ORIGINAL ARTICLE

Journal of Emergency Health Care. 2025;14(1): 40
https://doi.org/10.22034/jehc.14.1.40

The Effectiveness of Cognitive Behavioral Therapy in Reducing Stress and Anxiety in Hospitalized Patients

Negin Nikkar[1], Somayeh Babu Azami[2], Nasim Torabi[3]

[1]*Master of Clinical Psychology, Islamic Azad University of Isfahan (Khorasgan) Branch, Isfahan, Iran.*
[2]*Master of Psychology, Islamic Azad University of Sari, Mazandaran, Iran.*
[3]*Master of Personality Psychology, Islamic Azad University, Sciences and Research Branch, Tehran, Iran.*

Article history:

Received: 20 May 2025
Accepted: 28 Jul 2025
Available online: 5 Aug 2025

Keywords:

Cognitive Behavioral Therapy (CBT)
Stress
Anxiety
Hospitalized Patients

Abstract

Purpose: The present study aims to investigate the effectiveness of cognitive behavioral therapy (CBT) in reducing stress and anxiety in hospitalized patients.
Methods: The research method is semi-experimental and pre-test-post-test design with a control group. The statistical population consists of patients hospitalized in Tehran hospitals. 30 people were selected using the convenience method and randomly assigned to two groups (15 people in the experimental group and 15 people in the control group). Research data were collected through the Lavibond and Lavibond (1995) Depression, Anxiety, and Stress Questionnaire. Cognitive behavioral therapy was administered by the researcher in 8 sessions for 4 weeks, two sessions per week, each session lasting 60 minutes, for the experimental group. The control group did not receive any intervention during this period. The test results were calculated using SPSS software.
Results: The findings of the study indicate that cognitive behavioral therapy has an effect on the level of stress in hospitalized patients and significantly reduces it. Also, cognitive behavioral therapy has an effect on the anxiety of hospitalized patients and significantly reduces it.
Conclusion: Cognitive behavioral therapy helps patients become more aware of their behaviors, emotions, and problems, and to regulate and manage their behaviors, they pay attention to targeted programs based on cognition and thinking, as well as directing their behavior to reduce stress and existential anxiety.

Cite this article as: Nikkar N , Babu Azami S, Torabi N. The Effectiveness of Cognitive Behavioral Therapy in Reducing Stress and Anxiety in Hospitalized Patients. J Emerg Health Care. 2025;14(1):40. https://doi.org/10.22034/jehc.14.1.40.

Introduction

Stress and anxiety are completely normal human responses to threatening or worrying situations. Anxiety is an automatic neurophysiological state of alertness characterized by a fight-or-flight response to the cognitive appraisal of current or imminent danger (real or perceived) (1). Anxiety is related to fear and appears as a prospective mood state that involves a complex cognitive, emotional, physiological, and behavioral response system formed by preparation for anticipated events or situations perceived as threatening (2). Anxiety is one of the most common psychiatric disorders, but its true prevalence is unknown because many people do not seek help or doctors fail to diagnose (3).

Anxiety disorders appear to result from the interaction of bio-psychosocial factors. Genetic vulnerability interacts with situations that are stressful or traumatic to produce clinically significant syndromes. Stress is a dynamic and exciting state in which an individual is faced with an unusual opportunity, constraint, or demand and exhibits emotional, physical,

Correspondence:
Negin Nikkar. Master of Clinical Psychology, Islamic Azad University of Isfahan (Khorasgan) Branch, Isfahan.
E-mail: negin.nikkar1@gmail.com

This work is licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) which allows users to read, copy, distribute and make derivative works for non-commercial purposes from the material, as long as the author of the original work is cited properly.

[Downloaded from mail.intjmi.com on 2026-11-19]

[DOI: 10.22034/jehc.14.1.40]

and cognitive reactions (4). Stress is an individual's response to an external event that is perceived to be beyond the individual's capacity to control. Any physical or psychological stimulus that disrupts homeostasis leads to a stress response. The stimuli are called stressors, and the physiological and behavioral changes in response to exposure to the stressors constitute the stress response (5).

There's a fine line between stress and anxiety. Both are emotional reactions, but stress is usually triggered by an external trigger. The trigger can be short-term, like a work deadline or a fight with a loved one, or long-term, like being unable to work, discrimination, or chronic illness. People under stress experience mental and physical symptoms such as irritability, anger, fatigue, muscle pain, digestive problems, and difficulty sleeping (6). Anxiety, on the other hand, is defined by persistent and excessive worry that does not go away even in the absence of a stressor. Anxiety leads to a similar set of symptoms to stress: insomnia, difficulty concentrating, fatigue, muscle tension, and irritability (7).

In a situation where reaction to stressful events plays a significant role as a risk factor for hospitalized patients, cognitive behavioral therapy can be effective in reducing their stress and anxiety (8). Cognitive behavioral therapy is a combination of behavioral therapy and cognitive therapy theories and techniques that emphasizes increasing cognitive skills and reducing maladaptive cognitive activities, and also uses behavioral tasks to change behavior (9). In fact, this therapeutic approach is a system of psychotherapy that attempts to reduce self-destructive emotional and behavioral reactions by changing faulty thinking and maladaptive beliefs that underlie emotional reactions (10).

In cognitive behavioral therapy, the therapist takes an active role in solving the person's problems. He / she does not just nod wisely while the person bears all the burden of finding the answers that he or she brings to the treatment. The person begins treatment with a thorough diagnostic process that ensures that their needs and problems are accurately identified and addressed. This essential step, often omitted or reduced in traditional forms of treatment, results in a clear and understandable, flexible treatment approach that is truly tailored to the individual's needs (11). In many ways, cognitive behavioral therapy is similar to education, training, and tutoring. Under professional guidance, as a CBT client, the individual will be involved in setting treatment goals and also in determining the method that will be most effective for them personally (12).

Shakeri Nasab et al. (2022) presented a study titled "Comparison of the effectiveness of cognitive behavioral therapy and acceptance and commitment therapy on social self-efficacy in single-parent male adolescents." The results indicated the positive effectiveness of both cognitive behavioral therapy and acceptance and commitment therapy on social self-efficacy. Also, the effectiveness of acceptance and commitment therapy was greater than cognitive behavioral therapy both in the post-test and in the follow-up period. Accordingly, these two methods can be used to increase the social capabilities of single-parent sons and, while increasing social self-efficacy, prevent the occurrence of behavioral problems and social harms that threaten them (13).

Beigi et al. (2021) conducted a study comparing the effectiveness of positive cognitive behavioral therapy with cognitive behavioral therapy on mental well-being and resilience in adolescents with depressive symptoms. The results of the study showed that students' scores on subjective well-being and resilience at the post-test and follow-up stages were significantly higher in positive cognitive behavioral therapy compared to cognitive behavioral therapy and the control group. It seems that positive cognitive behavioral therapy may be more effective in strengthening positive functioning components. Further research is needed to clarify this issue (14).

In their study, Irani et al. (2021) examined the effect of cognitive behavioral therapy on depression, anxiety, and stress in people with cardiovascular disease after coronary artery bypass surgery. The results of the analysis of covariance between the two groups showed that after controlling for the pre-test effect, there was a significant difference between the post-test scores of the two groups in the variables of depression, anxiety, and stress; and after the intervention, the depression, anxiety, and stress scores of the experimental group decreased significantly compared to the control group. Therefore, in addition to medical interventions, cognitive behavioral therapy can be used for people with cardiovascular disease after coronary artery bypass surgery to reduce depression, anxiety, and stress and prevent disease recurrence (15).

Li et al. (2020) conducted a study to examine the effect of cognitive behavioral therapy on depression, anxiety, and stress in patients with COVID-19. According to the findings, significant reductions in the means for the depression, anxiety, stress, and total DASS-21 scales were observed in both the intervention and control groups, with participants in the intervention group having greater reductions in means. After the intervention, more participants in the intervention group than in the control group did not have symptoms of depression or anxiety, but no statistical difference was observed. Compared with participants with chronic illness, participants without chronic illness had a significant decrease in the DASS-21 total scale. Therefore, patients with COVID-19 experienced high

[Downloaded from mail.intjmi.com on 2026-11-19]

[DOI: 10.22034/jehc.14.1.40]

levels of anxiety, depression, and stress. The study results demonstrate the effectiveness of CBT in improving mental health in patients with COVID-19, and also suggest that CBT should be focused on patients with chronic illness and those who are hospitalized for longer periods of time. These results have important implications for clinical practice in improving mental health in the context of the COVID-19 pandemic (16).

Methods

The method of the present study is a semi-experimental pre-test-post-test design with a control group. The statistical population of this study includes hospitalized patients. Of these, 30 people were selected using a convenience method (non-generalizable) and based on demographic variables such as age, and randomly assigned to two groups (15 people in the experimental group and 15 people in the control group). The following questionnaires were used to collect information:

Depression Anxiety Stress Scales (DASS-21): This instrument was developed by Lavibond and Lavibond in 1995. This scale has two forms: "anxiety", "depression", and "stress". The short form has 21 items that assess each psychological construct using 7 different phrases. The response format is 4-choice. The response range varies from never to always. Scoring is from 0 to 3. In order to evaluate the psychometric properties of this scale, Lavibond and Lavibond (1995) administered it to a non-clinical sample of 2914 individuals. The reliability of this scale was found to be acceptable by Cronbach's alpha for the depression, anxiety, and stress subscales, 84%, 84%, and 91%, respectively. The validity of the depression, anxiety, and stress scales, using correlations with test scores administered simultaneously, was 78%, 62%, and 72%, respectively (17). In the study by Afzali et al. (2007), the calculated Cronbach's alpha for the anxiety scale was 98%, the depression scale was 84%, and the stress scale was 93% (18).

Cognitive behavioral therapy was administered by the researcher for 8 sessions over a period of 4 weeks, two sessions per week, each session lasting 60 minutes, to the experimental group. During this period, the control group did not receive any intervention. After the end of the sessions, the questionnaire questions were read to the subjects again as a post-test, raw scores were calculated and recorded, and finally, the results of the tests were calculated using SPSS software.

Results

Based on the descriptive findings, the dispersion and central tendency indices of the research variables are shown in Tables 1 and 2, separated by group and test type.

Table 1. Mean and standard deviation of variables before cognitive behavioral therapy in the two experimental and control groups

Variables	Mean (standard deviation) Experimental group	Mean (standard deviation) control group
Anxiety	(2.20)72.82	(2.80)73.35
Stress	(2.04)23.62	(1.70)22.42

The results show that the average anxiety and stress scores of hospitalized patients in the control and experimental groups are almost equal, and the results show that the experimental and control groups do not differ significantly from each other.

Table 2. Mean and standard deviation of variables after cognitive behavioral therapy in the two experimental and control groups

Variables	Mean (standard deviation) Experimental group	Mean (standard deviation) control group
Anxiety	(2.53)66.95	(4.00)72.92
Stress	(2.03)18.48	(1.17)22.82

The findings in the table show that the average scores of the variables in the experimental group are lower than those in the control group. In other words, cognitive behavioral therapy has reduced the average scores in the anxiety and stress variables of hospitalized patients, while no significant difference was observed in the control group.

The results of testing the first hypothesis that "cognitive behavioral therapy has an effect on stress levels" are presented as follows:

Table 3. Results of univariate analysis of covariance on pre-test-post-test scores of the patients' stress level variable

Source of changes	Sum of squares	Degree of freedom	Mean squares	F	Significance level
Pretest	19.00	1	19.00	7.00	0.05
Group	101.18	1	101.18	23.37	0.001
Error	95.85	27	2.63		
Total	208.01	30			

Based on the results obtained, after adjusting for pre-test scores, there is a significant effect on the between-group factor (F=33.37, P=0.001). The scores show that the average of the experimental group that was exposed to training has decreased significantly. Therefore, it can be concluded that cognitive behavioral therapy has an

[Downloaded from mail.intjmi.com on 2026-11-19]

[DOI: 10.22034/jehc.14.1.40]

effect on the level of stress in hospitalized patients and significantly increases it. Therefore, the first hypothesis of the study is confirmed.

The results of testing the second hypothesis, namely that "cognitive behavioral therapy has an effect on anxiety in hospitalized patients," are presented in Table 4.

Table 4. Results of univariate analysis of covariance on pre-test-post-test scores of patients' anxiety variable

Source of changes	Sum of squares	Degree of freedom	Mean squares	F	Significance level
Pretest	6.48	1	6.48	0.50	0.34
Group	126.49	1	126.49	14.33	0.001
Error	310.88	27	11.31		
Total	136416.23	30			

The results show that after adjusting for pre-test scores, there is a significant effect on the between-subjects factor (F=14.33, P=0.001). The scores show that the mean of the experimental group that was exposed to training decreased significantly. Therefore, it can be concluded that cognitive behavioral therapy has an effect on the anxiety of hospitalized patients and significantly increases it. Therefore, the second hypothesis of the study is confirmed.

Discussion

The aim of this study is to investigate the effectiveness of cognitive behavioral therapy (CBT) in reducing stress and anxiety in hospitalized patients. The results obtained from testing the hypotheses are as follows:

Cognitive behavioral therapy has an effect on the level of stress in hospitalized patients. The average of the experimental group that was exposed to the training has decreased significantly. Therefore, it can be concluded that cognitive behavioral therapy has an effect on the level of stress in hospitalized patients and significantly increases it (18, 19). Therefore, the first hypothesis of the study is confirmed.

Cognitive behavioral therapy has an effect on the level of anxiety in hospitalized patients. The average of the experimental group that was exposed to the training has decreased significantly. Therefore, it can be concluded that cognitive behavioral therapy has an effect on the anxiety of hospitalized patients and increases it significantly (18). Therefore, the second hypothesis of the study is confirmed.

Conclusion

Cognitive behavioral therapy places the person in their biological, social, and cultural context and teaches them how to live and think healthily, relying on principles and rules derived from psychology and other related sciences (12). Unlike other forms of behavioral therapy, cognitive-behavioral therapy deals directly with thoughts and feelings—which are of obvious importance in all mental disorders (20).This treatment method helps the patient to identify distorted thinking patterns and dysfunctional behavior. This is achieved through structured discussions and behavioral assignments. The emphasis in therapy is on providing opportunities for new adaptive learning and making changes in the environment outside the clinical setting. Cognitive behavioral therapy helps patients become more aware of their behaviors, emotions, and problems, and to regulate and manage their behaviors, they pay attention to targeted programs based on cognition and thinking, as well as directing their behavior to reduce stress and existential anxiety (17).

Among the limitations of the study, we can mention the lack of proper cooperation of some patients due to the length of the sessions. Also, the limited sample size is one of the most important limitations of this study. For future research, it is suggested that this therapeutic approach be compared with other methods in future studies.

Funding

None

Authors contribution

Author conceptualized the study objectives and design.

Acknowledgment

None

Ethics

None

References:

[1] Sutar, R., Majumdar, A., Yadav, V., Basera, D. S., & Gupta, H. (2024). Anxiety, stress, and quality of life in patients with tuberculosis: A systematic review and meta-analysis. Industrial Psychiatry Journal, 33(1), 13-29.

[2] Niya H M, Noei F R, Moayedi S, Fahimi K, Sakineh F. The Effect Of Familiar Voice On Pain And Anxiety Of Children After Hernia Surgery. J Emerg Health Care 2023; 12 (4) :44-50.

[Downloaded from mail.intjmi.com on 2026-11-19]

[DOI: 10.22034/jehc.14.1.40]

[3] Stute P, Lozza-Fiacco S. Strategies to cope with stress and anxiety during the menopausal transition. Maturitas. 2022 Dec 1;166:1-3.

[4] Hasanpour Asil B. Investigating The Relationship Between Depression And Stress And Death Anxiety Among The Elderly. J Emerg Health Care 2020; 9 (2) :153-161.

[5] Keshavarz M, Abiri S, Rezaeian S, Kalani N. Investigating Stress Factors In Medical Students Of Jahrom University Of Medical Sciences: A Cross-Sectional Descriptive Study In 2022. J Emerg Health Care 2022; 11 (3) :56-63.

[6] Tran TT, Nguyen NB, Luong MA, Bui TH, Phan TD, Tran VO, Ngo TH, Minas H, Nguyen TQ. Stress, anxiety and depression in clinical nurses in Vietnam: a cross-sectional survey and cluster analysis. International journal of mental health systems. 2019 Dec;13:1-1.

[7] Zanon C, Brenner RE, Baptista MN, Vogel DL, Rubin M, Al-Darmaki FR, Gonçalves M, Heath PJ, Liao HY, Mackenzie CS, Topkaya N. Examining the dimensionality, reliability, and invariance of the Depression, Anxiety, and Stress Scale–21 (DASS-21) across eight countries. Assessment. 2021 Sep;28(6):1531-44.

[8] Hasibuan RE, Yona S, Zahra AN. Effect Of Cognitive Behavioral Therapy On Reducing Anxiety, Stress And Depression In HIV-AIDS Patients: A Systematic Review. Jurnal Ners. 2025 Apr 5;9(2):2506-19.

[9] Xu H, Cai J, Sawhney R, Jiang S, Buys N, Sun J. The effectiveness of cognitive-behavioral therapy in helping people on sick leave to return to work: a systematic review and meta-analysis. Journal of Occupational Rehabilitation. 2024 Mar;34(1):4-36.

[10] Levy HC, O'Bryan EM, Tolin DF. A meta-analysis of relapse rates in cognitive-behavioral therapy for anxiety disorders. Journal of anxiety disorders. 2021 Jun 1;81:102407.

[11] Nakao M, Shirotsuki K, Sugaya N. Cognitive–behavioral therapy for management of mental health and stress-related disorders: Recent advances in techniques and technologies. BioPsychoSocial medicine. 2021 Oct 3;15(1):16.

[12] Kuut TA, Müller F, Csorba I, Braamse A, Aldenkamp A, Appelman B, Assmann-Schuilwerve E, Geerlings SE, Gibney KB, Kanaan RA, Mooij-Kalverda K. Efficacy of cognitive-behavioral therapy targeting severe fatigue following coronavirus disease 2019: results of a randomized controlled trial. Clinical Infectious Diseases. 2023 Sep 1;77(5):687-95.

[13] Shakeri-Nasab, Mohsen, Garavand, Aliyeh, Doroodi, Raziyeh, Behnoud, Zahra, and Akhtar-Moghaddam, Samaneh. (2022). Comparing the effectiveness of cognitive behavioral therapy and acceptance and commitment therapy on social self-efficacy of single-parent male adolescents. Achievements in Clinical Psychology, 8(4), 244-255.

[14] Beigi Ali, Najafi Mahmoud, Mohammadi Far Mohammad Ali, Abdollahi Abbas. Comparing the effectiveness of positive cognitive behavioral therapy with cognitive behavioral therapy on mental well-being and resilience in adolescents with depressive symptoms. Journal title. 2021; 15 (4): 25-38

[15] Irani Elham, Mousavipour Saeed, Sajjadinejad Marzieh sadat. The effect of cognitive behavioral therapy on depression, anxiety, and stress in individuals with cardiovascular disease after coronary artery bypass surgery. Journal of Cardiovascular Nursing. 2021; 10 (1):2-11

[16] Li, J., Li, X., Jiang, J., Xu, X., Wu, J., Xu, Y., ... & Xu, X. (2020). The effect of cognitive behavioral therapy on depression, anxiety, and stress in patients with COVID-19: a randomized controlled trial. Frontiers in psychiatry, 11, 580827.

[17] Lovibond, P. F., & Lovibond, P. F. (1995). Manual for the depression, anxiety and stress scales (2nd ed). Sydney: Psychology Foundation.

[18] Afzali, Afshin, Delavar, Ali, Borjali, Ahmad, Mirzamani, Mahmoud. (2007). Psychometric properties of the DASS-42 test based on a sample of high school students in Kermanshah city, Behavioral Sciences Research, 5 (2), 81-92.

[19] Tajeryan, Z., Afrooz, G. A., & Nouryghasemabadi, R. Social Problem Solving in Women with PTSD and Addiction. Psychology of Woman Journal, 2022; 3(4): 84-91. [20] Tajeryan, Z., Afrooz, G. A. A., & Nouryghasemabadi, R. Emotion Regulation in Women with PTSD and Addiction. Psychol. Woman J, 2023; 4: 160-168.

[Downloaded from mail.intjmi.com on 2026-11-19]

[DOI: 10.22034/jehc.14.1.40]