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Original Research Article

Comparative Analysis of the Severity of Stress among Medical, Dental and Paramedical Students from a Private Health Sciences University in Northern India

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Abstract

Background: Stress is an external constraint which upsets individual both mentally and physically**.** Studies reveal that stress is evident more in medical stream more as compared to other faculties**.**

Objective: To assess severity of depression among medical paramedical and dental students in northern India.

Material and Methods: It was a Cross-sectional, survey. The study was conducted on total 354 students of 18-22 years.Zung's scale was used to assess the depression.Questionnaire having 20 items was given responses were collected. Responses were 4-point Likert-type, ranging from "A little of the time", "Some of the time", "Good part of the time", "Most of time". Self- rating Depression Scale (SDS) index was calculated to assess mild, moderate, severe depression. Height, weight, pulse rate and blood pressure were recorded two months before and during academic examination.Mean difference and p value was calculated. Statistical analysis was done using excel (Excel V.16.29, 2019).

Results: It was shown that 12.1% of male medical students and 23.3% of female medical students and 12.5% males and 12.5 % of females from Paramedical and 12.4% males and 12.5 % females from dental suffered from moderate depression.7.1% of males and 15.5% of females medical students and 7% of males and 14.3 % of females from Paramedical and 9.1 % boys and 9.5% girls from dental had severe marked depression. P value calculated for mean of medical and paramedical group was 0.03 and mean of medical and dental course was 0.04 which was statistically significant.

Conclusions: Our study showed that 7.1% males and 15.5% female medical students were having severe depression.Females were more affected with severe and extreme depression than boys in MBBS course. Medical students were more with depression as compared to paramedical and dental students. This indicates academic stress due to examination is prevalent in medical stream or higher education fields as compared to paramedical and dental streams and is potential cause for physical health effects.

Key Words: Academic, Stress, Severity, Depression

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Introduction

Stress can be defined as an uncomfortable emotional experience that is accompanied by predictable biochemical, physiological and behavioral changes.[1] The psychological and physical state occurs when the capabilities of the individual are not sufficient to cope with the requirements of their current situation.[2]Graduate medical studies are considered one of the most stressful professional courses.[3]Medical students exposed to work overload in such a competitive environment with constant pressure of examination and assessment brings various changes in their daily habits such as lack of sleep, irregular diet, and substance abuse in the form of excessive consumption of alcohol and smoking in order to cope with the academic burden and stress.[4]Higher levels of stress may have a negative impact on the students learning ability. Excessive stress may result in mental and physical problems and may diminish a student's sense of worth and might affect his/her academic achievement.[5,6] High expectations from self and family members, along with the training for assuming responsibility for the well-being of the patient, make a medical student prone to experience stress which may become excessive.[7,8]and can appear as health ill effects.

Material and Methods

The prospective cross-sectional study was designed to assess the levels of depression, leads to stresses and its effect on vital parameters during academic curriculum The study was conducted on total 354 students of 18-22 years age . All students of first-year medical students (100), dental students (100) and Paramedical students (154) were included in the study. The participants were explained about the study. The participation was voluntary. Ethical committee approval was taken. Informed consent was taken from the students. To maintain reliability, anonymity, and confidentiality, students were asked not to write their names as well as roll numbers. The incomplete questionnaires and those who were not willing for the study were excluded from the study. Two months prior to the academic examination height (cm), weight (kg), Pulse rate and Blood Pressure were recorded and again during academic examination the same was taken. The observed mean age of student was 18.00±2.54 years. Six students were excluded from the study as they were absent during examination. After explaining the purpose of the study a questionnaire was provided to one student at a time just before the start of viva-voce and was asked to answer (fill up) the questions in prescribed format so as to assess their depression level.

Zung's scale was used to assess the depression level.[9] The questionnaire consists of twenty questions where Likert Scale Format is used for assessment and scoring of depression level. Ten questions based on positive answers and ten negative are included. Each question has answer score from 1 to 4. The option for each question is (a) None or a little of the time (b) Some of the time (c) Good part of the time and (d) Most or all of the time. The raw score is converted to 100 point scale (SDS Raw Index). SDS Raw Index=(Raw Score/80 total points)x100 and SDS Index=SDS Raw Index*1.25.The score obtained was analyzed by using scale of depression according to Zung's categorization as <50 is Normal, <60 is Mild Depression, <70 is Moderate or Marked Major Depression and >70 is Severe or Extreme Major Depression**.** Pre readings (before examination) for Pulse Rate, Systolic Blood Pressure and Diastolic Blood Pressure were compared with post readings (at the time of examination). Body Mass Index was calculated for all the students.[10]

Data were entered into the computer database. The responses of frequencies were calculated and analyzed by using statistical software SPSS version 11.0. Prevalence of an outcome variable along with 95% confidence interval was calculated. Student's t-test for paired

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samples was used to compare the mean values of study variable in relation to depression. The descriptive statistics like mean and standard deviation of different study variables was calculated. The Zung's self-rating depression scale was analyzed by categorization of the four levels (Normal,Mild, Moderate or Marked Major and Severe or Extreme Major Depression) of depression as presence of depression.

Results

Findings reported that in medical boys and girls are equally distributed whereas in paramedical 56% were girls and in dental 48% were girls.

Table 1: revealed the weight and height of students of medical and Paramedical and dental course.

Table 1: Gender-wise distribution of students according to weight and height (n=354)							
		MBBS		Paramedical		Dental	
Parameter	Categories	Boys	Girls	Boys	Girls	Boys	Girls
Weight of Students (Kilograms)	35 -55	4	5	5	4	1	1
	56-75	28	24	44	48	28	22
	>75	17	22	21	32	23	25
	Total	49	51	70	84	52	48
Height of the students (Centimeters)	140-160	6	38	6	30	22	12
	161-180	39	8	58	34	24	22
	>180	4	3	6	20	6	14
	Total	49	51	70	84	52	48

The table 2 showed that of the total selected subjects most of the students 58.3% had normal weight. 19.7% were overweight. Among male dental students 7.9% were obese. Major proportion of boys 31.71% and girls 45.45% from medical course and 51.8% of girls from paramedical and 45.5% boys from dental course were normal weight .Boys 18.4% and 35.3% of girls from medical course and 25% of girls from Paramedical and 31.1% boys and 25.6% girls from dental were normal.

Table 2: Sex-wise Percentage distribution of students according to according to Body Mass Index (n=354)						
Variables	MBBS		Paramedical			Dental
BMI Categories	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
	n=49	n=51	n=70	n=84	n=52	n=48
<18.5	2(4.1)	11(22.3)	0	7(8)	6(11.2)	11(22.5)
18.5-24.9	32(64.9)	25(48.2)	33(46.5)	41(48.5)	17(33.4)	20(42.2)
25-29.9	15(31)	15(29.5)	37(53.5)	37(43.5)	29(55.4)	13(27.4)
> 30	0	0	0	0	0	4(7.9)

Percentages are shown in parenthesis

Table 3: Sex-wise distribution of students according to according to depression (n=354)						
	MBBS		Paramedical		Dental	
Level of stress	Boys	Girls	Boys	Girls	Boys	Girls
SDS Index	n=49	n=51	n=70	n=84	n=52	n=48
<50	9(18.3)	1(2.6)	9(12.3)	11(12.5)	23(44)	22(45.6)
51-59.9	31(62.5)	30(58.6)	48(68.2)	50(60.7)	18(34.5)	16(32.4)
60-69.9	6(12.1)	12(23.3)	9(12.5)	11(12.5)	6(12.4)	6(12.5)
≥70	3(7.1)	8(15.5)	5(7)	12(14.3)	5(9.1)	5(9.5)

Percentages are shown in parenthesis

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Table 3 It Could be assessed that more than half (62.5%) of boys and more than one-fourth (28.5%) of girls from medical course and about three-fourth (75.9%) of boys and approximately one-third (32.4%) of girls from Paramedical had mild depression. Whereas 12.1% of boys and 23.3% of girls from medical course and 12.5% boys and 12.5 % of girls from Paramedical and 12.4% boys and 12.5 % girls from dental suffered from moderate depression.7.1% of boys and 15.5% of girls from medical course and 7% of boys and 14.3 % of girls from Paramedical and 9.1% boys and 9.5% girls from dental had severe marked depression. P value , which is a statistical measurement calculated to validate a hypothesis for mean of medical and paramedical group was 0.03 and for the mean of medical and dental course was 0.04. As it was < 0.05, it is considered statistically significant.

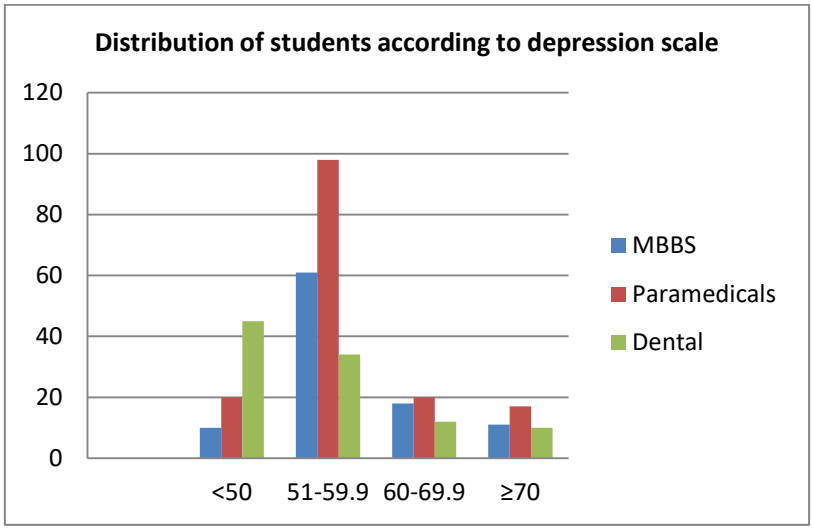

Figure 1: shows sex wise distribution of students according to depression

Table 4: Comparison between Pulse rate, Systolic Blood Pressure and Diastolic Blood Pressure before and at the time of examination

Parameters	Before Examination(Mean± S.D.)	At the time of Examination (Mean± S.D.)	Mean Difference
Pulse rate	75±9.2	90±5.3	15*± 4.1*
Systolic Blood Pressure	123±5.5	134±8.9	11*± 3.4*
Diastolic Blood Pressure	83±3.5	85±5.7	2* ± 2.2*

*significant

Table 4 shows highly significant difference between before and at the time of examination observations in vital parameters such as Pulse rate ($p<0.001$), Systolic Blood Pressure ($p<0.001$) and Diastolic Blood Pressure ($p<0.001$) due to examination stress in all the students from medical and Paramedical and dental course

Discussion

Psychological symptoms of anxiety, depression, and stress among medical students have been reported from across the globe.[11-16] Severe stress was mentioned by 21.7% females and 8.5% males; moderate stress was reported by 16.6% females and 8.5% males; and mild stress was reported by 14.9% females and 7.14% males females This is not in accordance to our study where we got severe depression in 15.5 % female and mild stress in 62.5% male and 58.6 % female medical students. [17]

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Ragab etal showed main sources of stress were time pressure, heavy workload, fear of failure, and examination frequency. One-third of students indicated that they experienced at least one source of psychosocial- and teaching-related stress. Female medical students were more significantly stressed due to academics than males which conforms to our study.[18]
Khalood described medical students have a limited time to understand and memorise the information they study, and the huge amount of information combined with the state of recurrent exams may create feelings of distress and disappointment, as students may not pass every exam in their curriculum.[19]

Sirraj and Rourke attributed stress due to the course workload, lack of leisure time, defective learning materials and frequent examinations. Progressive assessments in anatomy physiology and biochemistry increase students' stress levels, as they are required to pass these courses to progress to the next level of study.[20,21]

The prevalence of perceived stress seems to be high among medical students, which tends to affect not only their academic performances but also all aspects of health and the frequency of stress seems considerable with little difference between males and females, which does not correlate with our study as we found females were more affected with stress.[22]
It was described that too much stress pooled with other psychological factors can be damaging and can disrupt normal functioning of the students. It may lead to further psychological complications causing psychological morbidity. Subjective experience of stressors in students can lead to poor quality of life, condensed self-esteem resulting in lower self-confidence, compromised ability to cope with daily life problems and may influence student's academic performance.[5,6]

Steenberger et al.[23] and Ronald opined that girls have reported exams, as the reason for their stress than their male colleagues.[24] Mamoza obtained the response of stress by confirming the higher prevalence of stress in undergraduate medical students.[25]

Conrad etal described reasons of stress as academic pressure and the limited time they are given to acquire this vast knowledge prevents medical students from adopting a healthy lifestyle. Though there was statistically insignificantassociation between level of the study and stress severity, additionally there were statistically insignificant associations between parent's education, family monthly income with stress severity. The excessive amount of stress in medical training predisposes students to experience difficulties when solving problems, reducesconcentration and, finally, increases their chances of developing depression.[26]First semester studentswere found particularly prone to develop stress which is due tothe transition to a new environment.[27]

Mannapur B et al. observed that the students with psychological stress were found to be involved in habits like tobacco chewing and smoking, as well as alcohol intake.[28]

Sarkar etal showed that substantial proportion of medical students suffer from depression, anxiety, and psychological distress. Efforts are required to cater to medical students who are distressed, in a nonintrusive manner. Assessment of psychological morbidity may be paired with other external validators such as quality of life and academic performance. This would give a greater impetus toward addressing the concerns of the students.[29]

Kaplan and sadock etal[30] showed learning and memory can be affected by stress. Although an optimal level of stress can enhance learning ability, too much stress can cause physical and

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mental health problems by Niemi & Vainiomak etal[31] reduce students' self-esteem by Linn & Zeppa[32].It was reported that depression among youth has increased from 2% to 12% in the last 5 years.[33] The academic examinations in Medical and Para-medical students are found to be stressful due to high levels of depression followed by significant changes in vital parameters which may affect their academic performances.[34]

Limitations

Authors acknowledge that this is a study with sample of only first year Medical and Para-medical and dental students appearing for university examination drawn from only one medical college.

A prospective study could be carried out with a cohort of all year students in all the medical and paramedical colleges to look at the different levels of academic stress related to depression.

Conclusion

A high depression level may affect not only academic performances but also all aspects of student physical and mental health. The stressors should be identified and discussed with individual students. As depression which impacted these stress in colleges cannot be eliminated. It is worth advisable that teachers can and should do a better job and provide review of academics and exam schedules, more leisure time activities, better interaction with the faculty and proper guidance, advisory services and peer counseling could do a lot to reduce the depression. By laying more emphasis on regular, day by day reading, mock examinations and use of question banks could alleviate the fear, depression and anxieties associated with the university examination. Multicentric studies are need for effective representation in larger population.

Conflict of Interest

Authors declare no conflict of interest.

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