




The Effectiveness of Mindfulness Training on Emotional Problems (Anxiety, Depression, and Stress) in Adolescents

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ABSTRACT

Objective: The present study aimed to determine the effectiveness of mindfulness-based intervention on the emotional problems of adolescents.

Methods and Materials: This research was a quasi-experimental study with a pre-test-post-test design and a control group. The statistical population included all high school students in Azarshahr city during the 2023-2024 academic year who suffered from emotional problems. A sample of 30 individuals was selected using the Depression Anxiety Stress Scales (DASS-21) by Lovibond and Lovibond (1995) through purposive sampling methods and randomly assigned to experimental and control groups. Data analysis was performed using covariance analysis in SPSS version 25.

Findings: The data analysis indicated that the mindfulness-based intervention led to a significant difference between the groups in emotional problems (82%) and its components, including depression (0.71), anxiety (0.67), and stress (72%) ($p < .05$).

Conclusion: Based on the findings, it can be argued that mindfulness-based intervention reduces emotional problems.

Keywords: Mindfulness, Emotional Problems, Adolescents.

1. Introduction

Adolescence is a transitional period during which adolescents undergo numerous changes, including physical, social, and psychological changes. These changes start in childhood and continue into early adulthood,

encompassing issues such as community, puberty, and the addition of adult roles, impacting their lives (Barghi Irani & Dehghan Saber, 2021; Hosseinian & Nooripour, 2019). Adolescence is a period of growth marking the transition from childhood to adolescence, beginning and ending differently across cultures. It is also referred to as a period of

transition (Mahvash et al., 2024; Marsh et al., 2018). During adolescence, having emotional-behavioral disorders is significant as it can lead to psychological disorders and problems in adulthood. Given the sensitivity of adolescence as a starting point for some disorders and the development of health-related behaviors and diseases, forming a healthy lifestyle and health pattern in adolescents is crucial (Barghi Irani & Dehghan Saber, 2021; Hosseinian & Nooripour, 2019). One such disorder is anxiety and emotional problems. Anxiety is considered abnormal when there is difficulty in adapting to situations (Babaee et al., 2022).

Anxiety disorder involves a marked and persistent fear of being embarrassed or negatively evaluated in social situations or when performing activities in the presence of others (Fulambarkar et al., 2023). Therefore, these situations are avoided due to the intense anxiety they provoke (Marusak et al., 2018). Anxiety is diagnosed as generalized or specific social phobia based on the range of situations the person fears and avoids. For example, a person who is anxious about writing in the presence of others but not about other social situations is diagnosed with specific anxiety. The generalized type, which has an early onset age, is more comorbid with other disorders such as depression and alcohol abuse and has more negative effects on a person's social and occupational activities (Newland, 2020). Without therapeutic interventions, this disorder can lead to long-term disability, causing significant personal and social functional impairments (Pouladi et al., 2022).

Emotional-behavioral problems refer to conditions where an individual's emotional-behavioral responses differ from cultural, age, and ethnic norms, negatively affecting academic performance, self-care, social relationships, individual adaptation, classroom behavior, and environmental adaptation (Bahreini et al., 2022). Emotional-behavioral problems are categorized by Achenbach (1991) into internalizing and externalizing problems. Externalizing problems are maladaptive behavior patterns directed outward, causing problems for others, such as law-breaking and aggressive behavior. Internalizing problems are perceived as directed inward and are associated with overcontrolled behaviors like anxiety, depression, active withdrawal, and avoidance of social activities. Internalizing problems decrease somewhat in pre-adolescence but increase again in early adolescence (Pouladi et al., 2022).

This study aimed to investigate the effectiveness of mindfulness-based training on emotional problems to test the hypothesis that mindfulness-based training impacts emotional problems.

2. Methods and Materials

2.1. Study Design and Participants

This study was a quasi-experimental design with a pre-test-post-test and control group. The statistical population comprised high school students in Azarshahr city during the 2023-2024 academic year who suffered from emotional problems and sleep disorders. The sampling method was purposive non-random sampling, selecting students with emotional problems and sleep disorders. The Emotional Problems and Sleep Disorders Questionnaire was distributed among 100 individuals, and 30 who scored highest were chosen as the sample. Due to the intervention nature of the study, a minimum sample size of 15 per group was considered. Thus, 30 adolescents with emotional problems and sleep disorders were randomly assigned to intervention and control groups (random assignment based on matching groups using initial data). The mindfulness training program consisted of eight weekly 90-minute sessions administered to the intervention group. The control group received no intervention.

Inclusion criteria included interest in participating in the study, meeting DSM-5 criteria for emotional and sleep problems as diagnosed by a clinical psychologist, being aged 15-18, scoring above the third quartile in the Emotional Problems and Sleep Disorders Questionnaire, not receiving medication, psychological treatment, or counseling before the study, absence of other psychological disorders, and participant and parental consent. Exclusion criteria included missing more than two therapy sessions.

During the study, initial interviews, assessments, and screening were conducted upon the participants' arrival. After identifying the group members, the process, including objectives, scheduling, implementation, session benefits, and exit procedures, was explained in the first session. The Emotional Problems and Sleep Disorders Questionnaire was provided to the group, with instructions on responding. Finally, participants were randomly assigned to experimental and control groups, and session start dates were set. The experimental group underwent eight 90-minute mindfulness training sessions, while the control group was on a waiting list. One week after the intervention, the specified questionnaires were administered to both groups. For ethical considerations, a consent form explaining the research purpose was provided. Participants read the consent form and chose to participate voluntarily. The consent form is attached in the appendix. Participants were assured of no personal misuse in the research, and some

participants requested the results of their questionnaire responses, which were provided in simple language. Confidentiality of the questionnaires and their results was explained to the participants. Variance and mean data were calculated using these indices, and demographic information was classified using descriptive statistics and displayed in charts.

2.2. Measures

2.2.1. Emotional Problems

The Depression Anxiety Stress Scales (DASS-21) by Lovibond and Lovibond (1995) assesses stress, anxiety, and depression with 21 questions. The DASS-21 has three subscales, each with seven questions, scored from 0 (does not apply to me at all) to 3 (applies to me completely). As DASS-21 is a shortened version of the original 42-item scale, the final score for each subscale should be doubled. Lovibond and Lovibond (1995) reported a validity of 0.77 for the DASS-21 (Bayat et al., 2022; Haghshenas, 2019).

2.3. Intervention

2.3.1. Mindfulness Stress Reduction Intervention

The mindfulness stress reduction training program was developed by Kabat-Zinn (1990). This training included eight 120-minute sessions (Kabat-Zinn, 2003).

Session 1: The first session aimed to introduce participants and foster group cohesion while explaining the training objectives. Initially, a pre-test was administered. Participants were asked why they were attending and how anxiety had impacted their lives. Concerns and questions about mindfulness were addressed. The basics and benefits of mindfulness in medical and psychological contexts were explained. Participants were encouraged to commit to regular attendance, completing assignments, not interrupting others, maintaining confidentiality, and not focusing excessively on treatment outcomes to avoid self-judgment. The session concluded with a 15-minute breathing exercise, guiding participants to sit straight, close their eyes, and listen to the leader, focusing on body awareness and breath.

Session 2: In this session, participants shared their experiences with the 15-minute breathing exercise and provided feedback on the previous session. They discussed their perspectives on the training. The mindfulness practice involved eating a raisin mindfully, describing its color and shape, and slowly chewing it while paying attention to the sensations. Participants also performed a full-body scan to

enhance non-judgmental awareness. The raisin exercise highlighted the difference between mindful and automatic eating, showing how attention can alter experiences. Participants were asked to mindfully eat one meal during the week.

Session 3: This session utilized gentle yoga movements to promote physical relaxation and awareness of subtle body movements. Participants were encouraged to be mindful of their bodily sensations and not to push beyond their limits, avoiding competition. They were asked to view these movements as mindfulness practices rather than exercises. The session included a non-judgmental listening exercise, where pairs shared unpleasant experiences without the listener showing any reaction, fostering non-judgmental awareness. The session concluded with a homework assignment to practice yoga and record unpleasant experiences.

Session 4: The session began with a sitting meditation focusing on bodily sensations as mere feelings, not thoughts or catastrophes. Participants then practiced mindful walking, paying attention to bodily sensations while walking slowly and deliberately. The goal was to experience walking mindfully without aiming for a destination. Participants were encouraged to redirect their focus to the sensations of walking whenever their minds wandered. The session also included a discussion on the psychophysiological symptoms of stress. Homework included body scan, yoga, sitting meditation, and walking meditation.

Session 5: This session reviewed the previous session and discussed the impact of the training so far. Participants shared their unpleasant experience logs and discussed the emotional, physical, and cognitive effects. The session involved a sitting meditation to discuss thoughts and feelings, emphasizing mindfulness in responding to daily stress. A 40-minute yoga meditation followed, and participants provided individual feedback on the practice.

Session 6: This session continued the discussion on homework and the impact of the exercises on participants' current functioning. A 40-minute meditation focused on mindful awareness of the environment, starting with abdominal breathing and expanding to whole-body awareness. Participants were asked to pay attention to areas of pain, gently focusing on these areas and releasing tension with their breath. They also listened mindfully to surrounding sounds. The session concluded with feedback and homework assignments, including walking meditation, body scan, yoga, and mindful daily activities.

Session 7: This session involved a half-day retreat focused on silence and continuous meditation, including body scans, sitting meditation, and yoga stretches. Participants were asked not to speak or make eye contact, focusing on being present and accepting all experiences of the day. The goal was to increase awareness of pleasant and unpleasant emotions and experiences. Participants later discussed their mixed emotions and experiences, emphasizing non-judgmental awareness.

Session 8: The final session began with a review of past homework and continued with a body scan exercise. The discussion focused on participants' experiences during the training sessions, and the session included body scan

meditation. Participants provided feedback on the impact of mindfulness on their lives, discussing the benefits and results of the training.

2.4. Data analysis

The hypothesis was tested using analysis of covariance via SPSS-26.

3. Findings and Results

Based on the results, 51% of the sample in the experimental group were male (53%) and female (46%), and in the control group, 60% were male and 40% were female.

Table 1

Descriptive Statistics of Scores in Pre-Test and Post-Test Stages in Both Groups

Variables	Groups	Mean	Standard Deviation
Emotional Problems	Pre-test Control	69.3333	8.49089
	Pre-test Experimental	74.4000	8.10467
	Post-test Experimental	39.4667	3.54293
	Post-test Control	72.6667	6.27542
Depression	Pre-test Control	23.6000	4.45293
	Pre-test Experimental	24.8000	3.34237
	Post-test Experimental	13.2667	2.60403
	Post-test Control	25.7333	2.12020
Anxiety	Pre-test Control	22.8667	3.06749
	Pre-test Experimental	25.2000	3.34237
	Post-test Experimental	13.6667	2.69037
	Post-test Control	23.0667	3.61478
Stress	Pre-test Control	22.8667	3.18179
	Pre-test Experimental	24.4000	3.11219
	Post-test Experimental	12.5333	2.35635
	Post-test Control	23.8667	3.62268

As shown in Table 1, the mean scores for emotional problems and sleep problems have significantly changed in the control and experimental groups, indicating the effectiveness of mindfulness training on adolescents' emotional and sleep problems. To examine the assumption of homogeneity of regression slopes, multivariate analysis of covariance (MANCOVA) was used to analyze the interaction between the covariate and the independent variable, as presented in Table 2. The interaction between

the independent variable and the covariate was not significant ($P \leq 0.05$, $F = 85.771$). Therefore, it can be concluded that the assumption of homogeneity of regression slopes is met. Additionally, the assumption of homogeneity of variances is also met ($P \geq 0.05$). The value ($P \geq 0.05$, $F = 1.874$) is not significant at the given error level of 0.05, indicating that the observed covariance matrices across the different groups are equal.

Table 2

Results of Multivariate Tests

Effect	Value	F	df	Error df	Sig.	Eta Squared
Time * Group	Pillai's Trace	.909	8.121	9.000	168.000	.000
	Wilks' Lambda	.160	16.389	9.000	131.572	.000
	Hotelling's Trace	4.798	28.080	9.000	158.000	.000
	Roy's Largest Root	4.706	87.846	3.000	56.000	.000

Table 2 shows the results of four multivariate tests. As indicated in Table 2, the significance level of the tests is less than 0.05, meaning the tests are significant ($P \leq 0.05$). This

indicates that the differences between the pre-test and post-test are significant. This result demonstrates significant differences in results between the groups at different times.

Table 3

Results of Covariance Analysis for Comparing Mean Post-Test Scores

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	Sig.	Eta Squared
Model	Emotional Problems	12203.933a	3	4067.978	85.771	.000	.821
	Depression	1507.783b	3	502.594	47.553	.000	.718
	Anxiety	1185.200c	3	395.067	38.651	.000	.674
	Stress	1423.783d	3	474.594	49.327	.000	.725
Group	Emotional Problems	12203.933	3	4067.978	85.771	.000	.821
	Depression	1507.783	3	502.594	47.553	.000	.718
	Anxiety	1185.200	3	395.067	38.651	.000	.674
	Stress	1423.783	3	474.594	49.327	.000	.725
Error	Emotional Problems	2656.000	56	47.429			
	Depression	591.867	56	10.569			
	Anxiety	572.400	56	10.221			
	Stress	538.800	56	9.621			

As shown in Table 3, the effect of pre-test scores on post-test scores is significant ($P \leq 0.05$, $F = 85.771$). It can be said that the correlation between the covariate and the independent variable is observed. This means that after removing the effect of the pre-test, there is a significant difference between the mean scores of the two groups in the post-test. Therefore, the research hypothesis is confirmed, indicating that mindfulness training impacts adolescents' emotional problems. This also applies to the components of depression ($P \leq 0.05$, $F = 47.553$), anxiety ($P \leq 0.05$, $F = 38.651$), and stress ($P \leq 0.05$, $F = 49.327$).

4. Discussion and Conclusion

The results of this study indicate that mindfulness training has an effect on adolescents' emotional problems. These findings are consistent with the prior findings (McKay et al., 2007; McKay et al., 2019; Moulton-Perkins et al., 2022; Sedighi et al., 2021; Shahsavari Goghari et al., 2022; Tajzadghehi et al., 2023).

Mindfulness is a technique that combines meditation and specific mental orientations toward an experience, promoting present-moment awareness in a non-judgmental manner or minimizing engagement with thoughts and feelings (Potteck, 2012). Individuals with anxiety can significantly reduce stress, anxiety, and depressive symptoms after practicing mindfulness techniques. Depressed individuals and those who have experienced depressive symptoms showed a marked reduction in depressive symptoms and other related outcomes after one

month of mindfulness practice. Based on Kabat-Zinn's mindfulness-based stress reduction (MBSR) model, which integrates principles of cognitive therapy, mindfulness-based cognitive therapy (MBCT) aims to replace negative emotions with positive ones. MBCT combines mindfulness meditation training with cognitive therapy interventions.

During mindfulness practice, self-regulation abilities are taught through exercises focusing on internal attention, such as awareness of breathing, or external objects, such as sounds, with the primary emphasis on present-moment experiences (Moulton-Perkins et al., 2022; Sedighi et al., 2021). By adopting a non-judgmental attitude toward thoughts, feelings, and behaviors during mindfulness practices, immediate shifts in attention from unrelated worrisome thoughts to the present moment can occur. With poor awareness of personal emotions, individuals may lack information about the type of feelings they are experiencing and how best to soothe them during times of distress (Moulton-Perkins et al., 2022; Shahsavari Goghari et al., 2022). Additionally, due to low levels of empathy, these individuals may not have the interest or capacity to understand that others might suffer from the consequences of their actions, leading to a lack of restraint from aggression. In other words, those with poor empathy cannot consider another's perspective and imagine that others did not intend to harm, humiliate, or abandon them, nor can they be concerned about the suffering caused to others by their antisocial actions (Tajzadghehi et al., 2023). Therefore, mindfulness training increases the sense of connection and

empathy towards others, consequently improving emotional regulation problems in students with conduct disorder.

5. Limitations & Suggestions

Limitations of this study include the difficulty in implementing some mindfulness-based intervention techniques on adolescents due to challenges in establishing rapport with them and the absence of a follow-up phase to examine the sustainability of the therapeutic effects of the mindfulness-based intervention. Future research should consider long-term follow-up periods to evaluate the lasting effects of mindfulness-based interventions. Given the impact of mindfulness on emotional and sleep problems, it is recommended that mindfulness intervention be applied as an effective approach to improving emotional regulation processes. Positive and negative emotions within the family environment should be assessed, and positive thinking should be reinforced. Adolescents' emotions and behaviors, such as severe pessimism, worthlessness, hopelessness, low self-esteem, self-blame, and restlessness, should be addressed logically. Emotional problems in adolescents should be analyzed and examined using a family-interactive perspective. When everything is focused on the adolescent and parents withdraw or perceive their role as neutral, typically, no significant improvement occurs. Meditation and mindfulness have been studied extensively in clinical trials by psychologists. Based on these trials, meditation can effectively control stress, anxiety, pain, depression, and insomnia.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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Authors' Contributions

All authors equally contributed to this article.

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