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# Efficacy of Yoga in Managing Stress among Middle Level Managers of Textile Industry

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## Abstract

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. High level of stress (distress) causes physiological, psychological, and behavioural problems. The present study was aimed at assessing the efficacy of yoga in managing stress among middle level managers of textile industry. 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:** Psychological symptoms, Somatic symptoms, State anger, State anxiety, Well being.

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Modern life is full of stress. People feel stress, as they can no longer have complete control over what happens in life. 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.

There are three categories of potential stressors: environmental, organizational, and individual. Environmental factors include economic uncertainty, political uncertainty, and technological uncertainty. Organizational factors include task demands, role demands, interpersonal demands, organizational structure, organizational leadership, and organization's life stage. Individual factors include family problems, economic problems and personality.

High level of stress (distress) causes physiological, psychological, and behavioural problems. Physiological consequences include heart disease, ulcers, high blood pressure, headaches, sleep disturbances etc. Psychological consequences include job dissatisfaction, depression, exhaustion, moodiness, burnout, etc. Behavioural consequences include lower job performance, more accidents, faulty decisions, higher absenteeism, work place aggression, etc.

High level of stress affects the individual directly and through him, his family and organization. Therefore, efforts should be made to overcome the negative consequences. Such efforts can be made at two levels: individual level and organizational level. Individual coping strategies include physical exercise, relaxation, cognitive therapy, networking, time management etc. Organizational approaches include supportive organizational climate, job enrichment, organizational role clarity, career planning and counseling, stress control workshops etc.

The present study was an attempt to assess the efficacy of yoga in managing stress among middle level managers of textile industry.

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,.

State anxiety refers to temporary and always changing state of subjective, consciously perceived feelings of apprehension and tension, associated with activation of the autonomic nervous system. Trait anxiety refers to behavioural disposition to perceive objectively non-dangerous circumstances as threatening. It is directly related to the personality of the individual. The intensity of the individual's angry feelings either at (a) the time of testing or (b) a time and situation specified by the test administrator. Type-A behaviour pattern is characterized by a feeling of chronic sense of time urgency and by an excessive competitive drive. Type-A individual is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time. A subjective emotional state of positive affect (affect means emotions or feelings), relatively low negative affect and general life satisfaction.

## 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 (EKG), 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 self-esteem 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. The outcome measures were anxiety scores, taken on the first and last day of the course. Anxiety scores, both State and Trait anxiety were significantly reduced. Among the diseased subjects significant improvement was seen in the anxiety levels of patients of

hypertension, coronary artery disease, obesity, cervical spondylitis and those with psychiatric disorders. The observations suggest that a short educational programme for lifestyle modification and stress management leads to remarkable reduction in the anxiety scores within a period of 10 days.

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 Well-being. 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 Twenty-five 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 Textile industry.
2. Somatic and psychological symptoms among middle level managers of Textile industry.
3. State and Trait anxiety among middle level managers of Textile industry.
4. State anger among middle level managers of Textile industry.
5. Type-A behaviour among middle level managers of Textile industry, and
6. Well-being of middle level managers of Textile industry.

## Hypothesis

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.

## Methodology

### Participants

The present study has been conducted on 54 middle level managers of the Textile industry. 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 a 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. The following procedure was adopted for the intervention.

**Shavasana**

Lie down on your back on a blanket. The length of the carpet or blanket should be equal to the length of the body. Keep both the legs a little apart, about one and a half feet from each other. Keep both the hands a little away from the side of the body. Now the left toe point towards the left and the right toe towards the right. Head may be kept straight or may be inclined towards the left or right according to one's convenience. Palms should face upward and fingers should remain a little bent. Eyes are closed and the whole body be relaxed. No thoughts in your mind. Lie relaxed like a dead. Breathing should be slow and normal. When you come out of the pose do not tense your neck and throat. Bring your arms to your sides and bring your legs together. Gently roll off onto your right side, and place your right palm under your head. Keep your knees slightly bent. Pause and rest for a few moments. Allow your body and mind to determine when you should sit up. When you feel ready, push yourself into a sitting position with your left hand.

**Sukhasana**

Sit upon the blanket using only the front edge, or first third of the support. Have your legs stretched out in front of you in preparation for bending. Bend your right leg under your left thigh and the left leg under the right thigh, assuming the cross-legged "tailor pose". Check that your kneecaps are roughly level with each other. Keep your spine erect and your head nicely poised upon your shoulders. Place your hands, palms down, upon your knees in such a fashion that they will not slip off. Be certain that your elbows relax naturally against your body. Firmly close your eyes as if you were drawing down shutters. Continue to keep your eyelids under control for the duration of the session. You are now introverted within yourself. Concentrate your mind upon the natural rhythm of your breath. Control yourself from dreaming, reasoning, or otherwise becoming mentally active, and keep your body erect, motionless, and as relaxed as possible.

**Pranayama (Nadi shodhan pranayama)**

Sit in Sukhasana on a blanket. Keep the waist, back, neck and spine erect. Sit peacefully and breathe normally. Close your eyes. Close the right nostril with the right thumb. Now, inhale slowly through the left nostril and fill your lungs. After complete inhalation press the left nostril with the ring finger of the right hand and close the left nostril. Open the right nostril, exhale and breathe slowly. After complete exhalation, again inhale through the right nostril and fill your lungs. Close the right nostril by pressing it with the right thumb. After opening the left nostril, breathe out slowly. In the beginning this should be practiced three times only. It can be gradually increased to thirty times. Breathing in and breathing out should be done very slowly.

**Meditation**

Sit in Sukhasana. Keep the head, neck and trunk in a straight line. Do not bend either forward or backward. Close your eyes. Concentrate gently in the Trikuti, the space between the eyebrows. Lock the fingers. Relax all the muscles and the nerves. Gently think of your Ishta Devata. Slowly recite the mantra OM. Meditate on OM with Bhava or the right mental attitude.

### Data Collection

Data were collected from the sample by administering the questionnaires. A trained nurse from a local hospital measured physiological indicators. Data were collected twice, before treatment and after treatment.

### 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.

## 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.

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

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 | 120.14 (1.03) | 120.21 (0.89) | 0.007 | 0.322 |
| 2 | Diastolic Blood Pressure | 79.93 (0.47) | 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.

| Sl. No | Variable | Before Condition Mean and Standard Deviation | After Condition Mean and Standard Deviation | Mean Difference | Critical Ratio |
|---|---|---|---|---|---|
| 1 | Systolic Blood Pressure | 120.00 (1.44) | 119.86 (0.76) | 0.14 | 0.812 |
| 2 | Diastolic Blood Pressure | 79.89 (1.03) | 80.00 (0.76) | 0.11 | 0.550 |
| 3 | Pulse Rate | 72.00 (0.60) | 71.93 (0.65) | 0.07 | 0.441 |
| 4 | Somatic symptoms | 13.57 (8.02) | 12.39 (6.85) | 1.18 | 4.326** |
| 5 | Psychological symptoms | 17.11 (9.63) | 14.82 (8.17) | 2.29 | 6.869** |
| 6 | State anxiety | 42.54 (7.66) | 39.46 (7.26) | 3.07 | 11.103** |
| 7 | Trait anxiety | 43.75 (6.73) | 41.46 (6.70) | 2.29 | 2.828** |
| 8 | State anger | 20.39 (3.74) | 18.50 (3.52) | 1.89 | 9.104** |
| 9 | Type A Behaviour | 80.32 (27.09) | 80.82 (26.14) | 0.50 | 1.260 |
| 10 | Well being | 11.93 (4.45) | 13.71 (3.91) | 1.74 | 5.632** |

**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).

## Conclusion

The present study was aimed at assessing the efficacy of yoga in managing stress among the middle level managers of textile industry. 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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