Original Article

The Prevalence of Stress and Its Possible Association with Demographic Features: A Cross Sectional Study

Srivastava Dhiraj Kumar[1], Bansal Manoj[2], Gour Neeraj[3], Srivastava Monika[4], Jain Pankaj Kumar[1]

[1]Department of Community Medicine, UP University of Medcial Sciences, Saifai, Etawah
[2]Department of Community Medicine, GR Medical College, Gwalior(MP)
[3]Department of Community Medicine, SHKM Government Medical College, Mewat, Haryana
[4]Department of Anatmoy, UP University of Medcial Sciences, Saifai, Etawah

Abstract

Background: Medical professionals are prone to different forms of stress. These stresses start right from the beginning of medical professions. Most of the time such stresses have a negative impact on the psychological and physiological health.
Objectives: To assess the prevalence of stress among medical students. To identify the possible stressors in medical students.
Methods: The present study was a cross-sectional one carried out for a period of one month in Nov 2017 among medical students of 6th & 7th semesters. Assessment of stress was done using Medical Student Stress Questionnaire (MSSQ).The test of association was applied between the level of stress and sociodemographic profile of the participants.
Result: A total of 122 students participated in the study. The prevalence of moderate to severe stress was 55.7%. It was more in female students compared with their male counterparts. There was no statistically significant difference in the levels of stress between male and female students among different stressors. Statistically significant association was noted between Academic Related Stressor and sex of the participants and fathers' occupation. Significant association was also noted between Teaching and Learning Related Stressor and fathers' occupation. Reliability analysis showed that overall Cronbach's alpha for MSSQ for Indian students was 0.907.
Conclusion: Moderate to severe stress is common among medical students and more common in female students. Most common source of these stresses is academic related issues. Fathers' occupation is also a potential source of stress.
Keywords: PSYCHOLOGICAL STRESS, DEMOGRAPHIC FACTOR, MEDICAL STUDENTS

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Introduction

Medical professionals are prone to different forms of stress (1). These stresses start right from their entrance into the medical profession. Sometimes the stresses have a positive impact on professionals by motivating them but most of the times they have a negative impact on the psychological and physiological health of the medical professionals (1-6).

Medical students are more prone to stress compared with their counterparts from other streams (7-11). The most common source of stress can be grouped into academic stressors, psychological stressors, and environmental stressors.

Chronic exposure to stress among medical students has a negative effect on the mental and physcial health of these students in the later life. Mental problems are likely to lower

***Corresponding author:** Dhiraj Kumar Srivastava, Associate Professor, Department of Community Medicine, UP University of Medical Sciences, Saifai, Etawah (UP). **Phone:** +98 (9) 3071022
Email: dhirajk78sri@yahoo.co.in

self esteem, and cause anxiety and depression, difficulty in solving interpersonal conflicts, sleep disorders, increase intake of alcohol, and drug abuse (5-8, 12). Studies have shown that early identification of stress and stressors can prevent these illnesses in medical students (13, 14). So the present study was designed to assess the prevalence of stress among medical students and to identify the possible stressors in them.

Methods

The present study was a cross-sectional one carried out for a period of one month in Nov 2017 among medical students of 6th and 7th semesters admitted to UP University of Medical Sciences, Saifai, Etawah (UP). All the students were informed about the aims and objectives of the study and a day was fixed for the distribution of questionnaire and discussion about the questions. The students were asked to return the questionnaires within one week of the distribution of questionnaire.

The questionnaire was divided into two parts. The first part was related to the assessment of the sociodemographic profile. The second part was related to the assessment of stress among medical students. Assessment of stress was done using Medical Student Stress Questionnaire (MSSQ, 15). MSSQ assesses six domains related to stress namely:-

1. Academic related stressors
2. Inter and intra Personal related stressors
3. Teaching and Learning related stressors
4. Social related stressors
5. Drive and Desire related stressors and
6. Group Activity related stressors

The questionnaire consists of 40 questions, which were divided into the above six domains, thus there were 13 questions related to the assessment of academic related stressors, seven questions related to the assessment of interpersonal and intra personal related stressors, seven questions related to the assessment of teaching and learning related stressors, six questions related to the assessment of social related stressors, three questions related to the assessment of Drive and Desire related stressors, and four questions related to the assessment of Group Activity related stressors.

The students were asked to mark their answers on a scale that range from 0-4 ("causing no stress" to "causing severe stress"). The total score for each stressor was calculated by adding the individual question score and then dividing by the total number of questions in that stressor to get the overall score for that stressor. According to the overall score for a particular stressor, it can be graded on a spectrum ranging from "causing mild stress" to "causes severe stress".

All the data were entered into SPSS software version 23 and the test of association was applied between the level of stress and sociodemographic profile of the participants. Those who were found to have a significant association (i.e. $P<0.05$) between them were further analyzed using linear regression model analysis to find out significant association. The reliability of the questionnaire on Indian population was assessed by calculation of Cronbach's alpha.

Result

In the present study, a total of 129 students participated in the study. Of them, four students did not return the forms and three students returned incomplete forms or did wrong entries thus limiting the total sample to 122 students whose data were analyzed. Of the remaining 122 participants, 71 were male (58.2%) and 51 (41.2%) were female. Father and mother of most of the study participants were literate with 65.6% of the fathers having qualification of graduate or above, and 33.6% of the mothers having qualification of graduate or above. Most common occupation of the fathers was farmer (33.6%) and government servant (32.8%). However, mothers of most of the study participants (82.8%) were housewives by occupation (Table 1).

In the present study it was noted that the

Table 1: The distribution of study participants on the basis of sociodemographic determinants

S. No	Socio demographic determinants	Number	Percentage
1	Fathers' education		
	● Illiterate	7	5.74
	● Up to 5	2	1.64
	● Up to 10	21	17.21
	● Up to 12	12	9.84
	● Graduate	35	28.69
	● Post graduate	29	23.77
	● Professional	16	13.11
	Total	122	100.00
2	Mothers' education		
	● Illiterate	29	23.77
	● Up to 5	6	4.92
	● Up to 10	27	22.13
	● Up to 12	21	17.21
	● Graduate	18	14.75
	● Post graduate	19	15.57
	● Professional	2	1.64
	Total	122	100.00
3	Fathers' occupation		
	● Unemployed	4	3.28
	● Unskilled laborer/farmer	42	34.43
	● Government servant	41	33.61
	● Clerical	2	1.64
	● Business	21	17.21
	● Professional	12	9.84
	Total	122	100.00
4	Mothers' occupation		
	● House wife	101	82.79
	● Government servant	12	9.84
	● Business	2	1.64
	● Professional	7	5.74
	Total	122	100.00
5	Number of sibling		
	● 0	18	15.57
	● 1	60	49.18
	● 2	27	22.13
	● 3	11	9.02
	● 4	3	2.46
	● 5	2	1.64
	Total	122	100.00

prevalence of moderate to sever degree of stress was 55.7%. It was more in the female students compared with male counterparts. However, this difference was statistically insignificant (Table 2).

Similarly there was no statistically significant difference in the levels of stress in male and female students among different stressors using MSSQ. Reliability analysis showed that the overall Cronbach's alpha for MSSQ for Indian students was 0.907. For the individual domain, it was highest for Academic related stressors (0.814) followed by Teaching and Learning related stressors (0.773) (Table 3).

On applying the test of association between different stressors of MSSQ and

Table 2: The association between different levels of stress and sex of the study participants

Level of stress	Sex of the participants		P value
	Male (No. (%))	Female (No. (%))	
Mild	34 (47.8%)	20 (39.2%)	χ^2=2.51
Moderate	17 (23.9%)	18 (35.2%)	df=3
High	12 (16.6%)	6 (11.7%)	P value=0.472
Severe	8 (11.2%)	7 (13.7%)	
Total	71	51	

Table 3: The association of different levels of stress with the sex of participants on individual domains of MSSQ and the reliability analysis of MSSQ on Indian population

S. No	Level of Stress	Male	Female	Total	Median (IQR)	P value	Cronbach's alpha
1	Academic Related Stressor (ARS)						
	● Mild	12	4	16	30 (22-35)	X2=3.79 Df=3 0.285336	0.814
	● Moderate	19	20	39			
	● High	31	19	50			
	● Severe	9	8	17			
	Total	71	51	122			
2	Interpersonal & Intrapersonal Related Stressor (IRS)						
	● Mild	23	7	30	11 (7-15)	X2=6.12 Df=3 0.106047	0.615
	● Moderate	29	26	55			
	● High	14	15	29			
	● Severe	5	3	8			
	Total	71	51	122			
3	Teaching and Learning Related Stressor (TLRS)						
	● Mild	22	11	33	11 (7.5-15)	X2=2.11 Df=3 0.550241	0.773
	● Moderate	29	26	55			
	● High	15	9	24			
	● Severe	5	5	10			
	Total	71	51	122			
4	Social Related Stressor (SRS)						
	● Mild	23	10	33	10 (7-14)	X2=3.06 Df=3 0.381982	0.627
	● Moderate	29	24	53			
	● High	15	15	30			
	● Severe	4	2	6			
	Total	71	51	122			
5	Drive & Desire Related Stressor (DRS)						
	● Mild	22	23	45	5 (3-7)	X2=3.69 Df=3 0.297013	0.422
	● Moderate	24	17	41			
	● High	22	9	31			
	● Severe	3	2	5			
	Total	71	51	122			
6	Group Activity Related Stressor (GARS)						
	● Mild	16	15	31	7 (5-10)	X2=5.05 Df=3 0.168205	0.612
	● Moderate	24	23	47			
	● High	25	12	37			
	● Severe	6	1	7			
	Total	71	51	122			

IQR=Interquartile range

sociodemographic profile of the study participants, it was noted that there was a statistically significant association between Academic Related Stressor and sex of the participants and fathers' Occupation. Similarly, a significant association was also noted between Teaching and Learning Related Stressor and fathers' occupation. However, all these associations were diminished on application of linear regression model on all associations which was found to be statistically significant on test of association (Table 4).

Table 4: The association of domains of MSSQ with sociodemographic determinants using Chi square test and linear regression model

S. No	Determinants	Chi square test			P value *
		X^2	df	P value	
1	Academic Related Stressor (ARS)				
	● Sex of the participants	8.84	3	0.031	0.572
	● Fathers' education	19.43	18	0.366	-
	● Mothers' education	14.26	18	0.711	-
	● Fathers' occupation	31.01	15	0.009	0.488
	● Mothers' occupation	16.13	9	0.064	-
	● No. of siblings	12.57	15	0.634	-
2	Interpersonal & Intrapersonal Related Stressor (IRS)				
	● Sex of the participants	6.59	3	0.086	-
	● Fathers' education	20.33	18	0.315	-
	● Mothers' education	13.84	18	0.739	-
	● Fathers' occupation	14.72	15	0.471	-
	● Mothers' occupation	10.06	9	0.345	-
	● No. of siblings	11.60	15	0.709	-
3	Teaching and Learning Related Stressor (TLRS)				
	● Sex of the participants	2.74	3	0.433	-
	● Fathers' education	12.37	18	0.828	-
	● Mothers' education	19.82	18	0.343	-
	● Fathers' occupation	28.18	15	0.020	0.514
	● Mothers' occupation	5.42	9	0.796	-
	● No. of siblings	7.307	15	0.949	-
4	Social Related Stressor (SRS)				
	● Sex of the participants	4.74	3	0.191	-
	● Fathers' education	15.63	18	0.618	-
	● Mothers' education	17.29	18	0.503	-
	● Fathers' occupation	21.64	15	0.117	-
	● Mothers' occupation	6.96	9	0.647	-
	● No. of siblings	15.85	15	0.391	-
5	Drive & Desire Related Stressor (DRS)				
	● Sex of the participants	3.28	3	0.350	-
	● Fathers' education	20.38	18	0.312	-
	● Mothers' education	20.28	18	0.317	-
	● Fathers' occupation	25.90	15	0.017	-
	● Mothers' occupation	9.20	9	0.418	-
	● No. of siblings	10.10	15	0.813	-
6	Group Activity Related Stressor (GARS)				
	● Sex of the participants	4.89	3	0.180	-
	● Fathers' education	14.79	18	0.676	-
	● Mothers' education	24.64	18	0.135	-
	● Fathers' occupation	24.46	15	0.058	-
	● Mothers' occupation	9.33	9	0.407	-
	● No. of siblings	19.08	15	0.210	-

Discussion

In the present study a total of 122 students participated of whom 68 students reported to have moderate to severe stress thus giving a prevalence rate (moderate, higher, and severe) of 55.7%. This is lower than the rate reported by different researchers. This difference could be due to difference in the scale used and the difference in the population studied (9, 10, 15-19).

On doing detail analysis on the questions related to the assessment of sociodemographic, it was noted that most of the parents (62.2%) were literate having qualifications of 12th and above. Fathers of most (62.9%) of the participants were either farmer or government servants whereas mothers were housewives. Most of the study participants had one or more siblings.

In the present study the prevalence rate among female participants (60.7%) was higher than the male participants (52.1%). However this difference was not statistically significant. This difference could be attributed to the difference in the number of male and female students participated in the study. This is similar to the findings of other researchers (2, 8). Similarly in line with the above findings, no statistically significant difference in the level of stress between male and female participants regarding individual stressors was found. However the most common source of stress was Academic related stressors (median score=30) followed by Interpersonal and Intrapersonal related stressors (median score=11) and Teaching and Learning related stressors (median score=11). These findings are in line with the findings of other researchers who also reported that Academic related stress were the most important source of stress among medical students (9, 19-21).

On doing reliability analysis, the overall score for MSSQ was found to be very high (0.905) indicating that the scale can be used in Indian setting. This finding further strengthens the findings of Gupta and colleagues (9) who also applied MSSQ scale on Indian population. On comparing the individual stressors, a high Cronbach's alpha was noted among Academic related stressors (0.814) followed by Teaching and Learning related stressors (0.773). This is in line with the findings of researchers like Gupta and co-workers (9). However in the present study Drive and Desire related stressors (0.422) had the least Cronbach's alpha, which is against the finding of Gupta and colleagues (9) and this difference could be attributed to the difference in the population who participated in the study.

On applying the test of association between different stressors and sociodemographic characteristics, it was noted that sex of the participants and fathers' occupation were statistically associated with the Academic related stressors. Similarly, a statistically significant association was noted between Teaching and Learning related stressors and fathers' occupation. However, these associations diminished when linear regression model was applied. These findings could be due to small sample size and therefore authors recommend that a bigger study with a larger sample size should be carried out to see whether any association exists or not.

Conclusion

Present study hereby concludes that moderate to severe stress is common among medical students and more common in female students. Most common source of these stresses is Academic related issues. Thus the present study hereby recommends that there is an urgent need to restructure the medical curriculum. This should be coupled with the effort to reduce the communication gap between the students and teachers.

The present study further concludes that fathers' occupation is also a potential source of stress among medical students. Uncertainties related to future due to financial constrains coupled with long curriculum duration is also a big source of stress among medical students.

Therefore restructuring of fee structure can also help in reducing stress among medical students.

Conflict of Interest: None Declared.

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