

The Effectiveness of Cognitive-Behavioral Therapy Courses in Improving the Emergency Medicine Residents and Interns' Ability to Regulate their Emotions in Threatening or Stressful Events

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Abstract

Background: Given that the duties of an emergency medicine (EM) specialist are much more complicated than the other health care professionals, inexperience, weakness or inability to make appropriate decisions, and lack of control over their emotions and stress can lead to medical errors. This study aimed at determining the effect of cognitive-behavioral therapy (CBT) of emotion regulation on the EM assistants' and interns' level of satisfaction and cognitive control of anger and stress.

Materials and Methods: In this study, 25 EM residents and interns were trained in the virtual CBT course while 19 ones were not given any training in the control group and Cognitive Emotion Regulation Questionnaire (CERQ) were filled before and after the training intervention.

Results: After the training intervention, the dimensions of catastrophizing and other blame in the experimental group with the means of 3.84 ± 1.40 and 3.16 ± 0.94 respectively were significantly lower than these dimensions in the control group with the means of 5.68 ± 1.76 and 4.73 ± 1.15 , respectively (P value < 0.05). Moreover, the refocus on planning in the experimental group with the means of 8.40 ± 1.53 was significantly higher than in the control group with the means of 7.00 ± 2.05 (P value < 0.05).

Conclusion: CBT method used in this study may be effective in controlling the emotions of EM interns and residents. CBT may help them to regulate anger and stress and have the ability to control their emotions during or after the experience of threatening or stressful events.

Keywords: Cognitive-behavioral therapy, cognitive control, emergency medicine, emotion regulation

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INTRODUCTION

Emotion is one of the psychological factors that play an effective role in human health and quality of life that plays an important role in various aspects of life such as adapting to life changes and stressful events. Emotion regulation means employing strategies that reduce, maintain, or increase emotion and helps people to keep control over their emotions during or after the experience of threatening or stressful events is

a basic principle in initiating, evaluating, and organizing adaptive behaviors as well as preventing negative emotions and maladaptive behaviors.^[1,2]

However, Emergency Medicine (EM) is one of the specialties of medicine that is related to the diagnosis and treatment of unpredictable diseases and injuries. Residents

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and interns in this field need a unique set of medical information and knowledge. The duties of an EM specialist include examining, diagnosing, treating, and coordinating the various care services provided to patients in need of immediate medical, surgical, or psychiatric care services.^[3,4] In addition to the high cognitive burden placed on residents and interns, there are factors such as inexperience, weakness, or inability to make decisions that lead to medical errors along with some other factors that interfere with their immediate decision-making.^[5]

Therefore, it seems that emotion regulation can be a significant and determining factor in the psychological well-being and effective performance of EM specialists and can play a key role in controlling anger and adapting to stressful events.^[6]

In this regard, Cognitive-Behavioral Therapy (CBT), as one of the employed methods, is the outcome of combining cognitive and behavioral approaches.^[7] The cognitive-behavioral emotion regulation course is an individual therapy course that aims at reducing the symptoms of depression and anxiety and consists of a variety of treatment strategies including psychological training, skill acquisition, dependency management, Socratic questioning, cognitive correction, acceptance and attention strategy, and behavioral practice.^[8]

CBT helps the person to think differently, which can lead to healthier and more correct behavior in the face of unwanted and unfortunate events. CBT can be used to regulate and control emotions such as stress, depression, fear, phobia (fear of crowded places and social fear), overeating, obsessive-compulsive disorders, post-traumatic stress disorders, bipolar disorders, and insanity. CBT can also affect the person with problems of inability to control anger or low self-esteem.^[9]

Hence, it seems that educational interventions can be effective in managing stress, anger, workload changes, increased variety in work tasks, and counseling and communication skills. Training programs at the level of medical education reveal the effectiveness of interventions during these courses. Due to the busy schedule of healthcare specialists and time constraints as well as the time and place flexibility provided by such virtual media, it seems that virtual courses can better help this group.^[10-12]

Therefore, considering the effects of regulating anger and stress emotions on having better communication with patients, increasing patient satisfaction, and improving healthcare specialists' job satisfaction as well as the positive role of training in this respect, the present study aimed at evaluating the effect of a virtual CBT course on the EM assistants and interns' cognitive control of anger and stress emotions.

MATERIALS AND METHODS

This study was a randomized controlled clinical trial. The study population comprised all EM residents and interns at Isfahan University of Medical Sciences in 2020-2021.

The sample size was estimated to be 60 cases based on the sample size formula, at a confidence level of 95%, a test power of 80%, a population size of 240 individuals, a standard deviation of 0.40, and an error level of 0.1.

The inclusion criterion in the study was EM residents and interns of Isfahan University of Medical Sciences. If they did not participate in at least half of the virtual CBT sessions or did not cooperate in the evaluation after the training intervention, they were excluded from the study.

After obtaining the code of ethics from Isfahan University of Medical Sciences (approval code:) and written consent from the eligible participants to enter the study, 60 cases were selected using the simple random sampling method. Their age and gender were recorded upon entering the study. Moreover, the results of the Cognitive Emotion Regulation Questionnaire (CERQ) distributed to the participants at the beginning and end of the study were recorded.

Then, they were divided into two control and experimental groups using the random allocation software. No virtual CBT sessions were provided in the control group while 14 virtual CBT sessions were held in the experimental group.

Virtual CBT course

Following consultation with one distinguished clinical psychologist and coordination with the virtual unit of the Centre for Medical Education Studies and Development, the researcher designed and complied with the content of the CBT course. In this study, the CBT course consisted of about 14 sessions, each taking about 20–30 minutes. The course content was a compound of C, which was merged with cognitive-behavioral management methods. The content of each session is summarized in Table 1.

Audio files and podcasts of this course were presented to the EM residents and interns in the experimental group through a virtual site. They had a three-week to one-month opportunity to listen to the audio files and podcasts and do the related practices.

Data collection

Cognitive emotion regulation questionnaire

CERQ^[13,14] was used to evaluate the participants' cognitive control of anger and stress emotions. The CERQ is an 18-item questionnaire consisting of nine conceptually-distinct subscales, each comprising several items. Each item refers to what someone thinks after experiencing threatening or stressful life events. As mentioned, nine cognitive emotion regulation strategies were addressed in CERQ. Self-blame mentions to the thoughts of blaming others for what you have experienced on yourself but other-blame means to blame for what you have experienced on the environment or another person; rumination points to thinking about the feelings and thoughts related to negative events; Catastrophizing refers to thoughts that overtly emphasize the fear of what you have experienced; Consideration refers to thoughts about setting aside the seriousness of events or emphasizing relativity when

Table 1: The summary of the content of each CBT session

Session	Content
Session 1	The effect of our beliefs on our behavior and thought
Session 2	Different reactions and strategies when you face with stress and anger (positive and negative reactions)
Session 3	Cognitive distortions
Session 4	What are mental rules and the basis of automatic thought?
Session 5	How to deal cognitive distortions: replacing true beliefs with our wrong ones
Session 6	Different types of beliefs
Session 7	The impact of schemas on life and types of schemas
Session 8	The schema therapies
Session 9	Conflict management and relaxation
Session 10	Decision-making skills
Session 11	Slow and belly breathing techniques
Session 12	The review of the sessions
Session 13	How to communicate and have a good relationship with others
Session 14	Coping with stress: how to manage stress

comparing them to other events; Positive refocusing refers to thinking about happy and pleasant things instead of thinking about actual events; Positive reappraisal refers to thoughts that give positive meaning to events in terms of personal growth; Acceptance is the thought of accepting what has been experienced and surrendering to what has happened; and finally Refocusing on planning refers to thinking about what actions to take and how to deal with negative events.^[15]

Some of the cognitive emotion regulation strategies such as other blame, rumination, catastrophizing, and putting into perspective are categorized into the general group of non-adaptive strategies. While others like positive refocusing, positive reappraisal, acceptance, and refocusing on planning are categorized under the general term of adaptive strategies. Cognitive emotion regulation strategies were measured on a five-point Likert scale ranging from one (almost never) to five (almost always). The questionnaire was typed in Google form, and the link to the questionnaire was sent to the participants in both experimental and control groups.

The participants' satisfaction with the virtual CBT course and their improvement in controlling their anger and stress emotions were evaluated and recorded based on a score of 0 (dissatisfaction) to 10 (complete satisfaction).

Statistical analysis

The collected data were entered into SPSS software (ver. 26). Quantitative and qualitative variables were presented as means \pm standard deviation (SD) and frequency (%), respectively. According to the result of the Kolmogorov-Smirnov test indicating the normal data distribution, the independent samples *t*-test and paired samples *t*-test were used to compare the means of the quantitative variables between the two groups and the means of the quantitative variables after the intervention as compared to before the intervention in each of

the two groups. Chi-squared test was also used to compare the frequency distribution of qualitative variables. In all analyses, a significance level of less than 0.05 was considered.

RESULTS

In the present study, 11 cases from the control group were excluded from the study due to not referring back after the intervention. Moreover, 2 cases because of not listening to virtual CBT sessions and 3 cases because of not referring back after the intervention were excluded from the experimental group. Therefore, the size of the control and experimental groups was reduced to 19 and 25 participants, respectively [Figure 1].

Of the 25 participants in the experimental group, 15 (60%) were male and 10 (40%) were female with a mean age of 27.91 ± 1.57 years. Furthermore, of the 19 participants in the control group, 10 (52.6%) were male and 9 (47.4%) were female with a mean age of 26.96 ± 2.07 years (P value > 0.05).

Before the training intervention, the mean of none of the nine dimensions of the CERQ was significantly different between the two groups (P value > 0.05). However, after the intervention, the means of catastrophizing, other-blame, and non-adaptive strategies in the experimental group with the values of 3.84 ± 1.40 , 3.16 ± 0.94 , and 16.00 ± 3.40 , respectively were significantly lower than their means in the control group with the values of 5.68 ± 1.76 , 4.73 ± 1.15 , and 21.11 ± 4.96 , respectively (P value < 0.05). Moreover, the means of refocus on planning and adaptive strategies in the experimental group with the values of 8.40 ± 1.53 and 37.36 ± 5.99 , respectively were significantly higher than their means in the control group with the values of 7.00 ± 2.05 and 30.63 ± 7.66 , respectively [Table 2].

Besides, examining the changes in the participants' cognitive control of the anger and stress emotions after the CBT intervention as compared to before this intervention indicated that all dimensions of the cognitive control of the anger and stress emotions improved significantly in the experimental group after the intervention as compared to before the intervention. However, the rumination dimension decreased while the positive refocusing and other-blame dimensions increased significantly in the control group after the intervention as compared to before the intervention (P value < 0.05) [Table 2].

The residents' and interns' satisfaction with the virtual CBT course and cognitive-behavioral training in the experimental group with a mean of 8.40 ± 2.15 and the control group with a mean of 7.37 ± 1.04 was high, and there was no significant difference between the two groups in this regard (P value > 0.05) [Table 3].

DISCUSSION

The results of the present study showed that the differences between participants' CERQ scores in the control and experimental groups were not significant in the self-blame,

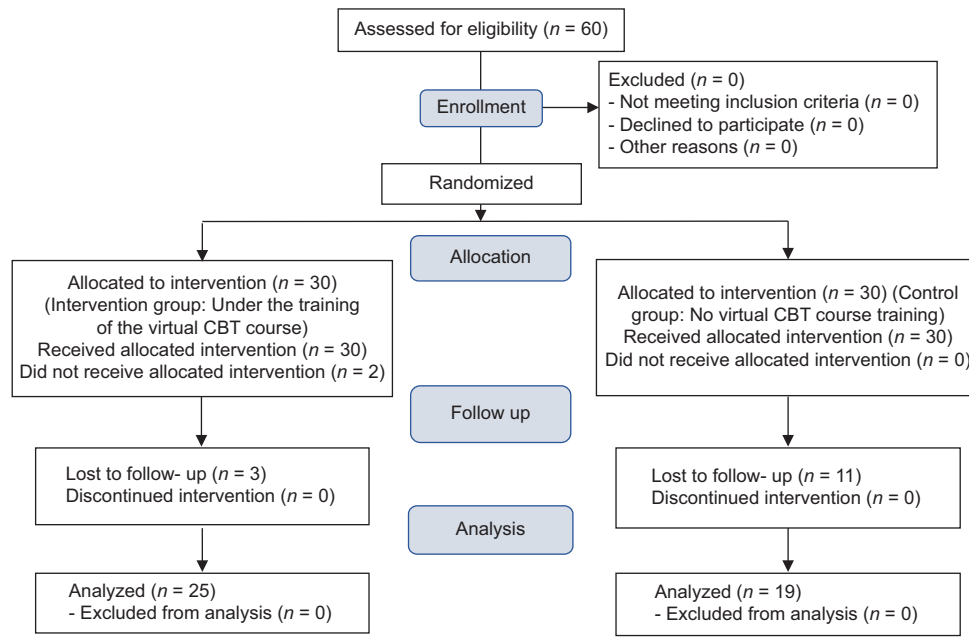


Figure 1: Consort flow diagram of patients

acceptance, rumination, positive refocusing, refocus on planning, positive reappraisal, and putting into perspective dimensions; however, the scores in the other-blame dimension were different between the experimental and control groups. The analysis of the post-test scores revealed that the EM residents' and interns' mean CERQ scores after the intervention were different in some strategies between the two groups. The scores of refocus on planning, catastrophizing, and other-blame strategies were significantly different between the experimental and control groups. The CBT method used in this study was effective in controlling EM interns' and residents' emotions. CBT may help them during or after the experience of threatening or stressful events to regulate their anger and stress and get the ability to keep control over their emotions. CBT may provide them with a new perspective on their situation, which enables them to regain control, reduce the intense physiological and emotional symptoms, and adopt effective strategies that will help them to deal with stressful situations with more confidence and ease.^[16]

The researcher also compared the changes in scores within each group before and after the intervention. The results indicated that there were significant differences between the mean scores of each strategy before and after the intervention (CBT course) in the experimental group. The mean scores of the self-blame, rumination, putting into perspective, catastrophizing, other-blame, and the general strategy of non-adaptive strategies were reduced. It is promising to figure out that participants could reduce negative emotions after the intervention whereas the results of these strategies were almost consistent or increased in the control group.

However, the mean scores of other strategies like acceptance, positive refocusing, refocus on planning, positive reappraisal, and the general strategy of adaptive cognitive increased in

the experimental group. The mentioned finding indicated that the participants gained the ability to increase their ability to adapt themselves to the situation and accept their experience, think about joyful and pleasant issues, be optimistic about the events, and also think about the steps they can take and the ways through which they can handle the negative events.

To measure the participant's satisfaction with the CBT course, the researcher asked them to report their degree of satisfaction with the course. The results indicated that 96% of the participants were satisfied with the CBT course and liked cognitive-behavioral training. This result is consistent with those of previous studies,^[17-20] which showed that CBT can reduce using non-adaptive strategies to control stress in nurses.^[21] Ebert *et al.* (2015) also indicated that CBT is effective and acceptable for controlling anxiety and depression.^[16] Their studies provided evidence for the efficacy of CBT in the treatment of anxiety and depressive symptoms in youth. In addition, the study conducted by Majidpoor *et al.* (2021) indicated that CBT reduced rumination and depression in women.^[18]

Finally, it can be stated that although the implementation of the virtual CBT training course among EM specialists can be regarded as one of the strengths of this study, there are some limitations such as the small size of the sample and the limited number of videos and virtual training sessions (14 sessions). The mentioned limitations were unavoidable considering the implementation of this study among the medical staff and the difficulty in holding training sessions due to the participants' work shifts. However, considering the promising results obtained in this study, it is suggested to conduct further studies to confidently generalize the results to the whole population because the training and qualitative improvement of the emotions among this group of employees due to their relationship with the

Table 2: Comparison of the mean of CERQ dimensions before and after the CBT intervention between the two study groups

CERQ scales*	Time	Experimental group (n=25)	Control group (n=19)	P ¹
Self-blame	Pre-test	4.40±1.55	4.37±1.49	0.949
	Post-test	3.40±1.00	4.37±1.38	0.109
<i>P</i> ²		0.003	1.00	
Acceptance	Pre-test	6.88±1.81	6.31±1.86	0.317
	Post-test	7.76±1.64	5.94±2.09	0.117
<i>P</i> ²		0.048	0.407	
Rumination	Pre-test	6.96±1.34	7.37±1.77	0.388
	Post-test	5.60±1.71	6.31±1.89	0.254
<i>P</i> ²		0.003	0.017	
Positive refocusing	Pre-test	3.88±1.30	3.47±1.43	0.331
	Post-test	6.16±2.07	4.42±1.61	0.084
<i>P</i> ²		<0.001	0.030	
Refocus on planning	Pre-test	7.32±1.82	7.16±2.01	0.781
	Post-test	8.40±1.53	7.00±2.05	0.035
<i>P</i> ²		0.003	0.707	
Positive reappraisal	Pre-test	7.28±1.77	7.05±2.12	0.700
	Post-test	8.28±1.40	7.37±1.86	0.102
<i>P</i> ²		0.012	0.454	
Putting into perspective	Pre-test	5.68±1.89	6.05±2.01	0.532
	Post-test	6.76±1.56	5.89±2.08	0.297
<i>P</i> ²		0.028	0.747	
Catastrophizing	Pre-test	5.92±1.98	5.84±1.89	0.896
	Post-test	3.84±1.40	5.68±1.76	0.001
<i>P</i> ²		<0.001	0.716	
Other-blame	Pre-test	5.84±1.93	4.58±1.26	0.068
	Post-test	3.16±0.94	4.73±1.15	<0.001
<i>P</i> ²		<0.001	0.007	
Adaptive strategies	Pre-test	31.04±5.59	30.05±7.07	0.607
	Post-test	37.36±5.99	30.63±7.66	0.035
<i>P</i> ²		<0.001	0.723	
Non-adaptive strategies	Pre-test	23.12±3.99	21.16±5.06	0.158
	Post-test	16.00±3.40	21.11±4.96	0.002
<i>P</i> ²		<0.001	0.961	

CERQ=Cognitive Emotion Regulation Questionnaire. 1: The significance level obtained from the independent samples *t*-test comparing the mean of the variables between the two study groups in each of the follow-up times. 2: The significance level obtained from the paired samples *t*-test comparing the mean of the variables after the intervention as compared to before the intervention in each of the two studied groups

Table 3: Comparison of participants' satisfaction with the virtual CBT course and cognitive-behavioral training

	Experimental group (n=25)	Control group (n=19)	P
Satisfaction	8.40±2.15	7.37±1.04	0.149

patient can affect their stress control, satisfaction level, and job performance, which in turn will be associated with the patients' greater satisfaction with medical care services provided.

CONCLUSION

In general, the results of this study indicated the effectiveness of the CBT course in improving the EM residents' and interns' ability to keep control over their emotions during or after threatening or stressful events. Following the CBT course, they

may gain the ability to reduce their self-blame, other-blame, rumination, catastrophizing, and putting into perspective emotions. In addition, their abilities to use positive refocusing, positive reappraisal, acceptance, and refocusing on planning dimensions were also improved significantly after the CBT course.

The results of this study may help EM residents and interns to improve the quality of their life and may reduce the psychological problems they face. This research may also be used as an introduction and basis for further experimental studies such as training courses in this respect.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Garnefski N, Kraaij V, Spinhoven P. Negative life events, cognitive emotion regulation and depression. *Personality and Individual Differences* 2001;30:1311-27.
- McRae K, Gross JJ. Emotion regulation. *Emotion* 2020;20:1-9.
- Panacek EA. Anyone, anything, anytime (A history of emergency medicine): By Brian J. Zink. 2006, Philadelphia, PA, Mosby-Elsevier, 310 pages, \$49.95 (hardcover). *Academic Emergency Medicine* 2006;13:e13.
- Samuels EA, Tape C, Garber N, Bowman S, Choo EK. "Sometimes you feel like the freak show": A qualitative assessment of emergency care experiences among transgender and gender-nonconforming patients. *Ann Emerg Med* 2018;71:170-82.
- Bijani M, Abedi S, Karimi S, Tehranineshat B. Major challenges and barriers in clinical decision-making as perceived by emergency medical services personnel: A qualitative content analysis. *BMC Emerg Med* 2021;21:11.
- Azizkhani R, Maghami-Mehr A, Isfahani MN. The effect of training on the promotion of emotional intelligence and its indirect role in reducing job stress in the emergency department. *Frontiers in Emergency Medicine* 2021.
- Wenzel A. Basic strategies of cognitive behavioral therapy. *Psychiatr Clin North Am* 2017;40:597-609.
- Rubin-Falcone H, Weber J, Kishon R, Ochsner K, Delaparte L, Doré B, *et al.* Longitudinal effects of cognitive behavioral therapy for depression on the neural correlates of emotion regulation. *Psychiatry Res Neuroimaging* 2018;271:82-90.
- Toohey MJ. Cognitive behavioral therapy for anger management 2021.
- Lee AH, DiGiuseppe R. Anger and aggression treatments: A review of meta-analyses. *Curr Opin Psychol* 2018;19:65-74.
- Rao N, Kemper KJ. The feasibility and effectiveness of online guided imagery training for health professionals. *J Evid Based Complementary Altern Med* 2017;22:54-8.
- Van Lieshout RJ, Layton H, Feller A, Ferro MA, Biscaro A, Bieling PJ. Public health nurse delivered group cognitive behavioral therapy (CBT) for postpartum depression: A pilot study. *Public Health Nurs* 2020;37:50-5.
- Garnefski N, Kraaij V. Cognitive emotion regulation questionnaire—development of a short 18-item version (CERQ-short). *Personality and individual differences* 2006;41:1045-53.
- Besharat MA, Bazzazian S. Psychometric properties of the Cognitive Emotion Regulation Questionnaire in a sample of Iranian population. *Advances in Nursing and Midwifery*, 2015; 24:61-70. Available URL: <https://journals.sbmu.ac.ir/en-jnm/article/view/7360>.
- Garnefski N, Kraaij V. The cognitive emotion regulation questionnaire. *Eur J Psychol Assess* 2007;23:141-9.
- Ebert DD, Zarski AC, Christensen H, Stikkelbroek Y, Cuijpers P, Berking M, *et al.* Internet and computer-based cognitive behavioral therapy for anxiety and depression in youth: A meta-analysis of randomized controlled outcome trials. *PLoS One* 2015;10:e0119895.
- Lv Z, Li J, Zhang B, Zhang N, Wang C. The effect of computerized cognitive behavioral therapy on people's anxiety and depression during the 6 months of Wuhan's lockdown of COVID-19 epidemic: A pilot study. *Front Psychol* 2021;12:687165.
- Majidpoor TL, Golshani F, Peimani J, Baghdasarians A, Taghilo S. The Effects of Cranial Electrotherapy Stimulation, Cognitive-Behavioral Therapy, and Pharmacotherapy on Rumination and Depression in Women. *Middle Eastern Journal of Disability Studies (MEJDS)*, 2021;11:68-68. Available URL: https://jdisabilstud.org/browse.php?a_id=2270&sid=1&slc_lang=en
- DAR SO, SER NM. Cognitive-behavioral therapy to promote self-management. *Promoting self-management of chronic health conditions: Theories and practice* 2017:31.
- Andrews G, Cuijpers P, Craske MG, McEvoy P, Titov N. Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health care: A meta-analysis. *PLoS One* 2010;5:e13196.
- Yoshinaga N, Nosaki A, Hayashi Y, Tanoue H, Shimizu E, Kunikata H, *et al.* Cognitive behavioral therapy in psychiatric nursing in Japan. *Nurs Res Pract* 2015;1:1-6.