



Effectiveness of mindfulness programs on emotional regulation among adolescents in Indian schools

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Abstract

This study evaluated the effectiveness of an 8-week mindfulness program in improving emotional regulation among adolescents in Jaipur schools. Pre- and post-intervention assessments using the Emotional Regulation Questionnaire (ERQ) and Mindful Attention Awareness Scale (MAAS) showed significant improvements in emotional regulation, with a mean increase of +0.70 ($p < 0.001$). Students from lower socio-economic backgrounds showed the greatest improvement (+0.75). Both genders benefited equally from the program, with no significant differences in emotional gains. The findings suggest that mindfulness interventions can be a powerful tool for enhancing emotional resilience in adolescents, particularly in stressful environments.

Keywords: Mindfulness, emotional regulation, adolescents, mental health

Introduction

Emotional regulation, the ability to manage and respond to emotions effectively, is particularly important during adolescence—a critical period of rapid physical, emotional, and cognitive changes. Adolescents often face heightened challenges, including academic pressures, peer relationships, and family expectations, which can lead to emotional instability and stress. In the Indian context, these stressors are further intensified by cultural and societal demands. Promoting emotional regulation through interventions like mindfulness has gained attention as a way to support adolescents' mental well-being. Mindfulness, with its focus on present-moment awareness and non-judgment, offers adolescents practical tools to manage stress and improve emotional resilience, making it an essential component for fostering mental health during this transformative phase of life.

Overview of emotional regulation and its importance during adolescence

Emotional regulation, the ability to manage and respond to emotions in an adaptive manner, plays a critical role during adolescence—a time marked by profound physical, emotional, and cognitive transitions. Adolescents are particularly vulnerable to emotional dysregulation due to the challenges of navigating complex social relationships, academic pressures, and evolving family dynamics. Effective emotional regulation helps adolescents cope with stress, make better decisions, and maintain positive mental health, while poor regulation is linked to negative outcomes such as anxiety, depression, and behavioral issues. Thus, fostering emotional regulation in adolescents is key to their overall well-being and personal development.

Rising concerns over emotional instability and stress among adolescents in Indian schools

Indian adolescents face additional stressors, including intense academic competition, societal expectations, and family responsibilities. This pressure often leads to

emotional instability and mental health issues such as anxiety, depression, and stress. Schools, where adolescents spend much of their time, are crucial environments for intervention. However, traditional Indian education systems rarely address emotional health comprehensively, leaving gaps in emotional regulation development. The rise of mental health concerns highlights the need for structured programs, like mindfulness, that support emotional well-being within schools.

Introduction to mindfulness and its relevance in promoting mental well-being

Mindfulness, a practice rooted in ancient Buddhist philosophy, promotes being fully present and aware of one's thoughts and emotions without judgment. Its relevance in modern therapeutic settings has grown, as mindfulness is shown to enhance emotional regulation and mental resilience. Techniques like meditation, breathing exercises, and body awareness cultivate self-regulation and reduce emotional reactivity. Mindfulness programs are particularly valuable for adolescents, offering them tools to navigate emotional challenges, reduce stress, and improve mental health—making it an accessible intervention for schools worldwide.

Emotional regulation in adolescence

Emotional regulation is pivotal for adolescents, as it influences how they manage emotional responses to various stressors. Adolescents who develop these skills are better equipped to maintain positive mental health and social relationships. According to Gross (2014) [6], emotional regulation encompasses how individuals experience and express emotions. Adolescents struggling with these skills are at higher risk of anxiety, depression, and maladaptive behaviors (Compas *et al.*, 2017) [2]. In India, factors such as academic stress and peer pressure amplify emotional dysregulation, underlining the urgent need for interventions that promote emotional well-being.

Mindfulness and emotional regulation

Mindfulness has been widely recognized for its impact on improving emotional regulation, especially in adolescents. Global studies show that mindfulness-based interventions (MBIs) significantly reduce stress and enhance emotional resilience (Zoogman *et al.*, 2015) [16]. In India, preliminary research indicates similar positive outcomes, with mindfulness programs improving emotional regulation and reducing academic stress in adolescents (Goyal *et al.*, 2016) [5]. Mindfulness empowers adolescents by fostering awareness of emotional triggers and providing healthy coping mechanisms, making it an ideal intervention for enhancing emotional regulation in Indian school settings.

School-based mindfulness programs

Mindfulness-based programs have been successfully implemented in schools worldwide, improving emotional regulation, attention, and overall well-being among students. Programs like Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) have shown significant benefits in various school settings (Meiklejohn *et al.*, 2012) [9]. However, in India, cultural, logistical, and infrastructural challenges hinder the wide adoption of these programs. Despite these obstacles, there is growing recognition of the importance of mindfulness-based interventions in addressing the emotional needs of Indian adolescents. For successful implementation, cultural adaptation, teacher training, and policy support are essential. In summary, emotional regulation during adolescence is crucial for mental health, and mindfulness has emerged as a promising tool to enhance emotional regulation skills. While global studies support the efficacy of mindfulness, Indian schools face unique challenges that require targeted efforts to integrate mindfulness into the education system effectively.

Problem statement

Adolescents in India face significant emotional regulation challenges due to unique socio-cultural pressures, academic expectations, and the increasing influence of technology. Schools often prioritize academic achievement, neglecting students' emotional and psychological needs, leading to a rise in emotional dysregulation. To address this growing issue, effective intervention programs are urgently needed within the school system. Mindfulness-based interventions present a promising approach, yet research on their effectiveness in Indian schools remains limited. This study aims to fill that gap by evaluating how mindfulness programs can enhance emotional regulation in Indian adolescents, providing valuable insights for culturally relevant interventions.

Purpose of the study

To Evaluate the Effectiveness of Mindfulness Programs in Improving Emotional Regulation Among Adolescents in Indian Schools.

Research questions

The study aims to answer the following key research questions:

1. How do mindfulness programs influence emotional regulation in adolescents?
2. What are the measurable outcomes of mindfulness-based interventions in schools?
3. What challenges and opportunities exist in implementing mindfulness programs in Indian school settings?

Significance of the study

This study adds to the growing research on adolescent mental health in India by focusing on evidence-based interventions to improve emotional regulation and well-being. While much existing research highlights the prevalence of mental health issues, this study evaluates the effectiveness of mindfulness programs, offering insights on how schools can better support students' emotional development. If the findings are positive, they could have policy implications, encouraging the integration of mindfulness programs into school curricula to promote mental health. This research could guide policymakers and educators in implementing mindfulness-based interventions across India.

Methodology

Objectives

1. Primary Objective

To assess the effectiveness of an 8-week mindfulness program on improving emotional regulation among adolescents in Jaipur schools.

2. Secondary Objectives

- a) To evaluate the changes in emotional regulation scores before and after the mindfulness intervention.
- b) To explore the relationship between mindfulness practices and emotional regulation based on demographic factors such as gender, socio-economic status, and school type.

Hypotheses

1. Primary Hypothesis (H1)

Adolescents who participate in the mindfulness program will show significant improvements in emotional regulation compared to their pre-intervention scores.

2. Secondary Hypotheses:

- a) There will be a significant difference in emotional regulation improvement between male and female students after participating in the mindfulness program.
- b) Adolescents from higher socio-economic backgrounds will demonstrate greater improvements in emotional regulation compared to those from lower socio-economic backgrounds.
- c) Students from private schools will show more significant gains in emotional regulation than those from public schools after the mindfulness intervention.
- d) Participants in the mindfulness program will report a positive subjective experience, perceiving the intervention as beneficial for managing stress and emotions.

Research design

This study adopted a mixed-methods approach to assess the effectiveness of mindfulness programs on emotional regulation among adolescents. The mixed-methods design incorporated both quantitative and qualitative data collection and analysis to provide a comprehensive understanding of the impact of the intervention.

Sample

Adolescents aged 12-18 from schools in Jaipur, Rajasthan, participated in the study. These schools agreed to implement the mindfulness program, and participants were students

without diagnosed psychological or behavioral disorders, with parental consent obtained. The sample comprised 300 adolescents from five schools, ensuring diversity in gender, socio-economic status, and educational environments. Equal representation of male and female students was targeted, along with students from low, middle, and high-income families, based on parental education, occupation, and income. Both public and private schools from urban and peri-urban areas were included to provide a well-rounded representation.

Intervention

The mindfulness program lasted for 8 weeks, with sessions held twice a week for 45 minutes. It included components such as mindfulness meditation to enhance present-moment awareness, body awareness exercises like body scans and progressive muscle relaxation, mindful breathing techniques to promote relaxation, and emotional awareness exercises to help students recognize and label their emotions without judgment. The program was integrated into the school routine as part of wellness or extracurricular activities, led by trained instructors in designated spaces. Teachers received orientation on the program's goals, and students were encouraged to practice both during and outside school hours.

Tools Used

1. Emotional Regulation Questionnaire (ERQ)
2. Mindful Attention Awareness Scale (MAAS)

Statistical analysis

Paired t-tests were used to compare the pre- and post-intervention scores on emotional regulation and mindfulness scales to determine the significance of changes. One-way ANOVA was applied to examine whether there were significant differences in outcomes based on demographic factors such as gender, socio-economic status, and school type (urban vs. peri-urban).

Results

Table 1: Descriptive statistics of emotional regulation scores (Pre- and Post-Intervention)

| Variable | N | Mean (Pre) | SD (Pre) | Mean (Post) | SD (Post) | Mean Difference | p-value |
|----------------|-----|------------|----------|-------------|-----------|-----------------|---------|
| Total Sample | 300 | 3.40 | 0.70 | 4.10 | 0.65 | +0.70 | < 0.001 |
| Male | 150 | 3.35 | 0.75 | 4.05 | 0.68 | +0.70 | < 0.001 |
| Female | 150 | 3.45 | 0.68 | 4.15 | 0.62 | +0.70 | < 0.001 |
| Low SES | 100 | 3.20 | 0.80 | 3.95 | 0.75 | +0.75 | < 0.001 |
| Middle SES | 100 | 3.40 | 0.70 | 4.05 | 0.65 | +0.65 | < 0.001 |
| High SES | 100 | 3.60 | 0.60 | 4.20 | 0.55 | +0.60 | < 0.001 |
| Public School | 150 | 3.30 | 0.75 | 4.00 | 0.70 | +0.70 | < 0.001 |
| Private School | 150 | 3.50 | 0.65 | 4.15 | 0.60 | +0.65 | < 0.001 |

The data from Table 1 demonstrate a significant improvement in emotional regulation across all demographic groups, with a mean increase of +0.70 for the total sample (p < 0.001). Both males and females exhibited similar improvements, with females having slightly higher pre- and post-intervention mean scores, reflecting enhanced emotional regulation post-intervention. Across socio-economic statuses (SES), students from low SES

backgrounds showed the highest mean improvement (+0.75), suggesting that the mindfulness program may be particularly beneficial for students who might face more stress due to socio-economic challenges.

These findings align with research conducted by Zoogman *et al.* (2015) [16], which found that mindfulness interventions improve emotional regulation and reduce anxiety and depression, particularly in adolescents. Furthermore, the study by Goyal *et al.* (2016) [5] in the Indian context also supports these results, showing that adolescents from diverse socio-economic backgrounds benefit from mindfulness interventions, especially those from lower SES groups, who may face higher levels of stress.

Table 2: One-way ANOVA for differences in emotional regulation scores by socio-economic status (SES)

| Source of Variation | SS | df | MS | F | p-value |
|----------------------|-------|-----|------|------|---------|
| Between Groups (SES) | 5.12 | 2 | 2.56 | 8.75 | < 0.001 |
| Within Groups | 86.78 | 297 | 0.29 | | |
| Total | 91.90 | 299 | | | |

Table 2 shows that the One-Way ANOVA reveals significant differences (p < 0.001) in emotional regulation improvements among students from different socio-economic statuses. This indicates that while all students benefited from the mindfulness program, those from different SES backgrounds experienced varying degrees of improvement. Specifically, students from low SES backgrounds exhibited greater improvements compared to those from middle and high SES groups, which could be due to the relatively higher levels of stress and emotional challenges faced by these students, as reported in previous research.

This result is supported by the study of Singh and Misra (2021) [14], which found that adolescents from lower socio-economic backgrounds are more susceptible to emotional regulation difficulties due to additional life stressors. The mindfulness program likely provided them with coping mechanisms that contributed to these significant improvements.

Table 3: Paired t-test results for Pre- and Post-intervention scores

| Group | Mean difference | t-value | p-value |
|----------------|-----------------|---------|---------|
| Total Sample | +0.70 | 12.45 | < 0.001 |
| Male | +0.70 | 11.32 | < 0.001 |
| Female | +0.70 | 13.21 | < 0.001 |
| Low SES | +0.75 | 10.78 | < 0.001 |
| Middle SES | +0.65 | 12.02 | < 0.001 |
| High SES | +0.60 | 10.54 | < 0.001 |
| Public School | +0.70 | 11.78 | < 0.001 |
| Private School | +0.65 | 10.98 | < 0.001 |

The paired t-test results in Table 3 confirm the statistical significance of the changes in emotional regulation scores across all groups (p < 0.001). The overall mean difference of +0.70 for the total sample reinforces the effectiveness of the mindfulness intervention. Notably, students from low SES backgrounds had the highest mean difference (+0.75), further supporting the ANOVA results.

The findings are consistent with research by Reddy and Rangan (2019) [12], which showed that mindfulness interventions led to significant improvements in emotional regulation, especially in adolescents from more stressful environments. The study's conclusion that both male and

female students experienced similar gains aligns with the results in Table 3, which also suggests that mindfulness interventions are equally effective across genders.

Comparison with control group

A control group was included in this study to compare the effects of the mindfulness program on emotional regulation. The control group consisted of 150 adolescents from the same schools in Jaipur who did not participate in the mindfulness intervention. Both the experimental and control groups were assessed using the same pre- and post-intervention measures for emotional regulation and mindfulness.

Table 4

| Group | N | Mean (Pre) | Mean (Post) | Mean Difference | p-value |
|-------------------|-----|------------|-------------|-----------------|---------|
| Mindfulness Group | 150 | 3.40 | 4.10 | +0.70 | < 0.001 |
| Control Group | 150 | 3.35 | 3.40 | +0.05 | 0.25 |

Mindfulness group: The experimental group that received the mindfulness intervention showed a significant improvement in emotional regulation, with a mean difference of +0.70 between pre- and post-intervention scores ($p < 0.001$).

Control group: The control group, which did not receive the intervention, showed a minimal change in emotional regulation scores, with a mean difference of +0.05 ($p = 0.25$), indicating that no significant improvement occurred in this group over the same period.

Conclusion

This study assessed the impact of an 8-week mindfulness program on emotional regulation among adolescents in Jaipur schools. The findings confirmed that participants showed significant improvements in emotional regulation post-intervention, with a notable increase in scores (+0.70, $p < 0.001$). Students from lower socio-economic backgrounds saw the greatest gains (+0.75), supporting the idea that those under more stress benefit more. Both males and females showed equal improvements (+0.70), proving mindfulness equally effective across genders.

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