



Effect of stress on exam going first year medical students of Tirunelveli

* Sujatha B and Subhalakshmi S

Department of physiology, Tirunelveli Medical College, Tirunelveli-627011, Tamilnadu, India.

*Associate professor; Corresponding email: sujathadharanikumar@gmail.com

ABSTRACT

Everybody experience anxiety from time to time. Examinations are a part of academic curriculum. These are often tiresome and extremely stressful for students at any level of education. Stressful feelings can alter the ability to think during examinations. Aims & Objectives: 1. To determine the prevalence of anxiety among first year medical students. 2. To find out sex predominance in anxiety among medical students. 3. To determine the association between anxiety and examinations among medical students. 4. To grade the anxiety level among them. A Cross sectional study was carried out among 150 first year medical students of Tirunelveli medical college who had spent more than 6 months in college. The students were assessed during the period with and without examinations. Anthropometric variables of students such as weight, height and BMI were assessed. Prevalence of anxiety was assessed using a structured validated questionnaire. The Hamilton Anxiety Scale (HAM-A) with a cut off score for various levels of anxiety was used. The students were subjected to the questionnaire both prior to and during the examination. All 150 students completed the questionnaire. The mean age of students was 18 years. Data were analyzed using paired "t" test. A high prevalence of anxiety ($p < 0.001$) among medical students was found. Female students were found to be more prone to anxiety than male students and there was significant association between the prevalence of anxiety and examination period. This study finds a significant number of students with high anxiety scores indicating emotional stress which results in poor academic performance.

Key words: Exam stress, medical students, Anthropometric variables, Hamilton Anxiety Scale.

INTRODUCTION

Everybody experience anxiety in their life time. Examinations are a part of every academic curricular activity. These are often tiresome and extremely stressful for students at any level of education. Stressful feelings can alter the ability to think during examinations [1]. A medical student in his or her life goes through several academic stresses. Mild stress may be beneficial in cognitive tasks and performance while persistently high stress may lead to anxiety and depression. Stress is defined as "a physical or psychological stimulus that can produce mental or physiological reactions that may lead to illness." [2]. Anxiety causes the physical effects like palpitations, muscle weakness, fatigue, dyspnea, abdominal pain and headaches. Anxiety also has some emotional effects over the individual who experiences it. The emotional effects include feeling of apprehension, trouble concentration, feeling tense and anticipating the worst, irritability, restlessness, nightmares, obsessions about sensations etc. Anxiety also has some of the cognitive symptoms like racing thoughts, going blank, difficulty in concentration, dreadful fear and difficulty in organizing thoughts. Some studies have found little or no evidence of emotional distress among medical students; others have reported significant distress. Gender differences in distress have been found as well. The practical significance of higher level of stress in females is unclear, given that women in general tend to report more psychological distress. The rationale of this study was to identify the level of stress among medical students so that strategies can be employed to reduce stress and at the same time their academic performance can be improved.

MATERIALS AND METHODS

This study was carried out in the department of physiology of Tirunelveli Medical College, Tirunelveli.

Study population: 150 first year medical students.

Study design: Cross sectional study.

Inclusion criteria: This study was carried out among 150 first year medical students of Tirunelveli Medical College who had completed more than 6 months in college.

Exclusion criteria: 1.Any self-reported physical illness 2.Students with any psychiatric disorders.

Ethical committee clearance was obtained for the study. The subjects were explained about the study and informed consent was obtained. We assessed the students during the period with and without examinations.

Anthropometric measurements: Anthropometric variables such as weight, height and BMI were assessed. Height and weight of the individual was measured with the help of height measuring scale and standard weighing machine. Body mass index was calculated using formula weight (kg)/Height (m²). As per revised WHO criteria for Indians, BMI from 18.5 to 22.9 is normal, BMI from 23 to 24.9 is overweight and above 25 is obese^[3].

Prevalence of anxiety was assessed using a structured validated questionnaire. The Hamilton Anxiety Scale(HAM-A) with a cut off score for various levels of anxiety was used. The students were subjected to the questionnaire both prior to and during the examination. All students completed the questionnaire. The mean age of the students was 18 years.

RESULTS AND ANALYSIS

Data were analyzed using paired “t” test. A high prevalence of anxiety ($p < 0.001$) and depression (< 0.001) among medical students was found. Female students were found to be more prone to anxiety than male students and there was significant association between the prevalence of anxiety and examination period.

TABLE 1: Comparison of mean score of Hamilton Anxiety rating scale of study participants before and during exams

Parameters	Mean score before	Mean score after	P value ($p < 0.05$)
Anxious mood	0.72	1.273	$< 0.0001^*$
Tension	0.96	1.22	0.0103*
Fear	0.52	0.85	$< 0.0001^*$
Insomnia	0.39	0.64	$< 0.0001^*$
Intellectual	0.59	0.78	0.0126*
Depressed mood	0.553	0.853	0.0003*
Somatic(muscular)	0.28	0.73	$< 0.0001^*$
Somatic(sensory)	0.23	0.65	$< 0.0001^*$
CVS symptoms	0.19	0.74	$< 0.0001^*$
Respiratory symptoms	0.2	0.7	$< 0.0001^*$
GI symptoms	0.25	0.82	$< 0.0001^*$
Genitourinary symptoms	0.14	0.69	$< 0.0001^*$
Autonomic symptoms	0.47	0.75	0.0002*
Behavioral interview	0.84	1.19	0.0006*

(All parameters showed statistical significance ($p < 0.05$))

TABLE 2: Comparison of mean score of anxiety and depression of Hamilton Anxiety rating scale of participants before and during exams

Parameters	Mean score before exam	Mean score during exam	P value	Statistical significance($p < 0.05$)
Anxious mood	0.72	1.273	0.0001*	Significant
Depressed mood	0.553	0.853	0.0003*	Significant

Fig.1.Comparison of anxiety and depression score before and during exams

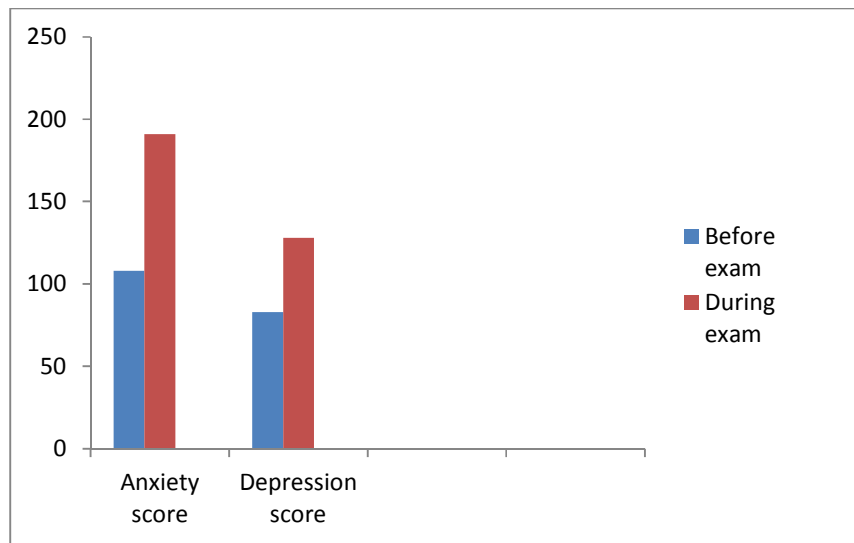


TABLE 3: Gender based Hamilton Anxiety rating score of study participants

Anxiety score	Before exams(n=150)		After exams(n=150)	
	Boys(n=76)	Girls(n=74)	Boys(n=76)	Girls(n=74)
Mild	74(49.33%)	70(46.66%)	40(26.66%)	29(19.33%)
Mild to moderate	2(1.33%)	3(2%)	26(17.33%)	31(20.66%)
Moderate to severe	0	1(0.66%)	10(6.66%)	14(9.33%)
Total	76(50.66%)	74(49.33%)	76(50.66%)	74(49.33%)

(Girls predominant in mild, moderate and severe anxiety both before and during the examination period compared to Boys)

DISCUSSION

Results of our study showed 45.99% of students with mild degree anxiety, 37.99% of students with moderate degree anxiety, and 15.99% of students with severe degree anxiety during examinations. Similar results were observed in a study conducted on examination anxiety among 50 school students in Coimbatore. The result showed that 40% of the students were with moderate examination anxiety, 36% of the students were with low anxiety and 24% with the severe examination anxiety. Girls were found to be more anxious than boys and there was significant ($p < 0.001$) association between anxiety and examination study period. These results correlate with the findings of NudratSohailet al(2013)^[4] and Mukesh Kumar et al(2014)^[5]. The results of this study showed that the perceived exam difficulty had effects on anxiety state during examination period. Medical curriculum is stressful and varied levels of stress have been reported amongst medical students suggested by Siddiqui *etal*^[6] and Lacy et al^[7]. In another study done by Reshugupta et al^[8], low levels of anxiety were seen during examination period which is contradictory to this study.

Academic achievement is more important than other factors in inducing stress in medical students. A number of studies found no difference in anxiety among male and female medical students at the start of medical education but greater increases in stress was detected among female medical students through the course of training^{[9][10][11]}. This finding suggests that the differences observed by gender in several studies may have other reasons and may require further investigations. However, few studies reported on differences in anxiety by gender^[12]. Various studies have shown that constant pressure and existing untreated emotional problems are associated with various negative complications including development of adulthood anxiety, depression and behavioral disorders^{[13][14][15][16]}. These studies suggest that the current educational process may have deleterious effect on student's mental health with high frequency of depression, anxiety and stress among medical students.

CONCLUSION

To conclude, this study finds a significant number of first year medical students with high anxiety scores indicating emotional stress which may result in poor academic performance. Awareness must be created among medical students about the negative consequences of stress and an efficient relaxation therapy as well as counseling services can be provided to stressful students to enhance their skill and academic performance. Education system needs to be modified which cause less stress among medical students, need to develop and provide better support for struggling students for their welfare and to safeguard our future generation.

REFERENCES

- [1] Senthilkavitha R, Sasikala G .Effectiveness of guided imagery in reducing students examination anxiety. *Nightingale Nursing Times*, 2011;7(6);57-59.
- [2] Singh R, Goyal M, Tiwari S, Ghildiyala, Nattu S, Das S, Effect of Examination stress on mood, performance and cortisol levels in medical students. *Indian J Physiol Pharmacol* 2012;56(1):48-55.
- [3] Mokdad AH, Ford ES, Bowman BA, Dietz WH, Vinicor F, Bales VS, Marks JS: Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *JAMA* 2003, 289:76-79
- [4] Nudrat Sohail, Stress and Academic Performance Among Medical Students, *Journal of the college of Physicians and Surgeons Pakistan* 2013, vol 23(1);67-71
- [5] Mukesh Kumar, Effect of stress on academic performance in medical students, *Indian J Physiol Pharmacol* 2014;58(1);81-86.
- [6] Siddiqui Fr, Sabih F, Danish Kf. Stress among medical student. *Professional Med J* 2009;16;395-399
- [7] Lacy K, Zaharia Md, Griffiths J, Ravndran AV, Merali Z, anisman H. A prospective study of neuroendocrine and immune alterations associated with the stress of an oral academic examination among graduate students. *Psychoneuroendocrinology*, 2000;25;339-356.
- [8] Reshu Gupta, Ankurpunia , Shikamathur, RCGupta, Abhishek Kawatra, KK Verma, assessment of psychological stress in first year students of a private medical college, *IJBAMR*; mar 2014; vol 3; P.437-443.
- [9] Vitaliano PP, Maiuro RD, Russo J, Mitchell ES, Medical student distress; a longitudinal study. *J Nerv Ment Dis.* 1989;177;70-76.
- [10] Gender differences in medical student distress; contributions of prior socialization and current role related stress. *Soc Sci Med.* 1990;30;777-87.
- [11] Lloyd C, Gartrell NK. Sex differences in medical student mental health. *Am J Psychiatry.* 1981;138;1346-51.
- [12] Lloyd, Gartrell NK. Psychiatric symptoms in medical students. *Compr Psychiatry* 1984;25;552-65.
- [13] Eller T, Aluoja A, Vasar V, Veldi M. Symptoms of anxiety and depression in Estonian medical students with sleep problems. *Depression and Anxiety* 2006;23(4):250-256.
- [14] Dahlin M, Joneborg N, Runeson B. Stress depression among medical students; a cross sectional study. *Med Educ* 2005;39:594-604.
- [15] Zaid Z A, Chan S C, Ho J J. Emotional disorders among medical students in a Malaysian private medical school. *Singapore Med J* 2007;48(10);895.
- [16] Sources and predictors of stress among medical students in Jordan, *BEPLS* vol (6) ;2015; 113-121.