

Effect of a Six-Week Yoga Training Program on Stress and Anxiety Among School Students: A Pre–Post Experimental Study

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Abstract— The period of adolescence is quite critical as during this stage student mostly encounter high stress and anxiety because of studies, social expectations, and lifestyle. Long-term pressure can affect an individual's emotional state, learning, and academic performance. The aim of this study was to assess the effect of well-organized six-week yoga training programme in schools on stress and anxiety of students. A one-group pre-test post-test pre-experimental design. Thirty purposively sampled students aged twelve to sixteen years from Government Senior Secondary School Jhanduke, Punjab, India. For six weeks, participants were completed a yoga programme, comprising of asana, pranayama, meditation and relaxation for 45 min per day, daily five days a week. The Student Stress questionnaire was used for assessment of stress and Test Anxiety Questionnaire for anxiety. The researchers utilized descriptive statistics as well as paired-sample t-tests at 0.05 significance level to analyse the data. The mean stress score dropped from 31.47 ± 3.82 to 25.10 ± 4.11 according to the t-test with obtained value of 7.86, $p < 0.05$. In addition, the mean anxiety score dropped from 13.97 ± 1.95 to 10.53 ± 2.16 according to the t-test with obtained value of 6.42, $p < 0.05$. The study findings show that six weeks of yoga significantly reduce stress and anxiety of students in schools. School health and physical education programs might use structured yoga classes as a practical,

cost-effective way to enhance mental health in adolescents.

Keywords—adolescents, anxiety, mental health, psychological well-being, school students, stress, yoga.

I. INTRODUCTION

The health and education of the adolescent age group require proper mental health. Adolescence, marked by rapid changes in one's physical, emotional, cognitive, and social worlds, makes young people prone to psychological stress and anxiety. School students may face psychological distress due to academic competition, examination pressure, parents' expectations, peer relations, and overexposure to digital media. If not managed optimally, it can disrupt concentration, academic success, emotional balance, social functioning, and quality of life.

Stress refers to the feeling of being under too much mental or emotional pressure. Even though moderate stress can boost motivation, chronic or excessive stress hampers cognition and emotion regulation. Young people worry, fear, and feel nervous from time to time, and the symptoms of anxiety are common in adolescents. Anxiety has a negative influence on academics and overall functioning and well-being [1], [2].

Yoga combines asana, pranayama, meditations and deep relaxation techniques. Studies show that yoga and mindfulness programs delivered in schools may improve self-regulation, mood, resilience, and

psychosocial well-being. As a result, it is increasingly regarded as a non-pharmacological component of school health promotion.

It appears that despite the country being flooded with evidence, comparatively few studies have examined brief yoga interventions in Punjab, India among school students. The present study evaluated the effects of six weeks of yoga training on stress and anxiety among students aged 12-16 years.

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Adolescents who go to school experience stress based on various demands, academic, interpersonal, developmental, and environmental. At this age, students are expected to cope with an ever more complicated curriculum, competitive examinations, parental expectations, peer comparison, social-media exposure, and changing self-identity. These pressures are not independent forces. The anxiety of students can trigger insecurities that often accumulate to create a long-lasting state of mental arousal in which students expect failure. Though they are related, stress and anxiety are conceptually distinct. The less able a person is to cope with external or internal demands the higher the stress. Anxiety refers to a sense of worry, apprehension, fear, anticipatory tension, and physiological tension even when we aren't in imminent danger. In the school setting, the two regularly reinforce each other: academic stress may create anxiety; anxiety may disrupt attention, memory retrieval, and performance, thus creating further stress. Because this is a cyclical relationship, any intervention that dampens physiological arousal and enhances emotional self-regulation may affect both at once. The complete mind-body structure of Yoga can

inform its potential effectiveness. Unlike an exercise program, yoga integrates controlled movement with breath control, training of attention, body awareness, and relaxation. The asana require the student to hold stable positions where they become aware of their muscle tension, balance, and breath. The process of pranayama teaches slow, even patterns of the breath. Also, the meditation-based relaxation teaches non-reactive awareness to the thoughts and sensations in the body. When brought together, they may break a repetitive cycle of anxiety and over activation of the autonomic nervous system. As per studies and reviews conducted within schools, the case of children or adolescents who have taken part in yoga or mindfulness-focused programs is encouraging. It has led to better moods, self-regulation as well as resilience, psychosocial functioning and performance anxiety.

This effect aligns with the view that yoga is more than a flexibility practice, as it might be a formal self-regulation intervention that trains students to better be aware of and adjust to their stress responses.

When stress lasts for an extended period of time, the sympathetic nervous system is overactive, the muscles tense up, breathing becomes shallow and rapid, and vigilance is increased. Taking slow deep breaths helps the body to relax and activates the parasympathetic nerve system. This helps in calming the arousal and emotion. Even though the current investigation did not assess cortisol, blood pressure, heart rate variability, or any other biomarker, the reductions in the scores on the questionnaires are broadly consistent with this psychophysiological pathway. Breathing techniques such as deep diaphragmatic breathing and Nadi Shodhana are highly beneficial for controlling one's breath while calming the mind. Repeated practice of these methods may help students develop a coping

response that is accessible before tests, during heavy homework loads, after emotionally difficult interactions, and so on. We should not consider this mechanism only biological. The decrease in distress may result from the predictable regularity of the session, a benign group atmosphere, the instructor's guidance, and withdrawal from academic requirements.

The mind control condition may involve attention allocation, cognitive distancing, and perceived self-efficacy. Constant worrying about negative outcomes and failures can spiral into feelings of anxiety, panic and doubt. A student may be able to notice stressful thoughts without immediately relating to them because of meditating and noticing his or her breath, but not remove them altogether. A small delay occurs between thinking and acting or responding. Just like with completion and variation in learning of redundant movements on new apparatus, learning and registering tricks and postures on a new set of apparatus gives a sense of competence and bodily control. When learners find that external forces such as exams, family expectations, or social evaluation take away their control, this sense of mastery can be meaningful. School-based yoga offers children a way to regulate their emotions and attention. School-based mindfulness interventions have shown early improvements in emotional and behavioural adjustment. Thus, engaging with and enhancing the individual components of this six-week intervention likely reduced stress and anxiety through several mutually reinforcing pathways rather than through a single exercise.

We should also think about the length and form of the intervention. The method provides five days per week for six weeks of consistent exposure and re-exposure behavior. Thirty 45-minute classes provide a considerable amount of practice for school

students, although the overall intervention is still short compared with semester-long programs. The warm-up, asana, pranayama, meditation and Shavasana allow one to follow a gradual movement from physical activation to mental quietening. Forward bending, backward bending, balancing, twisting, standing and relaxation asana may be included which may help the person to become aware of his body and relieve the strain of sitting. The last relaxation period experience is particularly relevant because the students experiment with the contrast of effort with release. By repeating this sequence, a relaxation response could be conditioned and strategies as familiarized. The structure of this advancement strengthens the practicality of pre-post reductions.

In India, many students may not have access to specialized psychological services; hence, implementation in schools is relevant. Yoga can be done in groups, requires little or no equipment, and can fit into physical education, morning assembly, wellness periods or examination-preparation programmes. A more culturally appropriate context that students, parents, and teachers may accept more readily. Yoga should be seen as an adjunct mental-health promotion tool rather than a substitute for assessment or treatment. Students exhibiting significant anxiety and/or depression and/or symptoms related to trauma and/or risk of self-harm and/or major functional impairment require appropriate referral and clinical management. A school yoga program is better considered a universal preventive intervention that can enhance coping and emotional regulation in the general student population, while also offering counselling.

This investigation is filling a relevant gap in local evidence. An urban or clinical selection of the international literature is produced, yet no two school environments share the same academic

culture, family expectations, language, resources, and daily routine. In this context, the evidence from Pakistan Punjab can do the talking. Can a short, feasible program be associated with measurable psychological change in conventional schools? Simultaneously, contextual relevance does not rule out caution with the method. Because participants were purposively selected from a single school, all of whom received the intervention, the study provides preliminary evidence of effectiveness rather than causal proof. The key contribution is to highlight a practically relevant pattern that can inform more rigorous controlled scrutiny.

II. OBJECTIVES

- 1) To determine the effect of a six-week yoga training program on stress among school students.
- 2) To determine the effect of a six-week yoga training program on anxiety among school students.

III. HYPOTHESES

- 1) There is no significant difference between pre-test and post-test stress scores following the six-week yoga training program.
- 2) There is no significant difference between pre-test and post-test anxiety scores following the six-week yoga training program.

IV. METHODOLOGY

A. Research Design and Participants: They used a pre-experimental, one-group design. From the Government Senior Secondary School, Jhanduke, Punjab, India, thirty medically fit school students aged 12-16 years were selected through purposive sampling. Student participation here was voluntary, and permission was obtained from the school.

B. Yoga Intervention: For six weeks, five days a week, the structured program was 45 minutes per session. Each session had a warm-up (5 min), yogic asanas (20 min), pranayama (10 min), meditation (5 min), and Shavasana relaxation (5 min). The asanas

were *tadasana*, *vrikshasana*, *trikonasana*, *bhujangasana*, *shalabhasana*, *dhanurasana*, *vajrasana*, *paschimottanasana*, *pawanmuktasana*, and *ardha matsyendrasana*. Breathing exercises, including *Anulom-Vilom*, *Bhramari*, *Nadi Shodhana*, and *Deep Diaphragmatic Breathing*, were done.

C. Measures and Statistical Analysis

Stress was measured using the Student Stress Questionnaire, and anxiety using the Test Anxiety Questionnaire. Measurements were taken before and after the intervention. Using IBM SPSS Statistics version 25, mean, standard deviation, and paired-samples t-tests were computed. P-value of < 0.05 was considered statistically significant.

V. RESULTS

Tables I and II show the comparison between the pre-test and post-test. Both outcome measure showed decreased mean score at the end of six weeks.

TABLE I
PRE-TEST AND POST-TEST STRESS
SCORES

Assessment	Mean	SD	t-value
Pre-test	31.47	3.82	7.86*
Post-test	25.10	4.11	—

*Significant at $p < 0.05$.

Stress decreased from a pre-test mean of 31.47 (SD = 3.82) to a post-test mean of 25.10 (SD = 4.11). The mean reduction was 6.37 points, and the paired-samples t-test was statistically significant ($t = 7.86$, $p < 0.05$). The null hypothesis concerning stress was therefore rejected.

TABLE II
PRE-TEST AND POST-TEST ANXIETY
SCORES

Assessment	Mean	SD	t-value
Pre-test	13.97	1.95	6.42*
Post-test	10.53	2.16	—

*Significant at $p < 0.05$.

Anxiety decreased from a pre-test mean of 13.97 (SD = 1.95) to a post-test mean of 10.53 (SD = 2.16). The mean reduction was 3.44 points, and the paired-samples t-test was statistically significant ($t = 6.42$, $p < 0.05$). The null hypothesis concerning anxiety was therefore rejected.

VI. DISCUSSION

The study found that a six-week structured yoga program was significantly effective in decreasing stress and anxiety. The stress reduction may be due to the joint effects of posture, breathing, meditation, and relaxation. These techniques may facilitate physiological arousal and promote mindfulness, emotional regulation, and adaptation.

A decline in anxiety is consistent with prior studies demonstrating improved mood, psychosocial well-being, self-control, and performance anxiety with yoga- or mindfulness-based interventions among youth [3]–[13]. Students may benefit from regulated breathing and meditation to help them control worrying and nervousness and enhance their concentration and self-confidence. Given that this study employed a one-group pre-test–post-test design without a control group, causal inference should be interpreted with caution. Maturation, repeated testing, expectancy, and other uncontrolled factors should not be ruled out.

The intervention, in terms of its use, was brief, low-cost, and a feasible school-based option. Regular

yoga sessions may boost physical education and student wellness activities. Broad extrapolation of results requires larger controlled studies before making such claims.

A. Interpretation of the Magnitude and Educational Relevance of Change: The decrease in numbers is not only statistically significant but also educationally significant. The stress decreased by 6.37 points from a baseline mean of 31.47, representing a reduction of about 20.2% from the pre-test mean. Anxiety decreased from the baseline mean of 13.97 to 10.53 (3.44 points, or around 24.6%).

The aforementioned rates should not be interpreted as clinical recovery rates, as diagnostic cut-off scores and clinically important difference thresholds were not determined in the current investigation. However, the direction and magnitude of the change suggest that the intervention was associated with a non-trivial average change in questionnaire responses. A slight drop in perceived stress and test anxiety among teachers and school leaders may be meaningful if it leads to greater classroom participation, more consistent behavior, improved sleep, or reduced test-related distress. Rather than assuming them, future studies should directly assess these functional outcomes.

The decline in stress levels corresponds with the multifaceted nature of the program. The practice of asana may diminish physical restlessness and muscular tension, along with pranayama and meditation, which regulate arousal and attentional focus. At the end of every session, Shavasana may reinforce the relaxation response. In the design used, these components cannot be separated, and any program should be interpreted as an integrated package. The methodologically significant factor is that ascription of the observed change to a specific posture or breathing exercise would be misleading.

To determine which components were more responsible, studies could compare asana-only, breathing-only, meditation-only, and combined conditions. Since this is the strongest conclusion until such data appears, the complete structured program was associated with reduced perceived stress.

The improvement in anxiety may be particularly relevant for exams. Test anxiety encompasses cognitive worry, fear of negative evaluation, physiological tension, and concentration problems. Students may be able to notice early signs of arousal with the help of consistent exposure to slow breathing and meditative attention. Moreover, regular participation in communal programs may normalize the emotional complications, as these programs convey to the students that stress management is an educational activity and not a weakness. It might lessen shame and facilitate seeking assistance. Earlier studies have reported the effect of yoga programs on anxiety and mood switch among adolescents [7]. Studies also report the general benefit of these yoga programs for school psychosocial well-being [8]. The present findings are therefore consistent with a growing literature and add a school sample with geographic specificity.

Several non-specific influences may also have contributed to the results. The instructor regularly attended to the students, introduced a new group activity, and the students may have expected the improvement. The post-test was given after exposure to the questionnaires and after six weeks of structured contact. Familiarity, Hawthorne, expectancy or social desirability effects can occur. Stress and anxiety may also be influenced by maturation and changes to the school calendar, such as if an examination, holiday, or academic workload varied for the two assessments. A randomized controlled design with an active comparison group

would help to distinguish yoga-specific effects from attention, group participation, and time-related effects. Future studies could, for instance, examine the relative effects of yoga and a standard physical exercise, quiet reading, health education, or a waitlist condition.

Measurement quality matters as well. The questionnaire scores used in the study are suitable for capturing students' perceived experiences but are sensitive to comprehension, mood at the time of testing, and willingness to disclose distress. It is necessary for future studies to examine the reliability and validity of the Student Stress Questionnaire and Test Anxiety Questionnaire in the age group and language context. For the present sample, Cronbach's alpha or omega and other internal consistency estimates should be computed. When possible, teacher ratings, parent observations, attendance, sleep, academic performance, heart-rate variability, resting pulse, or salivary cortisol could supplement self-report data. Researchers would be able to determine if subjective improvement is associated with behavioural or physiological change through a multimethod design.

Strengthening statistical analysis in the following studies could also happen. Paired samples t-tests compare the means of pre-test and post-test when the difference scores are normally distributed. Future reports should include the shape of the distribution of difference scores, an indication of potential outliers, and confidence intervals for the mean change. Effect sizes, such as Cohen's d for paired observations, would enable cross-study comparisons and communicate the practical magnitude of the intervention in addition to the p-value. Examine differences in improvement across the variables of age, sex, baseline severity, attendance, previous yoga experience, academic grade, and proximity to examinations. Test whether students attending more

sessions experience higher reductions, using dose–response analysis.

The program is feasible, one of its most essential practical qualities. Because it requires no special machines, medication, or expensive infrastructure, it could be done at school in 45 minutes. However, the success in scaling would be dependent upon instructor competence, safety of the students, scheduling, ventilation and space, cultural sensitivity and adapting for students with physical limitations. It is necessary to document attendance and compliance accurately and systematically. Teachers shouldn't make yoga compulsory as a remedy or substitute for psychological support. A more tiered model: universal yoga-based wellness sessions and brief screening for all students with persistent, unidentified symptoms, and referral pathways for students needing specialist care.

It's not certain what long-term maintenance will yield. Thus, to conclude, the improvement seen after the test does not guarantee that the benefits continue past the end of the formal sessions. Assessments at 1, 3 and 6 months will help clarify durability. Schools may also test whether gains can be maintained with shorter maintenance sessions, home practice logs, audio-guided breathing or teacher-led relaxation. To find out about the stress management skills that students found useful, difficult, embarrassing, or transferable to real-life stress, it might be helpful to conduct qualitative interviews. If they offer data that might enhance the design of the interventions, then it will be able to explain why certain students will respond more, as compared to others. The conclusions of this study should probably be regarded as encouraging pilot data that calls for a larger more controlled and methodologically richer trial rather than as conclusive evidence of universal effectiveness.

VII. CONCLUSION & RECOMMENDATIONS

A six-week, well-structured yoga training program significantly reduced the measured stress and anxiety of school students. Results indicate yoga could be a useful added strategy for promoting mental health among adolescents in educational settings.

- 1) Incorporate classes to teach Yoga asana (postures), pranayama (breathing techniques), and meditation.
- 2) Sessions must be conducted under the supervision of appropriately qualified instructors.
- 3) Making use of larger and more varied samples and including a control or comparison group.
- 4) Evaluate and maintain advantages through medium- or long-term follow-up.
- 5) Look at other outcomes, including depression, self-esteem, resilience, attention, attendance, and achievement.

VIII. LIMITATIONS

The study used purposive sampling, a small sample, and a single school. It did not include randomization or a control group, and the outcome measures were based on questionnaire scores. Accordingly, the findings should be interpreted as preliminary and may not be generalizable to all school students.

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