



LEVEL OF STRESS AND ITS SOURCES AMONG MEDICAL STUDENTS OF GMC GONDIA: A CROSS SECTIONAL STUDY

<sup>1</sup>Dr. Alka Kaware, <sup>2</sup>Dr. Subhash Thakre, <sup>\*3</sup>Dr. Hemant Adikane and <sup>4</sup>Dr. Sayali Kalme

<sup>1</sup>Assistant Professor, Seth G.S. Medical College and K.E.M. Hospital, Mumbai.

<sup>2</sup>Professor and Head of Department, Department of Community Medicine, Government Medical College, Gondia-441610.

<sup>3</sup>Assistant Professor, Department of Community Medicine, Government Medical College, Gondia-441610.

<sup>4</sup>Assistant Professor, Department of Community Medicine, Government Medical College, Nagpur -440003.

\*Corresponding Author: Dr. Hemant Adikane

Assistant Professor, Department of Community Medicine, Government Medical College, Gondia-441610.

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ABSTRACT

**Introduction:** It is well documented in previously conducted studies that higher education is very stressful and medical education is even more stressful as compared to other professional students. In India, getting into the medical school is considered to be very prestigious, but the accompanying challenges of being in medical school are largely overlooked. Early identification and necessary interventions targeting the alleviation of modifiable stressors might result in a less stressful academic life for students, which in turn could enhance their academic performance and skill development as medical graduates. **Material & methods:** Present study was conducted in Government Medical College, Gondia during Nov 2017 to Jan 2018. To collect the data, medical students' stress questionnaire (MSSQ) was used. **Results:** In our study, first year study subjects were 98 (52.13%) while 90 (47.87%) were studying in second year. Majority of study subjects 129 (68.62%) were in the age group of 19-20 years. Out 6 domains academic related stress was found to be highest (1.85 + 0.71). Males and Ist year study subjects showed more stress as compared to their counterpart. **Conclusion:** A significant number of study subjects in our setting suffer from moderate level of stress. Academic related stressor was the source of stress and thus most often contributed to overall stress scores.

**KEYWORDS:** Medical student stressor questionnaire (MSSQ), Medical students, Stress.

INTRODUCTION

Stress is demarcated as the body's nonspecific response or reaction to demands made on it, or to alarming events in the environment. It is not just a provocation or a response but it is a process by which we recognise and cope up with environmental threats and challenges. Personal and environmental happenings that cause stress are known as stressors.<sup>[1]</sup> Stress is of two sorts 1. Favourable Stress - facilitates learning, 2. Unfavourable stress-suppresses learning. Medical students may perceive the same stressors differently based on their inbuilt talents. Excessive amount of stress affects students' self-esteem, achievement and development in their field.<sup>[2]</sup>

It is well documented in previously conducted studies that higher education is very stressful and medical education is even more stressful as compared to other professional students.<sup>[3]</sup> Medical education have come a long way since Hippocrates era and have evolved into a more organized and effective mechanism. However, some aspect of training may have produced some

unintended negative stress on medical students' mental and emotional health.<sup>[4]</sup>

In India, getting into the medical school is considered to be very prestigious, but the accompanying challenges of being in medical school are largely overlooked.<sup>[5]</sup> Learning lot of new information in a relatively short time, with the pressure of exams, causes development of stress in medical students.<sup>[6]</sup> The possible inducers of stress in medical students could be infrastructural factors such as unsatisfactory living conditions in the hostel and inadequate library facilities, academic factors such as pressure of studies, frequent examinations, and interpersonal factors such as excessive competitive attitude among students, political conflicts, jealousy and peer rivalry over love affairs, all of which could come in the way of natural friendship and cooperation.<sup>[7]</sup> The longer duration of study and greater duration required to complete professional degree, coupled with higher expectations from parents of same background serving as role models may poses a greater degree of stress on medical students.<sup>[8]</sup>

Knowing which form of distress is most common and how frequently the different forms of stress aggregate in individual medical students would help to inform how best to structure student wellness programs as different forms of distress (e.g., fatigue vs. depression) may require different responses (provision of adequate rest vs. counselling and pharmacologic treatment) or preventative strategies.<sup>[7]</sup> Early identification and necessary interventions targeting the alleviation of modifiable stressors might result in a less stressful academic life for students, which in turn could enhance their academic performance and skill development as medical graduates.<sup>[9]</sup>

A very few studies in India have studied the prevalence of stress and stressors responsible in medical students. Early recognition of different stressors would be helpful in detecting mental health disorders among medical students. The present study was planned to acquire information about sources of stress among medical students at Government Medical College, Gondia. So that we will be able to plan targeted intervention like counselling, psychiatric sessions. This will help in improving their academic performance & to make use of their highest potential.

#### MATERIALS AND METHODS

Present study was conducted in Government Medical College, Gondia. GMC Gondia, was established in 2014 and ongoing students are studying in Ist and IInd year. Gondia district is socially disadvantaged because of left extremist activities and major proportion of tribal and rural population. Cross sectional study design was adopted for conduction of present study. All the students present in Ist and IInd year of GMC, Gondia were recruited. Data from study subjects were collected during Nov 2017 to Jan 2018.

#### Study tool

To collect the data, medical students' stress questionnaire (MSSQ) was used, which is a validated instrument used to identify sources of stress.<sup>[10]</sup> There were 40 items in MSSQ those represented the possible sources of stress in medical students and were grouped into six main domains.

- 1) Academic-related stressors: with items like 'Tests/examinations', 'Getting poor marks', 'Large amount of content to be learnt', and 'Having difficulty understanding the content';
- 2) Intrapersonal and interpersonal-related stressors: with items like 'Conflicts with other students', 'Verbal or physical abuse by teachers', and 'Conflict with personnel';
- 3) Teaching and learning-related stressors: with items like 'Lack of guidance from the teacher', 'Uncertainty of what is expected of me', and 'Lack of recognition for work done';
- 4) Social-related stressors: with items like 'Facing illness or death of patients', 'Talking to patients

about personal problems', and 'Being unable to answer questions from patients';

- 5) Drive and desire related stressors: with items like 'Unwillingness to study medicine', 'Parental wish for you to study medicine', and 'Family responsibilities'; and
- 6) Group activities related stressors: with items like 'Participation in class discussion', 'Need to do well (imposed by others)', and 'Feeling of incompetence'.

The items under each stressor were measured using a rating scale 0-4. Respondents were asked to rate each item as 0 for 'causing no stress at all', 1 for 'causing mild stress', 2 for 'causing moderate stress', 3 for 'causing high stress' and 4 for 'causing severe stress'. The reliability coefficients of the stressor groups ranged from 0.64 to 0.92. The degree or level of stress were classified as: level 0-1.00 'causing nil to mild stress', level 1.01-2.00 'causing mild to moderate stress', level 2.01-3.00 'causing moderate to high stress' and level 3.01-4.00 'causing high to severe stress'.<sup>[10]</sup> It has a high internal consistency as Cronbach's alpha coefficient value was 0.95 which is more than the acceptable cut-off point of 0.6.

#### Data collection

Before administering the questionnaire, a pilot test was conducted among 40 undergraduate students and finalized the questionnaire accordingly. For operational feasibility, the students who attended community medicine class on the day of this survey were asked to take part in it. It was a purposive recruitment.

#### Ethical Consideration

Participation in this study was voluntary and informed consent was taken from all participants to participate in this study. Students who did not give consent and those who filled the questionnaire incompletely were excluded from this study.

#### Data analysis

The summary statistics were presented using frequencies with 95% confidence intervals for categorical variables and median with interquartile ranges for numerical, nonparametric variables. Differences between subgroups in the prevalence of stress were assessed using chi square test. A p value of less than 0.05 was considered as statistically significant. Statistical calculations were performed using Epi Info. Ver 7.1.2

#### RESULTS

Table 1 shows some socio demographic characteristics of study population. Out of 198 study subjects approached, 188 samples responded. Majority of study subjects 129 (68.62%) were in the age group of 19-20 years followed by 38 (20.21%) in 17 – 18 years of age. Nearly equal distribution of gender was observed in our study (M=50.53% Vs F=49.47%).

In our study, first year study subjects were 98 (52.13%) while 90 (47.87%) were studying in second year. Majority of study subjects 142 (75.53%) were living at hostel followed by on rent 34 (18.09%). The majority of study subjects fathers 118 (63.44%) were educated upto graduation or PG, Similarly their mothers also 77 (40.96%) followed by 59 (31.38%). Most of the study subjects mothers 77 (40.96%) were educated graduation or PG. Most of the study subjects fathers 70 (37.63%) were involved in skilled working occupation, followed by 54 (28.72%) in professional group. Mothers of majority of study subjects 147 (78.61%) were homemaker.

Table 2 depicts mean and SD scores of various domains of MSSQ. Out 6 domains academic related stress was found to be highest ( $1.85 \pm 0.71$ ) followed by Teaching and learning related stressors ( $1.34 \pm 0.76$ ). Table 3 displays stress level among individual stressor domain. In academic related stressor (ARS) domain, 83 (44.15%) of study subjects were having moderate level of stress. In Intrapersonal & interpersonal related stressors (IRS)

domain, 85 (45.21%) were having mild level of stress. In Teaching and learning related stressors (TLRS) domain, 85 (45.21%) were having moderate level of stress. Social related stressors (SRS) domain, Drive and desire related stressors (DRS) domain, Group activities related stressors (GARS) domain, were having mild level of stress.

Table 4 shows comparison of Stress levels between Female and Male Students. In case of Academic related stressors (ARS) domain, male study subjects were having significant higher mean as compared with their female study subjects. Such difference is also found while comparing Group activities related stressors (GARS) domain. Other domains show no such significant difference. Table 5 shows comparison of Stress levels between Ist and IInd years Students. In which, Academic related stressors (ARS) domain, study subjects of Ist year were having significant higher mean as compared to the IInd year study subjects. While other domains depicts no such significant difference.

**Table 1: Some Socio demographic characteristics of study subjects.**

Sr. No	Variable	Frequency	Percentage	
1	Age*	17-18 yrs	38	20.21
		19-20 yrs	129	68.62
		21-22 yrs	21	11.17
2	Gender	Male	95	50.53
		Female	93	49.47
3	Year of study	Ist	98	52.13
		IInd	90	47.87
4	Place of residence	Home	12	6.38
		Hostel	142	75.53
		Rental	34	18.09
5	Father's Education**	Professional Degree / PhD	3	1.60
		Graduate or Postgraduate	118	63.44
		Intermediate or Post High School Diploma	41	21.81
		High School Completion	21	11.17
		Middle School Completion	1	0.53
		Primary School Completion	1	0.53
		Illiterate	1	0.53
5	Mother's Education***	Professional Degree / PhD	0	0.00
		Graduate or Postgraduate	77	40.96
		Intermediate or Post High School Diploma	59	31.38
		High School Completion	38	20.32
		Middle School Completion	7	3.72
		Primary School Completion	0	0.00
		Illiterate	6	3.19
5	Father's Occupation**	Profession	54	28.72
		Semi Profession	17	9.04
		Clerk, Shop Owner, Farm Owner	43	23.12
		Skilled Worker	70	37.63
		Semi Skilled Worker	0	0.00
		Unskilled Worker	0	0.00
		Unemployed / Retired	2	1.06
5	Mother's Occupation***	Profession	21	11.17
		Semi Profession		
		Clerk, Shop Owner, Farm Owner	2	1.06

	Skilled Worker	12	6.38
	Semi Skilled Worker		
	Unskilled Worker	5	2.66
	Homemaker	147	78.61

\* Mean + 2S.D. = 19.35 ± 2.06 years Range – 17 to 22 years, \*\*n=186, \*\*\*n=187

**Table 2: Sources of stress in study population.**

Sr. No.	Sources of stress	Scores*
1	Academic related stressors (ARS)	1.85 ± 0.71
2	Teaching and learning related stressors(TLRS)	1.34 ± 0.76
3	Intrapersonal & interpersonal related stressors(IRS)	1.25 ± 0.89
4	Social related stressors (SRS)	1.25 ± 0.69
5	Group activities related stressors (GARS)	1.18 ± 0.80
6	Drive and desire related stressors (DRS)	1.11 ± 0.84

\*Mean score ± S.D.

**Table 3: Stress level among individual stressor domain.**

Sr. No	Stressor Domain	Level of stress against individual stressor domain			
		Mild (0-1.00)	Moderate (1.01-2.00)	High (2.01-3.00)	Severe (3.01-4.00)
1	ARS	25 (13.30%)	83(44.15%)	73(38.83%)	7(3.72%)
2	IRS	85 (45.21%)	72 (38.30)	25 (13.30)	6(3.19%)
3	TLRS	71 (37.77)	85 (45.21%)	28(14.89%)	4 (2.13%)
4	SRS	81 (43.09%)	85 (45.21%)	19 (10.11%)	3 (1.60%)
5	DRS	109 (57.98%)	55 (29.26%)	20 (10.64%)	4 (2.13%)
6	GARS	95 (50.53%)	72 (38.30%)	18 (9.57%)	3 (1.60%)

**Table 4: Comparison of Stress between Female and Male Students.**

Sr. No.	Sources of stress	Mean score		p value
		Female	Male	
1	Academic related stressors (ARS)	1.71	1.98	0.008
2	Intrapersonal & interpersonal related stressors (IRS)	1.20	1.31	0.41
3	Teaching and learning related stressors(TLRS)	1.30	1.37	0.5
4	Social related stressors (SRS)	1.24	1.27	0.7
5	Drive and desire related stressors (DRS)	1.11	1.11	0.9
6	Group activities related stressors (GARS)	1.02	1.09	0.004

**Table 5: Comparison of Stress between Ist and IInd year Students.**

Sr. No.	Sources of stress	Mean score		p value
		Ist	IInd	
1	Academic related stressors (ARS)	1.94	1.74	0.04
2	Intrapersonal & interpersonal related stressors (IRS)	1.29	1.22	0.55
3	Teaching and learning related stressors(TLRS)	1.39	1.28	0.29
4	Social related stressors (SRS)	1.29	1.21	0.41
5	Drive and desire related stressors (DRS)	1.14	1.08	0.63
6	Group activities related stressors (GARS)	1.26	1.19	0.20

Overall cronbach's alpha in our study was 0.942. Individual stressors had following distribution.

**Table 6: Cronbach's Alpha value of stressor groups.**

Sr. No.	Sources of stress	Cronbach's Alpha
1	Academic related stressors (ARS)	0.864
2	Intrapersonal & interpersonal related stressors(IRS)	0.890
3	Teaching and learning related stressors(TLRS)	0.839
4	Group activities related stressors (GARS)	0.791
5	Social related stressors (SRS)	0.731
6	Drive and desire related stressors (DRS)	0.563

## DISCUSSION

A life without any challenge or pressure, i.e. “stress,” would be under stimulating and deadly boring. Everyone needs a certain amount of “pressure” to perform their level best. But when the pressures exceed a person’s ability to cope, the result is stress.<sup>[11]</sup> Our study, among all the six domains of stress, subjects were having varying levels of stress.

In our study, majority of study subjects 129 (68.62%) were of age group of 19 – 20 years and mean age was 19.35 years. While study conducted by Surwase *et al* in Nagpur found mean age of study participants was 20.17 years.<sup>[11]</sup> In our study, nearly equal distribution of study subjects was found (M=50.53% Vs F=49.47%). Rock B *et al* studied in trichy, also found similar findings (M=48.8% Vs F=51.2%).<sup>[2]</sup> Our study subjects were limited upto IInd year only. While Surwase *et al* had included IInd and IIIrd year students, Shelke *et al* included IIIrd year students in study at Ioni.<sup>[6,11]</sup>

In our study, mean of Academic related stressors was 1.85 with SD of 0.71, which was lower than that studies conducted by other authors. Surwase K *et al* (2016) had mean of 2.96 with SD of 0.70 in Academic related stressors.<sup>[11]</sup> Manjunath R *et al* (2014) conducted the study at Chitradurga and found out that mean was 2.26 in Academic related stressors.<sup>[8]</sup> Shankar P *et al* (2014) conducted the study at Aruba in Netherlands and found out that mean score in Academic related stressors was 2.89.<sup>[12]</sup>

In our study, mean score of Teaching and learning related stressors was 1.34 with SD of 0.76, which was lower than that in studies conducted by other authors. Surwase K *et al* had found mean 2.49<sup>[11]</sup>, whereas Manjunath R *et al* found out that mean 1.55<sup>[8]</sup> and Shankar P *et al* conducted study and found out that mean of 1.46 with SD of 1.13.<sup>[12]</sup> In our study, mean of Intrapersonal & interpersonal related stressors was 1.25 with SD of 0.89, which was lower than that in studies conducted by other authors. Surwase K *et al* found mean 2.43<sup>[11]</sup>, Manjunath R *et al* found mean 2.03<sup>[8]</sup> and Shankar P *et al* found mean 1.28.<sup>[12]</sup>

In our study, mean of Social related stressors was 1.25 with SD of 0.69, which was lower than that in studies conducted by other authors. Surwase K *et al* found mean 2.24<sup>[11]</sup>, Manjunath R *et al* found mean was 1.82<sup>[8]</sup> and Shankar P *et al* found mean 1.71.<sup>[12]</sup> In our study, mean of Group activities related stressors was 1.18 with SD of 0.80, which was lower than that in studies conducted by other authors. Surwase K *et al* found mean of 2.34<sup>[11]</sup>, Manjunath R *et al* (2014) found mean of 1.87<sup>[8]</sup> and Shankar P *et al* found mean of 2.01.<sup>[12]</sup>

In our study, mean of Drive and desire related stressors was 1.11 with SD of 0.84, which was lower than that in studies conducted by other authors. Surwase K *et al* found mean 2.16<sup>[11]</sup>, Manjunath R *et al* found mean

1.43.<sup>[8]</sup> Shankar P *et al* found mean 1.09 which was similar to our study.<sup>[12]</sup> As discussed above, overall less stress was observed in our study as compared to other authors.

Academic related stressors among first year students was higher compared to second year (Table-5). High level of stress in first year may be due to the introduction of taking more responsibility for their learning and a shift from the traditional teacher- centered teaching methodology to self-directed student-centred teaching methodology. Similar finding were obtained by Salam A *et al*.<sup>[3]</sup> The mean scores of six domains were less as compared to the findings observed by other authors. As the study subjects were studying in newly established medical college, this could be a reason for this difference.

## CONCLUSION

A significant number of study subjects in our setting suffer from moderate level of stress. Academic related stressor was the source of stress and thus most often contributed to overall stress scores. Males and Ist year study subjects showed more stress as compared to their counterpart.

## Weakness

Our study has lot of limitations. One of the potential limitations is response bias. Response may be affected by stress. Stressed students may be less motivated to fill out a proforma, on the other hand, they may be more likely to participate as the topic of the survey is of importance to them. Present cross-sectional study was based on self-reported perception provided by students. Therefore, there is some potential for recall bias which may have occurred because of the respondents understanding of the questions or wish to report their emotions in a certain way. So this can be overcome with longitudinal study which could be carried out with a cohort of students to investigate the levels of stress among students in all the five years of undergraduate medical years and the associated factors. Due to cross sectional study design, no temporal relationship could be established as it did not show direct cause and effect.

## Strengths

Major strengths of our study was sample size. Study subjects were representative of Indian medical student population. Prospective design, and use of established full- length instruments for assessment of multiple manifestations of stress.

## Recommendation

With this study, we want the policy makers and the medical community to make a note of this ignored aspect of medical education. More elaborate and longitudinal studies would be required to draw conclusions on the incidence, causes and consequences of stress in future doctors. Mental fitness programmes are needed to help students make smooth transition between different



learning environments with changing learning demands and a growing burden on their mental and physical capacity.

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