relaxation programming can improve blood pressure and the oxygen supply in the brain, enhance the excitableness of the cortex, and reinforce the flexibility of the central nervous system, which would promote the functioning of the human body and psychological adaptability. Therefore, relaxation intervention has several potential benefits over COVID-19 treatment programs.

Another benefit of CBT for patients with COVID-19 is the possibility of creating social connections between patients and therapists, as many of them are likely to be socially withdrawn. People who suffer from COVID-19, whether they like it or not, are socially isolated; therefore, they are unable to manage their lives due to their negative emotions, thus they have to spend less time with their friends and family and their social activities decrease. As the disease progresses, their isolation continues, therefore CBT can provide an opportunity for these individuals to move out of social isolation and improve the quality of their social relationships. Furthermore, during the treatment, the participants could improve their ability to communicate with others in a social environment. Hence, they were able to manage their fear of COVID-19 and improve their social interactions over time.

After this outbreak period is over, we, as psychiatrists or psychologists, may be faced with a huge number of exaggerated cases of mental illnesses, such as anxiety, depression, or OCD. Thus, psychiatrists should expect that after the COVID-19 outbreak, an important part of our patient population would be patients with anxiety, although they were showing moderate clinical presentation before this outbreak (38). Therefore, CBT is an easy method to improve the mental status of patients with COVID-19, but it does not require a special time and place or special technology and equipment. Psychotherapy of patients with COVID-19 can reduce the negative psychological effects of this disease. Doing so will help people in immediate need of psychological

support and assist to plan multipronged mitigation strategies for the future (39).

Strength

This study has prepared a key experimental component of the CBT and helped expand empirically-based treatment plans that would suit the participants' real needs. By doing so, it confirmed that the successful remedy not only explains the fear of COVID-19 symptoms but also helps patients reduce their anxiety, depression, or any mental disorder and improves their social relationships and QOL.

Limitations

The results of the present study should be interpreted in light of several limitations. First, the limitations of our study were the confounder variables, such as individual differences and psychological conditions of the participants, socioeconomic status, cultural factors of participants, the influence of cultural factors on the individual status, and the patient's attention during the hospital stay. Second, the study period of two months was comparatively short for efficacy appraisal. Taken together, the results of the present study need to be stabilized in further studies that resolve those limitations. Third, due to the need for intervention, mental health promotion and the use of the results of this study, it was not possible to perform the follow-up phase, but the main purpose of this intervention was to improve mental health during the disease (eight weeks) and not after the disease.

Conclusion

The principal conclusion of this study is that CBT is an impressive treatment to improve QOL and reduce fear of COVID-19. Since the patients with COVID-19 also had serious mental health problems, such as loneliness, low self-esteem, anxiousness, and depression, according to the results of this study, CBT has a positive effect on improving QOL and reducing depression, anxiety, and stress in patients with COVID-19. In this study, the behavioral package focused on modifying the individual's thoughts, life style, mental health, cognitive errors, emotion regulation, and problem-solving. Relaxation therapy and stress management may also be related to the positive outcomes of this study. Based on the results of this study, it is recommended that this treatment package be taught to the caregivers, psychologists, and psychiatrists and be compared with other psychological therapies. Suggestions for further research include investigating the long-term effects of the model with a larger participant population.

Conflict of Interest

None.

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