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Original Article

Level of Perceived Stress and Coping Strategies Prevailing Among 1st year Medical Undergraduate Students: A Cross-sectional Study from South India

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ABSTRACT

Context: To maintain high level of proficiency and better patient outcomes, medical personnel suffer from high degree of stress. The aim of this study was to determine the prevalence of stress and associated coping strategies among medical undergraduate students in a south Indian medical college. **Settings and Design:** Cross-sectional study was done among 1st year students in a private medical college in Tamil Nadu, India. A self-administered pretested questionnaire was used to collect socio-demographic information and information on perceived mental stress (PSS-10) and coping strategies (Brief COPE). **Results:** About 80% of the boys and 75% of the girls reported a moderate or higher stress level according to the PSS. Most commonly employed coping mechanism among students under stress was religion (25%). Among boys, the most common mechanism was humor (26%) and that of girls was religious methods (30%). **Conclusions:** Stress was common among first year medical students. There is a requirement for stress management training among MBBS students.

Key words: Undergraduate medical student, Perceived stress, Coping strategies, Cross-sectional study, India.

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INTRODUCTION

Although it is difficult to define stress, Cambridge Dictionaries Online defines 'Stress as the human response to adverse physical, mental or social condition, in a biological or medical context.[1] High level of stress among medical students had been reported in various studies.[2-5] Excessive stress may lead to health problems like anxiety, depression, suicidal ideation, drug abuse and other complications.[6,7] Different individuals, depending on their cultural background and coping skills, may perceive stressors differently. People differ in the way they think about and react to the stressful situations. Therefore, this study aimed to determine the prevalence of stress and associated coping strategies among medical undergraduate students in a south Indian medical college.

SUBJECTS AND METHODS

This was a cross-sectional, college based survey conducted in 2014 on all students enrolled for the first year MBBS. course of a private medical college in Tamil Nadu, India. All consenting students were included in the study. No explicit exclusion criteria were employed. All participants were given a copy of the self-administered questionnaire and detailed instructions to fill it.

Study instruments

To assess the stress level we used the Perceived Stress Scale (PSS), and to assess the coping strategies the Brief COPE inventory was used.[8,9] Socio-demographic characteristics data was collected by semi-structured questionnaire.

Statistical analysis

All analyses were conducted using STATA 11. Results were expressed as proportions, means with standard deviation and associations expressed as odds ratio with 95% CI.

Ethical statement

The study was approved by the Institutional Review Board of the medical college. Written informed consent was obtained from all participants.

RESULTS

Socio-demographic description: A total of 135 out of 148 students completed the study (response rate 91%). Majority of the students were girls (68.8%) and had a mean (SD) age of 18 (0.5) years. Basic socio-demographic details are given in Table 1.

Perceived Mental Stress Level: Mean (SD) PSS score was 18 (6.5) in boys, 17 (6.4) in girls and 17 (6.5)

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overall. About 80% of the boys and 75% of the girls reported a moderate or higher stress level according to the PSS, a higher percentage of boys reported moderate stress (50%) as compared to girls (39%). However, there was no statistical difference between boys and girls (p=0.30) (Table 2).

Coping strategies among students who reported moderate or high stress: Among students who reported moderate or high level stress, the most commonly employed coping mechanism was found to be religion (25%) followed by self distraction (19%), instrumental support (19%), positive reframing (19%) and humour (16%). Among boys, the most common mechanism was humour (26%) followed by self blaming (19%), whereas in girls the most common strategy was religion (30%) followed by positive reframing (22%). Statistically, gender comparison of coping strategies showed that more boys (as compared to girls) employed humour (26% vs. 11%, p = 0.02) and self blaming (19% vs. 6.5%, p = 0.02) whereas more girls (as compared to boys) employed religion (30% vs. 14%, p = 0.05) to overcome their stress (Table 2).

Table 1: Socio-demographic details of the study participants.

		Boys (n=42)		Girls (n=93)		Total (n=135)	
		Nos.	%	Nos.	%	Nos.	%
Age, mean (SD)		18.07 (0.64)		17.89 (0.52)		17.97 (0.56)	
Boarding status	Day scholar	10	23.8	23	24.7	33	24.4
	Hosteller	32	76.2	70	75.3	102	75.6
Distance from home	<= 250 km	35	83.8	75	80.6	110	81.5
	> 250 km	7	16.7	18	19.4	25	18.5
Religion	Hinduism	37	88.1	79	84.9	116	85.9
	Christianity	3	7.1	10	10.8	13	9.6
	Islam	2	4.8	4	4.3	6	4.4
Father's education	Graduate or above	19	46.3	60	67.4	79	60.8
	Diploma	4	9.8	10	11.2	14	10.8
	Higher secondary school	9	22.0	11	12.4	20	15.4
	Secondary school	4	9.8	4	4.5	8	6.2
	Middle school	4	9.8	3	3.4	7	5.4
	Primary school	1	2.4	1	1.1	2	1.5
	Illiterate	0	0	0	0	0	0
Father's occupation	Professional	29	70.7	68	76.4	97	74.6
	Skilled	1	2.4	7	7.9	8	6.2
	Semi-skilled	10	24.4	13	14.6	23	17.7
	Unskilled	1	2.4	1	1.1	2	1.5
	Unemployed	0	0	0	0	0	0
Mother's education	Graduate or above	29	69.0	60	65.2	89	66.4
	Diploma	0	0	8	8.7	8	6.0
	Higher secondary school	5	11.9	12	13.0	17	12.7
	Secondary school	2	4.8	7	7.6	9	6.7
	Middle school	3	7.1	1	1.1	4	3.0
	Primary school	3	7.1	4	4.3	7	5.2
	Illiterate	0	0	0	0	0	0
Mother's occupation	Professional	13	31.0	35	38.0	48	35.8
	Skilled	1	2.4	3	3.3	4	3.0
	Semi-skilled	1	2.4	1	1.1	2	1.5
	Unskilled	0	0	0	0	0	0
	Unemployed	0	0	0	0	0	0
	Home maker	27	64.3	53	57.6	80	59.7
Family type	Nuclear	37	88.1	85	91.4	122	90.4
	Joint	5	11.9	8	8.6	13	9.6
Per capita monthly income (INR)	<=10000	21	50.0	37	39.8	58	43.0
	>10000	21	50.0	56	60.2	77	57.0

Note: Father's details were missing for five students and mother's details for one student.

Table 2: Prevalence of perceived mental stress level and coping strategies among the study participants and gender differentials.

		Boys (n=42)		Girls (n=93)		Total (n=135)		P value
		Nos.	%	Nos.	%	Nos.	%	
PSS score, mean (SD)		18.26 (6.54)		16.87 (6.48)		17.3 (6.51)		0.25*
PSS score category	Low stress	7	16.7	26	28.0	33	24.4	
	Moderate stress	21	50.0	36	38.7	57	42.2	
	High stress	14	33.3	31	33.3	45	33.3	0.30
Coping strategy (among stressed students)#	Self distraction	7	16.7	18	19.4	25	18.5	0.71
	Active coping	6	14.3	10	10.8	16	11.9	0.55
	Denial	3	7.1	13	14.0	16	11.9	0.25
	Substance use	0	0	0	0	0	0	-
	Emotional support	7	16.7	13	14.0	20	14.8	0.68
	Instrumental support	7	16.7	18	19.4	25	18.5	0.71
	Behavioral disengagement	2	4.8	2	2.2	4	3.0	0.40
	Venting	4	9.5	11	11.8	15	11.1	0.69
	Positive reframing	5	11.9	20	21.5	25	18.5	0.18
	Planning	5	11.9	14	15.1	19	14.1	0.62
	Humor	11	26.2	10	10.8	21	15.6	0.02
	Acceptance	2	4.8	12	12.9	14	10.4	0.15
	Religion	6	14.3	28	30.1	34	25.2	0.05
	Self blaming	8	19.0	6	6.5	14	10.4	0.02

Note: All other p values are from chi square test, * Students t test, # multiple response sets.

Table 3: Bivariate analysis - association between socio-demographic variables and perceived mental stress level among the study participants.

	Low stress (n=33)		Moderate/ high stress (n=102)		Odds ratio			P value
	Nos.	%	Nos.	%	Estimate	Lower 95% CI	Upper 95% CI	
Age	17.82	0.39	17.99	0.6	1.78	0.84	3.75	0.12
Gender								
Boys	7	21.2	35	34.3	1			
Girls	26	78.8	67	65.7	0.51	0.2	1.3	0.16
Religion								
Hinduism	26	78.8	90	88.2	1			
Others	7	21.2	12	11.8	0.49	0.17	1.38	0.18
Boarding status								
Day scholar	7	21.2	26	25.5	1			
Hosteller	26	78.8	76	74.5	0.78	0.3	2.02	0.62
Distance from home								
<=250 km	25	75.8	85	83.3	1			
>250 km	8	24.2	17	16.7	0.62	0.24	1.61	0.33
Father's education								
Graduate	20	60.6	59	60.8	1			
Others	13	39.4	38	39.2	0.99	0.44	2.22	0.98
Father's occupation								

Professional	25	75.8	72	74.2	1			
Others	8	24.2	25	25.8	1.08	0.43	2.71	0.86
Mother's education								
Graduate	21	63.6	68	67.3	1			
Others	12	36.4	33	32.7	0.84	0.37	1.93	0.69
Mother's occupation								
Professional	10	30.3	38	37.6	1			
Others	23	69.7	63	62.4	0.72	0.31	1.67	0.44
Family type								
Nuclear	31	93.9	91	89.2	1			
Joint	2	6.1	11	10.8	0.53	0.11	2.54	0.43
Per capita family income								
<=10000	13	39.4	45	44.1	1			
>10000	20	60.6	57	55.9	1.21	0.54	2.7	0.63

Association between socio-demographic variables and stress level: Bivariate analysis using binary logistic regression could not find any statistically significant variables that were associated with stress level (Table 3).

DISCUSSION

In our study mean (SD) PSS score was 18 (6.5) in boys, 17 (6.4) in girls and 17 (6.5) overall. About 80% of the boys and 75% of the girls reported a moderate or higher stress level according to the PSS, a higher percentage of boys reported moderate stress (50%) as compared to girls (39%). Studies have used, across India, various scales as measurement tools for stress. In this study PSS-10 was used to assess the perceived stress. A study done by Chilukuri H *et al* also used the PSS scale for assessing the stress factors among medical students.[4] The mean score in PSS scale obtained was 16.7 with standard deviation of 5.9, which is similar to the result found in the current study. Many other studies have used other measurement tools for stress. According to a study conducted by Iqbal S *et al*, 44% of the males and about 60% of the females were under stress and the prevalence of severe and extremely severe stress was 8.3% among males and 16.3% among females.[3-5,10] Similar results were also obtained by Supe AN, Nandi M *et al* and Reang T *et al*.[2-5] The prevalence of stress reported in this study was comparable with the study from Mumbai, India.[11] A study by Saipanish R showed that about 61% of medical students had some degree of stress.[12] The perceived stress score found in this study among medical students was lower than that studied by Singh *et al*. in Nursing students.[13] The participants reported using a wide range of coping strategies. The most common coping strategy used by boys was humor and among girls common strategies were religion and self-blaming while religion was the commonest strategy in the overall sample (20%). A study by Cherkil *et al* showed that humor was the commonest method associated with severe stress.[14]

In bivariate analysis none of the factors were found significantly associated with the stress. Similarly, other studies conducted in India found no relation with the gender, rural or urban status and residence in hostel, family income, travel, or medium of education.[2-4] But a study by Iqbal *et al* found significant differences by gender, semester and smoking status.[10]

Limitations

Lack of generalizability, information bias are the main limitations of the study.

CONCLUSION & RECOMMENDATIONS

Moderate to high level of stress is common among first year medical students in this private medical college. Students employed a variety of coping strategies, among which humour and religion were most common.

Stress management and coping skills training would be more effective if it is taken to the classroom in the form of a subject in medical curriculum beginning from the first year. A brief group Mindfulness-based Cognitive Therapy (b MBCT/ Mindful-Gym) programme has been developed to help medical students cope more effectively with stress and was found successful in University Putra Malaysia (UPM). One of the training methodologies used in the programme, 'Mindful - S.T.O.P', was particularly popular among the students.[15] Such programmes can be developed with a much more local perspective and implemented in Indian medical colleges as well.

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CONFLICT OF INTEREST

Nil

ABBREVIATIONS USED

PSS: Perceived Stress Score; SD: Standard Deviation; CI: Confidence Interval.

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