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Original Article

A Comparison between the Effectiveness of Cognitive-behavioral Therapy and a Combination of Cognitive-behavioral Therapy and Medication in Patients With Improved Panic Attacks from the Covid-19

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Abstract

Background and Objective: Cognitive-Behavioral Therapy (CBT) is used as one of the main treatments for panic disorder, yet fewer people with panic disorder receive medication-based treatment. The present study aimed to determine the difference between the effectiveness of cognitive-behavioral therapy and a combination of cognitive-behavioral therapy and medication in patients with panic attacks who have recovered from Covid-19 in Ramsar, Iran.

Materials and Methods: This quasi-experimental study was conducted based on a pre-test and post-test design with a control group. The statistical population included patients who were referred to hospitals and medical centers in Ramsar in 2022. A total of 30 cases were randomly selected using the Albanian Panic and Phobia Questionnaire and structural clinical interview. One group received 12 sessions of CBT, one group received a, and the other group received no training. The obtained data were analyzed using the statistical methods of univariate and multivariate analysis of covariance.

Results: Based on the results, there was a significant difference in the post-test between the CBT and control groups (P<0.001). Moreover, the group receiving a combination of medication and CBT differed significantly from the control group in the post-test (P<0.001). The results of the post hoc test demonstrated that the effectiveness of the combination of CBT and medication was significantly higher than that of the CBT and the control group (P<0.001).

Conclusions: As evidenced by the results of this study, combined CBT and medication in the short term effectively improved and reduced panic symptoms in patients with panic disorder.

Keywords: Cognitive-Behavioral Therapy (CBT), Covid-19, Medication, Panic

Background

In December 2019, in Wuhan, China, COVID-19, caused by SARS1-COV-2, was diagnosed. This virus caused pneumonia disease throughout China that is spreading worldwide [1] .There is a positive relationship between the prevalence and mortality rate of this virus, which has been reported to vary from 2%-3% [2]. This disease affects the respiratory system and lasts several days [3]. The lack of any definitive treatment or prevention and the prediction of some epidemiologists that at least 60% of the population is suffering from this disease has caused a lot of stress and concern in societies [4].

Epidemic diseases are a daunting challenge to public health; in fact, they are the anchors by which fear and panic become inseparable human responses [5]. Panic disorder can be considered a common mental disorder in the population, affecting about 5% of the population [6]. It is known as one of the anxiety disorders caused by frequent and sudden attacks of fear and anxiety [7]. The symptoms of panic disorder include heart palpitations, sweating, shortness of breath, chest tightness, fear of losing control, and fear of death [8]. Panic disorder is associated with great discomfort in professional and social life, exerting negative effects on the general quality of life [9]. Three types of interventions are recommended for the treatment of people with this disorder.

Psychological treatment is followed by drug treatment

and self-help. In cognitive behavioral therapy, it is assumed that basic cognitions differ specifically according to the client's behavioral disorder; that is, different injuries are related to different cognitive content [10]. Pharmacological treatments are used in combination. Selective serotonin reuptake inhibitors (SSRIs) have been recommended as the first line of pharmacological treatment and benzodiazepines [11]. Research findings provide promising preliminary evidence for the feasibility and acceptability of Internet-based intensive cognitive behavioral therapy (CBT) for panic disorder or agoraphobia [12]. Moreover, other studies pointed to the reduction of panic symptoms with CBT treatment [13].

Objectives

The current research aimed to determine the difference between the effectiveness of cognitive-behavioral therapy and a combination of cognitive-behavioral therapy and medication in patients with panic attacks who have recovered from Covid-19.

Materials and Methods

The current research was conducted based on a pre-test-post-test design with a control group in Ramsar in 2022. It has the code of ethics number IR.IAU.TON.REC.1401.017. The statistical population of the current research included all patients with panic attacks who recovered from Covis-19 in service and treatment centers and hospitals in Ramsar from September 2022 to December 2022. According to Cohen's Table, the research sample included 30 patients with panic attacks who recovered from Corona. The patients were examined using the Albanian Panic and Phobia Questionnaire and a structured interview. They were then assigned to three groups of 10 cases (treatment, cognitive behavioral therapy with medication, and the control group) using a simple random sampling method based on the inclusion and exclusion criteria and obtaining the informed consent of the participants. The inclusion criteria were as follows: participation of both men and women with panic disorder who suffer from this disorder in service and treatment centers, the age range of 15-50 years, and willingness to participate in the research and receive cognitive-behavioral therapy or medication. On the other hand, the exclusion criteria entailed participants' unwillingness to continue cooperation in each stage of the study and receiving unfavorable results.

Research instruments

1) Albanian Panic Questionnaire: This 27-item questionnaire was developed by Barlow and Zinbark in 1996 to measure social phobia, fear of crowded places, and inner fear [14]. The content validity of these subscales was evaluated by three clinical experts using a five-point scale, and it was suitable for all three subscales [14]. Test-retest reliability coefficients for the subscales of fear of crowded places, inner fear, and social phobia scale are 0.80, 0.82, and 0.79, respectively [14].

2) Medication: Paroxetine drug treatment with a dose of (20-60) with alprazolam, sertraline (50-100) with alprazolam, citalopram (10-20) with alprazolam, imipramine (75-200) with alprazolam or clomi-pramine (200 -75) along with alprazolam, which was prescribed by a psychiatrist. The intervention used in this research was cognitive-behavioral therapy. The research process was explained to the participants, and they were assigned to two intervention groups and one control group. The meeting protocol is briefly explained in Table (1). The method of data analysis from several variables was used, and the Imatrix command was used to check the effect size of each group.

Table 1. Description of cognitive-behavioral interventions

section	Program
1	Identifying patterns of anxiety and specific antecedents of Peter Lang's three system model & Introspection of fear and anxiety
2	Description of the underlying physiology of fear, anxiety, and panic, teaching the concepts of excessive ringing and conditioning of internal sheets, presentation of the substitute conceptual model
3	Abdominal breathing training, teaching the physiological basics of breathing, Correcting misinterpretations of the dangers of overbreathing, and providing information to challenge these misinterpretations
4	Abdominal breathing exercises within the session, cognitive reconstruction
5	Application of breathing control technique, cognitive reconstruction training to the second cognitive error, catastrophizing, coping and challenging, de-catastrophizing
6	Contextualization of confrontation with internal sheets, the logic of dealing with internal sheets, preparation of confrontation hierarchy
7	Review breathing control, confronting the sheets of frequent inner feelings, Hypothesis testing
8	Continuation of hypothesis testing, examining and identifying types and forms of avoidance in confrontation exercises, evaluating the probability of avoidance
9	Confronting at least three times with two items of the prepared hierarchy list, continuing to face the sheets of inner feelings in natural situations or activities, hypothesis testing, strengthening self-reflection, and cognitive challenge
11	Starting to face fearful and avoidable transitory situations, identifying the underlying false assumptions that lead to avoidance
12	Participating a significant other in treatment, doing the first practice of live confrontation, the logic of the treatment is explained to the individual, the importance of their cooperation in doing homework, formation of the family problem-solving team
12 to 15	Therapist's feedback in the form of cognitive reconstruction and correcting the participant's role, determination of live confrontation assignments for the next week

Results

The findings of the present research first provide information about descriptive data, such as numbers, mean, and standard deviation. Thereafter, in the second part, appropriate tests were used to assess each hypothesis. In this research, data were analyzed in SPSS software (version 26) using univariate and multivariate analysis of covariance, as well as the Shapiro-Wilk test for the normality of the data (Table 2).

In Table 3, in order to check the hypothesis of multivariate covariance, we need the results of the homogeneity of the regression coefficients, which were checked through the interaction of the pre-test with the grouping variable on the dependent variable. The slope of the regression line of the total score of the panic attacks variable was obtained in the post-test stage, which was not significant at the 0.05 level. According to the results of the multivariate statistics of Wilks's lambda, the components of panic attacks in the post-test stage are not significant at the 95% confidence level. Therefore, the assumption of homogeneity of regression coefficients is maintained. Due to the assumption of regression line slope, we are allowed to use univariate covariance analysis and multivariate covariance analysis. In order to test the homogeneity of variances (Table 4) in three groups, Levin's test was used. The results of Levin's test are not significant for the variable of panic attacks and its components in the post-test stage. Therefore, the condition of homogeneity of inter-group variances has been met for all variables of panic attacks and its components in the post-test stage, and no difference was observed between them.

Table 2. Descriptive indices of research variables by treatment and control groups (n=30)

Level		Pre-test stag				Post-test stage			
variable	Group	average	SD	SW statistic	p	average	SD	SW statistic	p
panic attacks	CBT	141.30	16.26	0.890	0.168	91.30	11.34	0.915	0.315
	Combination of CBT and medication	153.90	8.19	0.928	0.424	51.50	5.12	0.968	0.874
	control	154	7.42	0.969	0.885	148.10	5.97	0.944	0.593
Social anxiety	CBT	53.60	8.01	0.886	0.152	36.80	6.89	0. 925	0.398
	Combination of CBT and medication	57.80	4.44	0.914	0.309	18.50	3.43	0.957	0.747
	control	59.30	4.39	0.933	0.481	56.30	6.44	0.857	0.073
Fear of crowded places	CBT	48.80	7.72	0.971	0.904	29.30	4.94	0.860	0.075
	Combination of CBT and medication	51.40	3.71	0.931	0.455	17.30	3.88	0.961	0801
	control	51	4.98	0.926	0.414	50.30	3.36	0.941	0.562
Inner fear	CBT	38.90	4.74	0.921	0.369	25.20	2.97	0.828	0.032
	Combination of CBT and medication	44.70	4.64	0.899	0.213	15.70	3.19	0.971	0.903
	control	43.70	4.49	0.977	0.944	41.50	4.27	0.901	0.226

SW: Shapiro-Wilk test

Table 3. Examining the homogeneity of the regression slope for multivariate covariance analysis of the components of panic attacks in the post-test stage

Variable	Component	Wilks's lambda	df	df	F	sig
panic attacks	Social anxiety	0.663	6	32	1.217	0.323
	Fear of crowded places	0.634	6	32	1.364	0.259
	Inner fear	0.538	6	32	1.936	0.105

Table 4. The results of Levin's test regarding the assumption of homogeneity of variances of three groups in the variable of panic attacks and its components in the post-test stage.

Variable	df1	df2	F	sig
panic attacks	2	27	1.115	0.343
Social anxiety	2	27	0/567	0/574
Fear of crowded places	2	27	0/069	0/933
Inner fear	2	27	1/664	0/208

In order to investigate the difference between the cognitive-behavioral therapy and the control group in the variable of panic attacks and its components, Table 5 demonstrates the results of the comparison of the average scores of the cognitive-behavioral therapy and the control group in the post-test stage based on the Bonferroni post hoc test. The results indicated that the adjusted mean difference of the cognitive-behavioral therapy with the control group in the post-test stage in the variables was significant. Therefore, it can be stated that there is a significant difference between the effectiveness of cognitive-behavioral therapy and control in the variable of panic attacks. Therefore, cognitive-behavioral therapy is effective in improving panic attacks in patients who have recovered from Covid-19.

In order to investigate the difference between the combination of cognitive-behavioral therapy and medication group and the control group in the variable of panic attacks and its components, Table 6 illustrates the results of the comparison of the adjusted mean scores of the combination of cognitive-behavioral therapy and medication group with the control group in the post-test stage based on Bonferroni's post hoc test. The results indicated that the group combining cognitive-behavioral and medication differed significantly from the control group in the adjusted mean difference in the post-test stage. In addition, the effect size of panic attacks and components of social phobia, fear of crowded places, and inner fear were obtained, illustrating a marked difference between a combination of cognitive-behavioral therapy and medication group and the control group. Therefore, it can be argued that there is a significant difference between the effectiveness of combined cognitive-behavioral and pharma-cological treatment and evidence in the variable of panic attacks.

In order to examine the difference between the cognitive-behavioral therapy and the combined cognitive-behavioral and medication group in the components of panic attacks, Table 7 displays the results of the comparison of the adjusted mean scores of the cognitive-behavioral therapy group and the combined cognitive-behavioral and drug therapy group in the post-test stage based on the post-test Bonferroni.

Table 5. Examining the differences between CBT and control in panic attacks and its components

Component	Group	Adjusted mean	Mean difference	SE	Effect size	Significance level
Panic attacks	CBT	92.874	-54.430*	3.886	0.883	<0.001
	control	147.304				
Social anxiety	CBT	37.260	-19.085*	2.999	0.628	<0.001
	control	56.345				
Fear of crowded places	CBT	30.053	-19.785*	2.165	0.777	<0.001
	control	49.837				
Inner fear	CBT	26.158	-14.864*	1.745	0.752	<0.001
	control	41.022				

*P<0.001

Table 6. Examining the differences between a combination of CBT and medication and control in panic attacks and its components

component	group	Adjusted mean	mean difference	standard error	effect size	significance level
panic attacks	Combined treatment	50.722	-96.581*	3.502	0.967	<0.001
	control	147.304				
Social anxiety	Combined treatment	17.995	-38.350*	2.653	0.897	<0.001
	control	56.345				
Fear of crowded places	Combined treatment	17.010	-32.827*	1.915	0.924	<0.001
	control	49.837				
Inner fear	Combined treatment	15.220	-25.802*	1.544	0.921	<0.001
	control	41.022				

*P<0.001

Table 7. Examination of differences between CBT and combined CBT and medication in panic attacks and its components

component	group	Adjusted mean	mean difference	standard error	effect size	significance level
panic attacks	CBT	92/874	42/151*	3/881	0/819	<0/001
	Combined treatment	50/722				
Social anxiety	CBT	37/260	19/265*	3/022	0/629	<0/001
	Combined treatment	17/995				
Fear of crowded places	CBT	30.053	13.043*	2.182	0.598	<0.001
	Combined treatment	17.010				
Inner fear	CBT	26.158	10.937*	1.758	0.617	<0.001
	Combined treatment	1.5.220				

*P<0.001

As displayed in Table 7, the adjusted mean of the cognitive behavioral therapy group with the combination of cognitive behavioral therapy and medication in the post-test stage in the variables are significantly different. The effect size of panic attacks and components of social phobia, fear of crowded places, and internal fear were obtained, pointing to a marked difference between the cognitive behavioral therapy group and the combination of cognitive-behavioral therapy and medication in the community.

Discussion

A wide array of studies demonstrated that Covid-19 can cause mental disorders all over the world [15], and many investigations have been conducted regarding the treatment of these disorders [16]; nonetheless, the effectiveness of these treatments is still open to debate. Consequently, the present study aimed to compare the effectiveness of cognitive-behavioral therapy with the combination of cognitive-behavioral therapy and medication in patients with panic attacks who have recovered from Covid-19. This research demonstrated that combined cognitive-behavioral and medication effectively improve panic attacks in patients who have recovered from Covid-19.

The results of the studies by Totzek et al. [17], Baker et al. [13], and Malekshahi & Biravand [18] have pointed to a significant association between cognitive-behavioral therapy and panic attacks. In this regard, the study by Mohamadian et al. [19] showed the effectiveness of a combination of cognitive-behavioral therapy and medication in panic attacks. A study has been conducted on the effectiveness of cognitive-behavioral therapy in the reduction of anxiety, stress, and panic attacks in patients with mitral valve prolapse. The results showcased that cognitive-behavioral therapy reduces anxiety and panic in patients with mitral valve disease. It has visible performance; therefore, it is recommended for patients with mitral valve prolapse to use cognitive-behavioral therapy as a medication in addition to medication [20]. The results suggested that the most effective treatment methods were cognitive-behavioral, integrated, pharmacological, and cognitive, and in the normal state, they are in destructive, behavioral-cognitive, and cognitive treatments [21]. Moreover, other research findings provide promising preliminary evidence for the feasibility and acceptability of Internet-based CBT to prevent panic or agoraphobia [13].

Therefore, it can be stated that people who undergo a combination of cognitive-behavioral therapy and medication for their panic attacks show better results and are treated faster. Their physical symptoms can be quickly reduced by drug therapy, and on the other hand, cognitive behavioral therapy can affect their false beliefs and help reduce symptoms with proper breathing training during an attack [22]. The limitation of the current research is that research was carried out at the same time as the outbreak of the Coronavirus, which prevented the questionnaires from being administered face-to-face in treatment environments, and the questionnaires were administered electronically. Moreover, the number of patients with panic disorder who recovered from Covid-19 was limited. The results of this research can be widely used in the pre-management of the treatment of mental disorders; nonetheless, further research is needed to assess the effectiveness of the treatments and compare the treatments with each other.

Conclusions

Finally, the obtained findings indicated that the clients who underwent combined cognitive-behavioral therapy and medication showed a significant difference in reducing physical and psychological symptoms compared to cognitive-behavioral therapy alone. Each treatment method used in this research has been effective to some extent in the symptoms of panic attacks in their

own dimension; therefore, effective treatments for people's panic attacks should simultaneously target the psychophysiological dimension. These findings are important in terms of pre-management of treatment and improvement of treatment quality.

Compliance with ethical guidelines
Following ethical guidance, written consent was obtained from the participants. Ethical number: IR.IAU.TON.REC.1401.017

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This article was extracted from a master's thesis of the first author, and all the authors participated in the preparation of this article.

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Conflicts of Interest
The authors declare no conflict of interest.

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