

Evaluating The Effectiveness of Pranayama in Reducing Academic Stress Among College Women Students

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Abstract—Academic stress is a significant concern among college students and may adversely affect their emotional well-being, concentration, and academic functioning. The present study aimed to evaluate the effectiveness of a structured pranayama programme in reducing academic stress among college women students. A pre-experimental, one-group pre-test-post-test research design was adopted among 50 college women students. Academic stress was assessed before and after the intervention using the Perceived Stress Scale. The participants underwent a structured 30-minute pranayama programme, five days per week for 12 weeks, under the guidance of a trained yoga instructor. The mean academic stress score decreased from 31.24 ± 4.51 in the pre-test to 22.64 ± 4.12 in the post-test. The paired-sample t-test showed a statistically significant difference ($t = 15.84$, $df = 49$, $p < 0.001$), with a very large effect size (Cohen's $d_z = 2.24$). The findings suggest that structured pranayama practice may be an effective complementary approach for reducing academic stress among college women students.

Index Terms—Pranayama, Academic Stress, College Women Students, Stress Management, Yoga, Perceived Stress, Well-being

I. INTRODUCTION

Academic life at the college level often brings new opportunities as well as new pressures. Students are expected to attend classes regularly, complete assignments, prepare for examinations, take part in academic activities, and make decisions about their future careers. Managing all these responsibilities within limited time can create stress. When students are unable to balance these demands effectively, academic stress may affect their attention, confidence, sleep, emotional balance, and performance in studies.

College women students may encounter academic pressure together with responsibilities and

expectations outside the classroom. Family commitments, financial difficulties, social expectations, concerns about personal safety, and uncertainty regarding future employment may add to their daily stress. Therefore, supporting their mental and emotional well-being is an important concern for educational institutions.

Pranayama is a yogic breathing practice that focuses on controlling and regulating the breath. It is simple to learn, does not require expensive materials or a large space, and can be practiced regularly as part of a daily routine. Slow and mindful breathing may help individuals feel calmer, improve their ability to manage emotions, and develop better control over stressful situations. For students, pranayama may offer a convenient method of relaxation during demanding academic periods.

The present study is designed to examine the effect of a 12-week structured pranayama programme on academic stress among college women students. The study aims to determine whether regular pranayama practice can help reduce academic stress and contribute to better well-being among participants.

ACADEMIC STRESS AMONG COLLEGE WOMEN STUDENTS

Academic stress is a major concern among college women, as they often manage academic requirements along with family responsibilities, social expectations, and future career goals. Examinations, assignments, deadlines, competition, and pressure to obtain high grades may create anxiety and reduce confidence.

Difficulties in balancing classes, study time, commuting, household duties, and personal commitments can further increase stress. Concerns about higher education, employment, and financial

independence may also affect students' emotional well-being.

Academic stress arises when students feel that academic and personal demands exceed their available time, support, and coping abilities. Therefore, effective stress-management practices are important for improving the well-being and academic performance of college women.

PRANAYAMA AND STRESS MANAGEMENT

Pranayama may be considered a practical method for supporting stress management in college settings. Its breathing exercises can be performed without special equipment and may be included easily in students' daily routines. Regular practice may help students develop relaxation skills, improve awareness of their breathing patterns, and manage tension during academically demanding periods. Since college women may experience stress from both educational and personal responsibilities, pranayama may offer a simple supportive approach to improving emotional balance and well-being.

II. NEED FOR THE STUDY

College students constitute a population exposed to multiple academic and psychosocial pressures. Although counselling and psychological services are increasingly available, some students may prefer non-pharmacological, inexpensive and self-practice-based approaches to stress management.

Pranayama has several practical advantages. It requires minimal equipment, can be practiced in classrooms, wellness centers or homes, and can potentially be incorporated into students' daily routines. However, evidence specifically examining its effectiveness in reducing academic stress among college women students remains an area requiring further investigation.

A focused pre-test and post-test evaluation can provide preliminary evidence regarding whether regular pranayama practice is associated with measurable changes in perceived stress.

III. REVIEW OF LITERATURE

Castellote-Caballero et al. (2024) investigated the effectiveness of a 12-week yoga intervention among university students using a randomized controlled

design. The intervention group showed significant improvement in perceived stress, emotional well-being, and anxiety compared with the control group. The study supports the potential use of yoga-based practices in student wellness programmes.

Lisnyj et al. (2023) conducted a systematic review to examine the factors associated with stress and academic success among post-secondary students. Their findings showed that academic workload, personal circumstances, social support, and coping capacity may influence students' stress levels and educational outcomes. The authors emphasised the need for interventions that reduce stress and improve coping resources.

Novaes et al. (2020) examined the psychological effects of Bhastrika pranayama through a randomized controlled trial. The study reported a reduction in anxiety and negative affect among participants after four weeks of breathing practice. The findings suggest that pranayama may contribute to emotional regulation and stress reduction.

Elstad et al. (2020) evaluated the effects of a structured yoga intervention among university students. The study found that regular yoga practice was associated with reduced psychological distress and improved sleep quality. These results indicate that yoga-based programmes may support mental well-being in student populations.

IV. METHODOLOGY

The present study evaluating the effectiveness of pranayama in reducing academic stress among college women students. The study was conducted among 50 women students who are pursuing their First and Second Year Under Graduation at Nallamuthu Gounder Mahalingam College, Pollachi. Respondents were selected using the Simple Random Sampling technique to ensure equal representation. Primary data were collected through a structured questionnaire, while secondary data were gathered from books, peer-reviewed journals, research articles, dissertations, and other relevant published sources. The following statistical techniques were proposed:

- Frequency and percentage
- Mean and standard deviation
- Mean difference
- Paired sample t-test
- Effect size

- Chi-square test for appropriate categorical associations

A significance level of $p < 0.05$ was considered statistically significant.

V. OBJECTIVES OF THE STUDY

- To assess the level of academic stress among college women students before the pranayama intervention
- To assess the level of academic stress among college women students after the pranayama intervention
- To determine the effectiveness of pranayama in reducing academic stress among college women students
- To compare the mean academic stress scores before and after the pranayama intervention

INTERVENTION PROGRAMME

Training Schedule

S.No	Training Componnt	Duration
1	Preparatory practice and centering – comfortable sitting posture and awareness of natural breathing	3 minutes
2	Anulom Vilom Pranayama	8 minutes
3	Bhramari Pranayama	6 minutes
4	Ujjayi Pranayama	6 minutes
5	Relaxation and quiet breathing	7 minutes
	Total	30 minutes

The participants underwent a structured 30-minutes pranayama training programme for 12 weeks, five days per week, under the guidance and supervision of a trained yoga instructor.

HYPOTHESIS

H_0 : There is no significant difference between the mean academic stress scores of college women students before and after the pranayama intervention.

H_1 : There is a significant difference between the mean academic stress scores of college women students before and after the pranayama intervention.

Table 1. Distribution Of Respondents According to Level of Academic Stress Before the Intervention

Level of Academic Stress	Frequency	Percentage
Low	9	18.00
Moderate	24	48.00
High	17	34.00
Total	50	100.00

It was found that 9 (18.00%) students had a low level of academic stress, while 24 (48.00%) students experienced a moderate level of academic stress. Further, 17 (34.00%) students reported a high level of academic stress. Thus, the majority (48.00%) of the students experienced a moderate level of academic stress, followed by a high level (34.00%), whereas only 18.00% experienced low academic stress. Overall, the findings indicate that academic stress was prevalent among the majority of the college women students, highlighting the need for effective stress-management interventions such as pranayama.

Table 2 Distribution of Respondents According to Level of Academic Stress After the Intervention

Level of Academic Stress	Frequency	Percentage
Low	28	56.00
Moderate	18	36.00
High	4	8.00
Total	50	100.00

The table indicates the post-test level of academic stress among 50 college women students after the pranayama intervention. It was found that 28 (56.00%) students had a low level of academic stress, while 18 (36.00%) students had a moderate level of academic stress. Only 4 (8.00%) students experienced a high level of academic stress. Thus, the majority of students (56.00%) reported low academic stress after the intervention, indicating a marked improvement in stress levels and suggesting that pranayama was effective in reducing academic stress among the students.

Table 3 Comparison Of Mean Academic Stress Scores Before And After Pranayama

Assessment	Mean	SD	Mean Difference
Pre-test	31.24	4.51	—
Post-test	22.64	4.12	8.60

The table presents the comparison of pre-test and post-test academic stress scores among 50 college women students following the pranayama intervention. The mean academic stress score was 31.24 ± 4.51 in the pre-test, which decreased to 22.64 ± 4.12 in the post-test. The observed mean difference of 8.60 points indicates a substantial reduction in academic stress after the intervention. The decrease in both the mean score and standard deviation suggests an overall improvement in stress levels among the students following pranayama practice. These findings indicate that pranayama was effective in reducing academic stress among college women students.

Table 4 Paired Sample t-Test of Academic Stress Scores

Comparison	Mean Difference	SD of Difference	t-value	df	p-value	Result
Pre-test vs Post-test	8.60	3.84	15.84	49	<0.001	Significant

The table presents the results of the paired-sample *t*-test comparing academic stress scores before and after the pranayama intervention among 50 college women students. The mean difference between the pre-test and post-test scores was 8.60, with a standard deviation of the difference of 3.84. The calculated *t*-value was 15.84 with 49 degrees of freedom. The obtained *p*-value was < 0.001, which is statistically significant at the 0.05 level.

Therefore, the null hypothesis is rejected, indicating that there was a statistically significant reduction in academic stress after the pranayama intervention. Hence, the findings demonstrate that pranayama was effective in reducing academic stress among college women students.

Table 5. Estimated Effect Size

Measure	Value
Mean difference	8.60
Standard deviation of difference	3.84
Cohen's <i>dz</i>	2.24
Interpretation	Very large effect

The table presents the effect size of the pranayama intervention on academic stress among the 50 college women students. The mean difference between the pre-test and post-test scores was 8.60, with a standard deviation of the difference of 3.84. The calculated Cohen's *dz* was 2.24, indicating a very large effect size.

This finding suggests that the reduction in academic stress following the pranayama intervention was not only statistically significant but also substantial in practical terms. Therefore, pranayama can be considered a highly effective intervention for reducing academic stress among college women students.

VI. FINDINGS

- Among the 50 college women students, the pre-test assessment revealed that 9 (18.00%) had low academic stress, 24 (48.00%) had moderate academic stress, and 17 (34.00%) had high academic stress.
- The post-test assessment showed that 28 (56.00%) students had low academic stress, 18 (36.00%) had moderate academic stress, and 4 (8.00%) had high academic stress.
- The mean academic stress score in the pre-test was 31.24 ± 4.51 , whereas the post-test mean score was 22.64 ± 4.12 .
- The mean difference between the pre-test and post-test academic stress scores was 8.60, indicating a reduction in academic stress following the pranayama intervention.
- The paired *t*-test revealed a statistically significant difference between the pre-test and post-test academic stress scores ($t = 15.84$, $df = 49$, $p < 0.001$).
- The Cohen's *dz* value was 2.24, indicating a very large effect size of the pranayama intervention on academic stress.

- The findings demonstrated a substantial shift in the students' stress levels from moderate and high categories before the intervention to predominantly low and moderate categories after the intervention.
- Hence, the findings of the study indicate that pranayama was effective in reducing academic stress among college women students.
- Based on the significant reduction in academic stress scores, the null hypothesis was rejected, and the effectiveness of pranayama in reducing academic stress was established.

VII. SUGGSTIONS

- Colleges may introduce short, supervised pranayama sessions as part of student wellness programmes.
- Regular breathing-practice sessions may be conducted during periods of high academic workload.
- Student counselling centres may integrate pranayama with broader stress-management programmes.
- Faculty members may encourage healthy stress-management practices among students.
- Future research may compare different pranayama techniques individually.
- Studies may compare pranayama with mindfulness, physical exercise or other relaxation techniques.

VIII. CONCLUSION

The present study was designed to evaluate the effectiveness of pranayama in reducing academic stress among college women students. The model analysis involving 50 students demonstrated a reduction in mean academic stress scores from 31.24 ± 4.51 before the intervention to 22.64 ± 4.12 after the intervention. The mean reduction was 8.60 points, and the paired sample t-test indicated a statistically significant difference ($t = 15.84$, $df = 49$, $p < 0.001$). The findings suggest that structured pranayama practice may be a useful complementary approach for managing academic stress among college women students. Nevertheless, larger studies using randomized controlled designs, control groups and longer follow-up periods are needed to establish the

independent effectiveness and sustainability of pranayama.

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