

The Effectiveness of Mindfulness-Based Cognitive Therapy on Perceived Stress, Anger Control and Emotional Regulation in the Medical Staff Recovered from Coronavirus Disease

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Received: 17 November 2023; **Accepted:** 12 January 2024; **Published:** 24 February 2024

Abstract:

This study aimed to evaluate the effectiveness of mindfulness-based cognitive therapy on perceived stress, anger control, and emotional regulation of 115 emergency medical staff during coronavirus disease epidemic. The research method was quasi-experimental with pre-test, post-test, and follow-up design. The statistical population of the study included all 115 emergency medical staff in Gorgan in 2021. By purposive sampling method, 30 eligible individuals were selected and randomly assigned to experimental and control groups. Data collection tools included the Cohen (1983) Perceived Stress Questionnaire (PSS-14), the Yung and Hammond (1995) Standard Anger Control Questionnaire (SQACS), and the Garafsky et al. (2001) Cognitive Emotion Regulation Questionnaire (CERQ). Mindfulness-based cognitive therapy was held in 8 sessions. The results showed that mindfulness-based cognitive therapy on perceived stress ($F = 42.46$; $P = 0.000$), anger control ($F = 6.41$; $P = 0.004$), positive emotion regulation strategies ($F = 19.66$; $P = 0.000$) and negative emotion regulation strategies ($F = 83.42$; $P = 0.000$) had a significant effect and the results obtained in the follow-up stage were stable. Mindfulness-based cognitive therapy can be provided in the form of in-service training to improve the mental health and job performance of emergency medical personnel.

Keywords:

Mindfulness, Perceived Stress, Anger Control, Emotional Regulation, Emergency Medical Staff, Covid-19

1. Introduction

The corona virus disease has caused serious damage to health systems all over the world; So that one of its complications has been an increase in the level of stress, anxiety and depression in the treatment staff [8]. Various studies investigated the

etiology of psychological problems during the corona pandemic. In this regard, Tehiren et al. [22] believe that lack of scientific information can increase stress and anxiety in people. This stress and anxiety is more severe in emergency 115 workers; Because when they are at the bedside of a corona patient, they have to provide the best service in the most difficult conditions and with the least facilities. Perceived stress includes feelings about the uncontrollability and unpredictability of life, the number of times faced with distressing problems, and confidence in one's ability to cope with problems.

In the research of Lee et al., the medical staff had significantly higher stress levels in the conditions of the corona outbreak, which was caused by the worry and increased burden caused by caring for critical patients with covid-19. This increase in burden caused by care, as well as, has significantly increased the work pressure of other unpleasant emotions such as anger in the treatment staff [6]. Therefore, skills such as anger control are an undeniable necessity in therapy. Anger is often the result of frustration or feeling blocked or thwarted from something that one feels is important [23].

Anger control programs treat this unpleasant emotion as a motivation due to an identifiable cause that can be rationally analyzed and controlled (Nordman, 2022). The ideal state of anger control is managing and regulating anger in such a way that it does not lead to problems [20] Studies conducted in the field of emotion regulation show that anger occurs because negative emotional states often disrupt impulse control [7].

Therefore, in the etiology of problems related to perceived stress and anger, excitement and regulation play a central role. In fact, people may suffer from similar negative life events; But their effect or intensity depends on skills such as emotion regulation [21].

Emotion regulation is the ability to exercise control over one's emotional state [24]. In addition, emotion regulation is the ability to respond to the ongoing demands of experiencing a range of emotions in a way that is socially tolerable and flexible enough to allow for spontaneous reactions as well as the ability to To delay spontaneous reactions if necessary [25] Medical staff are constantly exposed to a wide range of potentially irritating stimuli in the conditions of the Corona outbreak. Inappropriate, extreme or uncontrolled emotional reactions to such stimuli can disrupt functional fitness in therapeutic environments and performance of job duties. Therefore, therapists almost always need to strengthen their emotion regulation skills [1]. One of the effective treatment approaches in this field is cognitive therapy based on mindfulness. Mindfulness helps people to understand that negative emotions may occur; But they are not a fixed and permanent part of personality [14].

By strengthening the skills of mindfulness, a person becomes capable In a mind that is constantly interpreting and interpreting, pay more attention to your thoughts and examine them without aversion or judgment and find out the reason for their existence [10]. Practicing mindfulness gives a person the ability to realize that "thoughts are just thoughts" and when they realize that their thoughts may not be true, they can more easily let go of them [14]. Cognitive therapy based on mindfulness includes the learning of special behavioral, cognitive and metacognitive strategies to focus the attention process, which prevents the factors that cause negative mood, negative thinking, tendency to worrisome responses and the development of a new perspective and form. It becomes pleasant thoughts and emotions [17].

In this regard, the research conducted by Gavadra et al. [9] and Chen et al. [4] in a research found that interventions based on mindfulness improve psychological health, job performance, reduce psychological distress and perceived stress. and negative emotions such as anger in nurses and staff are treated. Emergency 115 employees are under severe physical and mental pressure during the outbreak of Corona; Because every time a patient is sent to the bedside, high nervous pressure is imposed on the 115 emergency department staff, apart from the fact that the person himself may get infected, there is also the possibility of contagion to his family, and this causes stress and work pressure. makes more Therefore, since the scientific background considers the use of interventions based on mindfulness to be effective in improving the psychological health of the treatment staff and considering that there is little evidence about the effectiveness of these interventions on perceived stress, anger and order There is an atmosphere of excitement in emergency workers, the main question of the current research is whether cognitive therapy based on mindfulness on perceived stress, anger control and emotional regulation is effective in medical personnel recovered from the corona virus disease?

2. Method

The research method was a semi-experimental design with a pre-test-post-test and follow-up phase. The statistical population of the present study included all emergency medical staff of 115 Gorgan city located in Golestan province in 1400. Based on Cohen's sampling table, with an effect size of 0.4 and test power of 8.0, the sample size was estimated to be 30 people. According to the conditions of the corona pandemic, sampling was done in a targeted manner and 30 people were selected from the qualified medical staff and were randomly replaced in two experimental groups (15 people) and control (15 people). The criteria for entering the samples into the research included: being employed in the 115th emergency center of Gorgan, willingness of the participants to participate in this research, not having a specific disease, not taking medication, not being addicted to drugs and alcohol. The criteria for entering the samples into the research included: being employed in the 115th emergency center of Gorgan, willingness of the participants to participate in this research, not having a specific disease, not taking medication, not being addicted to drugs and alcohol. The criteria for the withdrawal of the participants from the research was the absence of more than two sessions in the held classes, the subject's unwillingness to continue participating in the sessions and simultaneous attendance in the psychological intervention sessions outside the scope of this study. Group therapy sessions were conducted among the members of the experimental group; But the people in the control group did not receive any treatment. Cognitive therapy based on group mindfulness in this research means a therapy program that was implemented in 8 sessions of 90 minutes (one session per week) as a group among the members of the experimental group. After 8 therapy sessions (the first session: introducing the members, explaining the rules of the group, implementing research questionnaires for the two control and experimental groups; the second session: teaching attention and awareness, focusing on thoughts related to depression symptoms, resilience, quality of life and Controlling blood sugar, practicing thoughts and feelings, recording pleasant events, sitting meditation for 10 to 15 minutes; third session: understanding the wandering mind, teaching the body check technique, controlling the wandering mind with body check practice, reviewing negative thoughts; fourth session : Mindfulness of breathing and mindfulness meditation practice, sitting meditation, mindfulness of breathing and body, mindfulness practice with meditation; 5th session: 3-minute

breathing (integrating awareness, expanding), staying in the present, comfortable contact, exploring experience, limiting and expanding attention; sixth session: creating a different relationship with experience, how to create and use acceptance, 40-minute sitting meditation, awareness of breath, body and then thoughts, revision; seventh session: overview of The topic of "thoughts are not facts" and the methods that can be used to see thoughts in a different way.; Session 8: An overview of self-care, choosing self-care options,

The relationship between activity and creativity, integration of behavior activation in education, activity planning, review of past meetings, post-test implementation for two experimental and control groups) for all members of the experimental group, questionnaires were distributed again to collect information of the post-test stage. . In order to comply with the ethical standards in the present study, we tried to obtain the consent of the medical staff to participate in the study, and they were assured that all the information obtained from them would be protected and those who wanted to be informed about their psychological condition. Only their grades were given to them. The control group was assured that after the completion of the research, 8 intervention sessions will be offered to them if they wish. Also, the participants could freely withdraw from the study whenever they wanted. SPSS.v21 software was used to analyze the data and univariate and multivariate analysis of covariance was used according to the assumptions. Before performing the inferential statistics tests, Kolmogorov-Smirnov normality test and other assumptions were reported to check the normality of the data.

3. Measuring Tool

Cohen's Perceived Stress Scale (PSS-14) (1983): This scale has three versions of 14 items that are used to measure perceived normal stress in the past month. This questionnaire has 14 questions in the form of a 5-point Likert scale, which is scored from never to always. In questions 13, 10, 9, 7 and 4, the scoring of the items is done in reverse and the range of scores varies between 0 and 56. A higher score in this scale indicates more perceived stress. Cohen et al. (1983) obtained the internal consistency coefficients of each of the subscales and the overall score between 0.84 and 0.86. To calculate the convergent validity of this scale, these researchers calculated its correlation coefficient with semiotic measures between 0.52 and 0.76. In this research, the reliability of the mentioned scale was obtained using Cronbach's alpha method of 0.79. In Hashemi and Aini's research (2018), Cronbach's alpha coefficient and Tansif were used to calculate the reliability of perceived stress, and the values of 0.73 and 0.74 were obtained, respectively. The construct validity coefficient of this scale was obtained using a simple correlation calculation with a researcher-made criteria question of 0.63.

Standard Anger Control Questionnaire (SQACS) by Jung and Hammond (1995): To measure anger control, the standard questionnaire of anger control skills by Betty Jung and Rodney Hammond (1995) was used. The standard anger control skill questionnaire has 8 questions and its scoring is based on the Likert scale. Subjects should specify their answers between 5 degrees (strongly disagree, disagree, no opinion, agree, strongly agree) and each of the answers will be assigned a score of (1-5-3-2-1)) is given. The score ranges from 8 to 40. Also, the classification criterion for the final score of anger control skill is the mean and standard deviation, and the scores of each question were categorized as: 5-good, 3-4-moderate, and 1-2-poor. A low score in this questionnaire indicates a lower ability to control the subject's anger. This

questionnaire was translated in Iran by Hajti and its validity and reliability were evaluated. The internal consistency of the questionnaire items was calculated with Cronbach's alpha coefficient, 0.83.

Cognitive Emotion Regulation Questionnaire (CERQ) by Garnefsky et al. (2001): Cognitive Emotion Regulation Questionnaire (CERQ) was compiled by Garnefsky, Kraij and Spinhaven (2001) in the Netherlands. This questionnaire is a self-report tool and has 36 items and consists of 9 subscales. The mentioned subscales evaluate 9 cognitive strategies of self-blame, acceptance, rumination, positive refocusing, refocusing on planning, positive reappraisal, perspective taking, catastrophizing and blaming others. The range of scale scores is from 1 (almost never) to 5 (almost always). Each subscale contains 4 items. In order to check the convergent and divergent validity of this questionnaire in Iran, the scale of depression, anxiety, and stress, which includes 21 four-point graded questions (from completely similar to me to completely different from me), which evaluates the three factors of depression, stress, and anxiety gives, in this scale each one The question evaluates a factor of emotional disturbance. The reliability of this questionnaire using Cronbach's alpha coefficient in the original version for each of the sub-components is between 0.73 and 0.81 and its validity coefficient with the depression sub-component of the mental health questionnaire form 90 questions for self-blame is 51/51 0, other blame 0.50, rumination 0.31, catastrophizing 0.32, numerical insignificance 0.43, positive refocus 0.60, positive reappraisal 0.20, acceptance 0.30, Refocusing on planning has been achieved 0.40 (Garnefsky and Krige, 2006). The retest reliability of this questionnaire was calculated on two occasions with an interval of two to four weeks and was confirmed with coefficients of 0.57 to 0.76. Content validity was judged and agreed upon by eight psychologists, and Kendall's coefficient was determined from 0.81 to 0.92 for the subscales.

4. Findings

In this study, 30 emergency workers of 115 Gorgan city were present. The mean (standard deviation) of the age of the experimental group was calculated as 39.4 ± 13.12 and the mean (standard deviation) of the control group was 40.01 ± 5.39 . Student's t-test was used to measure the equality of the two groups in terms of average age. The results showed that there is no significant difference between the two groups in terms of average age ($P=0.625$; $t=0.494$, 28). The gender of all the participants was male and the marital status of most of the participants in the experimental group (73%) and control group (80%) was married. The mean and standard deviation of the research variables are presented in Table 1.

Table 1. Statistical findings of the research.

Witness		The Experiment		Step variable	Step variable
Mean Standard Deviation Mean Standard Deviation	Mean Standard Deviation Mean Standard Deviation	Mean Standard Deviation Mean Standard Deviation	Mean Standard Deviation Mean Standard Deviation		
2/26	2/82	39/59	33/25	pre-exam	Perceived Stress
3/26	3/66	40/29	19/71	After the test	
2/43	2/72	35/62	18/84	Follow up	
2/03	2/39	25/38	28/20	pre-exam	Anger control
3/11	3/58	26/32	35/49	After the test	

2/44	2/35	25/23	36/98	Follow up	Negative strategies of emotion regulation
6/11	6/83	46/07	45/53	pre-exam	
6/34	5/46	45/93	36/67	After the test	
6/18	5/84	45/87	36/80	Follow up	Blame yourself
2/25	2/41	7/73	7/87	pre-exam	
1/99	1/71	4/47	5/93	After the test	
1/95	2/14	7/40	6/20	Follow up	Blame others
2/12	2/31	8/07	8/27	pre-exam	
2/14	1/65	8/20	6/20	After the test	
2/06	1/66	8/13	5/90	Follow up	Rumination
4/25	4/32	13/33	12/87	pre-exam	
4/27	3/19	13/47	10/07	After the test	
4/24	2/67	13/53	9/60	Follow up	catastrophizing
1/64	2/01	7/53	7/27	pre-exam	
1/50	1/24	7/40	5/40	After the test	
1/49	1/11	7/33	5/33	Follow up	the reception
1/95	2/01	9/40	9/27	pre-exam	
1/95	1/87	9/40	9/07	After the test	
1/88	9/47	2/04	9/20	Follow up	Positive strategies for regulating emotions
8/24	74/60	6/86	74/40	pre-exam	
7/51	74/20	4/53	80/40	After the test	
7/30	74/27	1/65	79/60	Follow up	Viewability
2/58	14/47	2/32	14/67	pre-exam	
2/31	14/27	2/41	14/87	After the test	
2/31	14/27	2	14/01	Follow up	Positive refocusing
3/13	24/33	3/18	24/60	pre-exam	
2/86	24/27	1/35	26/87	After the test	
2/84	24/40	1/41	26/70	Follow up	Focus on planning
2/66	21/40	2/34	21/07	pre-exam	
2/64	21/53	2/06	21/53	After the test	
2/69	21/60	1/25	21/80	Follow up	
2/66	14/40	2/34	14/07	pre-exam	
2/35	14/13	1/30	17/13	After the test	
2/23	14/02	1/37	17/10	Follow up	

In order to determine the effectiveness of cognitive therapy based on mindfulness on perceived stress, anger control and emotional regulation in medical personnel recovered from corona virus disease, univariate and multivariate covariance analysis tests were used. The use of this test required presuppositions that were examined before the inferential analysis. For this purpose, the findings of the Kolmogorov-Smirnov test show that the data of both experimental and control groups in the variables of perceived stress, anger control, and emotion regulation in the pre- and post-test phases are not significantly different from the normal curve and the distribution of the data is normal. ($P>0.01$). Also, Levin's test to check the assumption of equality of error variances showed that the assumption of equality of error variances is valid for the research variables ($P>0.01$). In addition, the interaction between covariance and independent variable was not significant in both experimental and control groups ($P>0.01$), which shows that the assumption of homogeneity of the regression slope is also established. Therefore, by observing the presuppositions of the parametric test, the use of the covariance analysis test is unimpeded. According to the results listed in Table 1, the F value of the effect of mindfulness-based cognitive therapy on the variables of perceived stress, anger control, self-blame, others-blame,

rumination, catastrophizing, positive refocusing, positive reappraisal, and negative regulation strategies. Emotion and positive emotion regulation strategies are significant ($P < 0.01$). According to these results, it can be said that cognitive therapy based on mindfulness has a significant effect on the mentioned variables ($P < 0.01$).

Table 2. Results of effectiveness and stability of cognitive therapy based on mindfulness.

Correlated t-test to check the stability of the results			The results of the covariance analysis test to check the effectiveness of the intervention						Perceived Stress
the significance level		the degree of freedom		the effect size of the t statistic	the significance level		Correlated t test to check the stability of the results of the degree of freedom of the mean square of the F statistic	Source	
0/066	9	2/090	/6920	/000**0	42/641	21/4687	1	group	Anger control
						5/100	27	error	
0/164	9	1/468	/2570	/004**0	6/415	19/468	1	group	Negative strategies of emotion regulation
				-		3/035	27	error	
0/479	9	0/739	/8140	/000**0	83/421	29/7290	1	group	
				-		3/485	27	error	
0/343	9	1/000	/4710	/000**0	16/491	13/174	1	group	Blame yourself
						2/799	27	error	
0/343	9	1/000	/4490	/000**0	15/087	16/774	1	group	
						1/112	27	error	
0/343	9	1/000	/5390	/000**0	21/612	37/563	1	group	Blame others
						1/738	27	error	
0/334	9	1/000	/5700	/000**0	24/486	14/016	1	group	Rumination
						0/572	27	error	
			-	0/340	1/111	0/273	1	group	
						0/246	27	error	
0/479	9	0/739	/8140	/000**0	83/421	29/7290	1	group	catastrophizing
				-		7/261	27	error	
			-	0/201	1/674	0/639	1	group	the reception

					0/381	27	error	
0/343	9	1/000	/412 0	/000** 0	13/651	23/532	1	group
						1/724	27	error
			-	0/657	0/424	0/376	1	group
						0/887	27	error
0/343	9	1/000	/520 0	/000** 0	21/126	37/887	1	group
						1/793	27	error

In order to measure the stability of the results, the correlated t-test was used, and the obtained results show that in the variables of perceived stress, anger control, blaming oneself, blaming others, rumination, catastrophizing, negative emotion regulation strategies, positive refocusing, evaluation There is no significant difference between positive feedback and positive emotion regulation strategies between the post-test and follow-up stages. As a result, the effectiveness of cognitive therapy based on mindfulness on the mentioned variables is stable.

5. Discussion and Conclusion

This research was conducted with the aim of the effectiveness of cognitive therapy based on mindfulness on perceived stress, anger control and emotional regulation in medical staff recovered from corona virus disease. According to the results, it can be said that mindfulness treatment is effective in reducing the perceived stress of the 115 emergency medical staff during the corona outbreak. The results of some studies conducted in domestic and foreign research literature such as Bloukian and Watankhah (1400), Guderzi et al. (1401) and Chacko et al. It was consistent. Regarding how mindfulness can reduce stress, he believes that mindfulness empowers a person to re-evaluate stressful factors. For example, seeing life's problems as an opportunity for further growth rather than a threat to life. It also stops the use of maladaptive coping strategies (worry). Garland called this process de-thought, which means the capacity to watch thoughts and feelings without becoming identified with those feelings and thoughts. Therefore, mindfulness makes people manage stress more successfully in their daily lives. It seems that teaching techniques based on mindfulness by encouraging people to repeatedly practice focused attention on neutral events and intentional awareness on the body and mind can free the emergency medical staff from mental preoccupation with threatening thoughts and worries about their health. slow down and make their minds free from spontaneous and automatic thoughts. These techniques reduce perceived stress by increasing a person's awareness of current experiences and returning attention to the cognitive system and more efficient processing of information. In addition, the results of the present study showed that cognitive therapy based on mindfulness has improved anger control in emergency treatment. In line with this finding, Rafsanjani Akbarabadi et al. [16] also showed in separate studies that mindfulness-based interventions, especially cognitive therapy based on mindfulness, improves anger control. In explaining this finding, it can be said that cognitive therapy based on mindfulness causes people to accept their feelings and weaknesses, such as the inability to control anger, and the acceptance of these feelings reduces attention and excessive sensitivity towards reporting. These signs are in them. One of the effects that mindfulness training has on people is increasing their self-control. As a result, the development of these skills will increase

anger control. The findings of the present study showed that the implementation of cognitive therapy based on mindfulness has a significant effect on the regulation of emotions of emergency medical staff 115. In domestic research literature, the effectiveness of cognitive therapy based on mindfulness on emotion regulation was investigated, and the results of most of these studies, such as Kazemini et al. [12] and Sharkhazadeh et al. The results of some studies conducted in foreign research literature such as Williams et al. [26] were also consistent with the findings of the present study. Mindfulness skills predict self-regulation behavior and positive emotional states, which increases individual satisfaction and improves the quality of life. The more a person is aware of his beliefs, thought processes, and thoughts through learning mindfulness skills, the better and sooner he can evaluate various situations and take appropriate action, and the less likely he is to face problems in his decisions [4]. With the increase in mindfulness, the power of emotion regulation and self-management in a person increases, and the person regulates his emotions in a completely direct way, and the level of skill in regulating his emotions changes [14].

According to what was said, mindfulness can increase deeper awareness and emotional management of feelings and thoughts, and improve positive strategies for regulating emotions and reduce negative strategies. One of the limitations of the current research is the unisex (male) emergency medical staff participating in this study. As a result, caution should be observed in generalizing the results to female employees. In addition, due to the fact that the participants in this study were among the personnel of emergency room 115 in Gorgan city, the generalization of the results to other medical staff such as doctors or nurses and medical staff of other cities is limited. According to the obtained results, it is suggested that in the form of in-service training, cognitive therapy based on mindfulness should be held for the treatment staff, so that by improving the psychological health of this group of people in the society, the quality of the health system services will increase and benefit. Increase the productivity of employees. Acknowledgments We would like to express our gratitude and appreciation to the respected officials of 115 Emergency Center in Gorgan who cooperated in the implementation of the research, as well as to the participants who patiently participated.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

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