Stress, anxiety & depression among medical undergraduate students & their socio-demographic correlates

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Background & objectives: Presence of psychological morbidity in medical undergraduate students has been reported from various countries across the world. Indian studies to document this burden are very few. Therefore, the presence of depression, anxiety and stress among medical undergraduate students was assessed using a previously validated and standardized instrument, Depression Anxiety Stress Scale (DASS 42) and the associations with their socio-demographic and personal characteristics were identified.

Methods: In a cross-sectional survey, a self-administered, pre-designed, pre-tested anonymous questionnaire including DASS 42 was used to collect information on basic socio-demographic (age, gender, semester) and personal characteristics (alcohol and tobacco use, academic performance). All students present on the day of survey were contacted for participation after obtaining informed written consent. Scores for each of the respondents over each of the sub-scales (Depression, Anxiety and Stress) were calculated as per the severity-rating index.

Results: More than half of the respondents were affected by depression (51.3%), anxiety (66.9%) and stress (53%). Morbidity was found to be more in 5th semester students rather than students of 2nd semester. Females reported higher score as compared to their male counterparts. Perception of self assessment in academics was strongly associated with the higher score.

Conclusions: A substantial proportion of medical undergraduate students was found to be depressed, anxious and stressed revealing a neglected area of the students' psychology requiring urgent attention. Student counselling services need to be made available and accessible to curb this morbidity.

Key words Anxiety - DASS 42 - depression - medical students - stress

Medical education can impose significant psychological stress on undergraduates[1]. Considerable degree of psychological morbidity has been reported among medical students ranging from stress, interpersonal problems and suicidal ideation to psychiatric disorders[2-7] and they tend to have greater psychological distress than the general population[5]. We undertook this study to determine the presence of depression, anxiety and stress among medical undergraduates studying in a premier medical institution

in Odisha (eastern India) and their socio-demographic correlates were also assessed.

Material & Methods

This study was conducted in the Institute of Medical Sciences at Bhubaneswar, Odisha, India, during July-August 2012. Students (both male and female) enrolled for at least six months prior to study and were present on the day of the survey were requested for participation. The study protocol was approved by the institutional ethical committee.

In this corss-sectional survey, a self-administered, pre-designed, pre-tested anonymous questionnaire (in English language) was distributed after obtaining an informed written consent from each participant. Information was collected on basic socio-demographic (like age, gender and semester) and personal characteristics (like alcohol and tobacco use, academic performance). A previously validated and standardized survey instrument, Depression Anxiety Stress Scale (DASS 42)[8] was used to assess information on depression, anxiety and stress.

The data were analyzed with SPSS v20.0 software (IBM Corp., Armonk, NY). Continuous data were expressed in terms of mean and standard deviation (SD). Means were compared using Student t test and ANOVA. Correlations between continuous variables were calculated using Pearson's correlation test.

Multivariable step-wise linear regression analysis was carried out to find the role of each significant variable in determining the relevant sub-scale scores.

Results & Discussion

Among the 353 respondents, 145 (41.1%) were males. The mean age of males was 21.38 ± 1.71 yr and that of females was 20.43 ± 1.37 yr. The mean non-response rate to questions of DASS scale was 3.26 ± 2.1 per cent (range = 0.28 to 8.28%). Based on score ranges from the DASS manual, 62 (17.5%) students had severe or extremely severe depression. This percentage was 33.4 per cent for anxiety and 13.1 per cent for stress. The mean scores of depression and stress for all students were found to be at mild level and the scores of anxiety at moderate level (Table I).

Univariate analysis (Table II) showed that higher scores of depression, anxiety and stress was associated with female gender, lower semester, younger age and non smokers, Students who were satisfied with their education had lower depression, anxiety and stress scores. Though the scores were higher among non-alcoholics the difference was not significant.

Multivariable linear regression showed (Table III) that semester was a significant predictor of all the three subscales and gender predicted only the stress sub-scale. The variables, which were used in regression, explained only 7.7 per cent of depression, 7.9 per cent of anxiety and 9.1 per cent of stress.

Table I. Severity distribution of DASS scores (%) among medical undergraduate students (n=353)						
Subscale		Normal	Mild	Moderate	Severe	Extremely severe
Depression						
	All	48.7	14.7	19.0	12.7	4.8
	Males	56.6	14.5	12.4	13.1	3.4
	Females	43.3	14.9	23.6	12.5	5.8
Anxiety						
	All	33.1	10.5	22.9	19.8	13.6
	Males	42.8	9.0	19.3	18.6	10.3
	Females	26.4	11.5	25.5	20.7	15.9
Stress						
	All	47.0	21.5	18.4	10.8	2.3
	Males	56.6	15.2	20.0	6.2	2.1
	Females	40.4	26.0	17.3	13.9	2.4
Males n= 145, females n=208						

Table II. Univariate analysis of association of DASS scores with socio-demographic and personal characteristics among medical undergraduate students

Variable	Categories (n)	Depression	Anxiety	Stress
Gender	Male (145)	10.30 ± 8.60	10.61 ± 7.32	14.00 ± 8.57
	Female (208)	12.37 ± 8.42	12.53 ± 6.86	16.96 ± 8.10
		$P<0.05$	$P<0.05$	$P<0.001$
Semester	2nd (76)	13.21 ± 8.83	12.67 ± 7.03	16.72 ± 9.23
	4th (80)	12.65 ± 8.58	12.30 ± 7.19	17.80 ± 7.78
	5th (95)	14.28 ± 7.79	15.02 ± 6.75	17.99 ± 7.71
	7th (76)	7.86 ± 7.50	8.37 ± 5.07	12.30 ± 7.41
	9th (26)	4.27 ± 5.44	5.19 ± 5.28	8.38 ± 5.82
		$P<0.001$	$P<0.001$	$P<0.0001$
Age	Continuous variable	$r = -0.213,$ $P = 0.0001$	$r = -0.201,$ $P = 0.0001$	$r = -0.193,$ $P = 0.0001$
Smoking[†]	Yes (29)	8.28 ± 6.57	9.24 ± 7.33	12.62 ± 8.27
	No (322)	11.79 ± 8.65	11.95 ± 7.07	16.03 ± 8.38
		$P<0.05$	$P<0.05$	$P<0.05$
Alcohol[†]	Yes (28)	9.14 ± 7.25	10.50 ± 7.61	13.43 ± 8.48
	No (321)	11.69 ± 8.63	11.82 ± 7.08	15.96 ± 8.41
Satisfied with own education[†]	Yes (171)	9.84 ± 8.02	10.49 ± 7.19	14.18 ± 8.29
	No (179)	13.17 ± 8.76	12.98 ± 6.84	17.26 ± 8.33
		$P<0.0001$	$P<0.001$	$P<0.001$

Values are mean ±SD. [†]Values do not add up to 353 as some of the respondents did not answer all the questions

Table III. Multivariable linear regression analysis of association of DASS scores with socio-demographic and personal characteristics among medical undergraduate students

	Predictors	B	SE	Standardised beta	t value	P value	R	R^2
Depression score	Constant	17.21	1.14		15.05	.000	0.28	0.077
	Semester	-1.17	0.22	-0.28	-5.37	.000		
Anxiety score	Constant	16.51	0.95		17.32	.000	0.28	0.079
	Semester	-0.98	0.18	-0.28	-5.41	.000		
Stress score	Constant	17.32	2.04		8.49	.000	0.301	0.091
	Semester	-1.02	0.22	-0.25	-4.61	.000		
	Gender	2.15	0.91	0.13	2.36	.019		

Medical school training is intended to prepare graduates for a personally rewarding and socially meaningful career. However, reports have shown that this is a time of great personal distress for physicians-in-training[5]. It has long been recognized as involving numerous stressors that can affect the wellbeing of the students[9]. Our study also showed that there was a considerable level of depression, anxiety and stress in our setting revealing a neglected area of the students' psychology requiring urgent attention. Our sample of students had higher mean depression, anxiety and stress scores compared with previously published data[10] using DASS subscales.

Fifth semester students had highest depression, anxiety and stress scores as compared to others. Similar findings have been reported earlier[11-13]. This may be attributed to greater fear of not attaining their goal of being a doctor or may be due to excessive load of both paraclinical and clinical subjects as compared to only clinical subjects in the latter years.

Consistent with other studies[12,13] female respondents had reported higher scores of depression, anxiety and stress compared with their male counterparts. This may be due to the fact that women articulate depressive symptoms, even minor ones, more easily[14]. However, regression analysis showed significant association only in case of stress scores. Contrary to earlier findings[15], the association of abuse of alcohol or the habit of smoking was not associated with any of the morbidity, which could be due to small number of respondents.

Student distress may influence professional development and adversely impact academic performance contributing to academic dishonesty and substance abuse, and may play a role in attrition from medical school[5]. Other studies on medical school graduates also suggest that distress may negatively affect quality of patient care, patient safety[15], and professionalism[16].

In conclusion, more than half of the medical undergraduate students were found to be affected by depression, anxiety and stress. There is a need for the counselling services to be made available to the students in the medical college to control this morbidity.

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