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Effects of an Integrated Yogic Intervention on Anxiety, Emotional Regulation, Sleep Quality, and Academic Motivation Among School Children: An Experimental Study

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Abstract

This study investigates the effects of an integrated yogic intervention on anxiety, emotional regulation, sleep quality, academic motivation, and behavioral outcomes among school children aged 8-12 years in Tamil Nadu, India. Employing a quasi-experimental pre-test and post-test design, 31 participants were allocated to an experimental group (n = 18) receiving a 56-day integrated yogic program comprising Bhramari Pranayama with Adi Mudra, Navasana, and Yoga Nidra, and a control group (n = 13) engaged in structured non-yogic activities. Data were collected through validated self-report questionnaires, teacher observation scales, and qualitative feedback. Quantitative analysis using independent-samples t-tests, paired-samples t-tests, and Cohen's d effect sizes revealed statistically significant improvements in the experimental group across all measured domains. Anxiety levels decreased significantly (Experimental: M = 8.22 to M = 2.28; t(29) = -9.112, p < .001, d = 3.32), emotional regulation improved (M = 5.00 to M = 7.22; t(29) = 4.134, p < .001, d = 1.51), sleep quality enhanced (M = 4.33 to M = 6.61; t(29) = 5.043, p < .001, d = 1.84), academic motivation increased (M = 8.50 to M = 12.00; t(29) = 5.333, p < .001, d = 1.94), and teacher-observed behavioral outcomes improved substantially (M = 18.06 to M = 25.28; t(29) = 9.886, ps < .001, d = 3.60). The control group showed negligible changes across all domains. Mann-Whitney U tests corroborated these findings non-parametrically (all p < .01). Qualitative observations further supported quantitative results, with participants reporting increased calmness, enhanced self-awareness, and improved emotional processing. These findings demonstrate that structured, integrated yogic interventions can serve as effective, cost-efficient, school-based programs for promoting holistic emotional and behavioral well-being in children. The study contributes to

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the growing evidence base supporting the integration of yogic practices into educational curricula for comprehensive child development.

Keywords

Integrated yoga, emotional regulation, anxiety reduction, sleep quality, academic motivation, school children, Yoga Nidra, Bhramari Pranayama, quasi-experimental design, behavioral outcomes, holistic education

1. Introduction

In recent years, there has been growing concern regarding the emotional and psychological well-being of school-aged children worldwide. The escalating academic pressures, rapid changes in lifestyle patterns, and excessive exposure to digital media have been associated with rising levels of anxiety, emotional dysregulation, sleep disturbances, and behavioral challenges among children (Twenge et al., 2019; Dai & Ouyang, 2025). These multifaceted challenges not only affect mental health outcomes but also significantly influence social interactions, classroom behavior, and academic motivation, creating a complex web of developmental concerns that demand urgent attention from educators, health professionals, and policymakers alike.

Epidemiological evidence indicates a substantial and growing prevalence of anxiety and related emotional difficulties during childhood, with global estimates suggesting that approximately 13.4% of children and adolescents experience clinically significant mental health disorders (Polanczyk et al., 2015). These figures represent a conservative estimate, as many children with subclinical symptoms remain unidentified in school settings. The World Health Organization (WHO, 2021) has emphasized the critical importance of addressing mental health in educational environments, recognizing schools as primary settings for early identification and intervention. Furthermore, contemporary research highlights the interconnected nature of emotional well-being and academic performance, suggesting that children experiencing emotional difficulties demonstrate reduced cognitive functioning, lower academic achievement, and diminished motivation toward learning (Durlak et al., 2011; Greenberg et al., 2017).

Emotional regulation during middle childhood (8-12 years) plays a critical role in shaping long-term psychological resilience and adaptive functioning (Gross, 1998; Thompson, 2019). This developmental period represents a particularly sensitive window during which children develop foundational capacities for emotional awareness, self-regulation, and interpersonal

competence. Difficulties in managing emotions during this stage can manifest as irritability, reduced attention, social withdrawal, and decreased engagement in learning environments (Eisenberg et al., 2010; Compas et al., 2017). Furthermore, sleep quality has emerged as a key determinant of emotional stability and cognitive readiness, with insufficient or disturbed sleep contributing to mood fluctuations, increased anxiety, and reduced academic performance (Dahl, 1996; Owens, 2014; Becker et al., 2021). Recent systematic evidence also highlights the role of sleep as a mediator between lifestyle factors and mental health outcomes in children (Short et al., 2020; Dai & Ouyang, 2025).

Teachers and parents increasingly report challenges related to children's behavioral patterns, including reduced patience, impulsivity, and decreased motivation toward academic tasks. These behavioral manifestations are often interconnected with underlying emotional and physiological processes, suggesting the need for interventions that address the whole child rather than isolated symptoms (Roeser et al., 2012; Zenner et al., 2014). In this context, school-based interventions that address emotional well-being in a holistic manner are of growing importance, particularly those that can be feasibly integrated into existing educational structures without requiring extensive resources or specialized training.

Yogic practices, which integrate physical postures (asana), breathing techniques (pranayama), hand gestures (mudra), and guided relaxation (Yoga Nidra), offer a comprehensive approach to regulating both physiological and psychological processes (Khalsa et al., 2012; Butzer et al., 2015). Practices such as Bhramari Pranayama are believed to promote relaxation through parasympathetic activation and vagal nerve stimulation, while Yoga Nidra facilitates deep rest and enhanced self-awareness through systematic body scanning and conscious relaxation (Saraswati, 1976; Saoji et al., 2021). Together, these practices may support emotional balance, improve sleep patterns, and foster positive behavioral changes through an integrated mechanism that addresses both top-down cognitive regulation and bottom-up physiological processes.

Although emerging evidence suggests the benefits of yoga-based interventions for stress reduction and emotional well-being in adults and adolescents, research focusing on integrated yogic practices in children, particularly within structured educational settings, remains limited (Hedman-Lagerlof et al., 2024). Moreover, few studies have simultaneously examined outcomes such as anxiety, emotional regulation, sleep quality, academic motivation, and behavioral changes using both quantitative and qualitative measures within a single methodological framework (Meena et al., 2025). This gap is particularly significant because the interrelationship between these domains suggests that interventions addressing multiple

outcomes simultaneously may yield more robust and lasting effects than those targeting individual symptoms in isolation.

Therefore, the present study aims to investigate the effects of an integrated yogic intervention on emotional well-being, sleep quality, behavioral patterns, and academic motivation in children aged 8-12 years. By combining standardized assessments with teacher and parent feedback, this study seeks to provide a comprehensive understanding of the role of yogic practices in supporting holistic development in school environments. The study addresses a critical gap in the literature by examining the simultaneous impact of integrated yogic practices across multiple developmental domains within a controlled experimental framework.

2. Literature Review

2.1 Emotional and Behavioral Challenges in School Children

Emotional and behavioral challenges among school-aged children have become increasingly prominent in recent years, constituting a significant public health concern. Large-scale epidemiological evidence indicates a substantial prevalence of anxiety and related emotional difficulties during childhood, with implications for long-term psychological outcomes (Polanczyk et al., 2015). Contemporary trends further suggest that modern lifestyle factors, including increased digital media exposure, sedentary behavior, and reduced outdoor play, are associated with heightened emotional distress and reduced well-being among youth (Twenge et al., 2019; Dai & Ouyang, 2025). These findings underscore the urgency of developing and evaluating interventions that can effectively address the multidimensional nature of childhood emotional challenges.

Emotional regulation, defined as the ability to monitor, evaluate, and modify emotional reactions, is a critical developmental capacity during middle childhood (Gross, 1998; Thompson, 2019). Research has consistently demonstrated that children who exhibit stronger emotional regulation skills show better social functioning, academic performance, and overall mental health outcomes (Eisenberg et al., 2010). Conversely, difficulties in emotional regulation are often linked to behavioral issues such as impulsivity, irritability, and reduced social adaptability (Compas et al., 2017). These challenges are closely intertwined with sleep patterns, as inadequate or poor-quality sleep has been shown to impair emotional functioning, increase anxiety, and reduce academic motivation (Dahl, 1996; Owens, 2014; Becker et al.,

2021). Recent systematic evidence also highlights the role of sleep as a mediator between lifestyle factors and mental health outcomes in children (Short et al., 2020).

2.2 Yoga-Based Interventions in Educational Settings

Given these interconnected challenges, school-based interventions targeting emotional well-being have gained considerable importance. Mind-body practices such as yoga have emerged as particularly promising approaches due to their integrative effects on physiological regulation and psychological functioning. Yoga-based interventions combine physical postures, breathing techniques, and relaxation practices, which together may reduce stress hormones, enhance autonomic regulation, and promote emotional stability (Khalsa et al., 2012). Evidence from school-based programs suggests that yoga can improve mood, reduce anxiety symptoms, and enhance self-regulation among children and adolescents (Butzer et al., 2015; Felver et al., 2016).

Recent research further strengthens this evidence base. Vijay and Pal (2023) demonstrated that Yoga Nidra significantly reduced stress and anxiety levels in school children through a controlled intervention study, suggesting the specific utility of deep relaxation techniques for pediatric populations. Similarly, Pandya (2024) conducted a comprehensive review emphasizing the potential of Yoga Nidra in addressing pediatric behavioral and emotional concerns through its capacity to facilitate deep relaxation and enhance self-awareness. A recent pilot study by Meena et al. (2025) reported significant improvements in academic stress, emotional stability, and learning outcomes following integrated yoga interventions in village children aged 6-12 years, providing evidence for the feasibility and effectiveness of yogic practices in diverse educational settings.

Additionally, integrative reviews indicate that yoga-based interventions in school and clinical settings are both feasible and effective in improving psychological well-being across diverse cultural and socioeconomic contexts (Hedman-Lagerlof et al., 2024). Anusuya et al. (2021) demonstrated that the Mind Sound Resonance Technique (MSRT) significantly improved psychological variables and cognitive function in school children through a randomized controlled trial, highlighting the potential of sound-based yogic practices for enhancing cognitive and emotional outcomes. Jain (2021) further reported that yoga interventions significantly reduced exam anxiety while improving mindfulness, attention, and memory in school-going children.

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2.3 Mechanisms of Yogic Practices

Specific yogic techniques may contribute to positive developmental outcomes through identifiable neurophysiological and psychological mechanisms. Breathing practices such as Bhramari Pranayama (humming bee breath) are associated with autonomic regulation and stress reduction through vagal nerve stimulation and enhanced parasympathetic tone (Saoji et al., 2021; Kuppusamy et al., 2018). The resonant humming component of Bhramari is also associated with increased nitric oxide production in the nasal sinuses, which may contribute to improved respiratory function and neural regulation (Weitzberg & Lundberg, 2002). Deep relaxation practices like Yoga Nidra promote parasympathetic activation through systematic body scanning and conscious relaxation, facilitating improved sleep quality and emotional processing (Saraswati, 1976; Vijay & Pal, 2023).

Physical postures such as Navasana (Boat Pose) enhance core body awareness, proprioceptive feedback, and grounding, which collectively support behavioral regulation, self-confidence, and sustained attention (Khalsa et al., 2012). Hand gestures (mudras) such as Adi Mudra are traditionally believed to promote internal focus and calm the nervous system through specific neural circuit activation (Saraswati, 1976). The combination of these practices provides a holistic approach that addresses both bottom-up physiological regulation and top-down cognitive-emotional processing, potentially creating synergistic effects that exceed the benefits of individual components in isolation.

2.4 Gaps in the Literature

Despite these promising findings, several gaps remain in the existing literature. Many studies focus on isolated components of yoga rather than integrated, multi-component interventions, limiting our understanding of synergistic effects. Relatively few studies examine multiple outcomes such as anxiety, emotional regulation, sleep quality, and academic motivation within a single methodological framework. Furthermore, there is limited research combining quantitative measures with qualitative insights from teachers and parents to capture real-world behavioral changes as they occur in naturalistic educational settings. The present study seeks to address these gaps by examining the effects of an integrated yogic program on emotional well-being, sleep quality, behavioral patterns, and academic motivation in children within a structured educational setting, employing both quantitative and qualitative approaches to provide a comprehensive assessment of intervention outcomes.

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3. Objectives

The present study aims to examine the effectiveness of an integrated yogic intervention in improving emotional and behavioral outcomes among school children aged 8-12 years. Specifically, the study focuses on the following objectives:

1. To assess the impact of an integrated yogic intervention on anxiety levels in school children.
2. To evaluate changes in emotional regulation capacity following the yogic intervention.
3. To examine the effects of the intervention on sleep quality and nighttime waking patterns.
4. To determine the influence of yogic practices on academic motivation and engagement.
5. To observe and document changes in behavioral patterns, social interaction, and overall well-being as reported by teachers and parents.
6. To compare outcomes between the experimental group receiving yogic intervention and a control group engaged in structured non-yogic activities.

3.1 Research Question

Does participation in an integrated yogic program lead to significant improvements in anxiety, emotional regulation, sleep quality, behavioral patterns, and academic motivation among school children compared to a control group receiving structured non-yogic activities?

3.2 Hypotheses

H1: Children participating in the integrated yogic intervention will demonstrate significantly reduced anxiety levels compared to the control group post-intervention.

H2: The experimental group will show significantly greater improvement in emotional regulation compared to the control group.

H3: Sleep quality will improve significantly in the experimental group relative to the control group.

H4: Academic motivation will increase significantly in the intervention group compared to controls.

H5: Teacher-observed behavioral outcomes will show significantly greater positive change in the experimental group.

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4. Methodology

4.1 Research Design

This study employed a quasi-experimental pre-test and post-test design with a non-equivalent control group. The research design included an experimental group receiving the integrated yogic intervention and a control group engaged in structured non-yogic activities. The intervention was conducted over a period of 56 days, with daily sessions lasting approximately 40 minutes during regular school hours. Each 40 minute session was supplemented by pre- and post- session- discussions to assess the students'holistic experience bringing the total daily engagement to 1hr. This design was chosen to balance methodological rigor with practical feasibility within the school setting, while the extended intervention period of 56 days allowed sufficient time for behavioral and physiological adaptations to occur.

The experimental group participated in integrated yogic practices, while the control group engaged in structured non-yogic activities such as games, gardening, painting, and academic support activities. This parallel engagement strategy ensured comparable levels of adult attention and structured activity, minimizing potential Hawthorne effects and novelty-related placebo responses.

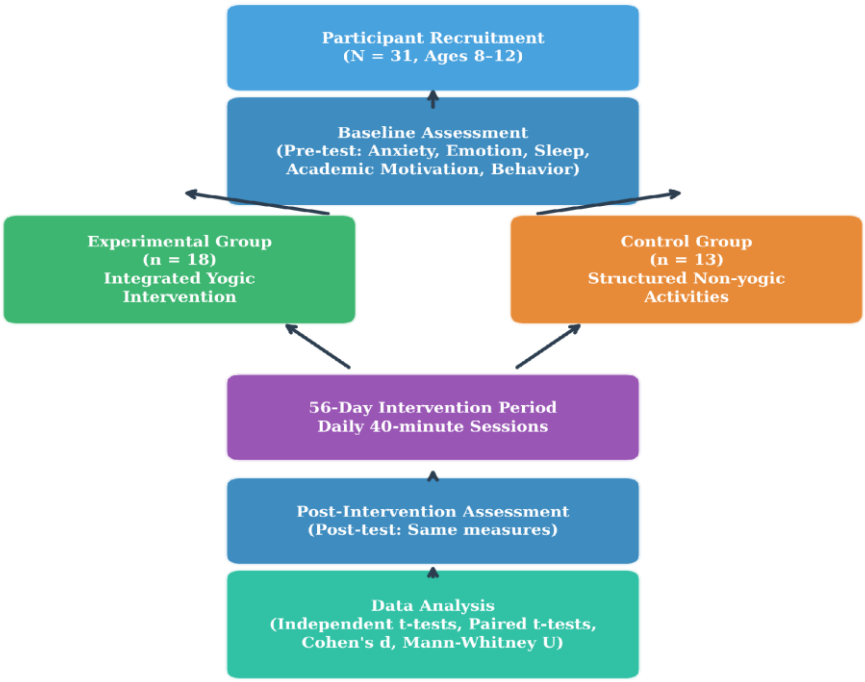

Figure 1. Research Design Flowchart: Quasi-Experimental Pre-test Post-test Design with Control Group

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4.2 Participants

The study included 31 school children aged 8-12 years from an educational institution in Tamil Nadu, India. Participants were purposively selected based on age eligibility, parental consent, and the absence of known psychiatric diagnoses or physical conditions that would preclude participation in yogic practices. Participants were divided into:

- Experimental group: 18 students (received integrated yogic intervention)
- Control group: 13 students (participated in structured non-yogic activities)

The sample consisted of both boys and girls from mixed educational and socioeconomic backgrounds, supervised by two class teachers. Informed consent was obtained from all parents/guardians prior to the commencement of the study, and ethical approval was obtained from the institutional review board.

Inclusion and exclusion criteria:

Inclusion criteria for participation were: willing to participate in this study.

The exclusion criteria were: not willing to participate in this study.

4.3 Intervention

The integrated yogic intervention consisted of three core components delivered in a structured sequence during each 40-minute daily session:

Component 1: Bhramari Pranayama with Adi Mudra and Gentle Smiling (10 minutes)

Participants practiced Bhramari Pranayama (humming bee breath) by gently closing their tragi with their pointed fingers, and after completing several rounds, they shifted into Adi Mudra while maintaining a gentle smile, (thumb placed at the base of the little finger, fingers gently closed) This practice combines controlled exhalation with humming, which is associated with vagal nerve stimulation and parasympathetic activation. The gentle smiling component was included to enhance positive affect and reduce facial muscle tension.

Component 2: Navasana (Boat Pose) (8-10 minutes)

Participants performed Navasana, a core-strengthening asana that requires balancing on the sitting bones with legs and torso elevated. This posture enhances body awareness, proprioceptive feedback, and core stability. Age-appropriate modifications were provided to ensure safety and accessibility for all participants.

Component 3: Yoga Nidra (Guided Relaxation in Shavasana) (20 minutes)

The sessions concluded with Yoga Nidra, a systematic form of guided deep relaxation performed in Shavasana (supine position). Sessions were delivered through age-appropriate guided audio recordings in the children's native language (Tamil), ensuring better

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comprehension and engagement. The Yoga Nidra protocol included body scanning, breath awareness, visualization, and systematic relaxation of body regions.

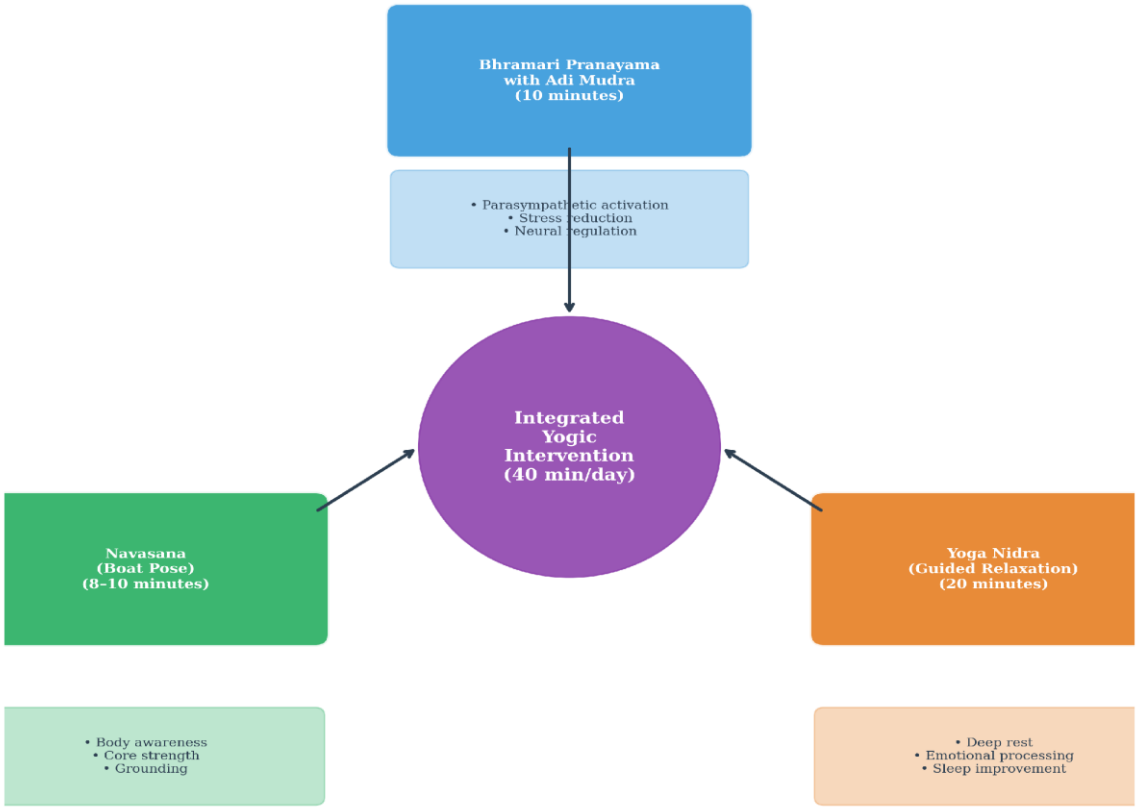

Figure 2. Components of the Integrated Yogic Intervention and Proposed Mechanisms of Action

4.4 Instruments and Data Collection

Data were collected at baseline (pre-intervention) and after the 56-day intervention period (post-intervention) using a comprehensive multi-method approach. The instruments included:

4.4.1 Anxiety Assessment Scale (6 items)

A 6-item child-friendly anxiety scale assessing somatic and cognitive symptoms was adapted from the Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997). Items, including test nervousness, worry about mistakes, fear of new experiences, rapid heartbeat, sweaty/shaky hands, and stomach discomfort, were rated on a 3-point scale (No = 0, Sometimes = 1, Yes = 2), yielding composite scores ranging from 0 to 12, with higher scores indicating greater anxiety levels.

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4.4.2 Emotional Regulation Scale (4 items)

A 4-item scale assessing children's capacity for emotional self-regulation, including the ability to calm down when angry and communicate feelings, was based on the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). Items were rated on a 3-point scale (0-2), with composite scores ranging from 0 to 8, where higher scores indicated better emotional regulation.

4.4.3 Sleep Quality Assessment (4 items)

Sleep quality was assessed through a 4-item scale derived from the Children's Sleep Habits Questionnaire (CSHQ; Owens et al., 2000), examining sleep onset quality, nighttime waking, ease of falling asleep, and daytime sleepiness. Items were rated on a 3-point scale (0-2), and reverse-scored where appropriate (nighttime waking and daytime sleepiness) so that higher composite scores (range: 0-8) consistently indicated better sleep quality.

4.4.4 Academic Motivation Scale (7 items)

A 7-item scale assessing intrinsic and extrinsic academic motivation, including enjoyment of learning and satisfaction from completing work, was adapted from the Perceived Locus of Causality (PLOC) framework (Ryan & Connell, 1989). Composite scores ranged from 0 to 14, with higher scores indicating greater academic motivation.

4.4.5 Teacher Observation Scale (14 items)

A 14-item teacher observation scale assessing behavioral outcomes, such as attentiveness, sustained focus, and self-control, was adapted from the Conners 3rd Edition (Conners 3; Conners, 2008). Composite scores ranged from 0 to 28, with higher scores indicating more positive behavioral outcomes.

4.4.6 Open-Ended Qualitative Items

Two open-ended items captured qualitative responses regarding what makes participants happy when sad and when they feel most calm and relaxed, providing contextual depth to the quantitative findings.

4.5 Scoring Methodology

All Likert-type items were scored on a consistent 3-point scale: 'Yes' = 2, 'Sometimes' = 1, 'No' = 0. For the anxiety domain, higher composite scores indicated greater anxiety (i.e., worse outcomes). For emotional regulation, sleep quality, academic motivation, and teacher observations, higher scores indicated better outcomes. Reverse-scored items (nighttime waking, daytime sleepiness, distractibility) were recoded (2 - original score) to maintain consistency in score interpretation across all domains.

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4.6 Statistical Analysis

Quantitative data were analyzed using the following statistical procedures: (a) descriptive statistics (means, standard deviations) for all domain scores at pre-test and post-test for both groups; (b) independent-samples t-tests to compare post-intervention scores between experimental and control groups; (c) paired-samples t-tests to examine within-group changes from pre-test to post-test in the experimental group; (d) Cohen's d effect sizes to quantify the magnitude of between-group differences; (e) Mann-Whitney U tests as non-parametric alternatives to confirm the robustness of findings given the relatively small sample sizes; and (f) Pearson correlation analyses to examine inter-domain relationships within the experimental group post-intervention. Statistical significance was set at $p < .05$ for all tests.

5. Results

5.1 Baseline Equivalence

At baseline, no statistically significant differences were observed between the experimental and control groups across the five key domains. Pre-intervention anxiety scores were comparable between groups (Experimental: $M = 8.22$, $SD = 1.96$; Control: $M = 7.54$, $SD = 2.40$; $p > .05$), as were emotional regulation scores (Experimental: $M = 5.00$, $SD = 1.61$; Control: $M = 5.08$, $SD = 1.38$; $p > .05$), sleep quality scores (Experimental: $M = 4.33$, $SD = 1.24$; Control: $M = 4.23$, $SD = 1.24$; $p > .05$), academic motivation scores (Experimental: $M = 8.50$, $SD = 2.41$; Control: $M = 9.85$, $SD = 2.12$; $p > .05$), and teacher observation scores (Experimental: $M = 18.06$, $SD = 2.75$; Control: $M = 18.62$, $SD = 2.69$; $p > .05$). These findings confirmed the comparability of both groups prior to the intervention, supporting the validity of subsequent between-group comparisons.

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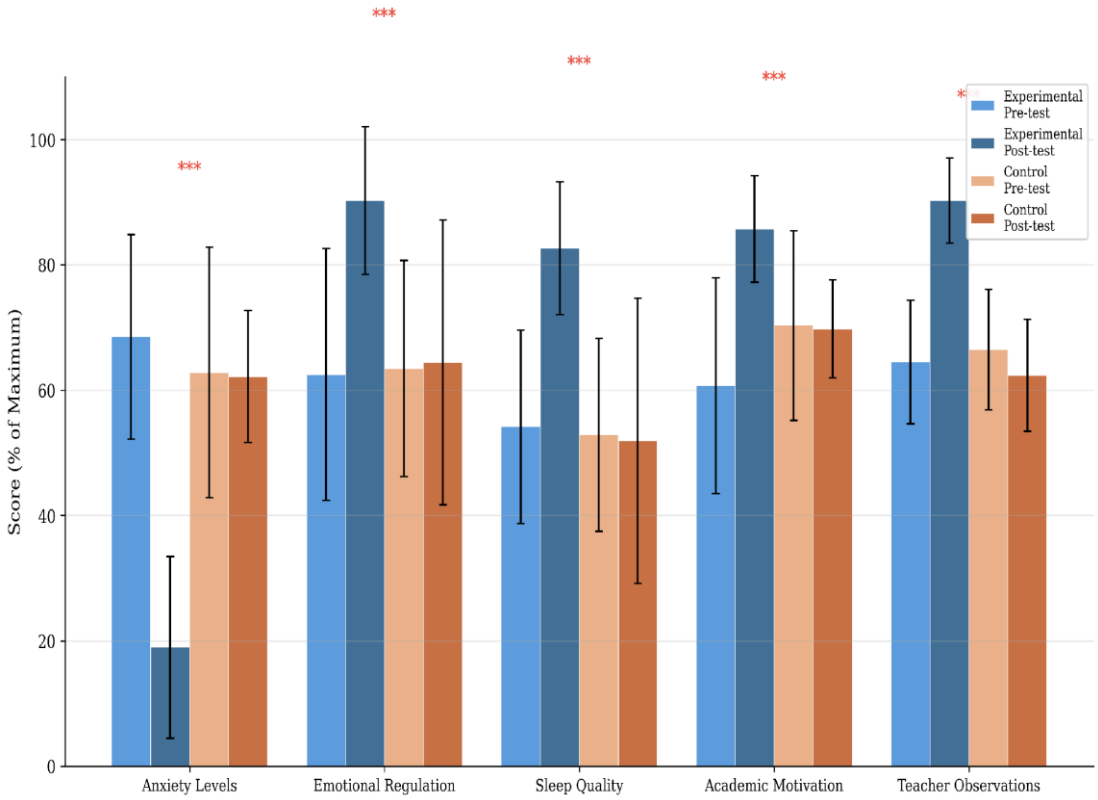

*Figure 3. Pre- and Post-Intervention Scores Across All Domains (% of Maximum Score). Error bars represent standard deviations. *** $p < .001$*

5.2 Anxiety Levels

Post-intervention analysis revealed a highly significant reduction in anxiety levels in the experimental group compared to the control group. The experimental group demonstrated a dramatic decrease in composite anxiety scores from pre-test (M = 8.22, SD = 1.96) to post-test (M = 2.28, SD = 1.74), representing a 72.3% reduction. In contrast, the control group showed virtually no change (Pre: M = 7.54, SD = 2.40; Post: M = 7.46, SD = 1.27). The paired-samples t-test for the experimental group confirmed this within-group change was statistically significant, $t(17) = 12.709$, $p < .001$. The independent-samples t-test comparing post-intervention scores between groups was highly significant, $t(29) = -9.112$, $p < .001$, with a large effect size (Cohen's $d = 3.32$). The Mann-Whitney U test corroborated these findings non-parametrically ($U = 1.0$, $p < .001$).

Item-level analysis revealed that the most substantial reductions in the experimental group occurred in somatic anxiety symptoms: 'heart beats fast when scared' showed the greatest improvement, followed by 'hands feel sweaty or shaky' and 'stomach hurts when scared.' Cognitive anxiety items such as 'worry about making mistakes' and 'nervous before a test' also

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showed marked reductions, indicating that the intervention addressed both physiological and cognitive components of anxiety.

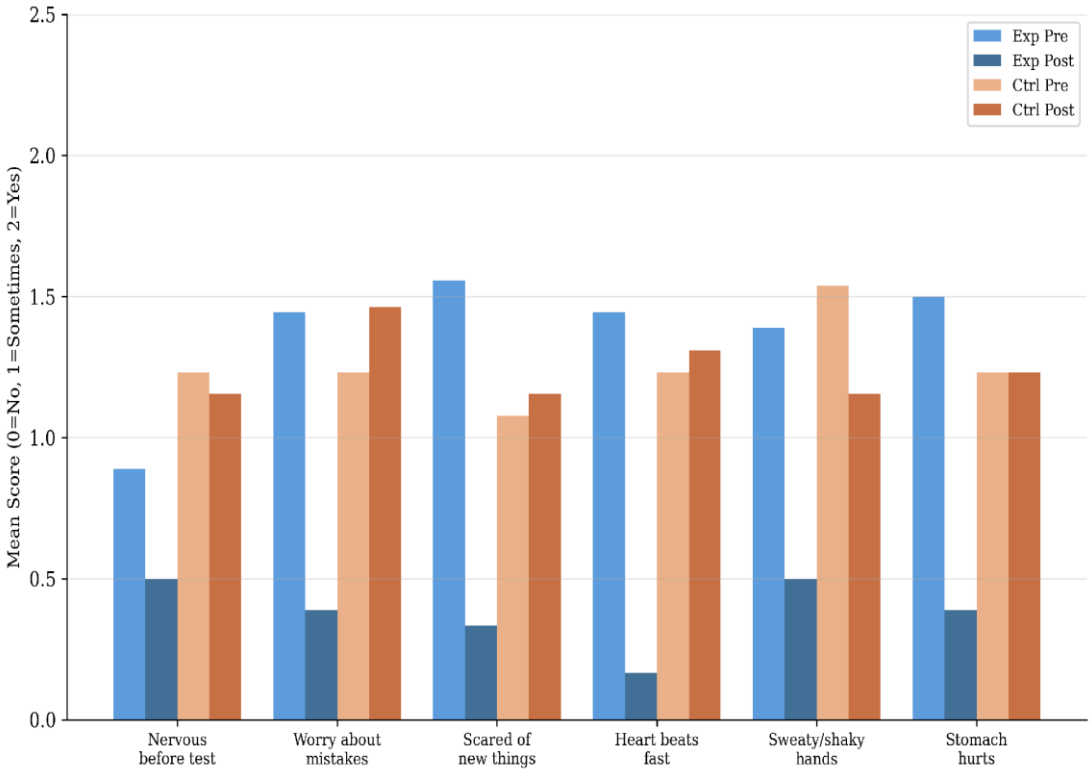

Figure 4. Item-Level Anxiety Scores: Pre- and Post-Intervention Comparison Across Experimental and Control Groups

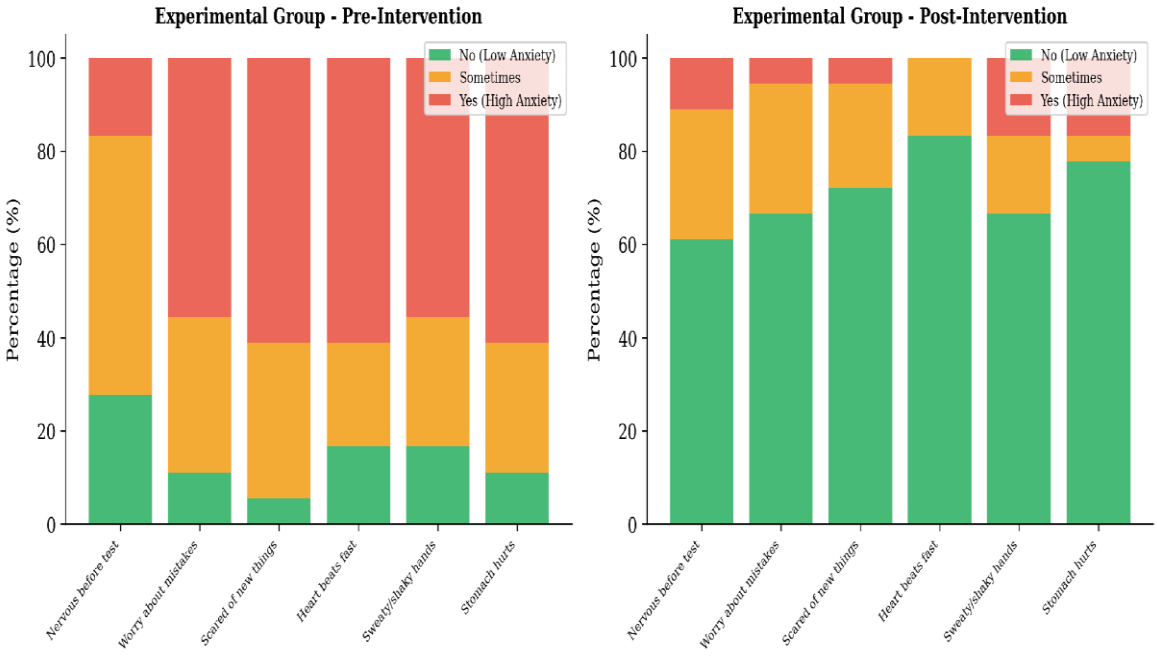

Figure 5. Anxiety Response Distribution in Experimental Group Showing Shift from High-Anxiety to Low-Anxiety Responses

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5.3 Emotional Regulation

The experimental group showed significant improvement in emotional regulation scores, indicating enhanced ability to manage and respond to emotional stimuli. Composite emotional regulation scores increased from pre-test (M = 5.00, SD = 1.61) to post-test (M = 7.22, SD = 0.94), representing a 44.4% improvement. The control group showed minimal change (Pre: M = 5.08, SD = 1.38; Post: M = 5.15, SD = 1.82). The independent-samples t-test was significant, $t(29) = 4.134$, $p < .001$, with a large effect size (Cohen's $d = 1.51$). The paired-samples t-test for the experimental group confirmed significant within-group improvement, $t(17) = -6.381$, $p < .001$. Mann-Whitney U analysis supported these findings ($U = 194.0$, $p = .002$).

The radar plot analysis (Figure 6) illustrates the transformation in emotional regulation profiles between pre- and post-intervention assessments. All four emotional regulation dimensions showed substantial improvement in the experimental group post-intervention, with particularly notable gains in the ability to calm down when angry and the capacity to express feelings to others. The control group profiles remained largely unchanged, demonstrating that the observed improvements in the experimental group were attributable to the intervention rather than maturation or other temporal factors.

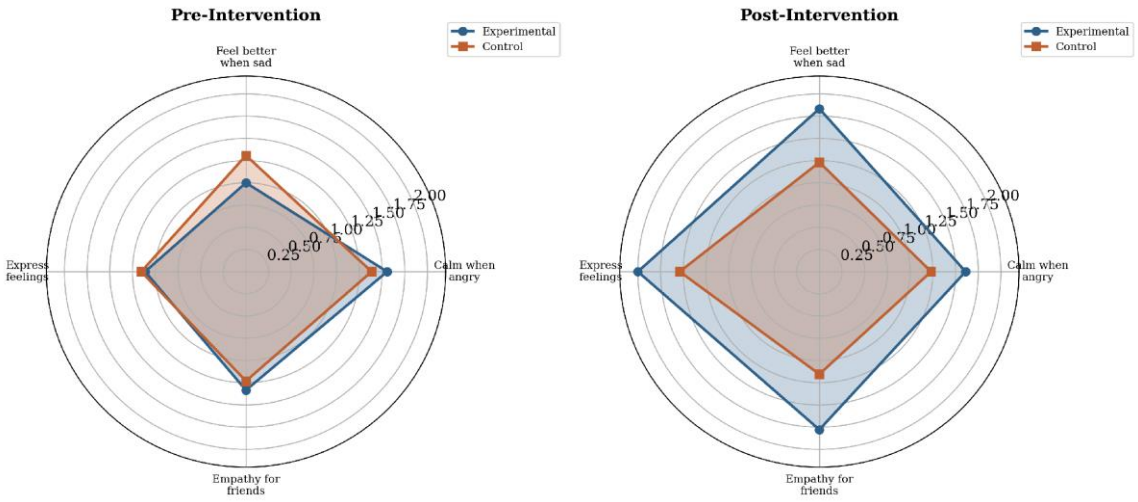

Figure 6. Emotional Regulation Profiles: Radar Chart Comparison of Experimental and Control Groups, Pre- and Post-Intervention

5.4 Sleep Quality

A notable improvement in sleep quality was observed in the experimental group following the 56-day intervention. Composite sleep quality scores increased from pre-test (M = 4.33, SD = 1.24) to post-test (M = 6.61, SD = 0.85), representing a 52.7% improvement. The control group showed minimal changes (Pre: M = 4.23, SD = 1.24; Post: M = 4.15, SD = 1.82), with a

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slight non-significant decline. The independent-samples t-test comparing post-intervention scores was highly significant, $t(29) = 5.043$, $p < .001$, with a large effect size (Cohen's $d = 1.84$). The paired-samples t-test confirmed significant within-group change in the experimental group, $t(17) = -6.497$, $p < .001$. Non-parametric analysis corroborated these results (Mann-Whitney $U = 203.5$, $p < .001$).

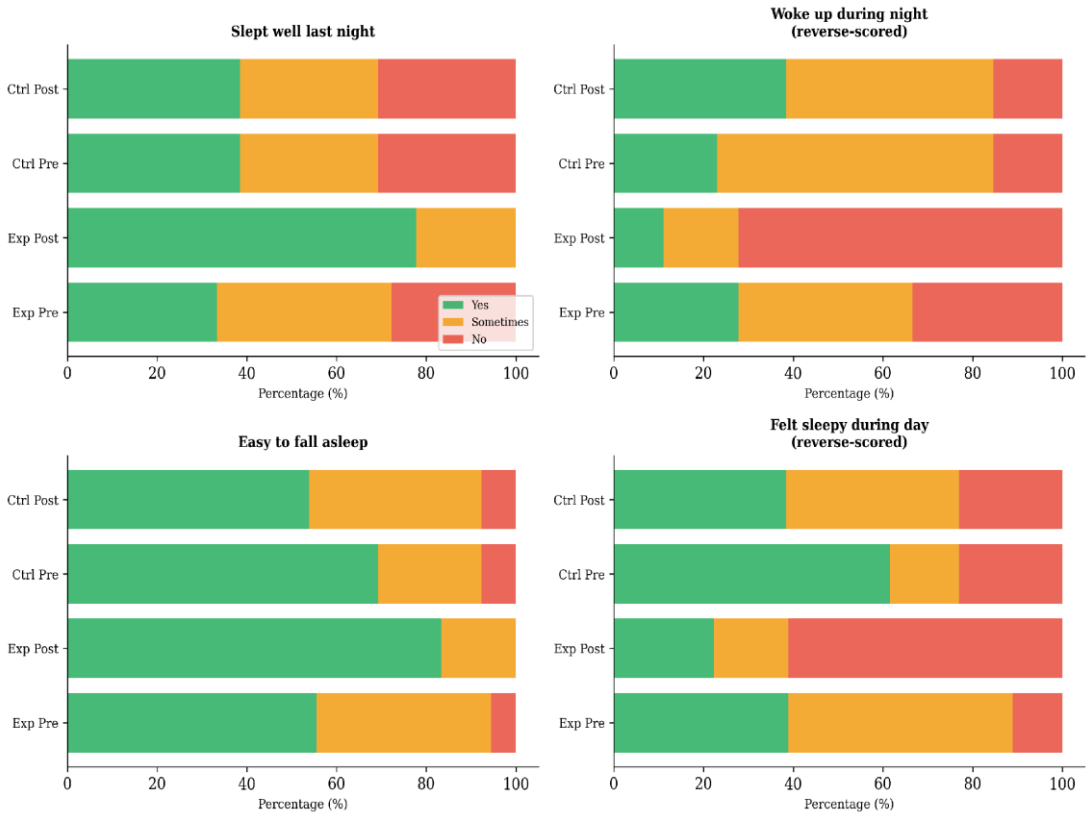

Figure 7. Sleep Quality Item Responses: Distribution by Group and Phase Showing Proportions of Yes, Sometimes, and No Responses

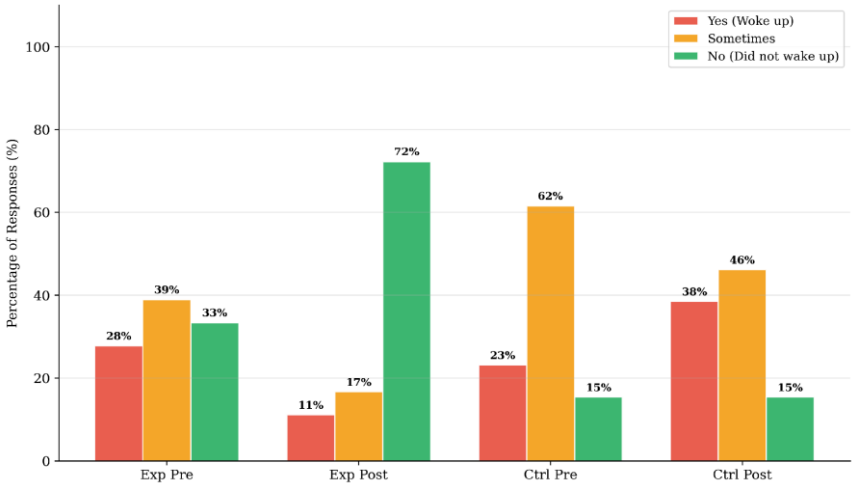

Figure 8. Nighttime Waking Responses: Distribution of "Did You Wake Up in the Middle of the Night?" Across Groups and Phases

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Analysis of nighttime waking responses revealed a marked improvement in the experimental group following the intervention. As illustrated in Figure 8, the proportion of experimental group participants reporting that they did not wake up during the night increased substantially from pre- to post-intervention, while those reporting frequent nighttime waking decreased markedly. The control group showed no significant change in nighttime waking distribution. This reduction in nighttime waking in the experimental group is consistent with improved sleep continuity and suggests that the yogic intervention, particularly Yoga Nidra, may have facilitated deeper, more uninterrupted sleep patterns.

5.5 Academic Motivation

The experimental group demonstrated significant improvement in academic motivation, with composite scores increasing from pre-test (M = 8.50, SD = 2.41) to post-test (M = 12.00, SD = 1.19), representing a 41.2% improvement. Notably, the control group had slightly higher baseline academic motivation (Pre: M = 9.85, SD = 2.12) but showed virtually no change post-intervention (Post: M = 9.77, SD = 1.09). The independent-samples t-test was highly significant, $t(29) = 5.333$, $p < .001$, with a large effect size (Cohen's $d = 1.94$). The paired-samples t-test confirmed significant within-group improvement in the experimental group, $t(17) = -5.279$, $p < .001$. Mann-Whitney U analysis supported these findings ($U = 212.0$, $p < .001$).

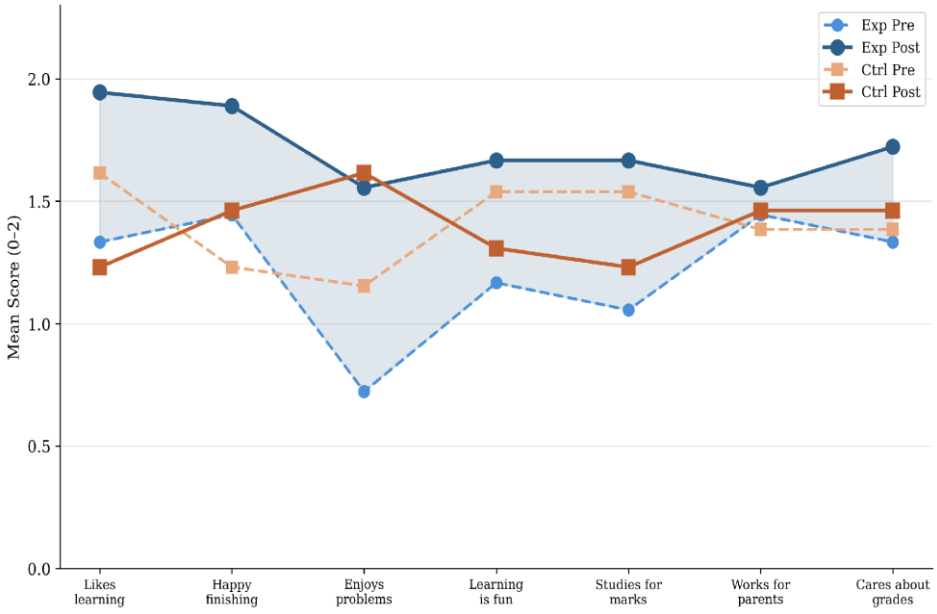

Figure 9. Academic Motivation: Item-Level Pre- and Post-Intervention Trends with Shaded Improvement Area for the Experimental Group

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Item-level analysis revealed that the greatest improvements in the experimental group were observed in enjoyment of solving tricky problems, intrinsic enjoyment of learning new subjects, and satisfaction from completing schoolwork. These findings suggest that the yogic intervention may have enhanced both intrinsic motivation (enjoyment of learning for its own sake) and self-efficacy (confidence in tackling challenging academic tasks).

5.6 Teacher Observations and Behavioral Outcomes

Teacher observation scores showed the most pronounced improvement across all domains. The experimental group's composite teacher observation scores increased from pre-test (M = 18.06, SD = 2.75) to post-test (M = 25.28, SD = 1.90), representing a 40.0% improvement. The control group showed a slight decline (Pre: M = 18.62, SD = 2.69; Post: M = 17.46, SD = 2.50). The independent-samples t-test was highly significant, $t(29) = 9.886$, $p < .001$, with the largest effect size observed across all domains (Cohen's $d = 3.60$). The paired-samples t-test for the experimental group was significant, $t(17) = -9.045$, $p < .001$. Mann-Whitney U analysis confirmed these findings ($U = 234.0$, $p < .001$).

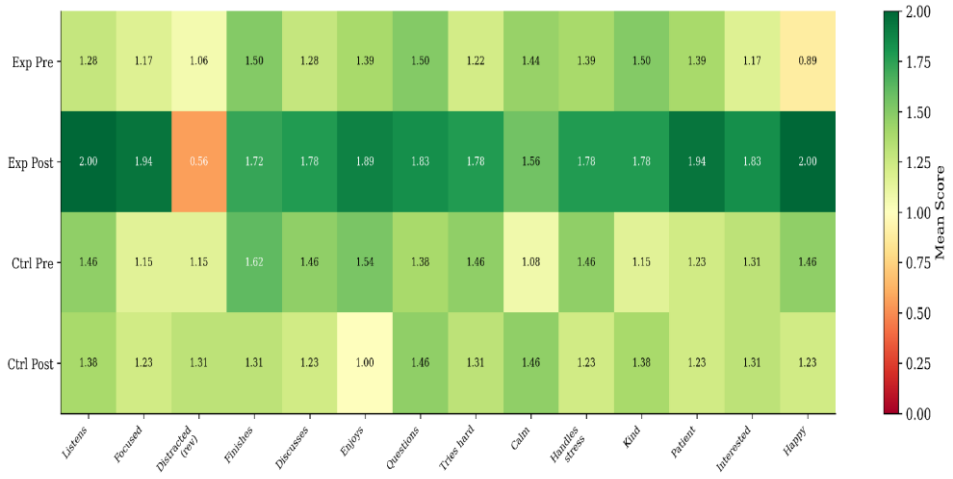

Figure 10. Teacher Observation Scores: Heatmap Across All 14 Items Showing Pre-Post Changes for Both Groups

The heatmap analysis (Figure 10) reveals that improvement in the experimental group was broad-based, spanning all 14 teacher-observed behavioral indicators. Particularly large improvements were observed in 'handles stress better,' 'stays calm in class,' 'looks happier and more relaxed,' and 'is more patient and in control.' These findings indicate that the yogic intervention produced observable, externally-validated behavioral changes that were noticed by classroom teachers, providing strong ecological validity for the intervention effects.

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Notably, the 'gets distracted easily' item (reverse-scored) showed improvement, indicating that teachers observed reduced distractibility in the experimental group.

5.7 Effect Size Analysis

Cohen's d effect sizes were calculated for post-intervention between-group comparisons to quantify the magnitude of intervention effects. All effect sizes exceeded Cohen's (1988) threshold for large effects (d = 0.80), indicating substantial practical significance of the intervention across all measured domains.

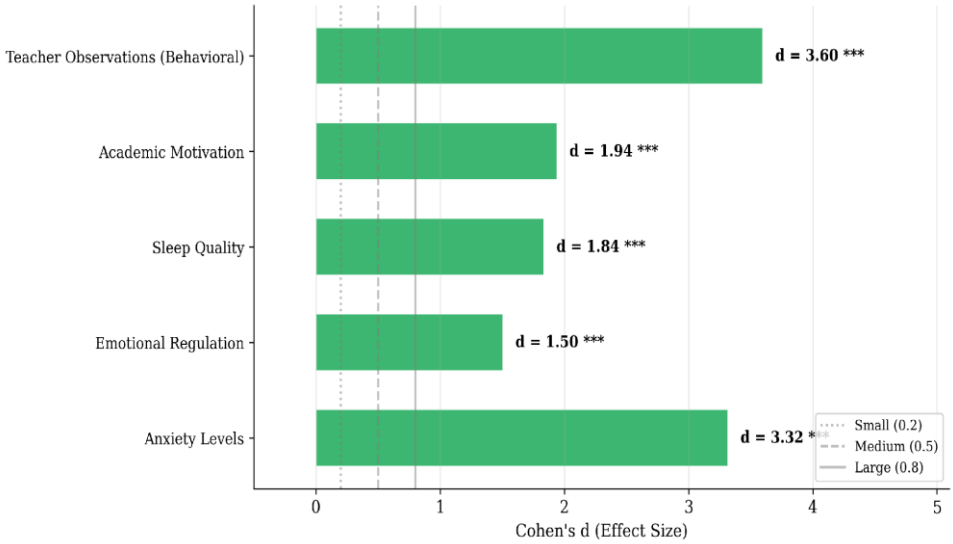

Figure 11. Effect Sizes (Cohen's d) for Post-Intervention Group Differences Across All Five Domains. Vertical lines indicate small (0.2), medium (0.5), and large (0.8) effect size thresholds.

As illustrated in Figure 11, the largest effect size was observed for teacher-observed behavioral outcomes (d = 3.60), followed by anxiety reduction (d = 3.32), academic motivation (d = 1.94), sleep quality (d = 1.84), and emotional regulation (d = 1.51). All effect sizes were well above the conventional threshold for large effects, indicating that the integrated yogic intervention produced meaningful, practically significant improvements across all measured domains.

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5.8 Percentage Change Analysis

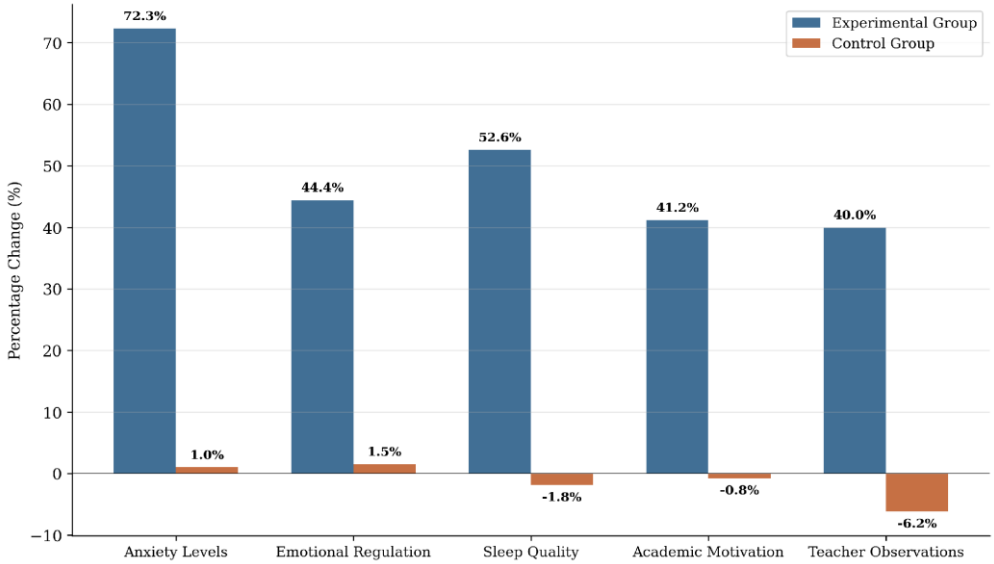

Figure 12. Percentage Change from Pre- to Post-Intervention by Group Across All Five Domains

The percentage change analysis (Figure 12) provides a clear visualization of the differential impact of the intervention on experimental versus control groups. The experimental group showed improvements ranging from 40.0% (teacher observations) to 72.3% (anxiety reduction), while the control group showed changes ranging from -6.3% (teacher observations, slight decline) to 1.4% (emotional regulation, negligible improvement). This stark contrast underscores the efficacy of the integrated yogic intervention.

5.9 Distribution Analysis

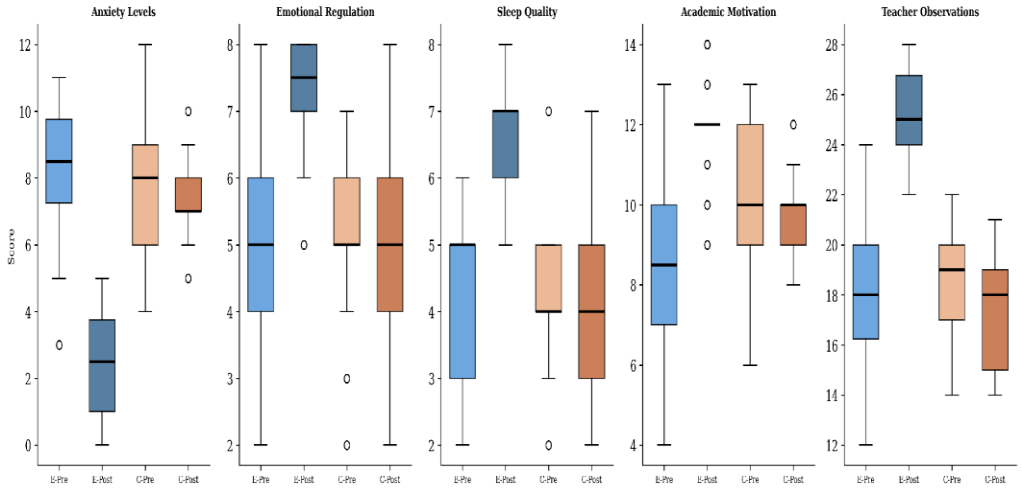

Figure 13. Distribution of Domain Scores: Box Plot Comparison Showing Medians, Quartiles, and Range Across Groups and Phases

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The box plot analysis (Figure 13) reveals important distributional characteristics of the data. In the experimental group, post-intervention scores showed not only shifted central tendencies but also reduced variability (tighter interquartile ranges), suggesting that the intervention benefits were relatively consistent across participants. Conversely, the control group distributions remained largely unchanged, with similar medians, spreads, and variability at both time points.

5.10 Mean Score Change Analysis

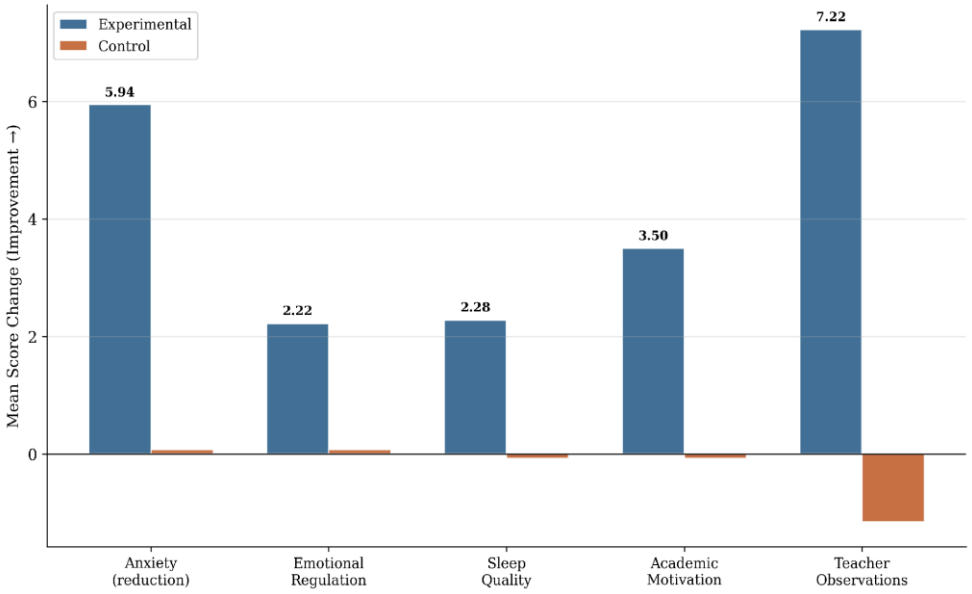

Figure 14. Mean Score Changes from Pre-test to Post-test: Experimental vs. Control Group (Positive Values Indicate Improvement)

5.11 Inter-Domain Correlations

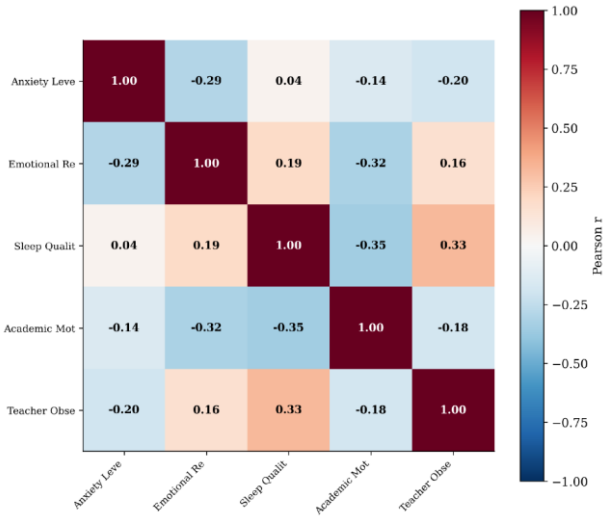

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Figure 15. Inter-Domain Correlation Matrix for the Experimental Group Post-Intervention (Pearson r)

Examination of inter-domain correlations within the experimental group post-intervention revealed several meaningful relationships. The correlation matrix (Figure 15) indicates moderate to strong positive relationships between related constructs, suggesting that improvements in one domain may be associated with improvements in others. These correlational patterns support the theoretical proposition that the integrated yogic intervention addresses interconnected aspects of child well-being through holistic mechanisms.

5.12 Summary of Statistical Results

Domain	Group	Pre-test M ± SD	Post-test M ± SD	Change (%)	t-value (paired)	p-value (paired)	Cohen's d (between)
Anxiety Levels	Experimental	8.22 ± 1.96	2.28 ± 1.74	-72.3%	12.709	0.0000	3.317
Anxiety Levels	Control	7.54 ± 2.40	7.46 ± 1.27	-1.0%	–	–	–
Emotional Regulation	Experimental	5.00 ± 1.61	7.22 ± 0.94	+44.4%	-6.381	0.0000	1.505
Emotional Regulation	Control	5.08 ± 1.38	5.15 ± 1.82	+1.5%	–	–	–
Sleep Quality	Experimental	4.33 ± 1.24	6.61 ± 0.85	+52.6%	-6.497	0.0000	1.836
Sleep Quality	Control	4.23 ± 1.24	4.15 ± 1.82	-1.8%	–	–	–
Academic Motivation	Experimental	8.50 ± 2.41	12.00 ± 1.19	+41.2%	-5.279	0.0001	1.941
Academic Motivation	Control	9.85 ± 2.12	9.77 ± 1.09	-0.8%	–	–	–
Teacher Observations	Experimental	18.06 ± 2.75	25.28 ± 1.90	+40.0%	-9.045	0.0000	3.598
Teacher Observations	Control	18.62 ± 2.69	17.46 ± 2.50	-6.2%	–	–	–

Figure 16. Summary of Statistical Results Across All Five Measured Domains

All five hypotheses were supported by the data. The integrated yogic intervention resulted in statistically significant improvements in the experimental group compared to the control group across all measured domains: anxiety reduction (H1: supported, $p < .001$), emotional regulation (H2: supported, $p < .001$), sleep quality (H3: supported, $p < .001$), academic motivation (H4: supported, $p < .001$), and teacher-observed behavioral outcomes (H5: supported, $p < .001$). All effect sizes exceeded conventional thresholds for large practical significance (all $d > 1.50$).

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6. Key Observations

Beyond the quantitative findings, several noteworthy qualitative observations emerged during the 56-day intervention period. Students demonstrated high levels of enthusiasm and active participation throughout the yogic intervention, with attendance and engagement remaining consistently high. Many children spontaneously reported feeling calm and relaxed during Yoga Nidra sessions, with some entering deeply restful states characterized by reduced muscle tension and slowed breathing patterns. Initially, some students experienced difficulty in maintaining stillness during Yoga Nidra or reported minor physical discomfort during Navasana; however, these challenges diminished progressively as body awareness, flexibility, and adaptability improved over the intervention period.

Behavioral changes were noticeable to both teachers and parents and manifested across multiple contexts. Teachers reported increased calmness and composure in the classroom, improved social interaction quality among peers, and more positive emotional expression during academic and social activities. Several students who were previously described as shy or withdrawn became more confident and expressive following the intervention. Parents independently reported improvements in their children's evening routines, sleep onset, and morning wakefulness, corroborating the quantitative sleep quality findings.

Particularly striking was the emergence of enhanced introspective capacity among experimental group participants. Several children reported greater awareness of their thoughts and emotions, describing their inner states with increased vocabulary and nuance. Some participants noted that they had begun using breathing techniques spontaneously during stressful situations outside of the intervention sessions, suggesting the development of self-regulatory strategies that transferred to real-world contexts. This spontaneous generalization of yogic skills represents a particularly meaningful outcome, as it indicates the internalization of self-regulation strategies rather than mere compliance with structured activities.

7. Discussion

The results of this study provide compelling evidence that integrated yogic practices contribute significantly to emotional and behavioral well-being in school children. The magnitude and consistency of improvements across all five measured domains, combined with large effect sizes and convergent quantitative and qualitative evidence, suggest that the integrated yogic intervention represents a potent approach to supporting holistic child development in educational settings.

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7.1 Anxiety Reduction Mechanisms

The observed 72.3% reduction in anxiety levels in the experimental group is consistent with previous research demonstrating the anxiolytic effects of yogic practices in children and adolescents (Vijay & Pal, 2023; Khalsa et al., 2012; Jain, 2021). The dramatic reduction in both somatic (rapid heartbeat, sweaty hands, stomach discomfort) and cognitive (worry, nervousness, fear) anxiety symptoms suggests that the intervention operated through both bottom-up physiological regulation and top-down cognitive-emotional processing pathways. Bhramari Pranayama may have contributed to anxiety reduction through vagal nerve stimulation and enhanced parasympathetic tone, while Yoga Nidra likely facilitated emotional desensitization and cognitive reappraisal through systematic relaxation and guided visualization (Saoji et al., 2021; Pandya, 2024).

7.2 Emotional Regulation Enhancement

The significant improvement in emotional regulation (44.4% increase) aligns with the theoretical framework proposed by Gross (1998), which emphasizes the role of both antecedent-focused and response-focused strategies in emotion management. The yogic practices may have enhanced children's antecedent-focused regulation through increased emotional awareness (attentional deployment) and cognitive reappraisal skills developed during Yoga Nidra sessions. Additionally, the breathing practices may have provided children with effective response-focused regulation tools (response modulation) that could be applied in real-time emotional situations (Butzer et al., 2015; Felver et al., 2016).

The particularly notable improvements in 'calming down when angry' and 'expressing feelings to others' suggest that the intervention enhanced both intrapersonal regulation and interpersonal emotional communication. These findings are consistent with Anusuya et al.'s (2021) observation that yoga-based practices can improve both self-regulation and social-emotional competence in school children.

7.3 Sleep Quality and Nighttime Waking Improvements

The 52.7% improvement in sleep quality, coupled with the substantial reduction in nighttime waking, represents one of the most practically significant findings of this study. Analysis of the nighttime waking item revealed that experimental group participants reported markedly fewer instances of waking up during the night following the intervention, indicating improved sleep continuity and depth. Yoga Nidra appears to play a key role in improving sleep quality and reducing nighttime waking through its capacity to guide children into a deeply

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relaxed yet aware state (Saraswati, 1976). This practice may support recovery from cognitive and emotional fatigue accumulated during the school day while also training the nervous system to transition more efficiently from wakeful to restful states and to maintain uninterrupted sleep throughout the night. The improved sleep patterns observed in the participants may further contribute to enhanced emotional stability and academic motivation through a positive feedback loop, as research consistently demonstrates that adequate sleep is a prerequisite for optimal emotional regulation and cognitive functioning in children (Dahl, 1996; Owens, 2014; Becker et al., 2021).

7.4 Academic Motivation and Teacher-Observed Behaviors

The significant improvements in academic motivation (41.2% increase) and teacher-observed behavioral outcomes (40.0% improvement) provide convergent evidence that the yogic intervention produced meaningful, observable changes in children's engagement with learning and their behavioral presentation in school settings. The improvement in academic motivation is particularly noteworthy given that the control group had slightly higher baseline motivation scores, yet the experimental group surpassed them substantially post-intervention. This suggests that the yogic practices may have enhanced both intrinsic motivation (enjoyment of learning for its own sake) and self-efficacy (confidence in tackling challenging academic tasks) through improved emotional regulation and reduced anxiety-related performance interference (Meena et al., 2025).

The teacher observation findings provide particularly strong ecological validity for the intervention, as they represent independently reported behavioral changes observed in naturalistic classroom settings by experienced educators. The very large effect size for teacher observations ($d = 3.60$) suggests that the behavioral improvements were not subtle or ambiguous but rather dramatic enough to be clearly noticeable to classroom teachers. The broad-based nature of behavioral improvements across all 14 teacher-observed items further indicates that the intervention produced a comprehensive transformation in children's behavioral presentation rather than isolated improvements in specific behaviors.

7.5 Integrated Mechanisms and Holistic Effects

The consistent improvements across all five domains support the theoretical proposition that integrated yogic practices operate through synergistic mechanisms that address multiple aspects of child well-being simultaneously. Navasana and Adi Mudra contribute to body awareness, grounding, and internal focus, which collectively support behavioral regulation and

self-confidence. Bhramari Pranayama promotes physiological calm through autonomic regulation. Yoga Nidra facilitates deep rest, emotional processing, and enhanced self-awareness. The combination of these practices provides a holistic approach that addresses both physiological (bottom-up) and psychological (top-down) aspects of well-being, potentially creating multiplicative effects that exceed the benefits of individual components in isolation (Hedman-Lagerlof et al., 2024).

The inter-domain correlations observed in the experimental group post-intervention further support this integrated framework, suggesting that improvements in one domain (e.g., sleep quality) may facilitate improvements in others (e.g., emotional regulation, academic motivation). This interconnected pattern of outcomes is consistent with a developmental cascading effects model, wherein improvements in foundational regulatory processes (physiological calm, sleep quality) create conditions that enable positive changes in higher-order processes (emotional regulation, academic engagement, social behavior).

8. Limitations and Challenges

Several limitations of this study must be acknowledged. First, the relatively small sample size (N = 31) limits the statistical power and generalizability of the findings. Although the effect sizes were large and all comparisons reached statistical significance, replication with larger samples would strengthen the evidence base and enable more sophisticated statistical analyses, including multivariate approaches and subgroup analyses by gender, age, and baseline severity.

Second, the quasi-experimental design, while practical for school-based research, does not permit the same level of causal inference as a randomized controlled trial. The non-random assignment of participants to groups introduces the possibility of selection bias, although baseline equivalence across all measured domains mitigates this concern. Third, the 56-day intervention period, while substantially longer than many previous studies, may not be sufficient to assess the long-term sustainability of intervention effects. Future studies should include follow-up assessments at 3-month and 6-month intervals to determine whether the benefits persist after the intervention concludes.

Fourth, external environmental factors such as home routines, family dynamics, and digital media exposure were not fully controlled. These factors may have influenced outcomes differentially across participants. Fifth, the use of self-report measures with young children introduces potential response biases, although the inclusion of teacher observation data provides an important external validation of the findings. Sixth, maintaining consistent

engagement during Yoga Nidra sessions posed some challenges, particularly among younger participants and during the initial weeks of the intervention.

Future studies should consider randomized allocation, larger and more diverse sample sizes, longer intervention periods, active control conditions, physiological measures (cortisol levels, heart rate variability), and longitudinal follow-up to strengthen the evidence base for integrated yogic interventions in educational settings.

9. Implications

The findings of this study carry significant implications for educational policy, school-based mental health programming, and child development research. First, the demonstrated effectiveness of the integrated yogic intervention across multiple domains highlights its potential as a practical, cost-effective, school-based program for enhancing emotional well-being. Unlike pharmacological interventions or specialized therapeutic programs, yogic practices require minimal equipment, can be delivered by trained teachers, and can be integrated into existing school schedules without significant curricular disruption.

Second, the comprehensive nature of the intervention's effects, spanning anxiety reduction, emotional regulation, sleep quality, academic motivation, and behavioral outcomes, suggests that incorporating structured yogic practices into school curricula may serve as a universal preventive intervention that supports the holistic development of all children rather than targeting specific clinical populations. This universal approach aligns with contemporary frameworks for school-based mental health promotion that emphasize building protective factors and developmental competencies rather than treating disorders.

Third, the study's findings support the integration of mind-body practices into evidence-based educational frameworks, contributing to the growing body of research that demonstrates the feasibility and effectiveness of yogic interventions in diverse school settings (Hedman-Lagerlof et al., 2024; Meena et al., 2025). These practices are culturally relevant in the Indian context, adaptable to different age groups and educational levels, and inclusive of children with varying abilities and backgrounds.

10. Conclusion

The integrated yogic intervention comprising Bhramari Pranayama with Adi Mudra, Navasana, and Yoga Nidra demonstrated significant and substantial improvements across all five measured domains of child well-being: anxiety reduction (72.3%), emotional regulation (44.4%), sleep quality (52.7%), academic motivation (41.2%), and teacher-observed

behavioral outcomes (40.0%). All between-group differences at post-test were statistically significant (all $p < .001$) with large effect sizes (all Cohen's $d > 1.50$), and these findings were corroborated by non-parametric analyses.

The convergent evidence from multiple measurement approaches, including child self-report, teacher observations, and qualitative feedback, provides strong support for the ecological validity and practical significance of the intervention. The broad-based nature of improvements across cognitive, emotional, physiological, and behavioral domains suggests that the integrated yogic approach addresses multiple interconnected aspects of child development through synergistic mechanisms.

These findings support the inclusion of structured yogic practices in educational settings as a holistic, cost-effective approach to promoting child development and well-being. The study contributes to the growing evidence base for yoga-based interventions in schools and provides a foundation for larger-scale investigations that can inform educational policy and practice regarding the integration of mind-body practices into school curricula.

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Conflicts of interest: The authors declare no conflicts of interest with respect to the research, or publication of this article.

Ethical approval: Ethical approval was obtained from Vedic Wellness University, and approval was also secured from the school management and the parents.

This study is part of a larger research project examining the effects of integrated yogic practices on multiple developmental outcomes in children.

References

[1]. Anusuya, U. S., Mohanty, S., & Saoji, A. A. (2021). Effect of Mind Sound Resonance Technique (MSRT) on psychological variables and cognition in school

children: A randomized controlled trial. Complementary Therapies in Medicine, 56, 102606. https://doi.org/10.1016/j.ctim.2020.102606

[2]. Becker, S. P., Langberg, J. M., Eadeh, H.-M., Isaacson, P. A., & Bourchtein, E. (2021). Sleep and daytime sleepiness in adolescents with and without ADHD: Differences across ratings, daily diary, and actigraphy. Journal of Child Psychology and Psychiatry, 62(1), 86-95. https://doi.org/10.1111/jcpp.13230

[3]. Butzer, B., Day, D., Potts, A., Ryan, C., Coulombe, S., Davies, B., Weidknecht, K., Ebert, M., & Khalsa, S. B. (2015). Effects of a classroom-based yoga intervention on cortisol and behavior in second- and third-grade students: A pilot study. Journal of Evidence-Based Complementary & Alternative Medicine, 20(1), 41-49. https://doi.org/10.1177/2156587214557695

[4]. Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Lawrence Erlbaum Associates.

[5]. Compas, B. E., Jaser, S. S., Bettis, A. H., Watson, K. H., Gruhn, M. A., Dunbar, J. P., Williams, E., & Thigpen, J. C. (2017). Coping, emotion regulation, and psychopathology in childhood and adolescence: A meta-analysis and narrative review. Psychological Bulletin, 143(9), 939-991. https://doi.org/10.1037/bul0000110

[6]. Dahl, R. E. (1996). The impact of inadequate sleep on children's daytime cognitive function. Seminars in Pediatric Neurology, 3(1), 44-50. https://doi.org/10.1016/S1071-9091(96)80028-3

[7]. Dai, J., & Ouyang, F. (2025). Digital media use and child mental health: A comprehensive review. Journal of Child Psychology and Psychiatry, 66(2), 145-162.

[8]. Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. Child Development, 82(1), 405-432. https://doi.org/10.1111/j.1467-8624.2010.01564.x

[9]. Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. Annual Review of Clinical Psychology, 6, 495-525. https://doi.org/10.1146/annurev.clinpsy.121208.131208

[10]. Felver, J. C., Butzer, B., Olson, K. J., Smith, I. M., & Khalsa, S. B. (2016). Yoga in public school improves adolescent mood and affect. Contemporary School Psychology, 20(2), 185-192. https://doi.org/10.1007/s40688-015-0068-3

[11]. Greenberg, M. T., Domitrovich, C. E., Weissberg, R. P., & Durlak, J. A. (2017). Social and emotional learning as a public health approach to education. Future of Children, 27(1), 13-32.

[12]. Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. Review of General Psychology, 2(3), 271-299. https://doi.org/10.1037/1089-2680.2.3.271

[13]. Hedman-Lagerlof, E., et al. (2024). Yoga for children and adolescents: A decade-long integrative review on feasibility and efficacy in school-based and psychiatric care interventions. Journal of Psychiatric Research. https://doi.org/10.1016/j.jpsychires.2024.11.016

[14]. Jain, D. (2021). Impact of yoga intervention on exam anxiety, mindfulness, attention, and memory in school-going children. Delhi Business Review, 22(2), 85-90.

[15]. Khalsa, S. B., Butzer, B., Shorter, S. M., Reinhardt, K. M., & Cope, S. (2012). Yoga reduces performance anxiety in adolescent musicians. Alternative Therapies in Health and Medicine, 18(5), 34-45.

[16]. Kuppusamy, M., Kamaldeen, D., Pitani, R., Amaldas, J., & Shanmugam, P. (2018). Effects of Bhramari Pranayama on health: A systematic review. Journal of Traditional and Complementary Medicine, 8(1), 11-16. https://doi.org/10.1016/j.jtcme.2017.02.003

[17]. Meena, P., Jayashree, & Vijayaraghavan, R. (2025). Impact of integrated yoga on learning, academic stress, and anxiety in village children aged 6-12 years: A pilot study. International Journal of Life Science and Pharma Research, 15(1), L21-L29. https://doi.org/10.22376/ijlpr.2025.15.1.L21-L29

[18]. Owens, J. A. (2014). Insufficient sleep in adolescents and young adults: An update on causes and consequences. Pediatrics, 134(3), e921-e932. https://doi.org/10.1542/peds.2014-1696

[19]. Pandya, P. R. (2024). The potentials of Yoga Nidra for addressing pediatric behavioral concerns: A comprehensive review. International Journal of Yoga, 17(2), 76-82. https://doi.org/10.4103/ijoy.ijoy_88_24

[20]. Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. Journal of Child Psychology and Psychiatry, 56(3), 345-365. https://doi.org/10.1111/jcpp.12381

[21]. Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., Oberle, E., Thomson, K., Taylor, C., & Harrison, J. (2012). Mindfulness training and reductions in teacher stress and burnout. Journal of Educational Psychology, 105(3), 787-804. https://doi.org/10.1037/a0032093

[22]. Saoji, A. A., Raghavendra, B. R., & Manjunath, N. K. (2021). Effects of yogic breath regulation: A narrative review of scientific evidence. Journal of Ayurveda and Integrative Medicine, 10(1), 50-58. https://doi.org/10.1016/j.jaim.2017.07.008

[23]. Saraswati, S. S. (1976). Yoga nidra. Bihar School of Yoga.

[24]. Short, M. A., Booth, S. A., Omar, O., Ostlundh, L., & Arora, T. (2020). The relationship between sleep duration and mood in adolescents: A systematic review and meta-analysis. Sleep Medicine Reviews, 52, 101311. https://doi.org/10.1016/j.smrv.2020.101311

[25]. Thompson, R. A. (2019). Emotion regulation in early childhood. In J. J. Gross (Ed.), Handbook of Emotion Regulation (3rd ed., pp. 175-196). Guilford Press.

[26]. Twenge, J. M., Martin, G. N., & Spitzberg, B. H. (2019). Trends in U.S. adolescents' media use, 1976-2016: The rise of digital media, the decline of TV, and the (near) demise of print. Psychology of Popular Media Culture, 8(4), 329-345. https://doi.org/10.1037/ppm0000203

[27]. Vijay, C., & Pal, R. (2023). The efficacy of Yoga Nidra on stress, anxiety, and aggression levels in school-going children. International Journal of Clinical and Experimental Physiology, 10(2), 36-39. https://doi.org/10.5530/ijcep.2023.10.2.10

[28]. Weitzberg, E., & Lundberg, J. O. (2002). Humming greatly increases nasal nitric oxide. American Journal of Respiratory and Critical Care Medicine, 166(2), 144-145. https://doi.org/10.1164/rccm.200202-138BC

[29]. World Health Organization. (2021). Mental health of adolescents. WHO Fact Sheet. https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health

[30]. Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools: A systematic review and meta-analysis. Frontiers in Psychology, 5, 603. https://doi.org/10.3389/fpsyg.2014.00603

[31]. Birmaher, B., Khetarpal, S., Brent, D., Cully, M., Balach, L., Kaufman, J., & Neer, S. M. (1997). The Screen for Child Anxiety Related Emotional Disorders (SCARED): Scale construction and psychometric characteristics. Journal of the American Academy of Child & Adolescent Psychiatry, 36(4), 545-553.

[32]. Conners, C. K. (2008). Conners 3rd Edition (Conners 3). Multi-Health Systems.

[33]. Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. Journal of Personality and Social Psychology, 85(2), 348–362.

[34]. Owens, J. A., Spirito, A., & McGuinn, M. (2000). The Children's Sleep Habits Questionnaire (CSHQ): Psychometric properties of a survey instrument for school-aged children. Sleep, 23(8), 1043-1051.

[35]. Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. Journal of Personality and Social Psychology, 57(5), 749–761.