

Effect Of Transcendental Meditation And Stress Management Program On Anxiety Score- A Comparative Study

Sadhana S. Mendhurwar*, J. V. Gadkari**

*Associate Professor, Department of Physiology, D.Y. Patil. Patil Medical College, Hospital and Research Centre, Nerul, Navi Mumbai, **Prof and HOD, Department of Physiology, Seth G.S. Medical College and KEM hospital, Parel, Mumbai

Abstract: Background and Objectives: Stress is an inevitable part of life. Stress can be evaluated by measuring anxiety score. In the present study effect of TM and Stress management program on anxiety score was studied. **Method:** For present study 150 volunteers between 20 - 40 years were selected in two groups each containing 75 volunteers. Group I volunteers were trained for TM. After training period they practiced TM every day 20 minutes for 6 weeks. Group II volunteers were subjected to stress management program where they practiced various breathing exercises, some asana and relaxation technique for 20 minutes for 6 weeks. Anxiety score was measured by using clinical anxiety scale (C.A.S.) before and after the TM and stress management program in each volunteer. **Result:** Comparison of results of TM and stress management program for anxiety score was done by statistical analysis. Stress management program was more effective in causing reduction in anxiety score in males and females, however anxiety score reduction was found significantly in females as compared to males who practiced TM. **Interpretation and conclusion:** From the present study it is concluded that Stress management program is more effective than TM in reducing anxiety score. In the present study volunteers practiced TM and Stress management program only for 6 weeks. Practicing TM or Stress management program for a longer time may be more effective and therefore should be studied.

Key words - TM, Stress management program, Anxiety score

Author for correspondence: Sadhana S. Mendhurwar, Associate Professor, Department of Physiology, D.Y. Patil. Patil Medical College, Hospital and Research Centre, Nerul, Navi Mumbai, Email: sadhana.mendhurwar@gmail.com

Introduction: Nowadays stress is an absolutely inevitable part of life. Stress can be evaluated by measuring anxiety score¹ Stress causes hormonal changes, biochemical changes^{2, 3, 4} various illnesses and psychosomatic diseases.^{5,6} Linkage between body and mind are now well appreciated and therefore one can use yogic practices in preventing and treating such stress related illnesses. Several studies have been done on effect of various yogic practices and meditation on anxiety score.^{7,8,9}

The present study examined the effects of TM and a stress management program on anxiety score Transcendental meditation (TM) is a common form of meditation that is easy to learn. The stress management program followed in the present study composed of breathing exercises, some yogic asanas and mudras. Goal of the present study was to compare the effects of TM and stress management and to find out which is better.

Methods and Materials: One hundred and fifty volunteers (75 males and 75 females) were selected. Following criteria were used for selecting the volunteers. Age between 20 to 40 years

No history of heart attack, hypertension, diabetes, or any other chronic illness that required regular pharmacological treatment. No history of major psychiatry disorders, current alcohol abuse/ dependency disorders.

Each volunteer was explained the whole program. Interested and co-operative volunteers were selected. Written consent was obtained from volunteers. The volunteers were asked to discontinue if they felt giddy. An approval of institutional medical ethics committee was obtained before commencing the study.

Name, age, sex, height and weight of each volunteer were recorded. Anxiety score was measured by using Clinical Anxiety Scale (C.A.S)¹. It is six item anxiety score. Score was noted as a number for each volunteer. The anxiety score was measured in each volunteer and the readings were noted as controlled readings.

Volunteers were divided in two main groups. Group I and Group II each of 75 volunteers. Group I was further subdivided into Group I (males) consisting of 37 male volunteers and Group I (females) consisting of 38 female volunteers. Group II was further subdivided into Group II (males) consisting of 38 male volunteers

and Group II (females) consisting of 37 female volunteers. Group I underwent session one and Group II underwent session two. Session one and two were divided into

1. Training session for 6 weeks
2. Practicing session for 6 weeks

Session One: Training session- In this session volunteers were trained for Transcendental meditation (TM). This is a progressive relaxation technique. Technique was taught by giving individualized personal instructions. Technique of TM was taught as below^{10, 11, 12, 13}. Meditator sits quietly in a comfortable position with his back erect, eyes closed, (lotus position) and takes slow and deep breaths.

Meditator silently repeats a mystical sound (mantra- OM) Repetition of mantra is supposed to be effortless. Meditator neither attempts to concentrate on sound nor attempts to prevent his/her attention from wavering. There is no need to prevent thoughts during TM. The meditator is instructed merely to concentrate on mantra. Gradually meditator learns to maintain awareness of mantra excluding the other thoughts, external influences and desires.

Practicing session - Volunteers in Group I practiced TM for 20 minutes in the morning everyday for 6 weeks.

Session Two: Training session- Volunteers underwent stress management program¹⁴ training for 6 weeks. In this program volunteers were explained about what is stress, different kind of stressors, mechanism by which stress acts on the body. Volunteers were taught about importance of holistic health and its role in stress management. Volunteers were also informed about importance of sprouts, fruits and proteins in the diet. Additionally they were taught some breathing exercises, mudras, and asanas as shown in the table.

Practicing session – Volunteers of Group II practiced breathing exercises, mudras, asanas, and relaxation techniques given everyday in the morning 20 minutes for 6 weeks.

At the end of practicing session anxiety scores were recorded from all the volunteers of Group I and Group II. The results obtained were compared with the control readings taken before

the sessions. Student' "t" test was applied for statistical analysis of the results.

1	Stress and stressors	2 Hours
2	Stress identification and construction of stressor hierarchy	1 Hour
3	Autonomic responses to stress	1 Hour
4	Effects of stressors on various systems of the body	1 Hour
5	Importance of fruits, fluids, proteins in the diet. Training is given for the following ¹⁵ Breathing exercises- Anulom and vilom type of breathing Mudras Brahmamudra Sinhmudra Relaxation Jaw relaxation Makarasan Nasikagra –drushti Asanas Bhujangasana Vakrasana	10 mins

Sessions of Stress Management Program.

Results: There was no significant change in anxiety score in males of Group I, there was significant change in anxiety score in females of Group I, however males and females of Group II showed significant difference in anxiety score (Table 1) Comparison of (Table2) results in Group I and Group II females did not show any significant difference in females. But in males the difference was highly significant. Group II males showed significantly greater decrease in anxiety score than Group I. It indicates that session II was more effective in reducing anxiety score in males.

Comparison of results in males and females of each group showed that there was significant difference in Group I of males and females (Table3) session I is more effective in reducing anxiety score in females. However there was no significant difference in Group II males and females indicating that session II was equally effective in reducing anxiety score in both

Table 1

Comparison of Anxiety score – Before and After the Sessions in Males and Females of both Groups								
Groups		No. of Observations	Mean (x)	S.D.	S.E.	t- value	p-value	Significance
Group-I (Males)	<i>Before</i>	37	5.08	1.07	0.23	0.1468	0.1476	Not Significant
	<i>After</i>	37	4.73	0.98				
Group-I (Females)	<i>Before</i>	38	4.84	0.90	0.196	2.39	0.168	Significant
	<i>After</i>	38	4.37	0.81				
Group-II (Males)	<i>Before</i>	38	6.87	0.80	0.177	3.566	<0.0004	Significant
	<i>After</i>	38	6.24	0.74				
Group-II (Females)	<i>Before</i>	37	5.89	1.01	0.208	2.78	<0.0028	Significant
	<i>After</i>	37	5.27	0.76				

Table – 2

Comparison of Anxiety Score, – in Group-I & Group-II								
Groups		No. of Observations	Mean (x)	S.D.	S.E.	t- value	p- value	Significance
Group-I	Males	37	0.3514	0.531	0.015	7.8397	0.0001	Highly Significant
Group-II	Males	38	0.4737	0.5495				
Group-I	Females	38	0.6316	0.6657	0.164	0.061	0.9522	Not Significant
Group-II	Females	37	0.6216	0.748				

Table – 3

Comparison of Effect Anxiety Score , – Males & Females of each Group								
Groups		No. of Observations	Mean (x)	S.D.	S.E.	t- value	p- value	Significance
Group-I	Males	37	0.3514	0.531	0.139	2.017	0.0434	Significant
Group-I	Females	38	0.6657	0.6657				
Group-II	Males	38	0.4737	0.5445	0.152	0.9743	0.332	Not Significant
Group-II	Females	37	0.621	0.748				

Discussion: Result of the present study indicate that there was significant reduction in anxiety scores in males and females of Group II and only females of Group I. There was no significant reduction in anxiety score in males of Group I. This indicates that TM program reduced anxiety score in females whereas stress management reduced anxiety score in both males and females. Thus stress management program is superior to TM in reducing anxiety score.

Comparing results in Group I and II showed that there was significant difference in results of Group I and II in males indicating that group II males had significantly greater reduction in

anxiety score and group I males did not show any statistically significant effect. This indicates that stress management program was effective in reducing anxiety score in males but TM had no effect.

Comparison of results in males and females of each group showed statistically significant difference in reduction of anxiety score in males and females in group I indicating that TM programme had effect in reducing anxiety score in females but not males. There was no statistically significant difference in effect on anxiety score in males and females of Group II indicating that stress management program had

reduced anxiety score in both males and females. Thus stress management program has affected both males and females equally.

Stress is the organism's response to stressful conditions or stressors consisting of patterns of physiological and psychological reactions both immediate and delayed. Rabkin JG, Struening EL⁵ have explained how stressors are capable of causing illness. They have following sequence-social stressors, mediating factors, stress and onset of illness. Social stressors refer to personal life changes e.g. loss of job, marriage etc. Social stressor is any set of circumstances, which requires change in individuals ongoing life pattern. Mediating factors are those characteristics of stressful life events that influence person's perception or sensitivity to stressor. There are long-standing precipitating factors such as behavioral patterns, childhood illness, social and personal characteristics that may alter person's susceptibility to illness. Onset of illness is an appearance of clinical symptoms and signs of disease. Several workers have correlated stress for conditions giving rise to illness and also studied effect of stress.

Christenson NJ, Jensen FW² have studied effect of stress on plasma nor epinephrine and epinephrine and found that there are raised plasma epinephrine levels in patients with duodenal ulcer. There is no close relationship between plasma epinephrine and illhealth. In population study they found that low plasma levels were associated with an unfavorable survival rate.

Gunner Johansson et al³ studied plasma TSH, T3, T4 levels before and after stress in males and females. They suggested that during psychological stress the pituitary-thyroid endocrine axis of females react differently than males. During intellectual stress females do not react as strongly as males and after the stress situation is over females seem to maintain and re-establish their psycho endocrine homeostasis more effectively and rapidly than males. Agarwal Vinay et al¹⁶ had shown that examination stress causes rise in serum cholesterol, triglyceride levels due to stress induced changes in hormone levels and peripheral lipolysis respectively.

Suls H, Fletcher B⁶ have after their study concluded that incidence of stressful life events

predicted subsequent illness among persons having low private consciousness as compared to persons of high self consciousness. Person with low self consciousness have a tendency to dis attain to their psychological and somatic reactions to stressful life events and fail to take corrective actions leading to lowered body resistance to stress and increased susceptibility to physical illness. Anxiety score measures the stress. Yogic exercises are supposed to decrease the anxiety. Therefore in the present study effect of TM and stress management program on anxiety scale was studied. Several workers have studied the effect yoga on anxiety score.

Backwell Barry, Haneson Irwin¹⁷ Satwartz GE et al¹⁸, Irving Krish and Henry David⁸ Harris G, Johnson SB⁹ have studied effect of meditation on anxiety score and found significant reduction of anxiety score after TM. However others like Goldman BL et al¹⁹ and Boswell PC, Murry EJ²⁰ found that there is no significant effect of meditation on anxiety score. But both of them studied effect of 1-2 weeks meditation. It is possible that short term practice of meditation has no effect.

In the present study however 6 weeks of stress management program reduced anxiety score significantly in males and females. Six weeks of TM has reduced anxiety score in females. Therefore stress management program was effective than TM. So it is concluded that such a technique practiced for a longer period may be effective in preventing the psychosomatic illness or may even be used as a part of therapy in psychosomatic illness.

Conclusion : The above study, practicing session was conducted for 6 weeks in normal males and females on anxiety scores. The score was taken before and after the TM & Stress management. The study concludes that stress management was more effective in reducing anxiety score than TM. Regular practice of TM or stress management over a longer period will be further helpful to confirm the same. This will add as a very good habit for human mankind in today's stressful life.

Referencess-

1. Sainath RP, Baugh SJ, Clayden AD, Husain A, Sipple MA. The clinical anxiety scale: An

- instrument derived from Hamilton Anxiety Scale. *Brit J. Psychat* 1982; 4: 518-523.
2. Christensen NJ, Jensen FW. Effect of psychological stress and age on plasma nor epinephrine levels. *A Review Psychosomatic Medicine* 1994; 56: 77-83.
 3. Johansson Gunnar, Laaksu ML, Karonen SL, Peder Mikael. Examination stress affects plasma level of TSH and thyroid hormones differently in females and males. *Psychosomatic Medicine* 1987; 49: 390-396.
 4. Morell EM, Hollandsworth JG. Nor epinephrine alterations under stress conditions following regular practice of meditation. *Psychosomatic Medicine* 1986; 48: 270-277.
 5. Rabkin JG, Struening EL. Life events, stress and illness. *Science* 1982; 215: 1013–1020 .
 6. Suls H, Fletcher B. Self – attention; life stress and illness. A prospective study. *Psychosomatic Medicine* 1985; 47: 469-481.
 7. Stanescu DC, Nemery B, Veriter C, Marechal C. Pattern of breathing and voluntary response to carbon dioxide in subjects practicing hath-yoga. *J Of Applied Physiology* 1981 51: 1625-1629.
 8. Irving Krish, Henry David. Self–sensitization and meditation in the reduction of public speaking anxiety. *Journal of Consulting and clinical psychology* 1979; 47: 536-541.
 9. Ginz Harris, Johnson SB. Comparison of Individualized Covert Modeling, Self control Desensitization and Study Skills Training for Alleviation of Test Anxiety. *Journal of Consulting and clinical psychology* 1980; 48: 186-194.
 10. Walton KG, Pugh Nirmal DC. Stress, Steroids and ‘Ojas’ Neuroendocrine mechanisms and current promise of ancient approaches to disease prevention. *Indian J. Physiol Pharmacol* 1995; 39: 3-36.
 11. Morse DR, Martin JS, Furst ML, Dubin LL. A physiological and subjective evaluation of meditation, hypnosis and relaxation. *Psychosomatic medicine* 1977; 39: 304-322.
 12. Farrow JT, Russell Herbert. Breathe suspension during the transcendental meditation technique. *Psychosomatic medicine* 1982; 44: 133-153.
 13. West Michael. Meditation – Review article. *British J. Psychiat.* 1979; 135: 457-467.
 14. Chariesworth EA, William BJ, Baer DE. Stress Management at the work site for hypertension. Compliance, cost- benefit, health care and hypertension- related variables. *Psychosomatic medicine* 1984; 46: 387-397.
 15. Jagdev Yogendra. *Cyclopedia ‘Yoga’ Book* Published by Yoga Institute Santacruz 1988
 16. Agarwal Vinay, Gupta Bhavesh, Singhal Usha, Bajpai SK. Examination Stress: changes in serum cholesterol, triglycerides and total lipids. *Indian J .Physio.Pharmacol* 1997; 4: 404-408.
 17. Blackwell Barry, Haneson Irwin, Bloomfield Saul et al. Transcendental meditation in hypertension. *Lancet* 1976; 223-226.
 18. Schwartz GE, Davidson RJ, Goleman DJ. Patterning of cognitive and somatic processes in self regulation of anxiety: Effects of meditation versus exercise. *Psychosomatic Medicine* 1978; 40: 321-328.
 19. Goldman BL, Domiter PJ, Murray EJ. Effects of Zen Meditation On Anxiety Reduction and Perceptual functioning. *Journal of Consulting and Clinical Psychology.* 1979 ; 47: 551-556.
 20. Boswell PC, Murray EJ. Effects of Meditation on Psychological and Physiological Measures Of Anxiety. *Journal of Consulting and Clinical Psychology.* 1979; 47: 606-607.

Disclosure: No conflicts of interest, financial or otherwise are declared by the authors.