



# The Effectiveness of Mindfulness-Based Stress Reduction Training at the Peak of COVID-19 Epidemic on Stress in Abused and Unaccompanied Adolescents in the Correctional Center

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## Abstract

**Background:** The purpose of this study is investigating the effectiveness of mindfulness-based stress reduction training in reducing post-traumatic stress and its effects at the peak of the COVID-19 epidemic in abused and unattended adolescents in correctional centers.

**Methods:** The present study was a quasi-experimental study with a pretest and posttest design in a control group. The statistical population of the present study consisted of all abused and unaccompanied adolescents in correctional centers. The sampling method was convenient, and 30 adolescents were selected based on the inclusion criteria and randomly assigned to two groups of 15 (experimental and control). Withers et al.'s (1993) list of post-traumatic stress disorder was used to collect data.

**Results:** For statistical analysis of data, covariance analysis and independent *t*-test were used with the help of SPSS software. The results showed a significant difference between the control and experimental groups ( $P < 0.05$ ) in such a way that the stress reduction training based on stress mindfulness after the accident had a direct and significant effect at the 95% confidence level.

**Conclusions:** Considering that badly-supervised and unsupervised teenagers are a vulnerable segment of society, mindfulness training is a suitable way to reduce future harm.

**Keywords:** Mindfulness-Based Stress Reduction, Covid-19, Post-traumatic Stress, Adolescents

## 1. Background

Currently, the COVID-19 virus, which in some patients leads to severe respiratory distress syndrome and may even lead to the death of some patients, is a pandemic or widespread and is spreading in all countries (1). The lack of definitive treatment or prevention and the prediction of some epidemiologists that at least 60% of the population is infected with this disease has caused a lot of stress and anxiety in communities (2). On the other hand, the fear and anxiety caused by a possible illness are destructive and can lead to mental abnormalities and stress in people (3). If this fear and stress persist for a long time, it will be destructive and weaken the immune system and decrease the body's ability to fight diseases such as Covid-19 (4). The adolescence period is one of the most important transitions in human development; biological, psychological, and social forces affect adolescent development (5). Some adolescents enter the adolescence period with parental support and family accompaniment; however, some adolescents who do not have adequate social

support in the family and the environment or have had punitive reactions in the correctional center may be affected by their interactions and future (6). Neglected and abused children are deprived of educational and psychological presence, the effective support of their parents, and the benefits of living in a family. Caring, empathic understanding and participation, transparent power structure, and problem-solving are essential family tasks. But neglected and abused children are deprived of this blessing and grow up in quasi-family centers (7). Traumatic experiences in childhood are one of the main causes of disorders such as post-traumatic stress disorder. Unaccompanied children are among the most vulnerable to mental disorders such as post-traumatic stress disorder (8). The experience of losing parents in children is considered to be one of the main causes of post-traumatic stress disorder, and children who lose their parents are even more likely to show signs of post-traumatic stress disorder than children who have been traumatized by the occurrence of natural disasters (9, 10). One of the therapeutic interventions in

educational environments was stress management training, which its success has been proven to improve people's mental health (11, 12). Stress management is a continuous process of monitoring, detecting, and preventing excessive stressful stimuli that have detrimental effects on the efficiency and effectiveness of individuals (13). One of the stress management programs is education based on the principles and methods of mindfulness-based treatment (14). Kabat Zayn et al. cited in Segal et al. defines mindfulness as paying attention to a specific, purposeful model in the present without judgment and prejudice (15). In mindfulness, a person becomes aware of his mental method at every moment, and after being aware of the two ways of the mind, one doing and the other being, he learns to move the mind from one method to another, which requires the training of the specific behavioral, cognitive, and metacognitive strategies to centralize the attention process (15). Research has shown that mindfulness-based stress reduction training is effective on anxiety and depression (16-28), perceived stress and fatigue and burnout of students (29), and emotional problems (30-33).

Therefore, given that most adolescents are in school environments, it is necessary to recognize emotional problems and ways to deal with these adversities and use them because emotional problems affect adolescent performance. Few studies, superficial and untested solutions have been suggested, which means it is necessary to use interventions based on innovative and modern tactics to address the behavioral, emotional, and cognitive characteristics of adolescents on the path to achieving their educational and training goals.

## 2. Objectives

The present study seeks to answer the question of whether mindfulness-based stress reduction training at the peak of the Covid-19 epidemic affects the post-traumatic stress and effects of abused and unaccompanied adolescents at the correctional center.

## 3. Methods

The present study was a quasi-experimental study with a pretest and posttest design with a control group. The present study's statistical population consisted of all Zahedan Correctional Center adolescents. The sampling method was the convenience method. In the first stage, 56 abused and unaccompanied adolescents were selected for screening, and in the next stage, based on the inclusion criteria, 30 adolescents were selected and randomly assigned into two groups of 15 (experimental and control groups).

Mindfulness-based stress reduction training was then applied to the experimental group. Mindfulness-based stress reduction intervention (34) was conducted on the experimental group in eight two-hour sessions every other day (Table 1). At the end of the training sessions, the experimental and control groups again answered the measuring instrument as a posttest.

Criteria for entering the research: (1) abused and unsupervised youths of the correctional center; (2) not having specific physical and mental problems; (3) having consent to participate in the research.

Exclusion criteria from the research: (1) dissatisfaction with cooperation in the work process; (2) suffering from an acute physical and mental illness during the research; (3) inability to do homework outside the meeting

### 3.1. Data Collection Tools

#### 3.1.1. Post-traumatic Stress Disorder Questionnaire

Post-traumatic stress disorder is a self-report scale used to assess the extent of the disorder and to screen these patients from normal people and other patients as a diagnostic aid tool. This list was prepared by Withers et al. (1993, cited in Goodarzi) based on diagnostic criteria for the US National Center for Post-traumatic Stress Disorder and included 17 items, of which 5 of them are related to the signs and symptoms of re-experiencing a traumatic accident, 7 of them related to the signs and symptoms of emotional numbness and avoidance and five items related to the signs and symptoms of severe arousal. The scoring method is obtained as a Likert (1 = not at all, two = very little, 3 = medium, 4 = high, 5 = very high) and is in the range of 17 - 85. Withers et al. (1993, cited in Goodarzi) (35), in a study, reported similarity coefficients of 0.97 for the whole scale and a coefficient of 0.96 as test coefficients two or three days apart. Krobach's alpha coefficient of this scale was equal to 0.93 to provide an index for the validity of this scale; its correlation with the list of life events was calculated and reported as equal to 0.37, which indicates the concurrent validity of this scale.

Data are expressed as mean  $\pm$  SD and analyzed by unpaired student's *t*-test.

## 4. Results

All of the participants are men. There was no significant difference in age between the control ( $15.9 \pm 1.9$ ) and experimental ( $15.8 \pm 2.7$ ) groups ( $P = 0.878$ ).

There is little difference between the pretest post-traumatic stress scores and their components in the two groups (Table 2). It is also observed that the mean post-traumatic stress scores and their components in the group

**Table 1.** Design of Mindfulness Intervention Sessions Based on Stress Reduction

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

posttest decreased compared to the pretest. Also, the mean post-traumatic stress scores and their components in the control group in the pretest and posttest were not significantly different. Before checking the significance of the observed differences using covariance analysis, the data's normality was checked using the Shapiro-Wilk test, and considering that the significance level for the variable was greater than 0.05, the null hypothesis indicates that the data is not normal. The normal distribution was confirmed. The results show a significant difference between the control and experimental groups ( $P < 0.05$ ). In other words, "mindfulness-based stress reduction training has a significant effect on post-traumatic stress and its components."

## 5. Discussion

Findings indicate that mindfulness-based stress reduction training at the peak of the COVID-19 epidemic has effectively reduced post-traumatic stress in abused and unaccompanied adolescents of the correctional center. These results are in line with previous findings, which have shown that mindfulness exercises are an effective program for reducing stress that can be found in the research of Elahi et al. (18), Butler et al. (19), Hofmann and Gomez (20), Talebi (24), Eghbali, et al. (25), Naqibi et al. (26), Turkal et al. (29), van Son et al. (30), Mirzaee and Shairi (32) and Beyrami et al. (33).

Regarding the effectiveness of mindfulness-based stress reduction training in reducing post-traumatic stress in abused and unaccompanied adolescents, it can be said that adolescents in the transition period from adolescence face various issues such as physical and sexual development, extreme emotions, identity search, fear of responsibility and some other challenging issues, each of which in turn can impose a lot of stress on adolescents. Therefore, due to the fact that mindfulness training

helps people to know themselves better and experience a non-judgmental, accepting, trusting, patient and kind attitude, it causes people to become aware of relationships with others and the amount of contacts. To increase their sociality, it will somehow be effective on interpersonal behaviors. In other words, it can be said that mindfulness training increases awareness of relationships, which in turn reduces post-traumatic stress (15).

Also, the effectiveness of mindfulness in improving post-traumatic stress can be explained by the fact that mindfulness includes the practice of components that lead patients to decentralization. In the mindfulness program, patients practice decentralization of thoughts and emotions (or anything else that may occur) during meditation sessions. These sessions enable a person to practice decentralization in a controlled environment, usually sitting with closed eyes in a relaxed atmosphere (36). Therefore, the focus of mindfulness training on intra-personal processes helps people change their relationships with their inner states, thoughts, and feelings, thus reducing post-traumatic stress.

### 5.1. Conclusions

Considering that unsupervised and abused teenagers are part of the vulnerable group of society, the use of the MBSR program and similar programs reduces excitement and anxiety, increases self-confidence, and thus prevents social harm.

### Footnotes

**Authors' Contribution:** Mohammadali Fardin conceived and designed the evaluation, interpreted the data, and revised the manuscript critically for important intellectual content, also Saeed Shahreki Kemak and Sofia Khaneghahi performed the statistical analysis, and revised

**Table 2.** Descriptive Statistics of Post-traumatic Stress by Group and Test Stage<sup>a</sup>

	Experimental Group	Control Group	P Value
<b>Re-experience</b>			
Pretest	16.9 ± 3.5	16.6 ± 2.7	0.744
Post-test	9.7 ± 2.5	17.4 ± 2.82	0.000
Changes	7.4 ± 3.11	-0.9 ± 0.6	0.000
<b>Avoidance</b>			
Pretest	25.6 ± 5.24	27.46 ± 2.79	0.234
Post-test	14.06 ± 5.03	27.3 ± 4.1	0.000
Changes	11.53 ± 4.6	0.13 ± 2.4	0.000
<b>Severe arousal</b>			
Pretest	18.9 ± 4	19.2 ± 2.4	0.782
Post-test	11.8 ± 6	19.4 ± 2.06	0.000
Changes	7.1 ± 2.9	-0.2 ± 1.2	0.000
<b>Post-traumatic stress</b>			
Pretest	61.4 ± 9.6	63.2 ± 5.02	0.511
Post-test	35.46 ± 12.5	64.1 ± 4.7	0.000
Changes	25.9 ± 10.13	-0.8 ± 3.1	0.000

<sup>a</sup> After calculating the changes in the scores of 30 people, an independent t-test was performed, according to the results of Levin's test ( $P > 0.005$ ), the equality of variances was confirmed, and the average scores of post-traumatic stress in the test group ( $25.9 \pm 10.13$ ) were higher than the group control is ( $-0.8 \pm 3.1$ ), which is statistically significant ( $t(28) = 9.1, P = 0.000$ ).

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 and drafted the manuscript, and read and approved the final manuscript.

**Conflict of Interests:** The authors report no conflict of interest in this work.

**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 the ethical approval code is: [ethics.research.ac.ir/IR.IAU.ZAH.REC.1400.026](http://ethics.research.ac.ir/IR.IAU.ZAH.REC.1400.026))

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## References

- Cascella M, Rajnik M, Aleem A, Dulebohn SC, Di Napoli R. Features, Evaluation, and Treatment of Coronavirus (COVID-19). *StatPearls*. Treasure Island, FL: StatPearls Publishing; 2022.
- Anderson R, McKenzie K, Noone S. Effects of a mindfulness-based stress reduction course on the psychological well-being of individuals with an intellectual disability. *Learn Disabil Pract*. 2019;**22**(2):20-5. <https://doi.org/10.7748/ldp.2019.e1981>.
- Barrett KE, Boitano S, Barman SM, Brooks HL. *Ganong's Review of Medical Physiology*. New York: McGraw Hill; 2010.
- Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet*. 2020;**395**(10228):931-4. [PubMed ID: 32164834]. [PubMed Central ID: PMC7158572]. [https://doi.org/10.1016/S0140-6736\(20\)30567-5](https://doi.org/10.1016/S0140-6736(20)30567-5).
- Habibi M, Gharaei B, Ashouri A. [Clinical application of validity and clinical scales of Minnesota Multiphasic Personality Inventory-Adolescent (MMPI-A): A comparison of profiles for clinical and non-clinical sample and determining a cut point]. *Journal of Fundamentals of Mental Health*. 2014;**15**(60):301-11. Persian. <https://doi.org/10.22038/jfmh.2013.2286>.
- Nooripour R, Hosseinian S, Afrouz GA, Bakhshani N. Effectiveness of Neurofeedback on Executive Functions and Tendency Toward High-Risk Behaviors in Adolescents with Attention Deficit Hyperactivity Disorder. *Int J High Risk Behav Addict*. 2018;**7**(4). e82012. <https://doi.org/10.5812/ijhrba.82012>.
- Shojaie Baghini F, Bahrami M. [The Relationship between competency Perception and Anxiety and Loneliness in Orphaned Children in Pseudo-Family Centers]. *Policewomen Studies Journal*. 2019;**2**(29):5-20. Persian.
- Smith P, Dalgleish T, Meiser-Stedman R. Practitioner Review: Posttraumatic stress disorder and its treatment in children and adolescents. *J Child Psychol Psychiatry*. 2019;**60**(5):500-15. [PubMed ID: 30350312]. [PubMed Central ID: PMC6711754]. <https://doi.org/10.1111/jcpp.12983>.
- Boelen PA, Spuij M, Reijntjes AHA. Prolonged grief and post-traumatic stress in bereaved children: A latent class analysis. *Psychiatry Res*. 2017;**258**:518-24. [PubMed ID: 28958457]. <https://doi.org/10.1016/j.psychres.2017.09.002>.
- Mutiso VN, Musyimi CW, Tele A, Ndeti DM. Epidemiological patterns and correlates of mental disorders among orphans

- and vulnerable children under institutional care. *Soc Psychiatry Psychiatr Epidemiol.* 2017;**52**(1):65-75. [PubMed ID: 27812734]. <https://doi.org/10.1007/s00127-016-1291-7>.
11. Smernoff E, Mitnik I, Lev-Ari S. The effects of Inquiry-Based Stress Reduction (IBSR) on mental health and well-being among a non-clinical sample. *Complement Ther Clin Pract.* 2019;**34**:30-4. [PubMed ID: 30712742]. <https://doi.org/10.1016/j.ctcp.2018.10.015>.
  12. 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. [PubMed ID: 25818837]. <https://doi.org/10.1016/j.jpsychores.2015.03.009>.
  13. Raitano RE, Kleiner BH. Stress management: stressors, diagnosis, and preventative measures. *Manag Res News.* 2004;**27**(4/5):32-8. <https://doi.org/10.1108/01409170410784446>.
  14. 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 ID: 20627269]. <https://doi.org/10.1016/j.brat.2010.05.004>.
  15. Segal ZV, Williams JMG, Teasdale JD. *Mindfulness-Based Cognitive Therapy for Depression: A New Approach to Preventing Relapse.* New York: Guilford Publications; 2001.
  16. Nettet MB, Bjorngaard 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 ID: 33120137]. <https://doi.org/10.1016/j.ijnurstu.2020.103795>.
  17. Liu C, Liu Z, Yuan G. Longitudinal Associations between Cyberbullying Victimization, Mindfulness, Depression, and Anxiety: A Mediation Analysis. *J Aggress Maltreat Trauma.* 2021;**31**(1):121-32. <https://doi.org/10.1080/10926771.2021.1876197>.
  18. Elhai JD, Levine JC, O'Brien KD, Armour C. Distress tolerance and mindfulness mediate relations between depression and anxiety sensitivity with problematic smartphone use. *Comput Hum Behav.* 2018;**84**:477-84. <https://doi.org/10.1016/j.chb.2018.03.026>.
  19. Butler RM, Boden MT, Olino TM, Morrison AS, Goldin PR, Gross JJ, et al. Emotional clarity and attention to emotions in cognitive behavioral group therapy and mindfulness-based stress reduction for social anxiety disorder. *J Anxiety Disord.* 2018;**55**:31-8. [PubMed ID: 29558650]. [PubMed Central ID: PMC5879018]. <https://doi.org/10.1016/j.janxdis.2018.03.003>.
  20. Hofmann SG, Gomez AF. Mindfulness-Based Interventions for Anxiety and Depression. *Psychiatr Clin North Am.* 2017;**40**(4):739-49. [PubMed ID: 29080597]. [PubMed Central ID: PMC5679245]. <https://doi.org/10.1016/j.psc.2017.08.008>.
  21. Hervás G, Cebolla A, Soler J. [Mindfulness-based psychological interventions and benefits: State of the art]. *Clin Salud.* 2016;**27**(3):115-24. Spanish. <https://doi.org/10.1016/j.clysa.2016.09.002>.
  22. Reich RR, Lengacher CA, Alinat CB, Kip KE, Paterson C, Ramesar S, et al. Mindfulness-Based Stress Reduction in Post-treatment Breast Cancer Patients: Immediate and Sustained Effects Across Multiple Symptom Clusters. *J Pain Symptom Manage.* 2017;**53**(1):85-95. [PubMed ID: 27720794]. [PubMed Central ID: PMC771358]. <https://doi.org/10.1016/j.jpainsymman.2016.08.005>.
  23. Johnson JR, Emmons HC, Rivard RL, Griffin KH, Dusek JA. Resilience Training: A Pilot Study of a Mindfulness-Based Program with Depressed Healthcare Professionals. *Explore (NY).* 2015;**11**(6):433-44. [PubMed ID: 26410675]. <https://doi.org/10.1016/j.explore.2015.08.002>.
  24. Talebi M. [The Effectiveness of Mindfulness-Based Cognitive Therapy on Anxiety, Happiness and Mindfulness in Nurses]. *Avicenna J Nurs Midwifery Care.* 2021;**29**(2):126-36. Persian. <https://doi.org/10.30699/ajnm.29.2.126>.
  25. Eghbali A, Vahedi H, Rezaei R, Fathi A. [The Effectiveness of Mindfulness-based Stress Reduction Training on Depression, Anxiety and Stress in People at Risk for COVID-19]. *J Health Care.* 2021;**22**(4):306-17. Persian. <https://doi.org/10.52547/jhc.22.4.306>.
  26. Naghibi F, Ahadi H, Tajeri B, Seirafi MR. [Effectiveness of Mindfulness-Based Stress Reduction training on psychological symptoms, pain in patients with thalassemia major]. *Adv Cogn Sci.* 2020;**22**(2):45-53. Persian. <https://doi.org/10.30699/ajnm.29.2.126>.
  27. Namvar M, Khorrami M, Noorollahi A, Pournemat M. [Effectiveness of Mindfulness-Based Stress Reduction (MBSR) Therapy on Anxiety and Depression Symptoms in Patients with Multiple Sclerosis (MS), Bojnurd, Iran]. *Psychology of Exceptional Individuals.* 2020;**39**(1):179-200. Persian. <https://doi.org/10.22054/jpe.2021.45321.2037>.
  28. Mandegar M, Zeidabadi M. [The effectiveness of stress-based mindfulness training on psychological distress and lifestyle during coronavirus outbreak (Covid-19)]. *2nd Psychology and Health National Congress: Focused on Lifestyle.* 10-11 November 2020; Shiraz, Iran. 2020. Persian.
  29. 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. *J Nurs Educ Pract.* 2018;**8**(10):58. <https://doi.org/10.5430/jnep.v8n10p58>.
  30. van Son J, Nyklicek 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 ID: 24913347]. <https://doi.org/10.1016/j.jpsychores.2014.03.013>.
  31. Conner CM, White SW. Stress in mothers of children with autism: Trait mindfulness as a protective factor. *Res Autism Spectr Disord.* 2014;**8**(6):617-24. <https://doi.org/10.1016/j.rasd.2014.02.001>.
  32. Mirzaee E, Shairi MR. [Evaluation of effectiveness of mindfulness-based stress reduction model on Positive and Negative Affects and Depression syndrome]. *Med J Mashhad Univ Med Sci.* 2018;**61**(1):864-76. Persian. <https://doi.org/10.22038/mjms.2018.11199>.
  33. Beyrami M, Hashemi T, Bakhshpour A, Alilo MM, Eghbali A. [Comparison of the effect of two methods of emotion regulation training and mindfulness-based cognitive therapy on psychological distress and cognitive strategies of emotion regulation of mothers of mentally retarded children]. *Journal of Modern Psychological Researches.* 2014;**9**(33):43-59. Persian.
  34. Gholipour Kouhestani FZ. [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.* 2016;**3**(3):133-25. Persian.
  35. Goodarzi MA. [Validation and validity Tensile scale after impact based on the questionnaire Mississippi (Ashley)]. *Journal of Psychology.* 2003;**26**(7):153-78. Persian.
  36. Baer RA. *Mindfulness-Based Treatment Approaches Clinician's Guide to Evidence Base and Applications.* San Diego, CA: Academic Press; 2006.