

Research Paper

Effects of 12 Weeks Yoga Intervention Program on Perceived Stress and Sleep Quality of Male IT Professionals

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ABSTRACT

The purpose of this research was to examine the effects of a 12-week yoga intervention program on perceived stress and sleep quality among male IT professionals aged 25 to 40 years in Pune. An Experimental Pre-test Post-test Non-Equivalent Group Research Design was employed. A total of 32 male IT professionals working in an IT company in Baner, Pune, were screened based on the inclusion criteria of using a computer or laptop for more than 6 hours per day and leading a physically inactive lifestyle. From this pool, 24 participants were selected using a non-probability purposive sampling technique, specifically targeting individuals with a sedentary lifestyle. These participants were then divided into two groups using the ABBA method: 12 participants in the experimental group and 12 in the control group. The independent variable was a 12-week yoga intervention program that included a combination of physical postures, breathing techniques, meditation, and mindfulness practices. The dependent variables were perceived stress and sleep quality. Perceived stress data was collected using the Perceived Stress Scale (PSS-10; Cohen et al., 1983), and sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1989). Both assessments were conducted for the experimental and control groups before (Pre-Test) and after (Post-Test) the intervention. Data was analysed using descriptive and inferential statistics through IBM SPSS software. The calculated mean difference in perceived stress was 5.16, and for sleep quality, it was 1.66. This indicates a significant improvement in both variables among the participants. The calculated t-values for perceived stress and sleep quality were 5.6 and 3.0, respectively. Notably, participants in the experimental group demonstrated a 6-unit greater reduction in perceived stress and a 1.67-point greater improvement in sleep quality compared to the control group. In conclusion, the 12-week yoga intervention program was effective in significantly reducing stress and enhancing sleep quality among male IT professionals.

Keywords: Yoga Intervention Program, Perceived Stress, Sleep Quality, IT Professionals, PSS, PSQI

The Indian Information Technology (IT) sector, a cornerstone of the country's global economic presence, has grown exponentially over the past two decades. While this expansion has generated considerable employment opportunities, it has also brought

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about a high-pressure, competitive work culture—particularly for male professionals who often shoulder expectations of extended work hours, managerial responsibilities, and societal pressures of financial stability. Consequently, many male IT professionals experience chronic stress, burnout, and disrupted sleep, all of which can significantly impair cognitive performance, emotional well-being, and long-term health.

Perceived stress refers to an individual's appraisal of life situations as stressful and unmanageable. Persistent exposure to occupational stress has been associated with heightened cortisol levels, mood disturbances, and sleep disorders. Simultaneously, sleep quality—a vital component of physiological and psychological recovery—is often compromised in high-stress environments, with irregular sleep patterns, insomnia, and fatigue increasingly reported among Indian professionals. Perceived stress, as conceptualized by Cohen et al. (1983), reflects the degree to which situations in one's life are appraised as stressful. Chronic perceived stress is strongly associated with anxiety, hypertension, reduced job satisfaction, and impaired sleep. Sleep quality, as measured by the Pittsburgh Sleep Quality Index (PSQI), is crucial for cognitive performance, emotional balance, and physical recovery. Studies confirm that poor sleep can both result from and worsen psychological stress (Buysse et al., 1989; Walker, 2017). Yoga, a centuries-old Indian practice integrating physical postures (asanas), breathing techniques (pranayama), and meditation (dhyana), is increasingly being recognized as a non-pharmacological intervention for stress and sleep management. Research demonstrates yoga's potential in modulating autonomic nervous system responses, lowering cortisol levels, and enhancing parasympathetic activity—key mechanisms for stress resilience and better sleep (Streeter et al., 2012; Telles et al., 2020). Multiple studies across different populations have explored the benefits of yoga-based practices to improve Sleep Quality and Reduce Perceived Stress. Riley & Park (2015) study on nurses- reduced stress and emotional exhaustion. Chen et al. (2009) study on elderly -improved sleep quality, latency, duration, and efficiency. Hariprasad et al. (2013) study on night shift workers Yoga led to better sleep regulation and reduced fatigue. A study by Gupta et al. (2021) reported significant reductions in perceived stress and improvements in sleep patterns among corporate employees following a 10-week yoga program. Similarly, Kudesia and Bhatta (2020) found that a structured yoga protocol significantly enhanced sleep efficiency in software professionals. However, literature focusing specifically on male IT professionals in the Indian corporate environment remains limited. Moreover, age-specific interventions (such as for those aged 25–40) are underexplored. The purpose of this study is to understand and address the gap by evaluating the effects of a 12-week yoga intervention program on perceived stress and sleep quality among male Indian IT professionals aged 25 to 40. By using validated tools—Perceived Stress Scale (PSS-10) and Pittsburgh Sleep Quality Index (PSQI)—and a controlled pre-test/post-test design, this research aims to provide evidence-based insights into the efficacy of yoga as a workplace wellness solution.

MATERIALS & METHOD

To study the effects of 12 weeks yoga intervention program on perceived stress and sleep quality experimental pre- test post-test non-equivalent group design research method was used. 12 Weeks Yoga interventions which includes combination of physical postures, breathing techniques, meditation was considered as Independent variables. Stress and sleep quality were dependent Variables. The study was delimited to the Male IT professionals from Pune city, aged between 25 to 40 years. The sedentary lifestyle of such IT professional who spend >6 hours per day in front of computer/laptop screen and physically inactive was

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considered as controlled variables for the study. Harmful habits like smoking, alcohol consumption and Bad routines like overeating, smart phone/internet addiction may cause Perceived Stress other than work related stress were extraneous variables. Perceived Stress data was collected by Perceived Stress scale (PSS) Questionnaire and Sleep Quality data was collected by Pittsburgh Sleep Quality Index (PSQI) Questionnaire for both Experimental and Control Groups before starting the 12 week Yoga Intervention program (Pre-Test) and also after completion of the 12 week Yoga Intervention program (Post-Test). The Perceived Stress Scale (PSS) is a questionnaire that measures how much a person perceives their life as unpredictable, uncontrollable, or overwhelming. The PSS is considered a gold standard for measuring stress perception. Here are some details about the PSS: The PSS assesses a person's subjective appraisal of how their life circumstances and events compare to their ability to adapt. The PSS is used to diagnose, treat, and monitor perceived stress. It's also used to study the relationship between perceived stress and health outcomes. The PSS uses a five-point Likert scale, where 0 means "never" and 4 means "very often". Some items require reverse coding, where the opposite score is assigned. The higher the score, the more perceived stress. The PSS was originally developed as a 14-item questionnaire, but is now more commonly used as a 10-item scale. The 10-item scale has established reliability and validity. The PSS was originally developed in 1983 by Cohen et al.

Pittsburgh Sleep Quality Index (PSQI) was published in 1989 developed by Buysse Daniel et al. The PSQI has 19 items that are grouped into seven components; Subjective sleep quality, Sleep latency, Sleep duration, Habitual sleep efficiency, Sleep disturbances, Sleeping medications, Daytime dysfunction. PSQI Scoring: Each component is scored on a scale of 0 to 3, with 3 indicating the greatest dysfunction. The component scores are then added together to create a global score that ranges from 0 to 21. A higher global score indicates worse sleep quality. Cut-off-A global PSQI score of 5 or higher can distinguish between good and poor sleepers. However, some clinical practice guidelines recommend a cut-off of 7 or higher to determine poor sleep.

For this study formal permission was taken from SPPU Physical Education department. 32 Male IT professionals were screened under inclusion criteria of Computer/Laptop usage >6Hrs/day and being physically inactive. The questionnaire was created using google forms. Based on the answers of questionnaire 24 Male IT professionals were selected by using non-probability based purposive sampling technique where participants with sedentary lifestyle and computer usage >6 hrs per day were selected after that using ABBA method 24 Samples were divided into two groups of 12 each. Pre-test Perceived stress data was collected by Perceived Stress scale (PSS) Questionnaire and Pre-test Sleep Quality data was collected by Pittsburgh Sleep Quality Index (PSQI) Questionnaire for both Experimental and Control Groups. Based on the data collected by PSS and PSQI researcher developed 12 weeks of yoga program was designed. The Yoga Intervention Program with 5 Days a week and 1 Hr. daily was administered on Experimental Group. Control Group was asked to continue with Daily routine. Post-test was carried out after 12 weeks through PSS and PSQI Questionnaire for both Experimental and Control Groups. Analysis of Pre-test - Post-test - PSS and PSQI scores and calculation of change in performance for both Experimental and Control Groups was done by comparing Pre-test and Post-test scores by using Independent sample t-Test. Result and Conclusion was drawn based on Statistical analysis.

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RESULT

The pre- and post-intervention levels of Perceived Stress and Sleep Quality were assessed using the PSS and PSQI scores, respectively, for 24 IT professionals. The collected data were statistically analyzed using descriptive and inferential statistics with SPSS software. Changes in performance were calculated by measuring the differences between the pre- and post-intervention PSS and PSQI scores. Descriptive statistics (Mean and Standard Deviation) for the pre-test, post-test, and performance change data for both the experimental and control groups are summarized below. As seen in Table No. 1 Mean of pre and post Perceived Stress Score for Yoga experimental group was 19.08 with Standard deviation of 4.10 and 13.91 with Standard deviation of 1.92 respectively. Mean of pre and post Sleep Quality Score for Yoga experimental group was 5.75 with Standard deviation of 1.60 and 4.08 with Standard deviation of 1.56 respectively. Similarly Mean of pre and post Perceived Stress Score for Yoga control group was 19.83 with Standard deviation of +5.55 and 20.66 with Standard deviation of 5.41 respectively. Mean of pre and post Sleep Quality Score for Yoga control group was 5.41 with Standard deviation of 2.02 and 5.41 with Standard deviation of 1.72 respectively. Change in performance in Perceived Stress for experimental and control group was 5.16 and -0.83 respectively. Change in performance in Sleep Quality for experimental and control group was 1.66 and 0.00 respectively.

Table No. 1 Descriptive Statistics of Perceived stress and Sleep Quality of Experimental and Control group

Group	Test	Perceived Stress			Sleep Quality		
		Mean	Standard Error of Mean	Standard Deviation	Mean	Standard Error of Mean	Standard Deviation
Experimental	Pre	19.08	1.18	4.1	5.75	0.46	1.6
	Post	13.91	0.55	1.92	4.08	0.45	1.56
	Change in Performance	5.16	0.98	3.4	1.66	0.44	1.55
Control	Pre	19.83	1.6	5.55	5.41	0.58	2.02
	Post	20.66	1.56	5.41	5.41	0.49	1.72
	Change in Performance	-0.833	0.38	1.33	0	0.3	1.04

Table No. 2 Inferential Statistics of Change in performance between pre and post-test for Perceived stress and Sleep Quality of Experimental and Control Group

		Levine's Test for Equality of Variances		t-test for Equality of Means			Mean Difference	Std. Error Difference
		F	Sig.	t	df	Sig. (2-tailed)		
CIP_PS	Equal variances assumed	6.02	0.02	5.68	22.00	0.00	6.00	1.06
	Equal variances not assumed			5.68	14.31	0.00	6.00	1.06
CIP_SQ	Equal variances assumed	3.67	0.07	3.08	22.00	0.01	1.67	0.54
	Equal variances not assumed			3.08	19.23	0.01	1.67	0.54

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CIP_PS stands for Change in performance in perceived stress after yoga intervention program and CIP_SQ stands for Change in performance in Sleep Quality. As seen in Table No. 2 Levine's Test for Equality of Variances this tests whether the variances in the two groups are equal: For CIP_PS $F = 6.022$, Sig. = 0.023 since $0.023 < 0.05 \rightarrow$ Variances are not equal, so use "Equal variances not assumed" row. $t = 5.679$, $df = 14.310$, Sig. (2-tailed) = 0.000 Mean Difference = 6.000, the interpretation is: There is a statistically significant difference between the two groups on CIP_PS ($p < 0.001$). The mean difference is 6 units, Participants in the yoga intervention showed a significantly greater reduction in perceived stress compared to the control group. On average, their stress scores dropped 6 points more than those in the comparison group. This result is statistically significant and not due to chance. For CIP_SQ $f = 3.667$, Sig. = 0.069 since $0.069 > 0.05 \rightarrow$ Variances are equal, so use "Equal variances assumed" row. $t = 3.079$, $df = 22$, Sig. (2-tailed) = 0.005 Mean Difference = 1.667 the interpretation is: There is a significant difference between the two groups on CIP_SQ ($p < 0.05$). The mean difference is 1.667, with the true difference likely between 0.544 and 2.789. Participants in the yoga program also showed a significant improvement in sleep quality. Their Sleep Quality Score improved by 1.67 points more than the control group. Again, this difference is statistically significant, suggesting a real effect of yoga on sleep.

DISCUSSION

Multiple studies across different populations have explored the benefits of yoga-based practices to improve Sleep Quality and Reduce Perceived Stress. Riley & Park (2015) study on nurses- reduced stress and emotional exhaustion. Chen et al. (2009) study on elderly - improved sleep quality, latency, duration, and efficiency. Hariprasad et al. (2013) study on night shift workers Yoga led to better sleep regulation and reduced fatigue.

But some of the limitations of these interventions are Heterogeneity in yoga styles and intervention designs, also Sample sizes often small; long-term effects are less studied.

The results in this intervention program are consistent with findings in earlier studies; though the focus group is different (IT Professionals) the benefits in reducing perceived stress and improving sleep quality are clearly visible.

CONCLUSION

Twelve weeks of Yoga Intervention Program shows noticeable effect on perceived stress levels along with improved sleep quality in Experiential Group of IT Professionals compared to control group those who did not undergo the program and provides preliminary evidence that yogic Intervention program can be an effective treatment.

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Conflict of Interest

The author(s) declared no conflict of interest.

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