

Investigating the Effectiveness of Virtual Mindfulness-based Stress Training in on Reducing the Anxiety of Adolescents in Rehabilitation Centers during the COVID-19

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ABSTRACT

Background: Mindfulness interventions were shown to be effective in reducing perceived stress in several conditions. These effects were also found in online mindfulness-based training, especially in teenagers. The aim of the study was to determine the effectiveness of virtual mindfulness-based stress training in reducing the anxiety of adolescents in rehabilitation centers during the COVID-19.

Methods: This is a semi-experimental study with a pre-test and post-test design with a control group on 30 teenagers of Zahedan Prison rehabilitation centers from September 2019 to December 2019. The sampling method was simple random using Random Allocation software, so that among the teenagers, 30 people were randomly allocated into an intervention group (with virtual mindfulness training n=15) and control group (with no intervention n=15). The participants completed the STAI-Y anxiety questionnaire one day before and 8 weeks after the intervention. Statistical analysis of the data was done through SPSS 23 software using ANCOVA test.

Results: The results showed that there was a significant difference between the control and intervention groups ($P=0.001$) in such a way that stress training based on mindfulness in a virtual way had a direct and significant effect on reducing anxiety.

Conclusion: Considering that teenagers are a vulnerable group in the society, mindfulness training in a virtual way is a suitable approach to reducing subsequent harm, including anxiety.

Keywords: Mindfulness, COVID-19, Anxiety, Teenager, Online learning, Virtual learning

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Introduction

One of the most common and widely recognized psychiatric disorders among young people is anxiety (1). The World Health Organization (WHO) estimates that 10- 19 percent of teenagers have an anxiety problem (2). If ignored, anxiety problems frequently progress into chronic conditions that last well into adulthood. Many mental and physical

conditions as well as other unfavorable effects are linked to anxiety feelings. Physical pain, such as palpitations, lightheadedness, tightness in the chest, insomnia, and joint and muscular stiffness, also exists in this disorder (3). In terms of psychological harm, anxiety is linked to low self-esteem, diminished well-being, and other mental illnesses, particularly depression; anxiety disorder not only places

a significant financial burden on society and lowers the quality of life, but also ranks among the top causes of suicide among young people (4, 5). Fewer than 50% of adolescents with mental illnesses receive specialized care (6). Also, it might be challenging to recognize anxiety in young individuals since it may not be as obvious as in adults (7). For achieving the best results, immediate identification and evidence-based treatment are, therefore, required (8).

Anxiety problems in young people can be treated with both psychosocial and psychopharmacological therapies, according to a growing body of empirical research (9). However, long-term use of these medications is likely to result in a rise in total cholesterol, dyslipidemia, erectile dysfunction, and even a high rate of drug dependence due to the numerous negative effects of these medications (10). As a result, the current technique of treating anxiety disorders in young people just with drugs is not adequate. Many guidelines and clinical studies in various countries recommend psychotherapy as the primary option for the treatment of anxiety in non-drug treatment situations (11).

One of the interventions in educational environments was stress management training, which has been proven successful in improving people's mental health (12, 13). Stress management is a continuous process of monitoring, detecting, and preventing excessive stressors that have harmful effects on people's efficiency and productivity (14). One of the stress management programs is training based on the principles and methods of mindfulness-based therapy (15, 16). In mindfulness, a person becomes aware of his mental method at any moment, and after becoming aware of the two ways of the mind, one of doing and the other of being, he learns to move the mind from one way to another, which requires the training of specific behavioral, cognitive, and metacognitive strategies to focus the attention process (16). So far, the effectiveness of this treatment in the field of anxiety on anxiety and depression (17-22);

perceived stress, fatigue and burnout of students (23); and emotional problems (24-27) has been proven. Therefore, it is possible that rehabilitation centers help to reduce anxiety among teenagers. Given its usability, the number of smartphone apps for mindfulness exercises has increased noticeably in recent years. They include HeadSpace and Calm (26, 27). Hence, using smartphone apps could be a good way to become more familiar with and practice mindfulness more frequently (25, 23).

The situation in which we observed the greatest increase in the use of online technologies for communication, training, and every aspect of our daily life was the COVID-19 (COroNaVIrus Disease 19, caused by the Severe Acute Respiratory Syndrome Coronavirus 2—SARS-CoV-2) pandemic. Moreover, social distancing was previously proven to trigger negative mental health consequences, including intensified anxiety and depression (3). Therefore, given the need of abused and homeless teenagers to improve their psychological health at COVID-19 pandemic, the impossibility of face-to-face education, and lack of sufficient studies for distance education of teenagers, this study aimed to investigating the effectiveness of virtual mindfulness-based stress training in reducing the anxiety of adolescents in rehabilitation centers during the COVID-19.

Methods

This is a semi-experimental study with a pre-test and post-test design with a control group. The statistical population of the present study consisted of all the teenagers referred to Zahedan Prison rehabilitation centers. The samples were randomly allocated. All students were given a code, and the study lasted 2 months.

Participants

The inclusion criteria were: (1) aged 10- 20 years; (2) STAI score >39–40; and (3) fluency in the Persian language. All patients were diagnosed by a psychologist, with diagnoses confirmed using the interview administered

at the screening visit. The exclusion criteria were: (1) individuals who were currently receiving weekly structured psychotherapy; (2) those who met the Diagnostic and Statistical Manual of Mental Disorders-V criteria for severe alcohol/substance use disorders in the past 3 months, demonstrated clinically significant suicidal ideation (defined as imminent intent), and individuals who had attempted suicide in the past 6 months; and (3) those with comorbid diagnoses of borderline personality, bipolar disorder, schizophrenia, and/or obsessive compulsive disorder.

Sample Size

Based on the study of Bossiet al. (12) and Alpha error, the power of the test was calculated to be 80% of the sample size of 25; considering a drop of 20%, we selected a sample of 30.

$$n = \frac{\left(Z_{1-\frac{\alpha}{r}} + Z_{1-\beta} \right)^2 (\delta_1^2 + \delta_2^2)}{(\mu_1 - \mu_2)^2}$$

The research sample consisted of 30 homeless and poorly supervised teenagers of the reformatory centers selected through the convenient sampling method. They were divided into two groups of 15 each, using simple random method (Figure 1); the experimental group received the intervention in the form of mindfulness-based online, and the control group received no intervention during the research.

Intervention

Then mindfulness-based stress reduction training through WhatsApp was applied to the experimental group, but the control group did not receive any intervention. Mindfulness-based stress reduction intervention (28) was implemented in 8 sessions in the form of two-hour weekly sessions on the experimental group in a virtual way (Table 1). After completing the training sessions, the experimental and control groups answered the measurement tool again as a post-test. To test research hypotheses, we used ANCOVA

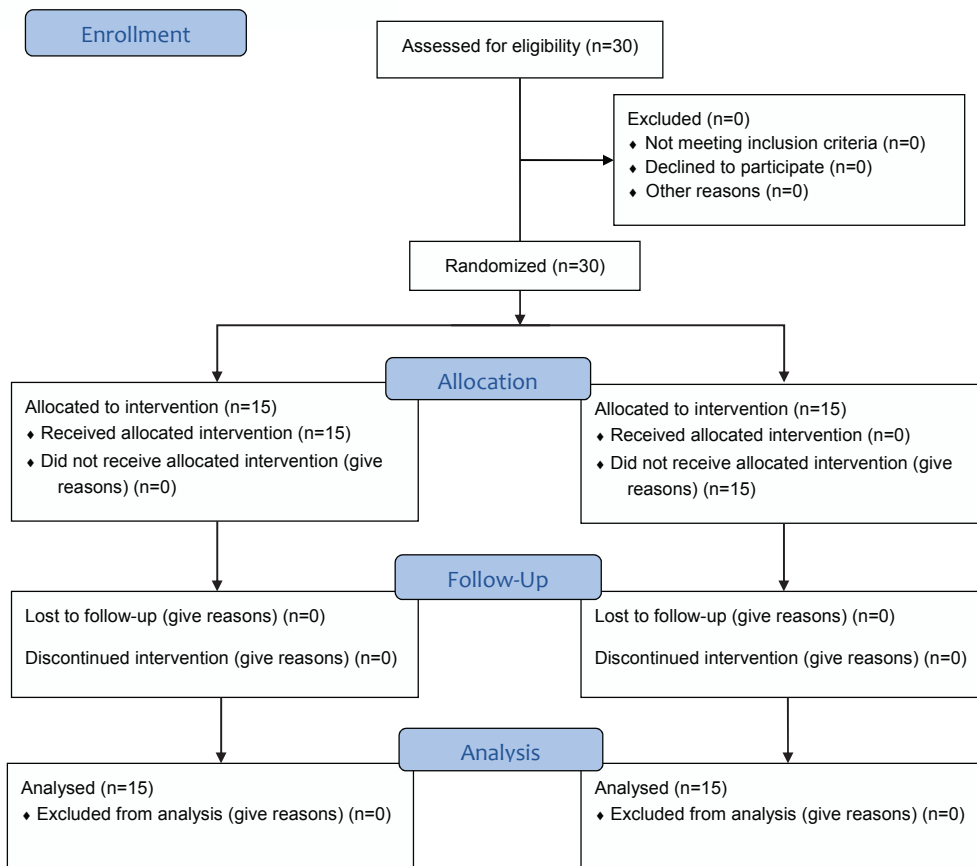


Figure 1: CONSORT Flow Diagram

Table 1: Plan of mindfulness intervention sessions based on stress reduction

First session	Getting to know and establishing relationships with the group members, determining the rules governing the meetings, discussing the impact of the training, conducting the pre-test
Second session	Examining the mind and its related theories-introducing mindfulness. Homework: Practicing eating raisins
Third session	Reviewing the experiences of pre-assignment sessions: three-minute breathing exercises and sitting meditation
Fourth Session	Homework Review: Mountain breathing practice, practice writing negative judgments about others in the last week
Fifth session	Reviewing the experiences of pre-homework sessions: practicing physical examination, looking at candles
Sixth session	Reviewing the experiences of the previous sessions - completing the calendar of pleasant events, the lake meditation
Seventh session	Reviewing the experiences of previous meetings - completing the calendar of unpleasant events
Eighth session	Reviewing the experiences of the previous sessions - reviewing the assignment - summarizing - completing the post-exam

using SPSS v22 software. Also, to comply with the assumptions of ANCOVA, we checked the assumptions of this test and confirmed them using the Shapiro-Wilk test. The criteria for entering the study included abused and neglected teenagers of the correctional center, lack of specific physical and mental problems, and consent to participate in the research. The exclusion criteria included not being satisfied with cooperation at the end-of-work process, suffering from an acute physical and mental illness during the research, and being unable to do the homework assigned for out of session.

Data Collection Instrument

State anxiety was estimated for all altitudes using the State-Trait-Anxiety-Inventory (STAI) [23]. This consists of 40 questions, of which 20 items reflect the current anxiety state ('at this moment') and hence 'State Anxiety' (STAI Y-1) and 20 items are related to the background sustained anxiety ('in general') known as the Trait Anxiety (STAI Y-2). The potential answers for each of the questions are numbered 1–4 on a Likert Scale: 1 'almost never', 2 'sometimes', 3 'often', and 4 'almost always.' The total score ranges from 20–80 for each of the STAI Y-1 and Y-2 questionnaires, respectively, with higher scores indicating greater anxiety. A cut-off point of >39–40

has been suggested to detect clinically significant state anxiety in younger adults. This tool has been standardized in Iran by Mehran (1372), reporting a Cronbach's alpha coefficient of 0.92 and its test re-test reliability from 0.69 to 0.76. (29) Also, the reliability of this questionnaire has been calculated as 87% in various studies; Kazemi Malek Mahmoudi (2012) and Rouhi (1384) also calculated the reliability of the Spielberger test as 89 and 90%, respectively, in a preliminary study (30, 31).

Data Analysis

The mean, standard deviation, skewness-kurtosis, and minimum and maximum scores were used in SPSS version 23 software to describe the research variables employed in this study. Statistical method used to compare the groups for primary and secondary outcomes was ANCOVA test. A P-value less than 0.05 was considered as statistically significant.

Results

Table 2 shows the descriptive indicators of gender, age, and marital status variables.

The results shown in Table 3 reveal that in the pre-test, the average scores of the anxiety components in the control and test groups are not significantly different, but that of the test group in the post-test have

Table 2: Demographic information of the participants

Variables	Grouping	Control		Intervention 1		P value
		Frequency	%	Frequency	%	
Age of participants	10-15	6	40	7	46.7	0.912
	15-20	9	60	8	53.3	
Gender of participants	Male	15	50	15	50	0.711
	Female	0	0	0	0	
Marital status of parents	Married	2	13.4	3	20	0.610
	Single	13	86.6	12	80	

Table 3: Descriptive statistics of anxiety by group and test phase

Variable		Intervention		Control		P value
		Mean	±SD	Mean	±SD	
Obvious anxiety	Pre-test	52.53	5.18	50.53	6.34	0.001
	Post test	33.13	8.70	50.54	6.20	
	Between groups	P=0.01		P=0.11		
Hidden anxiety	Pre-test	53.80	9.90	54.93	5.22	0.001
	Post test	35.86	7.93	54.73	5.65	
	Between groups	P=0.01		P=0.12		
Total anxiety	Pre-test	106.33	10.36	105.46	9.53	0.001
	Post test	69	13.80	105.26	10.04	
	Between groups	P=0.001		P=0.11		

decreased compared to the pre-test, as well as the average anxiety scores of the control group in the pre-test and post-test.

Discussion

The aim of this research was to investigate the effectiveness of stress training based on mindfulness in a virtual way in reducing the anxiety of teenagers in rehabilitation centers in COVID-19. The results of this study showed that the implementation of this educational program was effective in reducing the anxiety of abused and neglected adolescents in rehabilitation centers. This finding is consistent with those of Talebi (1400), which showed that cognitive therapy based on mindfulness affected the level of anxiety (18); Eghbali et al. (2019) showed that mindfulness-based stress reduction training had an effect on depression, anxiety, and stress of people at risk of contracting COVID-19 (19). Also, Namvar et al. (2019) who showed that mindfulness based on stress reduction has an effect on patients' anxiety and depression (21). Azhdari Kazroni et al. (2019) showed that mindfulness therapy had

an effect on reducing the anxiety of Corona and solving marital conflicts of Tehrani couples during the COVID-19 pandemic (22). In the same line, Hosseini et al. (2015), Sattari and Kafashzadeh (2014) and Dehestani (2014) stated that the implementation of mindfulness training had an effect on anxiety in high school students (28, 32, 33). Moreover, Nessel et al. (2021) showed that stress reduction treatment based on mindfulness impacted mental health and emotion regulation (17). Hofmann and Gomez (2017) indicated that interventions based on mindfulness were effective in anxiety and depression (34). Also, Van Son et al. (2014) indicated that cognitive therapy based on mindfulness was effective on the anxiety of people with diabetes (35).

In explaining the effectiveness of mindfulness techniques on anxiety, it can be said that mindfulness includes the practice of the techniques that guide patients in the direction of decentralization. Patients in the mindfulness program review the defocusing of thoughts, feelings, and emotions (or anything else that may occur) during meditation sessions. These sessions enable a

person to practice defocusing in a controlled environment, usually in a seated position with eyes closed in a relaxed atmosphere. When skills are reviewed, acceptance is easier and more convenient (36). As a result, it reduces anxiety. On the other hand, it seems that mindfulness with its two basic components, i.e. paying attention to the current experience and being receptive to this experience, allows the non-judgmental calling of the thoughts, emotions, and emotions without the person. It provides the ability to get caught in it or avoid it, and this issue causes emotional stability. Therefore, this effect reduces the symptoms of anxiety in a constructive and efficient way. If people are aware of their reaction to a stressful situation, they learn how to react to it in a more constructive and harmonious way. As mentioned, the research findings showed that stress reduction training based on mindfulness has been effective in reducing anxiety. In its explanation, it can be said that mindfulness skills allow anxious teenagers to identify habitual thinking patterns that prevent people from achieving a stable life and correct these habitual patterns by replacing them with more adaptive emotional regulation strategies. Researchers believe that emotions and physiological states can also cause more anxiety and provide false evidence to make a person anxious, and when these conditions happen to a person, he/she responds through more confusion, avoidance, and emotional breakdown, which only makes things worse. It develops anxiety in a person. Therefore, the first step in helping people with anxiety symptoms is to stop the cycle of anxiety and then find ways to limit the experience of anxiety by substituting new habits based on increasing self-esteem and coping skills. Relaxation is like mindfulness, so let's change (37). For this reason, the stabilization of this habit and attitude in a person causes the effect of stress management training based on mindfulness on reducing anxiety scores to continue over time. Therefore, it seems that it is better to use virtual educational methods more effectively to design educational

programs because it avoids wasting time and money, it is cost-effective, and in this crisis, where distance was emphasized, it is one of the most effective methods. These methods are considered, while traditional methods are still used for education. It is suggested that further studies should be conducted regarding the use of educational methods in virtual space for health education.

Limitations and Suggestions

Among the other limitations of this project, we can point out the individual characteristics; mental and psychological characteristics; and life, cultural and social differences of the research samples that had an impact on the answers to the questions and the results of the research. The researcher was abroad and doing research in Prison rehabilitation centers was accompanied by strictness.

Conclusion

Due to the fact that the unsupervised and abused teenagers are one of the vulnerable groups in the society, the use of MBSR program and similar online programs will reduce the excitement and thus prevent social harm in them.

Authors' Contribution

MF conceived and designed the evaluation, interpreted the data, and revised the manuscript critically for important intellectual content; also, SSh performed the statistical analysis, revised the manuscript critically for important intellectual content, participated in the interpretation of the data, and revised the manuscript critically for important intellectual content, collected the data, drafted the manuscript, and read and approved the final manuscript.

Conflict of Interest: None declared.

Ethical Approval

This study was approved by the Ethics Committee of the Central Prison in Sistan and Baluchestan Province under code IR.IAU.

ZAH.REC.1400.026. (webpage of ethical approval code is: <https://ethics.research.ac.ir/EthicsProposalView.php?&code=IR.IAU.ZAH.REC.1400.026>)

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References

- 1 Creswell C, Waite P, Hudson J. Practitioner Review: Anxiety disorders in children and young people—assessment and treatment. *Journal of Child Psychology and Psychiatry*. 2020 Jun;61(6):628-43.
- 2 Bandelow B, Reitt M, Röver C, Michaelis S, Görlich Y, Wedekind D. Efficacy of treatments for anxiety disorders: a meta-analysis. *International clinical psychopharmacology*. 2015 Jul 1;30(4):183-92.
- 3 Darvishi E, Golestan S, Demehri F, Jamalnia S. A cross-sectional study on cognitive errors and obsessive-compulsive disorders among young people during the outbreak of coronavirus disease 2019. *Activitas Nervosa Superior*. 2020 Dec;62:137-42.
- 4 Gili M, Castellví P, Vives M, de la Torre-Luque A, Almenara J, Blasco MJ, Cebrià AI, Gabilondo A, Pérez-Ara MA, Miranda-Mendizabal A, Lagares C. Mental disorders as risk factors for suicidal behavior in young people: A meta-analysis and systematic review of longitudinal studies. *Journal of affective disorders*. 2019 Feb 15;245:152-62.
- 5 Vizard T, Sadler K, Ford T, Newlove-Delgado T, McManus S, Marcheselli F, Davis J, Williams T, Leach C, Mandalia D, Cart-Wright C. Mental health of children and young people in England. *Health and Social Care Information Centre*. 2020 Oct 13:1-53.
- 6 Ye X, Bapuji SB, Winters SE, Struthers A, Raynard M, Metge C, Kreindler SA, Charette CJ, Lemaire JA, Synyshyn M, Sutherland K. Effectiveness of internet-based interventions for children, youth, and young adults with anxiety and/or depression: a systematic review and meta-analysis. *BMC health services research*. 2014 Dec;14(1):1-9.
- 7 Solmi M, Radua J, Olivola M, Croce E, Soardo L, Salazar de Pablo G, Il Shin J, Kirkbride JB, Jones P, Kim JH, Kim JY. Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies. *Molecular psychiatry*. 2022 Jan;27(1):281-95.
- 8 Cohen Kadosh K, Basso M, Knytl P, Johnstone N, Lau JY, Gibson GR. Psychobiotic interventions for anxiety in young people: a systematic review and meta-analysis, with youth consultation. *Translational psychiatry*. 2021 Jun 16;11(1):352.
- 9 Carter T, Pascoe M, Bastounis A, Morres ID, Callaghan P, Parker AG. The effect of physical activity on anxiety in children and young people: A systematic review and meta-analysis. *Journal of Affective Disorders*. 2021 Apr 15;285:10-21.
- 10 Bear HA, Edbrooke-Childs J, Norton S, Krause KR, Wolpert M. Systematic review and meta-analysis: outcomes of routine specialist mental health care for young people with depression and/or anxiety. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2020 Jul 1;59(7):810-41.
- 11 Niedzwiedz CL, Knifton L, Robb KA, Katikireddi SV, Smith DJ. Depression and anxiety among people living with and beyond cancer: a growing clinical and research priority. *BMC cancer*. 2019 Dec;19(1):1-8.
- 12 Bossi F, Zaninotto F, D'Arcangelo S, Lattanzi N, Malizia AP, Ricciardi E. Mindfulness-based online intervention increases well-being and decreases stress after Covid-19 lockdown. *Scientific reports*. 2022 Apr 20;12(1):6483.
- 13 Khoury B, Sharma M, Rush SE, Fournier C. Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *J Psychosom Res*. 2015;78(6):519-28. PMID: 25818837 doi: 10.1016/j.jpsychores.2015.03.009

- 14 Raitano RE, Kleiner BH. Stress management: stressors, diagnosis, and preventative measures. *Management Research News*. 2004. Doi: <https://doi.org/10.1108/01409170410784446>
- 15 Flaxman PE, Bond FW. A randomised worksite comparison of acceptance and commitment therapy and stress inoculation training. *Behav Res Ther*. 2010;48(8):816-20. [pubmed: 20627269] doi: 10.1016/j.brat.2010.05.004
- 16 Segal, Z. V., Williams, J. M. G., Teasdale, J. (2002). Mindfulness-based cognitive Strategies, and Systolic and Diastolic Blood Pressures in Patients with Hypertension. *The Journal of Tehran University Heart Center*, Vol 10 , NO 3, PP 140-148..
- 17 Nasset MB, Bjørngaard JH, Whittington R, Palmstierna T. Does cognitive behavioural therapy or mindfulness-based therapy improve mental health and emotion regulation among men who perpetrate intimate partner violence? A randomised controlled trial. *Int J Nurs Stud*. 2021;113:103795.[PubMed: 33120137] doi: 10.1016/j.ijnurstu.2020.103795
- 18 Talebi M. The Effectiveness of Mindfulness-Based Cognitive Therapy on Anxiety, Happiness and Mindfulness in Nurses. *Avicenna Journal of Nursing and Midwifery Care*. 2021;29(2):126-36. doi: 10.30699/ajnmc.29.2.126
- 19 Eghbali Ali, Vahedi Hossein, Rezaei Rasool, Fathi Ayatollah (1399). The effectiveness of mind-based stress reduction training
- 20 Naqibi Forough, Ahadi Hassan, Tajeri Buick, Sirafi Mohammad Reza. (1399). The effectiveness of mindfulness-based stress reduction training on psychological symptoms and pain in patients with thalassemia major. *Cognitive Science News*. ۱۳۹۹; 22 (2): 45-53 Doi: 10.30699/icss.22.2.45 doi: 10.30699/icss.22.2.45
- 21 Namvar, Maliha; Khorami, Mohammad; Noorullahi, Atefeh and Pournemat, Mina. (1399). Evaluation of the effectiveness of mindfulness based on stress reduction on anxiety and depression in MS patients. *Psychology of Exceptional People*, 10, 39, 200-179. doi: 10.22054/JPE.2021.45321.2037
- 22 Azhdari Kazroni, Mustafa and Nami Pas Visheh, Hamida and Mazloumin, Mehssa. (2019). The effectiveness of mindfulness therapy on reducing anxiety of Corona and solving marital conflicts of Tehrani couples during the epidemic of covid-19. The fourth national psychology conference of Payam Noor University, Rasht
- 23 Turkal M, Richardson LG, Cline T, Guimond ME. The effect of a mindfulness based stress reduction intervention on the perceived stress and burnout of RN students completing a doctor of nursing practice degree. *Journal of Nursing Education and Practice*. 2018;8(10):58.
- 24 van Son J, Nyklíček I, Pop VJ, Blonk MC, Erdtsieck RJ, Pouwer F. Mindfulness-based cognitive therapy for people with diabetes and emotional problems: long-term follow-up findings from the DiaMind randomized controlled trial. *J Psychosom Res*. 2014;77(1):81-4.[pubmed: 24913347] doi: 10.1016/j.jpsychores.2014.03.013
- 25 Conner CM, White SW. Stress in mothers of children with autism: Trait mindfulness as a protective factor. *Research in Autism Spectrum Disorders*. 2014;8(6):617-24. doi: <https://doi.org/10.1016/j.rasd.2014.02.001>
- 26 Mirzaei, Elham and Shairi, Mohammad Reza. (1397). Evaluation of the effectiveness of stress reduction therapy based on mindfulness on positive and negative emotions and depressive symptoms. *Journal of Mashhad University of Medical Sciences*, Volume 61, Number 1,876-864. doi: 10.22038/MJMS.2018.11199
- 27 Birami M, Hashmit T, Bakshipour A, Mahmoud Alilou M, Iqbali A. Comparison of the effect of two methods of emotion regulation training and cognitive therapy based on mindfulness, on psychological distress and cognitive strategies of emotion regulation of mothers of mentally retarded children. *New Psychological Research Quarterly*. 2015;9(33):43-59.<https://>

- psychologyj.tabrizu.ac.ir/article_3966.html
- 28 Gholipour, Fatemeh Zahra. (2016). Effectiveness of mindfulness-based stress reduction treatment training on reducing anxiety, depression and stress of anxious female students in Qaimshahr city. *Quarterly Journal of Psychology and Educational Sciences*, Volume 3, Number 3, 133-125.
- 29 Khanipour, Hamid, Mohammadkhani, Parvaneh, Tabatabai, Saeed, (1390), Thought control strategies and anxiety: predictors of morbid worry in non-clinical samples, *Journal of Behavioral Sciences*, Volume 5, Number 2, pp. 178-173. <https://www.sid.ir/paper/129756/fa>
- 30 Rabiee M, Kazemi Malek Mahmodi S, Kazemi Malek Mahmodi S. The effect of music on the rate of anxiety among hospitalized children. *Journal of Gorgan University of Medical Sciences*. 2007;9(3):59-64. Doi: <http://goums.ac.ir/journal/article-1-292-fa.html>
- 31 Roohy GR, Rahmany A, Abdollahy AA, Mahmoody GhR. The effect of music on anxiety level of patients and some of physiological responses before abdominal surgery. *Journal of Gorgan University of Medical Sciences*. 2005;7(1):75-8. Doi: <http://goums.ac.ir/journal/article-1-18-fa.html>
- 32 Hosseini S., Esmati-Moghadam M., Dehnukhalji H., Soltani-Rabat S., Mohammadi A. Investigating the effect of mindfulness-based stress management training on anxiety and depression of female students, *Journal=Studies in Psychology and Educational Sciences*, number=4, year=1395.65 - 73.
- 33 Sattari, Kafashzadeh M. The effect of mindfulness method on exam anxiety of secondary school girls in Saveh city. *Scientific journal of education and evaluation (quarterly)*. 2015;8(31):25-36. https://jinev.tabriz.iau.ir/article_518877.html
- 34 Hofmann SG, Gómez AF. Mindfulness-Based Interventions for Anxiety and Depression. *Psychiatr Clin North Am*. 2017;40(4):739-49.[pubmed: 29080597] DOI: 10.1016/j.psc.2017.08.008
- 35 van Son J, Nyklíček I, Pop VJ, Blonk MC, Erdtsieck RJ, Pouwer F. Mindfulness-based cognitive therapy for people with diabetes and emotional problems: long-term follow-up findings from the DiaMind randomized controlled trial. *J Psychosom Res*. 2014;77(1):81-4.[pubmed: 24913347] DOI: 10.1016/j.jpsychores.2014.03.013
- 36 Baer R. Mindfulness Training as a Clinical Intervention: A Conceptual and Empirical Review. *Clinical Psychology: Science and Practice*. 2003;10:125-43. DOI:10.1093/clipsy.bpg015
- 37 Goldin PR, Gross JJ. Effects of mindfulness-based stress reduction (MBSR) on emotion regulation in social anxiety disorder. *Emotion*. 2010;10(1):83-91. [pubmed: 20141305] DOI: 10.1037/a0018441