Effect Of 12 Weeks Hatha Yoga Program On Academic Stress And Sleep Quality Of Female Students From Competitive Exam Center

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ABSTRACT

The present study aimed to examine the effect of a 12-week hatha yoga program on academic stress and sleep quality of female students from competitive examination centre. The population consisted of female students aged 21 to 30 years preparing for competitive examinations from Savitribai Phule Pune University and residing in hostel. A total sample of 30 participants were selected by using purposive sampling technique and divided into two groups: an experimental group (n = 15) and a control group (n = 15). The experimental group underwent a structured 12-week hatha yoga program, while the control group did not receive any program. Pre-test and post-test data were collected and analysed using descriptive and inferential statistics. Mean of pre-test post-test scores of experimental group for academic stress & sleep quality scores are 26.20(±1.47), 22.27(±0.96) and 10.60(±0.99), 9.47(±0.64) respectively. Similarly, mean of pre-test post-test scores of control group for academic stress & sleep quality scores are 25.67(±1.23), 25.53(±0.92) and 10.60(±1.12), 10.53(±0.92) respectively. Mean of change in performance in academic stress & sleep quality scores of experimental and control group were -3.93, -1.13 and -0.13, -0.07 respectively. The calculated mean differences of change in performance of academic stress & sleep quality was -3.80, -1.07 respectively for 30 participants. Calculated t-value was -9.09, -5.25 at 0.05 level of significance (p=0.001, p=0.001). The findings suggest that regular practice of hatha yoga is effective in reducing academic stress and enhancing sleep quality among female competitive exam aspirants.

Keywords : Sleep Quality, Academic Stress, Hatha yoga program, Female Aspirants

Introduction

Competitive examinations such as UPSC, MPSC, and Banking services in India demand prolonged preparation, high cognitive engagement, and psychological endurance. The uncertainty, vast syllabus, and intense competition often elevate stress levels among aspirants (Raman & Elakkiya, 2021; Shrivastava & Rajan, 2019). Chronic stress may negatively influence physiological functions, particularly sleep quality.

"Sleep quality refers to an individual's subjective perception of sleep satisfaction, including duration, latency, disturbances, and daytime dysfunction" (Buysse et al., 1989). Poor sleep quality has been linked to impaired concentration, reduced cognitive efficiency, and emotional instability.

"Academic stress refers to the psychological distress associated with academic demands and perceived inability to cope with them" (Lazarus & Folkman, 1984). High levels of academic stress are associated with anxiety, reduced concentration, and poor academic performance. However, many competitive exam aspirants adopt sedentary lifestyles due to prolonged study hours.

Yoga, an ancient mind-body practice, is widely recognized for its beneficial effects on psychological health and physiological functioning. Hatha Yoga involves physical postures (asanas), breathing techniques (pranayama), and relaxation practices that help in reducing stress and improving sleep patterns. Regular yoga practice has been shown to reduce cortisol levels, enhance parasympathetic activity, and promote mental calmness (Gerber & Pühse, 2009; Streeter et al., 2012). Recent evidence further supports the effectiveness of yoga in promoting mental well-being among students. A systematic review by Castellote-Caballero et al. (2024) reported that yoga interventions significantly reduced perceived stress, anxiety, and depressive symptoms while improving overall psychological well-being in university students.

Recent studies have also demonstrated the effectiveness of structured yoga interventions in educational settings. Pradhan (2024) reported that a 12-week yoga programme significantly reduced stress and anxiety among students, highlighting yoga as an effective non-pharmacological strategy for improving mental health. However, limited research has specifically examined the effect of a 12-week Hatha Yoga programme on academic stress and sleep quality among female competitive examination aspirants. Therefore, the present study aims to examine the effect of a 12-week Hatha Yoga program on academic stress and sleep quality among females from competitive exam centres.

Methodology

Method : A Pre-test Post-test Non-Equivalent research design was used to examine the effect of hatha yoga program on sleep quality and academic stress of females from competitive exam center. This method was chosen to assess the impact of a hatha yoga program by comparing pre-test and post-test scores between experimental and control groups.

Subject : For this research out of 80 female students, total 30 students aged between 21 to 30 years preparing for UPSC, MPSC, from competitive examination center and residing in Savitribai Phule Pune university hostel were selected. The Participants were selected using purposive sampling technique and further divided into two groups: experimental group (n = 15) and control group (n = 15).

Tools : Data were collected using the Pittsburgh Sleep Quality Index (PSQI) developed by (Buysse et al. 1989) to assess sleep quality, and the Perceived Stress Scale (PSS) developed by (Cohen & Mermelstein, 1983) to measure academic stress among female competitive examination aspirants. The PSQI consists of 19 self-rated items that evaluate different components of sleep quality over the past month. The PSS consists of 10 items designed to measure the degree to which situations in one's life are appraised as stressful. Responses were recorded on a Likert-type scale, with higher scores indicating poorer sleep quality and greater academic stress, respectively.

Procedure : The formal permission was obtained from the concerned hostel authorities. The purpose and procedure of the study were explained to all participants before data collection. Oral consent was obtained from all participants. Participation was voluntary, and confidentiality and anonymity were maintained throughout the study. Initially, 30 female students aged 21-30 years were screened based on the inclusion criteria, which included residence in the hostel, preparation for competitive examinations, and willingness to participate in the study. Participants with regular yoga practice or any major physical or psychological illness were excluded. The selection of subjects was carried out using a non-probability purposive sampling technique. After screening, the selected 30 subjects were divided into two groups: an experimental group (n = 15) and a control group (n = 15). The study adopted a pre-test and post-test non-equivalent research design. Before the intervention, pre-test assessments were conducted for both groups to measure academic stress and sleep quality. Following the pre-test, the experimental group underwent a 12-week Hatha Yoga program, practiced three days per week for 60 minutes per session, which included asanas, pranayama, shatkarmas and dhyana. The control group did not receive any yoga intervention and continued with their regular daily routine. After completion of the 12-week program period, post-test assessments were conducted for

both groups using the same tools and procedure as the pre-test. The collected data were systematically tabulated and analyzed using inferential statistical techniques to determine the effect of the Hatha Yoga program on academic stress and sleep quality.

Results: The data of the present study were collected to examine the effect of a 12-week Hatha Yoga program on academic stress and sleep quality among female students from competitive examination center. The collected data were analyzed using descriptive statistics.

Table No. 1 : *Descriptive Statistics of Academic Stress and Sleep Quality for Experimental & Control Group*

		Academic Stress		Sleep Quality	
GROUPS		**Pre-test**	**Post-test**	**Pre-test**	**Post-test**
Experimental (N=15)					
	Mean	26.20	22.27	10.6	9.47
	Std. Error of Mean	0.38	0.25	0.25	0.16
	Std. Deviation	1.47	0.96	0.98	0.64
Control (N=15)					
	Mean	25.67	25.53	10.6	10.53
	Std. Error of Mean	0.32	0.24	0.28	0.23
	Std. Deviation	1.23	0.92	1.12	0.91

As shown in Table no. 1, the mean scores indicate differences between the pre-test & post- tests in both the groups for academic stress & sleep quality. In order to measure the academic stress score (PSS-10) questionnaire was administered. The mean of experimental group pre-test was 26.20 with std. deviation 1.47 and std. error of mean 0.38 & their mean of post-test was 22.27 with std. Deviation 0.96 and std. error of mean 0.25 whereas, the mean of control group pre-test was 25.67 with std. deviation 1.23 and std. error of mean 0.32 & their mean of post-test was 25.53 with std. deviation 0.92 and std. error of mean 0.24. Similarly, for measuring sleep quality (PSQI) questionnaire was administered. The mean of experimental group pre-test was 10.6 with std. deviation 0.98 and std. error of mean 0.25 & their mean of post-test was 9.47 with std. deviation 0.64 & std. error of mean 0.16 whereas the control group pre-test was 10.6 with std. deviation 1.12 and std. error of mean 0.28 & their mean of post-test was 10.53 with std. deviation 0.91 and std. error of mean 0.23.

Table No. 2 : *Descriptive Statistics of change in Performance of Academic stress and Sleep Quality*

GROUPS		Academic Stress	Sleep Quality
Experimental Group (N=15)	Mean	-3.93	-1.13
	Std. Error of Mean	0.36	0.17
	Std. Deviation	1.39	0.64
Control Group (N=15)	Mean	-0.13	-0.07
	Std. Error of Mean	0.22	0.12
	Std. Deviation	0.83	0.46

As shown in Table No. 2, the experimental group showed reduction in academic stress & improvement in sleep quality than control group. The mean of change in performance of academic stress score for the experimental group was -3.93 with std. deviation 1.39 and std. error of mean 0.36, while the mean of change in performance for control group was -0.13 with std. deviation 0.83 and std. error of mean -0.13 Similarly, the mean of change in performance of sleep quality score for the experimental group was -1.13 with std. deviation 0.64 and std. error of mean 0.17, while the mean of change in performance for control group was -0.07 with std. deviation 0.46 and std. error of mean 0.12.

Table No. 3 : *Inferential statistics of Change in Performance for Academic Stress and Sleep Quality*

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Change in performance (Academic stress)	Equal variances assumed	4.76	.038	-9.09	28	.00	-3.80	.42
	Equal variances not assumed			-9.09	22.95	.00	-3.80	.42
Change in performance (Sleep quality)	Equal variances assumed	2.11	.158	-5.25	28	.00	-1.07	.20
	Equal variances not assumed			-5.25	25.35	.00	-1.07	.20

As shown in Table No. 3, significant differences were observed in both the groups for Academic stress and Sleep Quality, with the experimental group showing reduction in academic stress and improvement in sleep quality than the control group. An independent sample t test was used to compare the mean change in performance between experimental and control groups. For academic stress, Levene's test showed F = 4.76 with (p=0.01). indicating equal variances were assumed. The mean difference between groups was -3.80 with a calculated t value -9.09 (df=28), showing a significant effect (p=0.01).

similarly, for sleep quality levene,s test showed F= 2.11 with p=0.01.The mean difference was -1.07 with calculated t value of t= -5.25 (df= 28) also indicating significant effect (p=0.01). Hence the null hypothesis could not be accepted and research hypothesis is accepted.

Discussion

The findings of the present study indicate that the 12-week hatha yoga program resulted in a significant reduction in academic stress and improvement in sleep quality of among female competitive examination aspirants residing in hostels. These findings are consistent with the systematic review by Castellote-Caballero et al. (2024), which concluded that yoga interventions effectively reduce stress and improve psychological well-being among university students. Similarly, Pradhan (2024) reported significant reductions in stress and anxiety following a 12-week yoga intervention, supporting the effectiveness of structured yoga programmes in educational settings. These results suggest that regular and structured yogic practices can play an important role in managing psychological stress and enhancing sleep quality in individuals exposed to prolonged academic pressure. The present study showed low academic stress and good sleep quality similar observations regarding stress and sleep disturbances among competitive exam aspirants have been reported by Srivastava and Rajan (2018). The present findings are consistent with several previous studies. Streeter et al. (2012) reported that yoga practices positively influence the autonomic nervous system and reduce cortisol levels, thereby decreasing stress. Similarly, Gerber and Pühse (2009) found that engagement in physical activity, including yoga, is associated with lower perceived stress and improved psychological well-being. Also the findings of present study showed improvement in sleep quality the similar observation reported by Kredlow et al. (2015) also observed that regular physical activity contributes to better sleep quality by improving sleep efficiency and reducing disturbances. In addition, Park (2014) reported a significant association between reduced stress, and improved sleep satisfaction among students. These findings strongly support the results of the present study. However, some studies have reported contradictory findings. Cramer

et al. (2013) suggested that short-term yoga interventions may not lead to significant improvements in stress or sleep-related outcomes, particularly when the duration or intensity of practice is insufficient. Overall, the majority of research evidence supports the effectiveness of yoga in reducing stress and improving sleep quality. As above studies emphasize that consistent mind-body interventions contribute significantly to stress reduction and sleep regulation. The findings of the present study are in agreement with this broader body of literature, suggesting that Hatha Yoga program is effective and practical intervention for academic stress reduction and sleep improvement among female competitive exam aspirants living in hostel environments.

Conclusion

These results suggest that regular practice of hatha yoga is an effective and practical approach for managing academic stress and enhancing sleep quality.

Recommendations

Future studies should include a larger sample size and participants from different educational institutions to improve the generalizability of the findings.

Similar research may be conducted on male students, different age groups, and diverse academic populations to compare the effectiveness of Hatha Yoga across different demographic groups.

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