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A STUDY ON STRESS IN INDIAN 2nd YEAR HOMOEOPATHY STUDENTS BY PERCEIVED STRESS SCORE (PSS), CLINICAL PARAMETERS AND EMG ACTIVITY.

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ABSTRACT

A certain amount of stress is desirable to give the required stimulation and motivation. However, too much of stress adversely affects health and well-being, behaviour etc. Aim of the study was to assess Perceived stress in 2nd year BHMS students of Homoeopathy with assessment of corroborative clinical parameters, perceived stress score (PSS) and Electromyography activity (EMG) activity. A cross-sectional survey were carried out amongst undergraduate 2nd year homeopathy students of Dr. D. Y. Patil Homoeopathic Medical College, Pune, India. On the basis of the PSS score ≥ 20, 35 participants were identified to be in moderate + category of stress. 50 students from the second year respondents participated in this study. The mean age of the study participants were found to be 19.71± 0.926 respectively, with a range of 18-23 years. The majority of participants were female (88.57%). Mean PSS score of all 35 participants were seen to be 22.57±2.24. High levels of perceived stress were found in Homeopathic students. All Subjects received 10 sessions of EMG biofeedback training for 10 minutes for 5 days/week for 2 weeks.

KEYWORDS: ***Stress, Undergraduate homeopathy students, PSS, EMG biofeedback.***

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INTRODUCTION

Stress is a body condition that occurs in response to actual or anticipated difficulties in life. People often experience stress as a result of major events in their lives, such as marriage or loss of job. Stress may also occur in response to daily problems, such as driving in heavy traffic or being hurried by someone. A certain amount of stress is desirable to give the required stimulation and motivation to overcome many obstacles that may prevent achieving goals. However, too much of stress adversely affects health and well-being, everyday performance, and outward social behaviour. An individual may react to stress by becoming anxious or depressed, by developing a physical symptom, by running away, by having a drink or starting an affair, or in limitless other ways[1-2]. or called as general adaptation syndrome" It is not just a stimulus or a response but rather, it is a process by which we perceive and cope with environmental threats and challenges.[3] Personal and environmental events that cause stress are referred to as stressors.[4] Recently incidence of stress during professional courses is increasingly being reported with psychological changes in medical students in Antalya, Turkey during their undergraduate education[5.] This study was undertaken to measure the prevalence of psychological morbidity, and the nature and source of stress, in first year medical students. The study shows that psychological well-being of medical students needs to be more carefully addressed, and closer attention paid to the styles of medical teaching that may provoke avoidable distress....[6] Some studies related to studies in the fields of dentistry, law, nursing, occupational therapy, management and social work has been published. (Alexander 2001), Archer and Peters (1988), Lim et al 2009, Kumar & Jejurkar 2005, Agrawal and Chahar 2007, Dziegielewski et al 2004. In a study comparing medical law and graduate students of Mc Gill university, it was found that medical students were not untowardly stressed but the transition of basic to clinical training was associated with stress. (Helmers et al. 1997) Previous studies have shown fairly high incidence of distress, such as symptoms of depression[7-8] and even rarely tendency of suicide[9-10] among medical students. The presence of emotional distress affects student's performance in class room as well as in their clinical practice.[11] It also increases the risk of stress-induced disorders and deteriorating performance.[12] Presence of current mental distress and further health problems was found to be high in those having perceived medical stress.[13-14] The present curriculum of the Homeopathy course is comprehensive and large. The course is demanding in terms of students' effort. Competition for post graduate seats in best clinical setups as well as other social and emotional factors influences students' mental health. Hence the students undergoing this course are predisposed to stress. Also there have been very few studies done on stress in homeopathy students and the effect of biofeedback hence the need for the study arises. The purpose of the study was to find out Stress in second year homeopathy students by using clinical parameters and perceived stress score.

METHODS

Setting and Participants

The present study was undertaken at Dr. D.Y. Patil Homeopathic Medical College and Research Centre, Pune , there were 50 students in second year Bachelor of Homeopathic Medicine and Surgery (BHMS) .As per their curriculum, the students have to appear for examinations. Therefore, they are likely to undergo stress in an academic year, beginning from entry level throughout the Homoeopathic course. The students of second year were invited to participate in this study.

Procedure

The design of this study was a cross-sectional survey .This study has approval of Institutional ethical committee of Dr D Y Patil Homoeopathic Medical College and the Dr. D. Y. Patil College of Physiotherapy, Pune.. A total of 50 Homeopathic undergraduate students were participants in this study. Perceived stress was assessed using the perceived stress scale (PSS 10).[15] On the basis of the PSS score ≥20, 35 participants were identified to be in the moderate + category of stress. 15 participants with PSS score <20 were found to be not stressed. The cut off value is taken on the basis of previous research work done on students from Pakistan. Clinical parameters includng pulse rate, respiratory rate, blood pressure and body mass index were assessed. The procedure was explained to all participants satisfying the inclusion criteria. Pre-assessment was done for vitals pulse rate, respiratory rate, blood pressure, height, weight and BMI. A Medicaid system EMG Biofeedback Biotrainer MBF 4000 device was used. The feedback was visual display with 17 bars (11 green on left, 1 yellow in middle, and 5 red at right) and digital value in microvolt. The display showed green bars with decrease and red with increase in tension of frontalis muscle respectively. The balance control was adjusted to yellow bar at the beginning of the session. The students were instructed to glow the green bars and not let the red bars to glow. The skin of forehead was cleaned with alcohol and conducting gel was applied over the electrode to reduce the skin resistance.For EMG biofeedback training the electrodes were attached over the forehead at frontalis muscle.[16] as mentioned in Significance of EMG Surface Electrode Placement Models and Headache Findings by Leonard G. Hudzinski Ph.D et al in 1988[24,17].Subjects were instructed to find a way to glow green bars in order to relax themselves. The feedback control was kept at maximum at the beginning of each treatment session to assist the patient in glowing the green bars with a minimal effort and gradually decreased when patient was able to glow. All Subjects received 10 sessions[25] of EMG biofeedback training for 10 minutes for 5 days/week for 2 weeks without disturbing their curriculum.

Data Analysis

The data was analyzed using SPSS 15.0 version. The mean scores of perceived stress were calculated.

RESULTS

Demographic characteristics and perceived stress score of the respondents

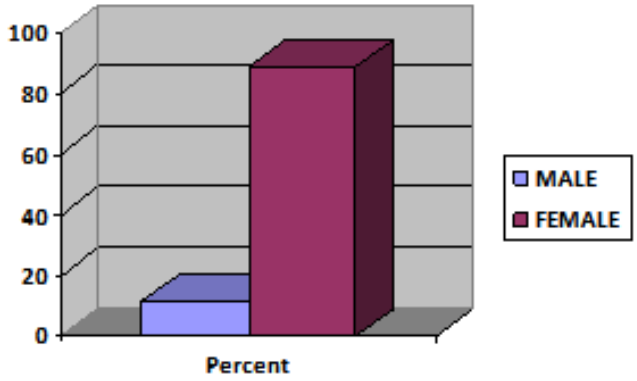
35 Homeopathy students participated in this study. The mean age and standard deviation (SD) of the study participants was found to be 19.71 and 0.926 respectively, with a range of 18-23 years. The majority of participants were female (88.57%). Mean PSS score in the study population of all 35 participants was seen to be 22.57 with S.D. value of 2.24

Table 1
Demographic Data

Gender	Percent
MALE	11.43
FEMALE	88.57

Table 2
Pre and Post mean score of PSS, EMG, PR, RR

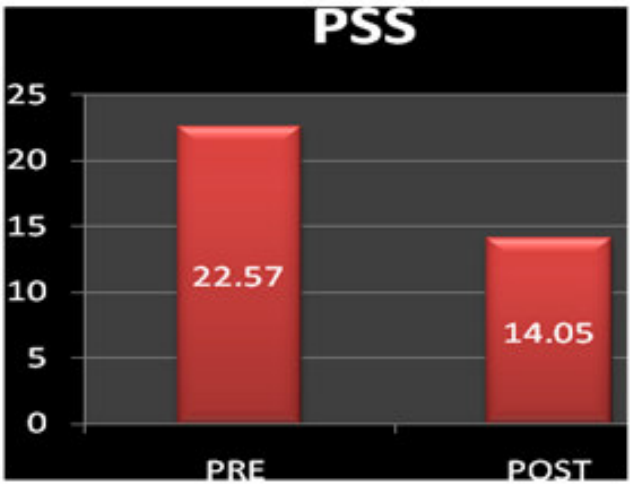
	PSS	EMG	PR	RR
MEAN-PRE	22.57	54.46	20.77	83
MEAN-POST	14.05	51.76	18.57	78.9



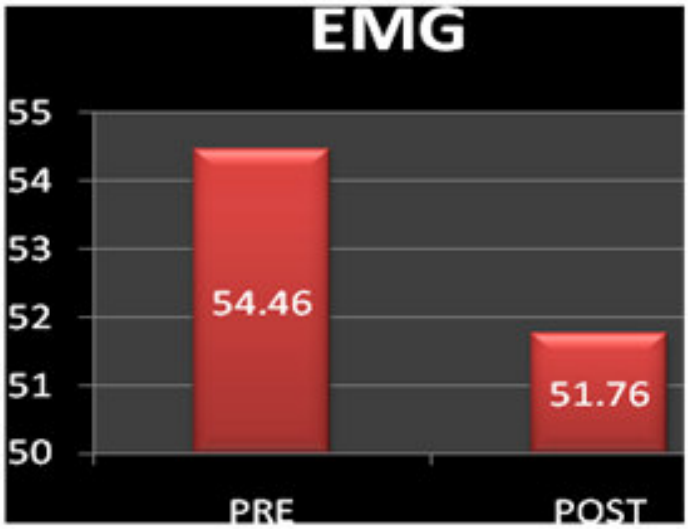
Graph 1
Mean of Male and Female Ratio

Table 3
Clinical Data and Perceived Stress Score

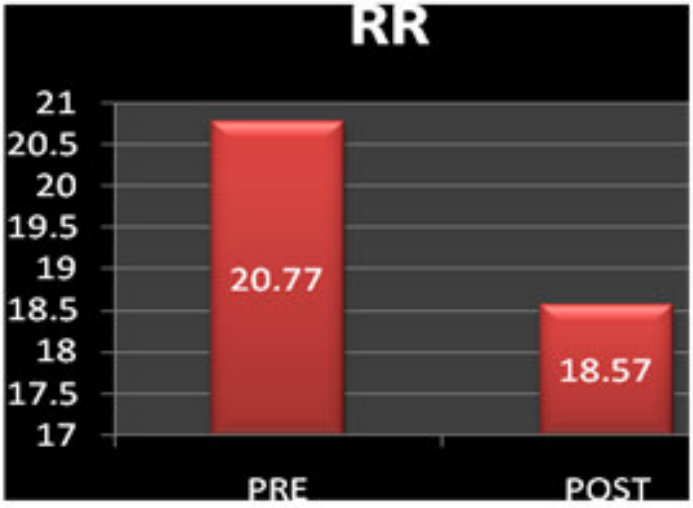
	Pulse	RR	BP (Systolic)	BP (Diastolic)	Weight (Kg.)	Height (cm)	BMI	PSS
Mean- PRE	83.00	20.77	116	72	56.56	158.40	22.50	22.57
Std Dev	10.53	4.04	9.03	8.12	13.02	9.10	4.88	2.24



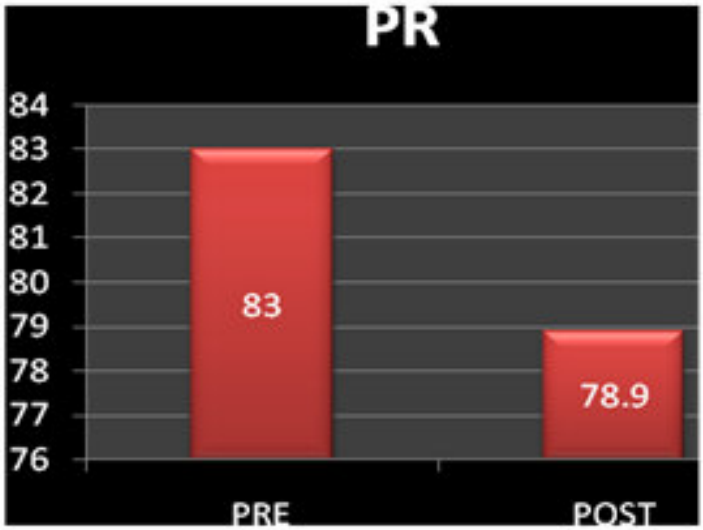
Graph 2
Comparison of Pre and Post values of PSS



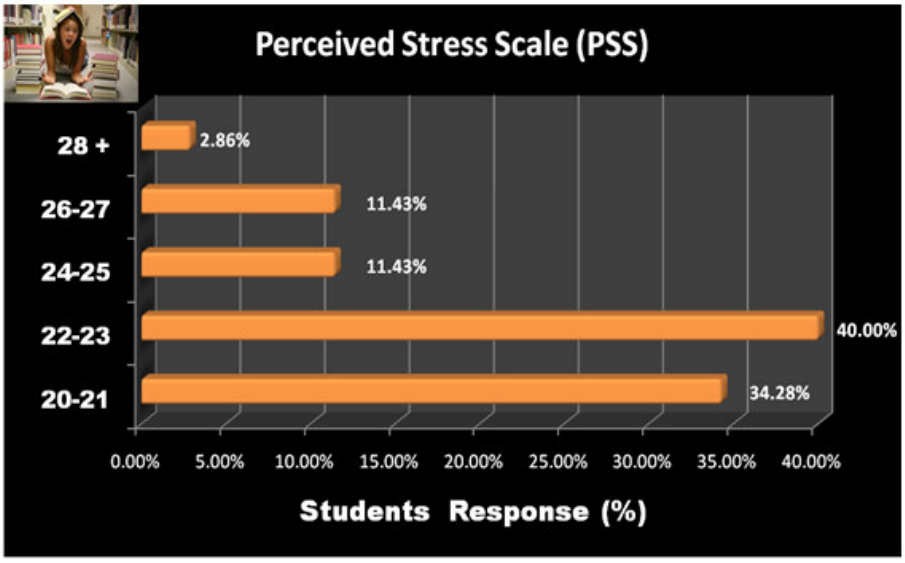
Graph 3
Comparison of Pre and Post values of EMG



Graph 4
Comparison of Pre and Post values of RR



Graph 5
Comparison of Pre and Post values of PR



Testing of Hypothesis

t-Test: Paired Two Sample for Means for PR		
	PR - Pre	***PR - Post***
Mean	**83**	**78.91428571**
Pearson Correlation	0.960606713	
t Stat	8.181846678	
P(T<=t) one-tail	7.60504E-10	
t Critical one-tail	1.690924198	
P(T<=t) two-tail	1.52101E-09	
t Critical two-tail	2.032244498	
This shows that there is a significant difference in the PR in Pre and Post application.		
t-Test: Paired Two Sample for Means for RR		
	RR-Pre	***RR - Post***
Mean	**20.7714286**	**18.5714286**
Pearson Correlation	0.991332	
t Stat	24.4940469	
P(T<=t) one-tail	1.7514E-23	
t Critical one-tail	1.6909242	
P(T<=t) two-tail	3.5027E-23	
t Critical two-tail	2.0322445	
This shows that there is a significant difference in the RR		
in Pre and Post application.		
t-Test: Paired Two Sample for Means for EMG		
	EMF Pre	***EMG Post***
Mean	**54.4685714**	**51.76571429**
Pearson Correlation	0.79872747	
t Stat	0.68732039	
P(T<=t) one-tail	0.24827144	
t Critical one-tail	1.6909242	
P(T<=t) two-tail	0.49654288	
t Critical two-tail	2.0322445	
This shows that there is NO significant difference in the		
EMG values in Pre and Post application.		

DISCUSSION

Stress during healthcare training is increasingly been reported in the published literature. Previous studies[23] have shown fairly high level of stress among the medical, dental, physiotherapy, homeopathy students. A N Supe (1998) [21], studied stress in medical students of Seth G.S. Medical College, Mumbai– showed that stress in medical students is common and process oriented. Academic Stress was attributed with Academic achievements; examinations and competition among students are greater perceived cause of stress in Medical students. Stress was found to be significantly more in students having more than 95% of marks at 12th standard, as compared to other health care undergraduate and postgraduate students.[5,7,14,] Homeopathy too being a professional field requires students to attain diverse proficiencies, including

acquisition of theoretical knowledge, clinical competencies and interpersonal skills. The aim of present study was to find out Stress in homeopathy students by using PSS-10, clinical parameters and EMG activity. In our study, we evaluated perceived stress among homeopathy students which may be of importance to both homeopathy teachers and a psychologist. To our knowledge such a detailed study has not been reported in homeopathy students in the country. Out of 50 students, 35 students were found to be with moderate plus category of stress score ≥ 20 of PSS-10. Thus, about 70% students were in range 20-34, a direct indication of stressful condition of students, this number shows high prevalence of stress among the homeopathy students. These findings are in accordance with the previous studies in other healthcare professions like medical and dental in various different countries. In addition, dominance of female(88.57%) students was noted in the present study with mean stress scores greater than that of boys, 73.86% students were found to have stress. In our study, homeopathy students reported a higher level of perceived stress, among second year students. Another study done by Yusoff et al, to find prevalence and sources of stress among Malaysia medical students found that academic-related problems were the major stressor among the students who were found to be stressed. Considering our sample population being homeopathic students, Homepathy course also must be posing higher demands on students academically because of which maybe there stress found in the many students. This is in contrary to the study by Khatri et al. done in 2008 [23] studied to find out the intensity of stress in undergraduate (BPT) physiotherapy students at KIPT, Belgaum and its corelation with their academic performance. Their study showed that under graduate Physiotherapy students at KIPT suffer from higher intensity of stress irrespective of their academic year in the institute and there is no correlation between academic performance in terms of their percentage of marks scored in previous academic year and stress. Consequently they proposed that their physiotherapy institute could take appropriate steps for prevention of undue stress and thereby stress related problems. Life of health care professional can be very stressful. Mild, moderate and high levels of stress and even burnout have been reported amongst medical students and healthcare professional from different countries.[17-19] A study from Pakistan University has reported that more than 90% of its students experienced stress during their course.[20] Similarly 73% students had perceived stress at Indian medical college during medical schooling.[21] In Thai medical school 61.4% of Students had reported incidence of stress as calculated by the Thai stress test.[22] These studies have used different instruments to assess stress. This limits the comparability among these studies. However, we chose the PSS 10 since this scale has been documented for its reliability and validity.[15] This is second clinical parameter to find out stress in Physiotherapy students. Respiration of the student is observed and counted. Normal Respiratory Rate in Adult is about 14 to 18 respiration per minute but wide variations occur in health and ill health. The main causes of fast breathing or tachypnoea are

- Recent exertion
- Pulmonary and Cardiac disorders causing Hypoxia
- Fever
- Cerebral disturbance
- Metabolic Acidosis
- Hysterical over breathing (Hyperventilation)
- Nervousness
- Stress and Anxiety

Obstruction in the airways gives rise to inspiratory noises. Obstruction in different parts of respiratory tract gives rise to recognizable variation of noisy breathing. The patterns of breathing may be characteristic of various diseases In our study after comparing the pre and post results of PR and RR it was found that there was a statistically significant improvement after intervention in the stress students. This means that the PR and RR reduced significantly post intervention thus reducing stress. 35 students with moderate plus stress level according to PSS-10 score were subjected to EMG Biofeedback training. Frontalis was chosen as it is a key muscle of expression, so whenever an individual is having stress, this muscle contracts, involuntarily. Thus, it is sensitive to detect stress by way of EMG activity at rest. It is easier for isolated pick-up, convenient for placement of surface electrodes. Significant reduction in stress levels as measured by PSS-10 and EMG activity of Frontalis muscle was noted following biofeedback training. Also every subject was listening to a soothing music (Alpha wave music) without a drum. These adjunct measures helped students to reduce fear and anxiety and contributed in reduction of stress, students learned to remain calm during those periods. EMG Biofeedback training showed significant improvement in post training PSS and EMG scores, thereby showing effectiveness of the training .Therefore proving that EMG Biofeedback training can be an effective technique to reduce stress and induce relaxation. Thus, the findings indicate that homeopathy students are also subjected to high levels of stress as found in previous studies on medical, dental and nursing students. This will help teachers and peers to recognise “Overstress” and allow application of various remedial measures at institutional levels. This can lead to increased productivity in terms of student performance and also institutional climate.

Limitations

In addition, the study took place only for second year students of college of homeopathy, which could differ in the generalizability to other institutions.

CONCLUSION

The pursuit of higher education is expected to be stressful and the course of Homeopathy being a professional field requires students to attain diverse proficiencies, including acquisition of theoretical knowledge, clinical competencies and interpersonal skills. Thus, the study proves that Homeopathy students are also subjected to high levels of stress (60.5%) as found in previous studies on medical, dental, nursing and physiotherapy students. This will help teachers and peers to recognise “Overstress” and allow

application of various remedial measures at institutional levels.

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CONFLICT OF INTEREST

Conflict of interest declared none.

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