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Impact of yogic practice on occupational stress of female employees in the software industries

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Abstract
In this paper, the effects of yogic practice on the occupational stress of the female employees working in the Software industries is investigated. A sample of 30 female software professionals from the age group of 30 to 55 years old, has been collected. The participants received a weekly 60-minute yoga class for 12 weeks. The participants completed the self-reported occupational stress questionnaire before and after the yogic intervention. Mean value of the pre and post occupational stress are 158.7 and 111.9 respectively. The t and p-value from the paired t-test are 17.75 and 0.000, respectively. The t and p value from paired t-test confirmed that there is significant difference in the pre and post mean stress value. The results imply that yogic practices have a highly positive impact in the management of stress related problem.

Keywords: software industries, occupational stress index (OSI), female employees, paired t-test

Introduction

The Software industry is facing new competition requiring employees to work for longer hours under competitive time bound deadlines. Prolonged exposure to such stressful situations affects our mind and body, which impacts job performance as well as overall organizational effectiveness. Occupational Stress is defined as the stress on the employees due to their job and working condition. Occupational Stress may have harmful physiological effects on worker. Too much stress can cause various health problems, such as high blood pressure, heart disease, depression, anxiety, diabetes etc. Besides this, it can also harm a personal relationship with family members, lovers or spouse. Yoga, an ancient Indian technique, can be used as a stress management tool. Yoga is an art of living, healthy and spiritually lifestyle. Yoga aims for the integrity of the body, mind, and spirit through a system of Asana, Pranayama and meditation.

Singh and Sharma *et al* [1] reported the beneficial impact of yogic practices on occupational stress among 25 male employees while Verma *et al* [2] reported positive impact of residential yoga training on various categories of occupational stress of school principals. Sabbarwal, Singh, and Amiri [3] have reported occupational stress among IT employees working in Pune. The study concluded heavy workload, long working hours, family problems, insecurity of job, low monetary compensation are the major causes of their occupational stress. Sheena Dhingra [4] in her research studied the relationship between Workplace Stress, Marital Adjustment and Conflict Management in Dual Working Couples. it was reported that there was a significant correlation between Marital Adjustment and Conflict Management Style. Significant differences were found between males and females as far as conflict management styles were concerned. While males preferred to use more of Competing style of conflict management, females resorted to avoiding style more as compared to male. Nakka and Naidu *et al* [5] investigated main causes of occupational stress observed by female IT employees and concluded that in the majority of IT organizations, there are poor working conditions, heavy workload and lack of employees' participation in management, but they did not report how stress can be managed. Darshan *et al* [6] in their study on professional stress, depression and alcohol use among Indian software professionals, observed that the software employees are professionally stressed due to job conditions and are at 10 times higher risk for developing depression and also there is a significant increase in the incidence of psychiatric disorders.

Pallavi *et al* [7] had investigated the effect of yoga on occupational stress among IT employees. She had reported a significant reduction in work-related stress after the 12 weeks of yoga training. In another report, Pallavi *et al* [8] reported the main causes of occupational stress among IT employees and concluded seventy percent of the IT employees were suffering with very high stress due to four main factors namely Role overload, Unreasonable group/Political pressures, Under participation and Strenuous working conditions, and yogic practices have a highly positive impact in the management of stress related problem.

Although several studies in the past have established that yoga addresses the issue of stress, no special studies to determine the usefulness of yogic practices on occupational stress of female employees working in Software industries has been done till now. In this paper, impact of yogic intervention on occupational stress of female software employees is explored.

Methodology

The research participants were 30 female software professionals who were not involved in any formal exercise program. The present study adopted a single-group pre-post research design, wherein 30 female professionals with ages 30–50 years completed the self-reported occupational stress questionnaire. The intervention in this study was a weekly 60-minute yoga class for 12 weeks. The fidelity of the yoga intervention was monitored and directed by a qualified teacher. The detailed yoga module for occupational stress is provided below.

Table 1: Yogic Module for Occupational Stress 12 Week Programme

	First Week	Second Week	Third Week
Loosening Exercise			
Spinal Twist	15	30	45
Back Swing	15	30	45
Hip Twist	15	30	45
Hip Rotation	15	30	45
Knee Stretch	15	30	45
Forward & Backward bending	15	30	45
Instant Relaxation Technique (IRT)			
Relax by free walk	2min	4min	6min
Sitting			
Spinal stretch with leg apart	5 rounds	10 rounds	15 rounds
Back stretch with alternate	5 rounds	10 rounds	15 rounds
Back stretch with both legs	5 rounds	10 rounds	15 rounds
Tiger stretch	5 rounds	10 rounds	15 rounds
Quick Relaxation technique (QRT) Supine			
Paschimotasana stretch	1 rounds	2 rounds	3 rounds
Halasana	1 rounds	2 rounds	3 rounds
Paschimotasana and halasana stretch	1 rounds	2 rounds	3 rounds
Cycling	1 rounds	2 rounds	3 rounds
Side leg raising (each leg)	1 rounds	2 rounds	3 rounds
Alternate leg raising (each side)	1 rounds	2 rounds	3 rounds
Naukasana	1 rounds	2 rounds	3 rounds
Prone			
Dhanurasana swing	1 rounds	2 rounds	3 rounds
Shalbhasana (both legs)	1 rounds	2 rounds	3 rounds
Alternate bhujansana and parvatasana	1 rounds	2 rounds	3 rounds
Deep Relaxation technique (DRT)			
Vibhagiya pranayama (sectional breathing)	2 rounds	4 rounds	6 rounds
Chandranuloma viloma	15 rounds	30 rounds	40 rounds
AAA chanting	5 rounds	10 rounds	15 rounds

The research tools of the study consisted of Occupational Stress Questionnaire. Occupational stress index questionnaire was developed by Dr. A.K. Srivastava and Dr. A.P. Sinha, Banaras Hindu University [9]. This questionnaire consists of 46 items. Occupational Stress Index (OSI) Questionnaire was rated on a 5- point scale. Questionnaire consisted of positive and negative key items. The response alternatives ranged in five categories from "Strongly Disagree, Disagree, Undecided, Agree to Strongly Agree". The participants were asked to respond to each question by choosing one out of five levels of perceptions, from 1 (Strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), to 5 (Strongly agree). A higher score indicates higher stress levels. The total score of an individual questionnaire indicates whether employees are low stressed, moderately stressed and highly stressed. As per the OSI, scores in between 46-127 indicate low stress; scores in between 128-150 indicate moderate stress and scores more than 150 indicate high stress.

Research data collected from the participants by questionnaire were coded and double- checked. Data analyses were carried out by using Minitab version 19.0. Paired t tests were used to compare the differences of the pre and post mean OSI score.

Results and Discussion

Since most of the statistical tests (t-test, F-test or Chi square test) are performed on Normal distributed data, therefore first Normality of the data is tested using Anderson-Darlington (AD) test. The p value > 0.05 from Anderson-Darlington test confirms Normal distribution of the data. Paired t-test was used to compare the mean scores of the pre and post occupational stress. The prerequisite for Paired t-test is to know if variance between pre and post stress (OSI) values are same or not. To check the if variance between pre and post stress (OSI) values are the same or not, an F-test is conducted. Figure (1) shows the graphical representation of variance test considering 95% confidence interval (alpha = 0.05). F-test showed the ratio of variance between pre and post stress value is 0.51 while confidence interval ranges from 0.35 to 0.73. F-test clearly showed that variance of pre and post value is significantly different, confirmed by p value < 0.05.

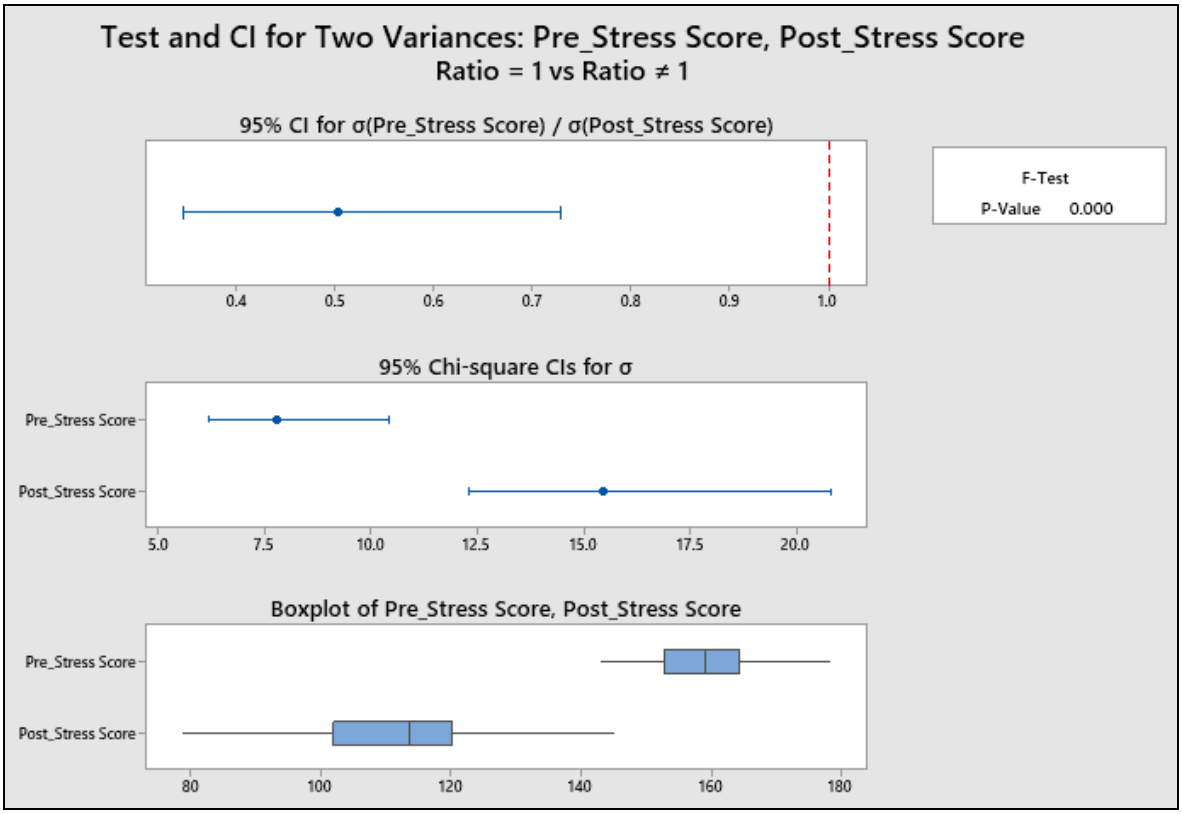

Fig 1: Graphical representation of variance test

After knowing that variance between pre and post OSI is different, Paired t-test is conducted choosing unequal variance. Paired t-test is a statistical test to compare mean values of pre and post stress scores to see the influence of yogic intervention on the female participants after 12 weeks yogic intervention. Paired t-test is done when samples are same in pre and post measurement. Figure (2) shows the box plot of pre and post Stress values (OSI). Mean value of the pre and post OSI scores of the female group are 158.7 and 111.9 respectively The t and p-value obtained from the paired-t test are 17.75 and 0.000, respectively. The p value < 0.05 from paired t-test confirmed that there is significant difference in the pre and post mean stress value, after the yogic intervention. From the current analysis, it can be concluded that yoga is certainly helpful to reduce the stress among female employees and must be included in daily life.

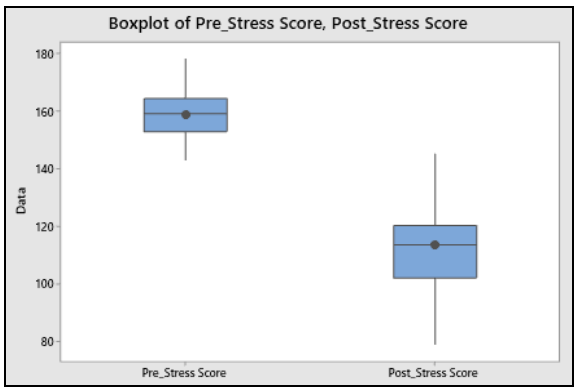

Fig 2: Box plot of pre and post Stress values

The results of paired t-test are summarized in the below table

Table 2

	Pre-test Stress	Post-test Stress	Mean difference	t value	p value
Occupational Stress	Mean+/-std dev.	Mean+/-std dev	Mean+/-std dev	17.75	0.000
	158.7 +/-7.8	111.9 +/-15.3	46.8+/-14.2		

The mean value of Stress score before yogic intervention was 158.7 (Stress > 150 is defined as high stress as per OSI scale) which confirms females working in software industries are highly stressed. The higher stress on Working females can be understood due to dual responsibilities in home as well as in office. Men's roles have not changed much. In India most of the men do not support their wife to do house work. House work is considered the responsibility of the women. Women need to cook, clean the house, clean the dishes, clean the laundry and get their children ready for school before they go to work. To finish regular house work, She needs to get up early every day therefore she is not able to get proper sleep. If Women are not working outside then this is still ok as they can get rest in the afternoon. In Software industries, there are long working hours and tight timelines to finish the work. Hence they are struggling with occupational stress very commonly.

The practice of yoga means practice both your body and mind. Yoga is for balancing the essential of a holistic mind-body and consequently offers a solution for stress. Our findings are in agreements with Guszkowska M *et al* [10], who concluded that the practice of Yoga exercises influences the women's anxiety level significantly. Ulger, O. Yagli, N.V. Aras, B. Aslan, E. [11] observed the effect of Hatha Yoga on working women with healthy physiological conditions and found that there is a significant change in

their stress level.

Conclusion

There is a significant improvement in Stress level of females working in the Software industry after 12 weeks of Yoga training. Yoga can be used as a stress management technique to prevent and reduce stress levels of employees' physical body and psychology; and thereby improve day to day activities of the employees at the workplace and in the family also. Overall, we found the practice of yoga safe, when practiced under guidance of a trained teacher, and have no side effects. Yoga exercise is recommended to incorporate in daily life to lead a happy, and peaceful life.

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