

# Role of Yoga in Managing Stress among Middle Level Managers of select Pharmaceutical Companies of Sikkim

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*Abstract* - The present study was aimed at assessing the role of yoga in managing stress among middle level managers of select pharmaceutical companies of Sikkim. Fifty four managers participated in the study. Among them 36 were randomly selected for the experimental group and the remaining 18 were treated as control group. The research design adopted for the present study was Pre and Post Experimental design with control group. In the before condition, managers "psycho- physiological stress levels were measured. Then stress management intervention was administered to the experimental group for a period of 6 weeks. Managers "psycho-physiological stress levels were measured after the treatment. Significant changes were observed in the experimental group after treatment in the areas of somatic symptoms, psychological symptoms, State anxiety, Trait anxiety, State anger, and Well being.

Keywords: Pharmaceutical company, Psycho-somatic symptoms, State anger, State anxiety, Stress Level, Well being.

# I. INTRODUCTION

There is no escape from stress in modern life. Hans Selye (1956) defined stress "as the non-specific response of the body to any demand made upon it". It is non-specific because any adaptation to a problem faced by the body, irrespective of the nature of the problem, is included in stress. According to Beehr and Newman (1997), job stress is a condition arising from the interaction of people and their jobs and characterized by changes within people that force them to deviate from their normal functioning.

Yoga is an integrated system of health and life-style for the holistic development of a person and aims at the well-being of not just the body but also the mind. Variables considered in this study relating to stress include blood pressure, pulse rate, Somatic and psychological symptoms, State and Trait anxiety, State anger, Type- A behavior, and Well-being. Somatic symptoms refer to physical responses of the body to stress which include headaches, cold, flu, allergies, loss of appetite, upset stomach, constipation, diarrhea, frequent urination, faster heart beat, breathing trouble, faintness, tics, trembling etc,. Psychological symptoms refer to the mental responses of a person to stress which include difficulty getting to sleep or staying asleep, frightening dreams, nervous habits like grinding teeth, difficulty concentrating, emotional outbursts, easily irritated, feeling self critical, withdrawing from others etc,.

The present study was an attempt to assess the efficacy of yoga in managing stress among middle level managers of select pharmaceutical companies of Sikkim.

## II. REVIEW OF LITERATURE

Morse, Martin, Furst, and Dubin, (1977) monitored respiratory rate, pulse rate, blood pressure, skin resistance, EEG activity, and muscle tension for forty-eight subjects divided equally into meditation, hypnosis, relaxation, and control groups. Their results showed significantly better relaxation responses for those practicing a relaxation technique than the control group. There were no significant differences between the relaxation techniques, however, except for the measure of muscle tension, in which meditation was significantly better.

Pelletier and Peper (1977) studied three adept mediators who voluntarily inserted steel needles into their bodies while such physiological measures as Electro Encephalography(EEG), Electromyography(EMG), Galvanic Skin Response (GSR) electrocardiogram (ECG), and respiration were recorded. Although each adept used a different passive attention technique, none reported pain.

Zaichkowsky and Kamen (1978) studied forty-eight subjects to determine whether EMG biofeedback, TM, or Benson's relaxation response produced decreased muscle tension. They found that all three groups had significant decreases in frontalis muscle tension when compared with a control group.

Morse et al. (1981) tested the hypothesis that salivary changes from stress to relaxation will be from opaque to translucent and from high to low protein levels, and those salivary bacteria will increase under the condition of stress and decrease under the condition of relaxation. Stress and relaxation of their twelve subjects, all dental students, were



evaluated before and after meditation by verbal reports and examination of saliva for opacity, translucency, protein, and bacteria. Subjects were taught word meditation and instructed to meditate twice daily for twenty minutes. The study began one week after the subjects learned meditation and continued for six weeks. There were significant anxiety-reduction changes by the end of the meditation sessions as measured by increased salivary translucency, decreased salivary protein, and reduced subjective evaluation of stress. In addition, bacteria levels showed a significant decrease by the end of the meditation sessions.

Mills and Farrow (1981) found that TM increased pain tolerance and reduced distress, while the physiological response to pain remained unchanged. Kabat-Zinn et al. (1985) trained ninety chronic-pain patients in mindfulness meditation. Statistically significant reductions were observed in measures of present- moment pain; negative body image; and inhibition of activity by pain, symptoms, mood disturbance, and psychological symptomatology, including anxiety and depression. Pain-related drug utilization decreased and activity levels and feelings of selfesteem increased. Improvement appeared to be independent of gender, source of referral, and type of pain.

Kabat-Zinn, Lipworth, Burney, and Sellers (1987) studied 225 patients in chronic pain following training in mindfulness meditation. Large and significant overall physical and psychological improvements were recorded with the Pain Rating Index (PRI), measures of negative body image (BPPA), number of medical symptoms (MSCL), and global psychology symptomatology (GSI).

Cerpa (1989) found the blood sugar levels of subjects with type II diabetes practicing a meditation-relaxation technique (CSM) were significantly reduced after participating in a six-week program, whereas the blood sugar levels of subjects in a diabetes education program and a control group did not significantly change, indicating meditation-relaxation techniques could be of significant benefit in diabetes control. Contrary to predictions, the State and Trait anxiety levels of the three groups remained relatively constant.

Nidhi Gupta (2006) studied the short-term impact of a comprehensive but brief lifestyle intervention, based on yoga, on anxiety levels in normal and diseased subjects. The study was the result of operational research carried out in the Integral Health Clinic (IHC) at the Department of Physiology of All India Institute of Medical Sciences. The subjects had history of hypertension, coronary artery disease, diabetes mellitus, obesity, psychiatric disorders (depression, anxiety, "stress"), gastrointestinal problems (non ulcer dyspepsia, duodenal ulcers, irritable bowel disease, Crohn"s disease, chronic constipation) and thyroid disorders (hyperthyroidism and hypothyroidism). The intervention consisted of asanas, pranayama, relaxation

techniques, group support, individualized advice, and lectures and films on philosophy of yoga, the place of yoga in daily life, meditation, stress management, nutrition, and knowledge about the illness.

Jadhav, and Havalappanavar (2009) made an attempt to find out whether Yoga intervention has any effect on State and Trait Anxiety and also on the Subjective Wellbeing. Fifty, first year students were selected from Naturopathy and Yogic Sciences Course; on whom; Spielberger"s State Trait Anxiety Inventory and Nagpal and Sell"s Subjective Well-being Inventory were administered in the beginning of the academic year and second time after a gap of one year. The data were analyzed by employing mean, SD and,,t" ratio. Results reveal a significant decrease in both State and Trait Anxiety levels and positive change in the Subjective Wellbeing of the students.

Gururaja ,Harano , Toyotake , and Kobayashi (2011) conducted a study in Japan to find the effect of yoga on mental health between young and senior people Twentyfive normal healthy volunteers of both sexes were divided into two groups according to age. Fifteen participants of the age group between 65 to 75 years and 10 participants of the age group between 20 to 30 years were selected. This study was approved by the ethical committee of Kawasaki University of Medical Welfare. Selected individuals were subjected to 90 minute of yoga classes once or twice a week for a month. Salivary amylase activity was assessed before and after yoga practice. State Trait Anxiety Inventory (STAI) was given before yoga on the first day and after one month of practice to assess the change in State anxiety and Trait anxiety. Reduction in State and Trait anxiety score indicated that yoga has both immediate as well as long-term effect on anxiety reduction.

# **OBJECTIVES OF THE STUDY**

The study had the following objectives: To study the effect of yoga on the:

- 1. Physiological indicators of stress among middle level managers of Pharmaceutical Companies.
- 2. Somatic and psychological symptoms among middle level managers of Pharmaceutical Companies.
- 3. State and Trait anxiety among middle level managers of Pharmaceutical Companies.
- 4. State of anger among middle level managers of Pharmaceutical Companies.
- 5. Type-A behaviour among middle level managers of Pharmaceutical Company, and
- 6. Well-being of middle level managers of Pharmaceutical Companies of Sikkim.



To achieve the research objectives the following hypothesis was formulated:

Physiological indicators, Somatic symptoms, Psychological symptoms, State anxiety, Trait anxiety, State anger, Type-A behaviour and Well being will not differ significantly between the before and after conditions among the experimental group.

# **III. METHODOLOGY**

### Participants

The present study has been conducted on 54 middle level managers of the select Pharmaceutical Companies located in Sikkim. Among the 54 managers 36 were randomly selected for the experimental group and the remaining 18 were treated as control group.

# **RESEARCH DESIGN**

The research design adopted for the present study was Pre and Post Experimental design with control group. In the before condition, Managers" psycho-physiological stress levels were measured. These data served as the base line data. Then stress management intervention was administered to the experimental group for a period of 6 weeks. The entire intervention programme was administered under the supervision of a professional yoga trainer with an experience of over two decades. Managers" psycho- physiological stress levels were measured after the treatment.

## ASSESSMENTS

#### Somatic and psychological stress symptoms

Kindler"s Personal Stress Inventory (1981) was used to study health symptoms. Health symptoms were divided into two major categories: somatic symptoms and psychological symptoms. The somatic and psychological symptoms inventories consisted of 19 items each, rated on 4-point scale frequently, occasionally, rarely and never. They were scored as 4, 2, 1, and 0 respectively.

#### State and trait anxiety

Spielberger's State and Trait Anxiety Inventories (Spielberger, 1983) were administered to study State and Trait anxieties. State Anxiety Inventory consisted of 20 statements, which were to measure "how a person feels at that particular moment". These items were rated on a 4-point scale Almost never (Never occur), Sometimes (Once in a month), Often (twice per month), and Almost always

(Once or more per week). Trait Anxiety Inventory consisted of 20 statements with regard to "How a person generally feels". Subject's responses to the items were scored using the STAI scale and the scores were summed up to get the total score. Higher score indicates a higher level of trait anxiety.

## State anger

Spielberger's State Anger Scale (1988) was administered to assess state anger. This scale consisted of ten items and measures the subject's general anger levels. Subject's responses to the items were scored using the scale and the scores were summed up to get the Spielberger's State Anger Score of the individual. Higher score indicates higher anger level of the individual.

## Type behaviour

Type A/Type B Behaviour Scale (Cooper and Davidson, 1980) was administered to assess Type a Behaviour. This consisted of 13 items, which attempt to measure the subject's sense of time urgency, hostility, rapid movement and patience level. Higher score indicates Type a Behaviour.

## Well-being

PGI Well-being Scale (S K Verma, A C Moudgal, Kuldip and Kaur) was administered to assess well-being. This scale consisted of 20 items. The respondent has to tick the items, which are applicable to him/her. This tool was easy to score. Simple check (True) for each item represents the positive well-being. There are no negative items in the scale.

# Stress management intervention

The intervention consisted of Shavasana, Sukhasana, Pranayama and Meditation. The total duration of each session was thirty minutes. Shavasana was done for a period of ten minutes. Pranayama (Nadi Shodhan Pranayama) and meditation in Sukhasana pose were done for a period of twenty minutes. There were two sessions in a day, one in the morning and one in the evening. A professional yoga trainer trained participants in the experimental groups. The intervention was for a period of six weeks.

## DATA ANALYSIS

Mean, Standard Deviation, and Mean Difference of the various variables were worked out. Critical Ratios were worked out to find out the significance of differences between the means before and after the treatment.

# IV. RESULTS AND DISCUSSION

This section presents the analysis of the data and the results.

Table 1 Showing the Mean Differences and Critical Ratios in the Before Condition among the Control and Experimental group.



S1.	Variable	Control Group	Experimental Group	Mean	Critical
no		Mean and Standard	Mean and Standard	Difference	Ratio
		Deviation	Deviation		
1.	Systolic Blood	120.14	120	0.14	0.331
	Pressure	(1.02)	(1.16)		
2.	Diastolic Blood	79.93	79.89	0.14	0.123
	Pressure	(0.47)	(1.03)		
3.	Pulse Rate	71.86	72.00	0.14	0.696
		(0.66)	(0.61)		
4.	Somatic	13.21	13.57	0.36	0.142
	symptoms	(6.90)	(8.02)		
5.	Psychological	16.07	17.11	1.04	0.323
	symptoms	(10.14)	99.63)		
6.	State anxiety	43.43	42.54	0.89	0.417
		(3.13)	(7.66)		
7.	Trait anxiety	43.57	43.75	0.18	0.085
		(5.58)	(6.73)		
8.	State anger	18.64	20.39	1.75	1.233
		(5.37)	(3.74)		
9.	Type A	79.29	80.32	1.03	0.128
	Behaviour	(18.93)	(27.09)		
10.	Well being	10.00	11.93	1.93	1.368
		(3.98)	(4.45)		

Results indicated that the calculated critical ratios of the systolic blood pressure, diastolic blood pressure, pulse rate, somatic symptoms, psychological symptoms, State anxiety, Trait anxiety, State anger, Type-A behavior and Well-being were less than the table values. Hence, it was concluded that there were no significant differences in these variables between the control and experimental group in the before condition. (Table 1)

Table 2 Showing the Mean Differences and Critical Ratios in the Before – After Condition among the Control group.

Sl. No	Variable	Before Condition Mean and Standard Deviation	After Condition Mean and Standard Deviation	Mean Difference	Critical Ratio
1	Systolic Blood Pressure		AM (0.89)	0.007	0.322
2	Diastolic Blood Pressure	79.93 <sup>-</sup> R <sub>esearch</sub> in	Engineering AP 80.07 (0.83)	0.14	0.563
3	Pulse Rate	71.86 (0.66)	71.93 (0.83)	0.07	0.249
4	Somatic symptoms	13.21 (6.90)	12.86 (6.40)	0.35	1.794
5	Psychological symptoms	16.07 (10.14)	16.14 (10.24)	0.07	0.366
6	State anxiety	43.43 (3.13)	43.50 (3.11)	0.37	0.434
7	Trait anxiety	43.57 (5.58)	43.36 (3.11)	0.21	1.883
8	State anger	18.64 (5.37)	18.43 (5.45)	0.21	1.883
9	Type A Behaviour	79.29 (18.93)	79.69 (18.81)	0.40	1.314
10	Well being	10.00 (3.98)	10.36 (3.27)	0.36	1.439

Results indicated that the calculated critical ratios of the systolic blood pressure, diastolic blood pressure, pulse rate, somatic symptoms, psychological symptoms, state anxiety, trait anxiety, state anger, Type-A behaviour and well-being were less than the table values. Hence, it was concluded that there were no significant differences in these variables between the before and after conditions among the control group. (Table 2)

To achieve the research objectives, hypothesis formulated was that "Physiological indicators, Somatic symptoms, Psychological symptoms, State anxiety, Trait anxiety, State anger, Type-A behaviour and Well being will not differ significantly between the before and after conditions among the experimental group". To test the hypothesis mean differences and critical ratios in the Before – After conditions were worked out for the experimental group.

Table 3 Showing the Mean Differences and Critical Ratios in the Before – After Condition among the Experimental group.

S1.	Variable	Before	After	Mean	Critical
No		Condition Mean and Standard Deviation	Condition Mean and Standard Deviation	Difference	Ratio
1	Systolic Blood	120.00	119.86	0.14	0.812
	Pressure	(1.44)	(0.76)		
2	Diastolic Blood	79.89	80.00	0.11	0.550
	Pressure	(1.03)	(0.76)		
3	Pulse Rate	72.00	71.93	0.07	0.441
		(0.60)	(0.65)		
4	Somatic symptoms	13.57	12.39	1.18	4.326**
		(8.02)	(6.85)		
5	Psychological	17.11	14.82	2.29	6.869**
	symptoms	(9.63)	(8.17)		
6	State anxiety	42.54	39.4 <mark>6</mark> / 5	3.07	11.103**
	grnat	(7.66)	(7.26) 5		
7	Trait anxiety	43.75	41.46	2.29	2.828**
		(6.73)	(6.70)		
8	State anger	20.39	18.50	1.89	9.104**
		(3.74)	(3.52)		
9	Type A Behaviour	80.32 <sup>9</sup> in Engir	eering 80.82	0.50	1.260
		(27.09)	(26.14)		
10	Well being	11.93	13.71	1.74	5.632**
		(4.45)	(3.91)		

## \*\*p<.01

The calculated critical ratios of systolic pressure, diastolic pressure and pulse rate were less than the table values. (Table 3).Hence, it was concluded that there were no significant differences in the physiological indicators in the before – after conditions among the experimental group. The calculated critical values of somatic symptoms, psychological symptoms, state anxiety, trait anxiety, state anger and well-being were greater than the table values and were significant. Hence, it was concluded that there were significant differences in these variables in the before – after conditions among the experimental group because of the stress management intervention. The calculated critical ratio of Type-A behavior was less than

the table value. Hence, it was concluded that there was no significant difference in Type-A behavior in the before and after conditions among the experimental group.

There were no significant differences in the variables between the experimental and control group before treatment as both the groups were homogenous in nature. There were no significant differences in the control group in the before and after conditions as the group has not received the treatment. Significant differences were observed in the experimental group after treatment in the areas of somatic symptoms and psychological symptoms. This finding replicates the findings of the studies conducted



by Kabat- Zinn et al. (1987), Nidhi Gupta (2006), Gururaja D et al. (2011) etc. Significant reductions in state anxiety and trait anxiety were observed after the intervention in the experimental group. This replicates the findings of the studies undertaken by Jadhav and Havalappanavar, (2009). Significant improvement in well-being was also observed in the experimental group because of the intervention. This also was consistent with the findings of the study conducted by Jadhav, and Havalappanavar. (2009).

# V. CONCLUSION

The present study was aimed at assessing the efficacy of yoga in managing stress among the middle level managers of select Pharmaceutical companies located in Sikkim. Fifty four managers participated in the study. Among them 36 were randomly selected for the experimental group and the remaining 18 were treated as control group. The research design adopted for the present study was Pre and Post Experimental design with control group. Significant changes were observed in the experimental group after treatment in the areas of somatic symptoms, psychological symptoms, state anxiety, trait anxiety, state anger, and well being. Hence it was concluded that Yoga is effective in managing stress among the middle level managers of textile industry. Managers should be provided with training in Yoga in order to help them acquire the required stress resilience.

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