

The Relationship Between Mindfulness and Styles of Coping with Stress and Depression in Emergency Medicine Residents Working in İstanbul

Ahmet Faruk Orhan¹, Sarper Yılmaz², Ece Altındağ Orhan³, Özgür Karcioğlu⁴

¹Tekirdağ İsmail Fehmi Cumaloğlu City Hospital, Clinic of Emergency Medicine, Tekirdağ, Turkey

²University of Health Sciences Turkey, İstanbul Kartal Dr. Lutfi Kırdar City Hospital, Clinic of Emergency Medicine, İstanbul, Turkey

³Çorlu State Hospital, Clinic of Psychiatry, Tekirdağ, Turkey

⁴İstanbul Taksim Training and Research Hospital, Clinic of Emergency Medicine, İstanbul, Turkey

Abstract

Objective: This study aimed to examine the relationship between mindfulness and coping styles with stress and depression in emergency medicine residents (EMR).

Materials and Methods: This cross-sectional survey study was used a socio-demographic data form, the mindful attention awareness scale (MAAS), Beck depression inventory (BDI), and the ways of coping with stress inventory. After defining mindfulness levels among physicians, univariate and multivariate logistic regression tests were used to explore its effect on depression.

Results: A total of 207 EMR residents were enrolled in the study. According to the cut-off level of BDI score (≥ 17), 83 (40.1%) of the participants had depression requiring treatment. Mean MAAS scores were significantly lower in the group with depression than the group without depression (median scores: 56 vs. 36, $p=0.000$). The multivariate logistic analysis disclosed that MAAS score was negatively associated with depression. Among ways of coping with stress, scores for self-confident, helpless, and submissive approaches were significantly higher in the group with depression than in those without depression ($p=0.000$ for all).

Conclusion: In addition to high depression rates, a significant relationship was observed between mindfulness and depression in EM residents. These findings suggest the potential benefits of mindfulness-based interventions in reducing the depression levels of EM residents.

Keywords: Emergency medicine residents, mindfulness, depression, stress, coping with stress

Introduction

The emergency departments (ED) create a stress source for many physicians due to the long shifts, overcrowding of the acute care areas, the necessity of proper and rapid treatment, and the high risk of being exposed to violence by patients and their relatives [1]. This leads to reduced professional satisfaction in physicians. Fatigue, stress, distraction, and the increased number of patient admissions may cause delays in recognizing and correcting fatal diseases. As a result of all these stress factors, the risk of many psychiatric disorders, especially depression, increases in physicians working in the ED, and impairment is

observed in their social and occupational functionality [2]. To ensure professional functionality and satisfaction in emergency physicians, it is necessary to review their working conditions, increase their stress coping skills, and prevent depression.

Mindfulness is defined as focusing one's attention on the moment without judgment and accepting the present experiences [3]. With the ability to focus on the present, the person can become aware of what is happening here and now by avoiding the anxiety, fear, and troubles caused by negative experiences in the past, expectations for the future, and uncertainties. In many studies conducted in different groups, it has been revealed that there is a significant relationship



Address for Correspondence: Sarper Yılmaz MD, University of Health Sciences Turkey, İstanbul Kartal Dr. Lutfi Kırdar City Hospital, Clinic of Emergency Medicine, İstanbul, Turkey

Phone: +90 507 280 11 64 **E-mail:** sarperyilmaz08@gmail.com **ORCID-ID:** orcid.org/0000-0001-8166-659X

Received: 27.05.2022 **Accepted:** 22.07.2022

© Copyright 2022 by the Turkish Emergency Medicine Foundation, Global Emergency and Critical Care published by Galenos Publishing House.

between mindfulness and the ability to cope with stress and depression [4,5]. The literature reveals that stress management yields-positive effects, increased professional satisfaction, and decreased depressive symptoms thanks to mindfulness-based practices (mindfulness-based education, stress reduction programs, and cognitive therapies) [6,7]. There are very few studies in the literature examining the level of mindfulness among emergency physicians and the relationship between mindfulness and coping with stress and depression [8,9]. This study aims to examine the relationship between mindfulness and coping with stress and depression in emergency medicine residents (EMR).

Materials and Methods

This cross-sectional study was conducted between February 2019 and September 2019. There are 26 training and research hospitals, 4 city hospitals and 17 university hospitals in İstanbul. Emergency medicine clinic administrators of all these hospitals were applied for the research and 3 universities and 12 training and research hospitals that accepted the research were included in the research. An invitation letter was sent to all residents working in EM clinics who agreed to participate in the study, and all EMR who participated in the invitation and filled out the research form were included in the study. Socio-demographic information forms were handed to all participants who had given their written informed consent. Although the project was designed to reach data of 250 physicians, 219 persons were interviewed, 12 were excluded for inadequate data, and finally, data obtained from 207 physicians were included in the analysis. This form contains questions about the participants' age, sex, marital status, starting date of residency, working conditions, habits, chronic diseases, etc.

Mindful Attention Awareness Scale (MAAS)

The MAAS was used to measure the participants' awareness levels. Developed by Brown and Ryan [3] in 2003, this scale measures individual differences in being aware of instant experiences and being mindful of experiences. It is a 6-point likert-type scale (1= almost always, 2= most of the time, 3= sometimes, 4= rarely, 5= quite infrequently, 6= almost never), which consists of 15 items and gives a single total score. Higher scores on the scale indicate a high level of mindfulness. The internal consistency coefficient of the original scale was found to be $\alpha=0.82$. Özyeşil et al. [10] conducted a validation study for the original questionnaire in Turkish, with high validity and internal consistency.

Beck Depression Inventory (BDI)

The BDI was used to assess the depression levels of the participants. This self-report scale is used to measure the severity

and level of depression symptoms in adult patients and was developed in 1961 by Beck et al. [11]. Its Turkish validity and reliability study was conducted in 1988 by Hisli [12]. It consists of 21 items used to measure the symptoms of depression in vegetative, emotional, cognitive, and motivational areas. Each item consists of a 4-item self-assessment statement that goes from less to more and is scored between 0 and 3. The total score ranges from 0 to 63. For detecting depressive disorder patients, a score of ≥ 17 is defined as an optimal cut-off score with sensitivity 0.809, specificity 0.764, the positive predictive value, 0.402, and the negative predictive value 0.953. We set the cut-off value at a score of 17 [13]. The mean scores of the scale are not affected by sex, age, or education level.

Ways of Coping with Stress Inventory (WCSI)

In this study, the WCSI was used to determine individuals' styles to cope with stress. The scale is a 4-point likert-type scale consisting of 68 items, developed as the ways of coping inventory by Folkman and Lazarus [14]. It was adapted to Turkish and validated in 1992 by Şahin and Durak [15].

The WCSI, an abbreviated form of the inventory, was prepared by Şahin and Durak [15] in 1995 for university students. The final version of the scale has 30 items and consists of 5 factors: Self-confident, optimistic, seeking social support, submissive, and helpless approaches. As the scores obtained from the self-confident, optimistic, and social support-seeking approaches increase, it means the person uses effective coping strategies. On the other hand, as the scores for the helpless and submissive approaches increase, it is understood that they use ineffective, i.e., passive coping strategies [15].

Ethics Committee Approval

The Clinical Research Ethics Committee of the İstanbul Training and Research Hospital approved this study (approval number: 1629, date: 04.01.2019). All participants were informed in detail before starting the study and approval was obtained via written informed consent forms.

Statistical Analysis

Demographic and clinic characteristics were summarized using descriptive statistics. Kolmogorov-Smirnov test was used to determine whether the variables were normally distributed. The Mann-Whitney U test and the chi-square test were performed to determine factors associated with depression. Fisher's exact test was used when the conditions for the chi-squared test were not met. We used Spearman's correlation analysis to compare MAAS scores with WCSI subscale scores. Univariate and multivariate analyses were performed to assess the effect of mindfulness and other factors on depression. The level of significance was set at $p<0.05$ and the SPSS 22.0 software was utilized for the analyses.

Results

A total of 207 EMR were included in the study. One hundred fifty-nine of the participants were in the 24-30 age range (76.8%) and 81 were female (39.1%). Eighty-four of the participants were married (40.6%) and 37 (17.9%) had children. Eighty-nine (43.0%) of the participants worked as a split shift (day or night), while 118 (57.0%) had a 24-hour shift. One hundred seventy-two of the participants (83.1%) chose to be a medical doctor willingly and 157 (75.8%) chose the ED branch willingly. Ninety-three (44.9%) of the participants were smoking, while the rate of alcohol consumption was 50.7%. One hundred-nine of the participants (52.7%) found working conditions easy, 12 (5.8%) moderate, and 86 (41.5%) difficult. Twenty participants (9.7%) had a psychiatric disease and the rate of using antidepressant drugs was 7.7%. Twenty-one (10.1%) participants had a low-income level, 28 (13.5%) had a moderate-income level, and 158 (76.8%) had a high income. Seventy-five (36.2%) of the participants regularly did sports, while 159 (76.8%) had their hobbies. However, only 69 of these (33.3%) could spare time for their hobbies. According to the cut-off score for BDI, 83 (40.1%) of the participants had depression requiring treatment (BDI ≥17). Age, sex, marital status, or having children (p=0.053, p=0.464, p=0.439, p=0.667, respectively) did not differ significantly between participants with and without depression. On the other hand, there was a significant relationship between depression and starting date of the residency, choosing to be a medical doctor willingly, and choosing ED voluntarily (p=0.016, p=0.008, p=0.001, respectively). Also, patients with depression had higher rates of chronic illness (p=0.009) and psychiatric illness (p=0.004), while their income levels (p=0.047) were lower. As a remarkable finding, there was a significant association between depression and not being able to devote time to their hobbies (p=0.001) (Tables 1 and 2).

The participants had a median MAAS value of 47.0 (minimum 15-maximum 79). The MAAS scores were significantly lower in the group with depression (p=0.000) than the group without depression. Among coping styles with stress, self-confident approach was significantly higher, while helpless and submissive approaches scores were significantly lower in the group with depression than those without depression (p=0.000 for all). Optimistic approach (p=0.241) and social support-seeking approach scores (p=0.063) did not differ significantly between the groups (Table 3).

In the univariate analysis performed to determine the factors affecting depression, choosing to be a medical doctor willingly [hazard ratio (HR): 2.86, 95% confidence interval (CI): 1.34-6.11, p=0.007], choosing the ED willingly (HR: 2.74, 95% CI: 1.41-5.32, p=0.003), having a chronic illness (HR: 2.84, 1.26-6.39, p=0.011), having a psychiatric illness (HR: 3.99, 95% CI: 1.46-10.86, p=0.007), spending time for hobbies (HR: 2.80, 95% CI: 1.47-5.32, p=0.003), working conditions (HR: 1.97, 95% CI: 1.11-3.47, p=0.019), and MAAS score (HR: 0.88, 95% CI: 0.85-0.91, p=0.000) were significant factors. Among the coping styles with stress, self-confident (HR: 0.39, 95% CI: 0.22-0.70, p=0.002), optimistic (HR: 0.35, 95% CI: 0.20-0.60, p=0.000), helpless (HR: 3.51, 95% CI: 1.95-6.31, p=0.000), and submissive approaches (HR: 1.71, 95% CI: 1.01-2.89, p=0.043) were significant as well. In the multivariate analysis after adopting the factors that were found to be significant in the univariate analysis, spending time for hobbies, helpless approach, and MAAS score obtained significant results. The correlation between MAAS scores and styles of coping with stress was examined. There was no significant (p=0.118) correlation between MAAS scores and the optimistic approach score. However, there was a significant (p=0.001) negative correlation between MAAS scores and self-confident approach score and significant positive correlations between MAAS scores and helpless, submissive, and social

Table 1. The relationship between depression and clinical characteristics*

		Depression (+)		Depression (-)		p
		n	%	n	%	
Specialization time	1-6 months	26	21	26	31.3	0.016
	7-12 months	12	9.7	7	8.4	
	13-24 months	33	26.6	10	12.0	
	25-36 months	29	23.4	13	15.7	
	More than 36 months	24	19.4	27	32.5	
Working hours	Split shift	55	44.4	34	41.0	0.629
	24-hour shift	69	55.6	49	59.0	
Chose to be a medical doctor willingly	(+)	11	88.7	62	74.7	0.008
	(-)	14	11.3	21	25.3	
Chose the emergency department willingly	(+)	10	83.9	53	63.9	0.001
	(-)	20	16.1	30	36.1	

*Chi-square test (Fisher's exact test)

support-seeking approaches scores ($p=0.001$, $p<0.001$ and $p=0.03$, respectively) has been observed (Table 3).

Discussion

Our study revealed the prevalence of depression among EMR and the factors affecting it, especially their coping with stress and mindfulness. We found that increasing mindfulness levels can be an important protective factor against depression. In studies on the prevalence of depression both in ED and in

other departments, a wide range of results have been obtained depending on factors such as the test chosen, the cut-off value of the test, specialization time, and the country in which the study was conducted [2,16,17]. In our study, according to the BDI, 83 (40.1%) of the participants had depression requiring treatment. Depression rates were significantly lower in those who chose the medical school and ED voluntarily than those who made their decisions randomly, which is consistent with the literature [18]. The rate of chronic illnesses was found to

Table 2. The relationship between depression and other socio-demographic characteristics*

		Depression (+)		Depression (-)		p
		n	%	n	%	
Chronic illness	(+)	11	8.9	18	21.7	0.009
	(-)	113	91.1	65	78.3	
Smoking	(+)	52	41.9	41	49.4	0.290
	(-)	72	58.1	42	50.6	
Alcohol use	(+)	57	46.0	48	57.8	0.094
	(-)	67	54.0	35	42.2	
Working conditions	Easy	57	46.0	52	62.7	0.062
	Moderate	8	6.5	4	4.8	
	Difficult	59	47.6	27	32.5	
Psychiatric illness	(+)	6	4.8	14	16.9	0.004
	(-)	118	95.2	69	83.1	
Use of antidepressants	(+)	7	5.6	9	10.8	0.170
	(-)	117	94.4	74	89.2	
Income level	Low	10	8.1	11	13.3	0.047
	Int.	12	9.7	16	19.3	
	High	102	82.3	56	67.5	
Being involved in sporting activities	(+)	50	40.3	25	30.1	0.134
	(-)	74	59.7	58	69.9	
Hobbies	(+)	101	81.5	58	69.9	0.053
	(-)	23	18.5	25	30.1	
Spending time for hobbies	(+)	52	41.9	17	20.5	0.001
	(-)	72	58.1	66	79.5	

*Chi-squared test (Fisher's exact test)

Table 3. Relationship of depression with MAAS and WCSI subscale scores*

	Depression (-)	Depression (+)	p
	Mean ± SD	Mean ± SD	
MAAS score	55.2±12.0	37.3±11.4	0.000
Self-confident approach	1.1±0.5	1.5±0.6	0.000
Optimistic approach	1.1±0.5	1.2±0.6	0.241
Helpless approach	0.3±0.6	0.0±0.5	0.000
Submissive approach	1.3±0.4	1.0±0.4	0.000
Social support-seeking approach	0.7±0.3	0.6±0.4	0.063

*Mann-Whitney U test.
SD: Standard deviation, MAAS: Mindful Attention Awareness Scale, WCSI: Ways of Coping with Stress Inventory

be significantly higher in the group with depression, in line with the literature [19]. The rate of psychiatric illness was significantly higher in the group with depression than in the group without depression, which is also consistent with the literature [20]. The loss of interest and pleasure is one of the most prominent depressive symptoms and social isolation and distancing from activities and hobbies that people were previously interested in are common among people with depression [21]. In the present study, the rate of devoting time to hobbies was significantly lower in the group with depression than the group without depression, in line with the literature. The inability to spare time for hobbies was one of the influential factors on depression in univariate and multivariate analyses. Mindfulness is the awareness of one's feelings, thoughts, internal and external stimuli, and experiences. The mind does not aim to stand on something or move away from it; it just observes, does not judge, and accepts it as it is. This makes the person more receptive, alert, peaceful, and happy. For this reason, there have been many studies examining the relationship between mindfulness and depression [5]. Studies are frequently conducted among individuals with chronic diseases (especially cancer patients), occupational groups with heavy stress load (especially teachers and healthcare professionals), and students, and a significant portion of these studies show that there is an inverse relationship between mindfulness level and depression. Depressive symptoms seem to decrease with such interventions [22-24]. Therefore, mindful awareness-based training has started to take place in medical schools in some countries [25]. In another study, a 4-week mindfulness-based training program was applied to medical students during their EM clerkship and a significant positive effect was observed on their behaviors and attitudes [9]. In our study, in accordance with the literature, the mindfulness score was significantly lower in the group with depression than the group without depression. It was also observed that the mindfulness score was effective on depression in both univariate and multivariate analyses. Based on these findings, we think that an increase in mindfulness may be a factor to decrease depression. Another issue that ED professionals should focus on is stress management and coping skills. When the literature is examined, more emotional and passive coping styles are seen in depressive individuals [26]. In our study, WCSI was used to investigate the styles of coping with stress. According to this scale, coping styles are discussed under two main headings as active and passive coping. Accordingly, "self-confident approach", "optimistic approach" and "seeking social support approach", which are sub-dimensions of the scale, are considered active methods of coping with stress. In contrast, "helpless approach" and "submissive approach" are passive methods [14]. In our study, the helpless and submissive approach scores were significantly higher in the group with depression than the group without depression,

consistent with the literature. Besides, self-confident and optimistic approaches among active coping styles and helpless and submissive approaches among passive coping styles were determined as effective factors on depression in the univariate analysis. In the multivariate analysis, only the helpless approach was found to be effective on depression. According to these results, we think that depression is higher in individuals who use passive coping styles. Looking at the relationship between coping with stress and mindfulness, studies have found that mindfulness was positively associated with the self-confident, optimistic, and social support-seeking approaches. It has been negatively associated with the helpless and submissive approaches [27]. Again, many studies have shown the positive effects of mindfulness-based practices, such as mindfulness-based stress reduction program, mindfulness-based cognitive therapy, and dialectical behavior therapy on coping with stress and stress factors [27-29]. In this study, a significant positive correlation was observed between MAAS scores and social support-seeking sub-scale scores, an active coping style, in line with the literature. While no significant relationship was observed between MAAS scores and optimistic approach subscale scores, another active coping style, a negative correlation was observed between MAAS scores and self-confident subscale scores, contrary to expectations. One of the potential reasons for this may be the low number of participants. Another reason can be the characteristic of WCSI since it is a self-report scale. The use of author-reported scales can provide more meaningful results.

Study Limitations

Limitation of our study, apart from what we have mentioned before, is that it was conducted in a cross-sectional design, as the causal relationship between variables may not have been adequately revealed. Since the study included only residents, most of the participants were young and healthy individuals, and this prevented generalization of the findings to different age groups. Additionally, the fact that the study consisted of EMR prevents us from extrapolation of the findings to emergency physicians and other branch residents and specialists. Another limitation is utilization of self-report scales to measure the major endpoints, which may have represented a source of bias for each participant.

Conclusion

In EMR; increasing mindfulness levels can be an important protective factor for depression. Depression rates were significantly lower in those who chose the medical school and ED voluntarily than in those who made their decisions randomly. Depression is higher in individuals who use passive coping styles. According to the findings we have obtained, studies aimed at increasing mindfulness will positively affect the coping skills of EMR and will reduce depressive symptoms.

However, further studies with larger sample groups are needed to confirm this conclusion.

Ethics

Ethics Committee Approval: The Clinical Research Ethics Committee of the İstanbul Training and Research Hospital approved this study (approval number: 1629, approval date: 04.01.19).

Informed Consent: Informed consent was obtained from the all patients.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: A.F.O., E.A.O., Ö.K., Concept: A.F.O., E.A.O., Ö.K., Design: A.F.O., Ö.K., Data Collection or Processing: A.F.O., Analysis or Interpretation: A.F.O., S.Y., E.A.O., Literature Search: A.F.O., S.Y., E.A.O., Writing: A.F.O., S.Y., Ö.K.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

- Behnam M, Tillotson RD, Davis SM, Hobbs GR. Violence in the emergency department: a national survey of emergency medicine residents and attending physicians. *J Emerg Med.* 2011;40:565-79.
- Katz ED, Sharp L, Ferguson E. Depression among emergency medicine residents over an academic year. *Acad Emerg Med.* 2006;13:284-7.
- Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. *J Pers Soc Psychol.* 2003;84:822-48.
- Chiesa A, Serretti A. Mindfulness-based stress reduction for stress management in healthy people: a review and meta-analysis. *J Altern Complement Med.* 2009;15:593-600.
- Desrosiers A, Vine V, Klemanski DH, Nolen-Hoeksema S. Mindfulness and emotion regulation in depression and anxiety: common and distinct mechanisms of action. *Depress Anxiety.* 2013;30:654-61.
- Ghawadra SF, Abdullah KL, Choo WY, Phang CK. Mindfulness-based stress reduction for psychological distress among nurses: a systematic review. *J Clin Nurs.* 2019;28:3747-58.
- Di Giuseppe M, Ciacchini R, Piarulli A, Nepa G, Conversano C. Mindfulness dispositions and defense style as positive responses to psychological distress in oncology professionals. *Eur J Oncol Nurs.* 2019;40:104-10.
- Braganza S, Young J, Sweeny A, Brazil V. oneED: embedding a mindfulness-based wellness programme into an emergency department. *Emerg Med Australas.* 2018;30:678-86.
- Chung AS, Felber R, Han E, Mathew T, Rebillot K, Likourezos A. A targeted mindfulness curriculum for medical students during their emergency medicine clerkship experience. *West J Emerg Med.* 2018;19:762-66.
- Özyeşil Z, Arslan C, Kesici Ş, Deniz ME. Bilinçli Farkındalık Ölçeği'ni Türkçeye uyarlama çalışması. *Turkish Eğitim ve Bilim.* 2011;36.
- Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry.* 1961;4:561-71.
- Hisli N. Beck Depresyon Envanterinin geçerliği üzerine bir çalışma. *Psikoloji Dergisi.* 1988;6:118-22.
- Park K, Jaekal E, Yoon S, Lee SH, Choi KH. Diagnostic utility and psychometric properties of the Beck Depression inventory-ii among Korean adults. *Front Psychol.* 2020;10:2934.
- Folkman S, Lazarus RS. An analysis of coping in a middle-aged community sample. *J Health Soc Behav.* 1980;21:219-39.
- Şahin NH, Durak A. Stresle başa çıkma tarzları ölçeği: üniversite öğrencileri için uyarlanması. *Türk Psikoloji Dergisi.* 1995;10:56-73.
- Sun H, Warner DO, Macario A, Zhou Y, Culley DJ, Keegan MT. Repeated cross-sectional Surveys of Burnout, Distress, and Depression among Anesthesiology Residents and first-year graduates. *Anesthesiology.* 2019;131:668-77.
- Williford ML, Scarlet S, Meyers MO, Lockett DJ, Fine JP, Goettler CE, et al. Multiple-Institution comparison of resident and faculty perceptions of burnout and depression during surgical training. *JAMA Surg.* 2018;153:705-11.
- Yuguero O, Forné C, Esquerda M, Pifarré J, Abadías MJ, Viñas J. Empathy and burnout of emergency professionals of a health region: a cross-sectional study. *Medicine (Baltimore).* 2017;96:e8030.
- Gunn JM, Ayton DR, Densley K, Pallant JF, Chondros P, Herrman HE, et al. The association between chronic illness, multimorbidity and depressive symptoms in an Australian primary care cohort. *Soc Psychiatry Psychiatr Epidemiol.* 2012;47:175-84.
- Ginzburg K, Ein-Dor T, Solomon Z. Comorbidity of posttraumatic stress disorder, anxiety and depression: a 20-year longitudinal study of war veterans. *J Affect Disord.* 2010;123:249-57.
- Cacioppo JT, Cacioppo S. Social relationships and health: the toxic effects of perceived social isolation. *Soc Personal Psychol Compass.* 2014;8:58-72.
- Zhang MF, Wen YS, Liu WY, Peng LF, Wu XD, Liu QW. Effectiveness of mindfulness-based therapy for reducing anxiety and depression in patients with cancer: a meta-analysis. *Medicine (Baltimore).* 2015;94:e0897-0.
- Ireland MJ, Clough B, Gill K, Langan F, O'Connor A, Spencer L. A randomized controlled trial of mindfulness to reduce stress and burnout among intern medical practitioners. *Med Teach.* 2017;39:409-14.
- van der Riet P, Levett-Jones T, Aquino-Russell C. The effectiveness of mindfulness meditation for nurses and nursing students: an integrated literature review. *Nurse Educ Today.* 2018;65:201-11.
- Daya Z, Hearn JH. Mindfulness interventions in medical education: a systematic review of their impact on medical student stress, depression, fatigue and burnout. *Med Teach.* 2018;40:146-53.
- Roohafza HR, Afshar H, Keshteli AH, Mohammadi N, Feizi A, Taslimi M, et al. What's the role of perceived social support and coping styles in depression and anxiety? *J Res Med Sci.* 2014;19:944-49.
- Weinstein N, Brown KW, Ryan RM. A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *Journal of Research in Personality.* 2009;43:374-85.
- Flugel Colle KF, Vincent A, Cha SS, Loehrer LL, Bauer BA, Wahner-Roedler DL. Measurement of quality of life and participant experience with the mindfulness-based stress reduction program. *Complement Ther Clin Pract.* 2010;16:36-40.
- Carmody J, Baer RA. Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *J Behav Med.* 2008;31:23-33.