



RESEARCH ARTICLE

ASSESSMENT OF DEPRESSION, ANXIETY AND STRESS AMONG UNDERGRADUATE MEDICAL STUDENTS IN RANGARAYA MEDICAL COLLEGE, KAKINADA, ANDHRA PRADESH

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ABSTRACT

**Background:** Medical students and practicing physicians, in comparison with the general population and that of other professions, are exposed to academic and professional stress and therefore are vulnerable to psychosocial health problems and certain specific dysfunctions that may compromise their physical, mental, and social health.

**Objectives:** To determine the prevalence of depression, anxiety and stress among the undergraduate medical students.

**Methods:** A cross-sectional questionnaire based study was conducted among undergraduate second and final year part I medical students from Rangaraya Medical College, Kakinada, Andhra Pradesh, India using Depression Anxiety and Stress Scale (DASS) 21 in August 2012.

**Results:** Data analysis was done on Statistical Package for the Social Sciences SPSS version 16. A total of 330 students participated in the study. Our study found that the overall prevalence of depression was 45.4%, anxiety was 64.9% and stress was 40.0% among all participated medical students.

**Conclusion:** The higher level of psychiatric morbidity depression, anxiety and stress among undergraduate medical students warrants needs for strategic plans to alleviate depression, anxiety and the stressors right from the time they join medical school and has to be continued till they finish the course.

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INTRODUCTION

Mental health is regarded as an essential component of health by the World Health Organization. A person could be termed depressed if he/she shows a variable combination of low mood; loss of interest or pleasure; feelings of guilt; low self-esteem; disturbed appetite; disturbed sleep; or disturbed concentration (Marcus, 2012). The World Health Organisation (WHO) has predicted that by 2030, depression will account for the highest level of disability accorded any physical or mental disorder in the world (WHO, 2008) (Manicavasagar, 2012). World Health Day 2017 (Depression: Let's Talk), celebrated on 7 April, aims to mobilize action on depression. The American Psychological Association characterizes anxiety and

stress (Anxiety, 2014 and Henning, 1992), by feelings of tension, worried thoughts, and physical changes. Anxiety is more related to autonomic arousal, skeletal muscle tension, and situational aspects, whereas stress is more related to irritability, impatience, and difficulty in relaxing. Medical students represent a highly educated population under significant pressures. Undergraduate medical education comprises strenuous study and training for 5–6 years. They encounter multiple emotions during the transformation from insecure student to young knowledgeable physician. The demands of the learning and training might adversely affect the student's physical and mental health. Studies suggest that mental health worsens after students begin medical school and remains poor throughout training. Students may become depressed at any point in medical school, but Gartrell has found that the period of greatest distress occurs during the third and fourth years, when students rotate through the hospitals and clinics. It has been reported that medical students consequently suffer from

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depression, anxiety, and stress (Henning, 1998; Roberts, 2001; Dyrbye, 2007). It is not just the undergraduate study period, which brings about these changes; it may continue later in internship, postgraduate study, and in physicians' practical life, and it may reach burnout level. The curricular objectives are dynamic due to expanding knowledge and evolving therapies. During this period, medical students should acquire adequate professional knowledge, skill, and attitudes in order to prepare themselves to deal with life-long professional challenges independently. Many medical students struggle with their own capacity to meet the demands of medical curriculum (Yusoff, 2013). Healthy students can develop depression and stress after commencing their medical education (Yusoff *et al*, 2013). The competition for getting postgraduate training and job opportunities could be an additional trigger for psychological illness. Excessive amounts of stress in medical training predisposes students for difficulties in solving interpersonal conflicts, sleeping disorders, decreased attention, reduced concentration, temptation to cheat on exams, depression, loss of objectivity, increased incidence of errors, and improper behavior such as negligence (Khan, 2015). Furthermore, stress in medical students can break the stability of the student's health and result in illness. This can cause headaches, gastrointestinal disorders, coronary heart disease, impaired judgments, absenteeism, self-medication, and the consumption of drugs and alcohol (O'Rourke, 2010). Psychological factors have always been considered for their role on risk taking behaviors such as substance abuse, risky driving and smoking. (Shek, 2005; Safiri *et al.*, 2013; Downey *et al.*, 1996; Black *et al.*, 1999) Further, burnout and chronic stress have also been found to correlate strongly with professional misconduct or reduced altruistic values among physicians (Dyrbye, 2010). At worst, depression can lead to self-inflicted injury and suicide. It has also been reported that physicians tend to have a higher suicidal rate than the general population (Schernhammer, 2004). Long-standing evidence suggests that those who choose medicine for a career are at greater risk for suicide: the suicide rate among physicians in the United States has been described as nearly twice that seen among white American men (Rose, 1973). Unfortunately, medical students experience suicidal thoughts and ideas because of depression, anxiety, and other reasons (Schwenk, 2010). This led to design the present study to explore mental health status in our students.

## MATERIALS AND METHODS

It was a cross-sectional study conducted in August 2012. Three hundred and thirty medical students of second and final year part I from Rangaya Medical College, Kakinada, Andhra Pradesh participated in the study. The inclusion of the subjects was voluntary. The students were given printed written information and procedure of consent along with the DASS-21 questionnaire. The responses were sought in a self-reported, anonymous fashion. Results were analyzed using SPSS 16, and adequate statistical significant tests were done. P value of <0.05 was considered statistically significant. Depression, Anxiety, and Stress Scale-21 (DASS-21) (Lovibond, 1995) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress, which consists of 21 items comprising three scales of 7 items each. Items refer to over the past week; and scores range from 0, "Did not apply to me at all," to 3, "Applied to me very much, or most of the time." DASS-21 will need to be multiplied by 2 to calculate the final score. The DASS-21 questionnaire categorizes each condition into five subcategories, namely,

normal, mild, moderate, severe, and extremely severe, as given in Table 1.

**Table 1. DASS 21 scale**

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

The Depression scale measures hopelessness, low self-esteem, and low positive affect. The Anxiety scale assesses autonomic arousal, physiological hyper arousal, and the subjective feeling of fear. The Stress scale items measure tension, agitation, and negative affect. The scales are considered to approximate facets of diagnostic categories, as follows: Depression scale for mood disorders, Anxiety scale for panic disorder, and Stress scale for generalized anxiety disorder.

## RESULTS

A total of 330 students gave responses.

**Table 2. Levels of Depression (n=330)**

	Depression (n)	Percentage (%)
Normal	180	54.6%
Mild	56	17.0%
Moderate	72	21.8%
Severe	16	4.8%
Extremely severe	6	1.8%
Total	330	100%

Depression among the students is in the range of 1.8-21.8%. More than one third (38.8%) are having mild to moderate form of depression whereas 6.6% are suffering from severe to extremely severe forms of depression. Nearly half (45.4%) of the students are suffering from one or other form of depression.

**Table 3. Levels of Anxiety (n=330)**

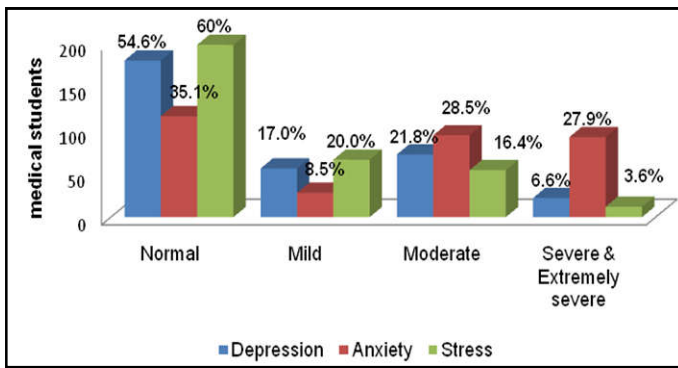
	Anxiety (n)	Percentage (%)
Normal	116	35.1%
Mild	28	8.5%
Moderate	94	28.5%
Severe	52	15.8%
Extremely severe	40	12.1%
Total	330	100%

Anxiety among students is in the range of 8.5-28.5%. More than 1/4<sup>th</sup> (27.9%) of students are suffering from severe to extremely severe form of anxiety. About 2/3<sup>rd</sup> (64.9%) of the students are having anxiety.

**Table 3. Levels of Stress (n=330)**

	Stress (n)	Percentage (%)
Normal	198	60.0%
Mild	66	20.0%
Moderate	54	16.4%
Severe	12	3.6%
Extremely severe	0	0%
Total	330	100%

Mild to severe form of stress was experienced by 40% of the medical students.



**Fig. 1. Depression, Anxiety and Stress among Medical students (n=330)**

Depression, Anxiety and stress was found to be 40-64.8% among the study subjects. Mean scores for depression, anxiety and stress were found to be  $9.72 \pm 6.914$ ,  $10.95 \pm 6.856$  and  $13.22 \pm 6.617$  respectively. The association of this psychological morbidities was found to be significant ( $\chi^2=139.5$ ,  $p<0.05$ ) (Fig.1).

**Table 4. Correlation matrix between severities of depression, anxiety, and stress among medical students (n =330)**

	Depression		Anxiety		Stress	
	r	p-value	r	p-value	r	p-value
Depression	-	-	0.430	<0.001	0.590	<0.001
Anxiety	0.430	<0.001	-	-	0.626	<0.001
Stress	0.590	<0.001	0.626	<0.001	-	-

Correlation between depression, anxiety and stress was found to be statistically significant ( $p<0.05$ ) among medical students.

## DISCUSSION

Medical students are more prone to depression than their nonmedical peers. Many studies have shown that the prevalence of psychological distress among medical students during medical training is higher than that in general population. Researchers recently surveyed first- and second-year medical students at the University of California, San Francisco (UCSF), and found that about one fourth were depressed (Givens, 2002). The prevalence increases disproportionately over the course of medical school (Rosal, 1997). A study among undergraduate medical students in the United States of America found that 23% had clinical depression and 57% were under psychological stress. A study done by Kunwar *et al.* (Kunwar, 2016) in Nepal found that the overall prevalence of depression was 29.9%, anxiety was 41.1% and stress was 27% among all participated medical students. Another study conducted by Basnet *et al.* (Basnet, 2012) also found that the overall prevalence of depression among the students was 29.78 percent. Similar findings were observed by Isra Ahmad *et al.* (Isra Ahmed, 2009) among Dubai medical college students. Of medical students, 28.6% showed depression and 28.7% showed anxiety. Of medical staff, 7.8% showed depression and 2.2% of them showed anxiety. There was a significant correlation between depression and anxiety among medical students ( $r = 0.6$ ). In the present study depression, anxiety and stress were 45.4%, 64.9% and 40.0% respectively. And also there was a significant ( $r=0.430-0.626$ ) correlation between depression, anxiety and stress.

Yusoff *et al.* (Yusoff, 2014) in their study 'The impact of medical education on psychological health of students' found that the prevalence of unfavourable stress during medical training ranged between 11.8% and 19.9%. The prevalence of anxiety during medical training ranged between 41.1% and 56.7%. The prevalence of depression during medical training ranged between 12% and 30%. Mean scores of stress and depression before (Time 0) and during medical training (Time 1-4) were significantly different ( $p < 0.001$ ). Sherina *et al.* (2004) in their study among under graduate medical students found that the Prevalence of psychological stress was 41.9% and There was a significant association between psychological stress and depression among the respondents ( $\chi^2=4.636$ ,  $df=1$ ,  $p<0.05$ ). In the present study Mean scores for depression, anxiety and stress were found to be  $9.72 \pm 6.914$ ,  $10.95 \pm 6.856$  and  $13.22 \pm 6.617$  respectively. The association of this psychological morbidities was found to be significant ( $\chi^2=139.5$ ,  $p<0.05$ ).

Bayram *et al.* (Bayram, 2008) in their study, Depression, anxiety and stress levels of moderate severity or above were found in 27.1, 47.1 and 27% of respondents, respectively. According to Dyrbye *et al.* (Dyrbye, 2007) study, Nearly half of medical students reported burnout (47%) and depressive symptoms (49%). A recent study among German medical students at international universities displayed the significantly higher risk of depression symptoms being 2.4 times higher than the average population. 23.5% of these German medical students showed clinically relevant depressive symptoms (Kamiar, 2016). A meta-analysis of the American JAMA magazine suggested depressive symptoms in 21% to 43% of all medical students (Douglas, 2015).

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## Limitations

Firstly, the data on depression, anxiety or stress among the study cohort before the commencement of medical education is not available. Secondly, the study tool depends upon self-reported measures.

## Conclusion

The present study confirms the high prevalence of depression, anxiety, and stress among medical students. In the majority of instances, the examinations, course burden, and hectic schedule was regarded as the reason for their depression, anxiety, or stress. Since academic stress proved to be one of the major factors, measures to make the academic curriculum more student-friendly are suggested. There is much emphasis on problem-based learning. Regular feedback from faculty as well as students regarding the academics should be encouraged and considered. It is advisable to manage study time and include healthy nutrition during the whole day. In addition, daily exercises can help to reduce the stress. The student mentorship program to address student's concerns has to be initiated. It is recommended to ensure the implementation of national intervention programmes which promote mental health.

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