



## A STUDY ON STRESS AND COMORBID CONDITIONS AMONG UNDERGRADUATE MEDICAL STUDENTS USING DEPRESSION ANXIETY STRESS SCALES(DASS)

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**KEYWORDS :** Stress, Depression, Anxiety, Undergraduate, Medical Students**INTRODUCTION**

Stress is any change in the environment that requires your body to react and adjust in response. The body reacts to these changes with physical, mental, and emotional responses. Stress is a normal part of life. It can be positive (eustress) or negative (distress). Distress is when a person faces continuous challenges without relief or relaxation between challenges. As a result, the person becomes overworked and stress-related tension builds.

Nowadays, Stress and comorbid conditions among undergraduate medical students is increasing at an alarming rate and has become a point of concern as it has adverse effects on health. The major reason for stress among medical students are vast syllabus, poor time management, recurrent examinations with short preparation intervals in between etc. There are many scientifically designed scales like DASS (Depression Anxiety Stress Scales) used to measure stress and comorbid conditions among adolescents and adults. Beyond their relevance in educational contexts, stress-induced alterations in learning and memory are also thought to contribute to stress-related mental disorders, such as major depressive disorder or post-traumatic stress disorder. (1)

On a stressful encounter, the autonomic nervous system (left) is activated within seconds to release catecholamines (e.g., noradrenaline) from the adrenal medulla and the locus coeruleus in the brain stem. Catecholamines are implicated in the 'fight-or-flight' response, but they also have profound effects on attention, working memory and long-term memory. Somewhat slower, the hypothalamus-pituitary-adrenal axis is activated, releasing corticotropin-releasing hormone (CRH) from the hypothalamus which stimulates the anterior pituitary to secrete adrenocorticotropic hormone (ACTH). ACTH in turn causes the adrenal cortex to produce cortisol and release it into the blood stream. Cortisol reaches peak level concentrations ~20–30 min after stress onset and readily enters the brain to affect cognition and behaviour. Cortisol feedback to the pituitary, hypothalamus and other brain areas (e.g., the hippocampus) prevents the system from overshooting. (2)

The common effects of stress on our body are headache, muscle tension/pain, chest pain, fatigue, change in sex drive, stomach upset, sleep problems; on our mood are anxiety, restlessness, lack of motivation/focus, feeling overwhelmed, irritability/anger, sadness/depression etc; on our behaviour are overeating/undereating, angry outbursts, drug/alcohol misuse, tobacco use, social withdrawal, exercising less often etc. Stress can also cause hypertension through repeated blood pressure elevations as well as by stimulation of the nervous system to produce large amounts of vasoconstricting hormones that increase blood pressure. Studies show that stress does not directly cause hypertension, but can have an effect on its development. (3)

One must find active and effective ways of stress management as it provides health benefits. And be sure to get plenty of sleep and eat a healthy, balanced diet. Avoid tobacco use, excess caffeine and alcohol, and the use of illegal substances. Inactive ways to manage stress — such as watching television, surfing the internet or playing video games — may seem relaxing, but they may increase your stress over the long term.

**OBJECTIVE:** To measure stress levels and comorbid conditions among undergraduate medical students using DASS (Depression

Anxiety Stress Scales), to evaluate the outcome of stress and their associate disorder in academic performance & also to evaluate their associated outcome of stress with their life style changes.

**Methodology**

**Study Area & Study Design:** The study was conducted at Sri Ramachandra University from April 2019 to September 2019.

This study is done according to the criteria of cross-sectional type with self-administered questionnaire survey was conducted on a sample of 224 medical students. The required sample size was estimated using single population proportion formula with 5% margin error with 95% CI and 37.3% of the prevalence by stress was found from the available article among medical students (IJCMPH)(1). The correction formula was used because the total number of undergraduate students in the medical college is less than 10,000.

Data collection was done using Depression, Anxiety and Stress Score questionnaire with 21 items (DASS 21) with background information and their outcome of stress event was taken into consideration. The students were asked to respond genuinely to the study variables including the average score of the cumulative grade points of Depression, Anxiety and Stress score. There were 10% of study sample was initially chosen from the paramedical undergraduate students where pre-tested questionnaire was administered to know the logistic and feasibility of study on Pilot basis and these students were not taken into account for analysis in the study.

**DASS 21**

It was used to identify sources of stress among any individuals and it measures severity of depression, anxiety and stress caused by these stressors. Respondents were asked to rate the severity of depression, anxiety and stress with four alternatives as follows:

- 0 – Did not apply to me at all
- 1 – Applied to me to some degree/some of the time
- 1 – Applied to me to a considerable degree/a good part of time
- 2 – Applied to me very much/most of the time

Ethical approval was obtained from Institutional Ethical Committee of SRMC. Written informed consent was taken from the student during data collection and the confidentiality was maintained throughout the study.

**Data Analysis:** After checking the collected data for completeness, the data was entered in excel format and exported in SPSS version 13.00 for analysis and Epi info 3.1 v was downloaded from the website and analysed for any trend difference and 95% CI. Test of significance was used to measure the association between independent variables. Statistical significance was accepted at  $P < 0.05$ .

**RESULT**

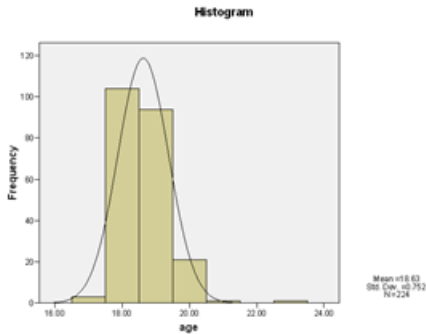
Under graduate medical students contributed nearly around 169 (71%) individuals.

Among the study participants, the majority were females which contributed around 146 individuals (65.17%) and the remaining 78 individuals (34.8%) were males. The age group of the study participants ranged from 17 to 23 years. The higher number of participants was reported among the age group of 18 and 19 years

which contributed to 46% and 42%. The remaining were from the other age groups. The mean age group of the study is around 18.6 years and standard deviation is 0.752 (18.6 +/- 0.752).

In this study, the majority were found to have English as their first language in school which is contributing around 217 individuals (96.9%). The remaining had other languages as their first language in school which contributed 7 individuals (3.1%). According to table 1, the results are well explained below.

The distribution of age follows the graph below:



**GENDER V/S DEPRESSION :** Females were found to be more depressed than men. 20.5 % males and 32.1 % females were found to be mild to moderately depressed. This difference in observation was found to be statistically significant.

**GENDER V/S ANXIETY:** Females were found to be more anxious than men with 41.8 % females (out of the 146 female participants) & 24.4 % men out of the 78 male individuals. This difference in observation was found to be statistically significant.

**GENDER V/S STRESS:** Females were found to be more stressed than males with 4.1 % females (out of the 146 female participants) & 3.8 % men out of the 78 male individuals. But this difference in observation was found to be statistically insignificant.

**FIRST LANGUAGE V/S DEPRESSION:** An overall of around 28.1% participants who had English as their first language and around 28.6% participants who had other languages as their first language were found to fall under categories of 'mild' and 'moderately' depressed; with equal number of participants (14.3% equivalent to 1 individual each) who studied 'other languages' fall under mild and moderately depressed categories. But this difference in observation was found to be statistically insignificant.

**FIRST LANGUAGE V/S ANXIETY:** An overall of 35.9% who had English as their first language were found to be more anxious than students who had other languages as their first language which accounts for 28.6% (which is equivalent to 2 individuals). Here, the difference in observation was found to be statistically insignificant.

**FIRST LANGUAGE V/S STRESS:** 9 (4.1%) out of the 217 individuals who opted English as first language were found to be mildly stressed when compared to others who had other languages as their first language. The latter had stress under normal levels. The difference in observation was found to be statistically insignificant.

**SLEEP DURATION V/S DEPRESSION:** Out of the 224 participants, 82 individuals (equivalent to around 36.6%) slept for less than 6 hours a day and were found to be depressed when compared to the 128 individuals (which constitutes 57.1 %) slept for more than 6 hours a day. Among them, an overall of 25 individuals (which constitutes 19.6 %) were found to fall under mild and moderately depressed categories. The difference in observation was found to be statistically significant.

**SLEEP DURATION V/S ANXIETY:** It has been found in this study that those participants who slept for less than 6 hours a day have got mild form of anxiety, 43 individuals (52.4%). The difference in observation was found to be statistically significant.

**SLEEP DURATION V/S STRESS:** The difference of observation among stressors and hours of sleep is more or less normal among the

study participants. Hence this difference of observation was found statistically not significant where  $P > 0.05$ .

**Table 1- Association Between Depression/anxiety/stress And Sociodemographic Variable Among Ug Students. bivariate Logistic Regression Analysis N=224**

SOCIO-DEMOGRAPHIC VARIABLES	Total N(%)	YES(n=) N%	NO (n=) N%	*OR	**COR(95% CI)
<b>DEPRESSION</b>					
AGE					
17-19	201 (89.7%)	16(20.3%)	62(79.5%)	0.217	0.43(0.11-1.69)
>20	23(9.8%)	47(31.8%)	99(67.8%)	0	0
SEX					
Males	78(34.8%)	16(20.3%)	62(79.5%)	0.543	0.18(0.66-1.83)
Females	146(65.2%)	47(32.1%)	99(67.8%)		
FIRST LANGUAGE					
English	217(96.9%)	61(19.1%)	156(71.9%)	0.96	0.65(0.15-2.78)
Others	7(3.1%)	2(28.6%)	5(71.4%)		

SOCIO-DEMOGRAPHIC VARIABLES	Total N(%)	YES(n=) N%	NO (n=) N%	*OR	**COR(95% CI)
<b>ANXIETY</b>					
AGE					
17-19	209(89.7%)	60(42.5%)	141(48%)	1.5	1.02(0.66-1.83)
>20	23(9.8%)	5(27.7%)	18(62.9%)		
SEX					
Males	78(34.8%)	59(75.6%)	19(57%)	2.08	2.88(1.03-8.05)
Females	146(65.2%)	85(58.6%)			
FIRST LANGUAGE					
English	217(96.9%)	78(36%)	139(64.1%)	1.402	1.10(0.66-1.83)
Others	7(3.1%)	2(28.6%)	5(71.4%)		

Sociodemographic Variables	Total N%	Yes(n=) N%	NO(n=) N%	*OR	**COR (95%CI)
<b>STRESS</b>					
Age					
17-19 YRS	201	20	181	1.16	0.93
>20 YRS	23(9.8)	2	21		(0.40-2.17)
Sex					
Male	78(34.8)	3(3.8)	75(96.2)	0.95	0.65
Female	146(65.2)	6(4.1)	140(95.9)		(0.15-2.78)
First Language					
English	217(96.9)	9(4.1)	208(95.8)	0	0
Others	7(3.1)	0(0)	7(100%)		

\*OR=ODDS Ratio

\*\*COR=Corrected ODDS ratio after BIVARIATE LOGICAL REGRESSION ANALYSIS

**Diet Pattern V/s Depression:** It has been found more number of individuals skip their regular diet -26 individuals (20.6%) have mild form of depression compared to others=11 individuals(13.4%). It has also been found that those who have normal depression, 14 individuals (10.8%) are also in habit of skipping meals but this difference of observation was found to be statistically insignificant.

**Diet Pattern V/s Anxiety:** It has also found more number of individuals are falling under moderate level of anxiety contributing 35 individuals (26.9 %) who skip their meals regularly. Compared to others it is also found severe level of anxiety has got increase in number of individuals with skipping meals. This difference of observation was found to be statistically insignificant.

**Diet Pattern And Stress:** It has been found that more number of participants who are in habit of skipping diet have stress, constituted by 6 individuals (4.6%) compared to 3 individuals (3.7%) who don't skip their meals. This difference of observation was found to be statistically insignificant.

**Outcome Of Dass With Relation To Academic Concentration And Internal Assessment:** Among depressed ones it was associated with lesser concentration in academic activity and among the remaining variable there was no relationship between academic performance and their concentration in academic activity in relation to depression, anxiety and stress.

**DISCUSSION**

A high prevalence of depression ,anxiety and stress among medical students indeed needs immediate medical attention to the individual in order to have implication on their academic performance and the quality of life.

The overall prevalence of depression was found to be 28.1 %, anxiety - 31.2% and stress 4.01%.In this study, due prevalence of anxiety contributed more compared to depression and stress disorder among the study participants which is almost lower to the prevalence reported by Abdulghani in Saudi Arabia(57%) and by Saiparish in Thailand (61.4%) (4).However the result of the present study is much lower compared to other studies that these must be possible reasons for due variability in their depression (4,5,6,7,8),anxiety and stress disorder but there also a variability of difference in the curriculum, facilities in college and availability of teaching and experience and qualification of instructor/teacher and the quality of care may vary from individual to individual for the relevance of stress disorder.

The amount of exposure to the complexity of environment vary from each student despite the fact that food and dormitory services are provided to the students by the University grand norms and basic necessary arrangements are made to them. Even though with adequate supply of diet the students tend to skip their meals during the academic session and they become more stressed during examination and have skip of meal and sleep and such habits during this period.(8)

In the present study, there was a significant association between anxiety and student academic achievement(9)But with negative correlation their level of stress increases and academic performance decreases. Medical studies are overloaded with a tremendous information, especially, in the preclinical and paraclinical encounters. The overload of information creates a feeling of distress and disappointment because they do not handle all topics covered and therefore are not successful during their examination period(9,10).The excessive amount of stress in medical training 9predisposes students to have difficulties in solving problem and reduced concentration and finally depression(10).Furthermore, stress can land up with break in the mental stability with impaired judgements and absenteeism from class lesson. In effect all those things compromise academic achievements of students.

**CONCLUSION:**

Hence the study concluded that undergraduate students are prone for stress full events were there should be a uniform comprehensive program to be adopted for coping management of these individuals.

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