

**STRESS AND ITS EFFECTS ON MEDICAL STUDENTS OF AIMC****Dr. Ali Bin Tariq*, Dr. Aqsa Tariq and Dr. Sajeela Riaz**

Allama Iqbal Medical College A study conducted at Allama Iqbal Medical College / Jinnah Hospital, Lahore.

***Corresponding Author: Dr. Ali bin Tariq**

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Article Received on 21/10/2018

Article Revised on 11/11/2018

Article Accepted on 02/12/2018

ABSTRACT

Background: Medical education is thought to be more stressful than other educations. So, this research was conducted to determine the frequency, grade, type of stress and the various effects produced by the stress which are regarded as stigma all over the world. Objective: To determine 1) Stress in medical students of AIMC 2) Effects of stress in medical students of AIMC Material And Methods: Study Design Cross Sectional Study Study Setting and duration Setting: Allama Iqbal Medical College attached with Jinnah Hospital Lahore, a tertiary care hospital, affiliated with UHS. Duration: 4 weeks. Inclusion criteria The regular students of all the years of MBBS Exclusion criteria Those MBBS students who will not provide the required information. Data Collection and analysis 260 medical students were included in our study. A structured questionnaire regarding stress and its effects of medical students in AIMC was given and all the information was entered. (attached). Data was entered and analyzed in SPSS Ver.: 17.0. Frequency and percentages was calculated for nominal variables like stress, and effect on academic performance. Cross tabulation was done for variable of interest like gender, class, academic performance and presence of stress. Chi-square test was used to assess the significance between variables with $p < .05$ as statistical significance. Results: The response rate was 74.28%. The prevalence of stress was 63.46%. It was more in females (71.1%). The most prevalent grade of stress was moderate (55.15%). The most common effect produced by stress was sleep pattern change (79.4%). The academic performance of female students (69.1%) was more affected than male students. Conclusions: The medical students of AIMC Lahore who complain of stress mostly had moderate stress. The most common reason of stress was found to be the exams. The most common feeling was of depression while stressed.

KEYWORDS: Medical students, Stress, Effects of Stress, AIMC.**INTRODUCTION**

“Stress is the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressure of the situation”.

Despite its diffuse perception, most of the well-known definitions emphasize stress as any factor that threatens the health of an individual or has an adverse effect on the functioning of the body. As such, stress is a normal, desirable, and beneficial part of our lives that can help one learn and grow. Most people are more active, invigorated, creative, and productive because of stress. Conversely, stress can cause significant problems. Prolonged, uninterrupted, unexpected and unmanageable stress is damaging. Stress impairs brain functioning, which leads to learning and memory deficits. Academic stress among students can vary from mild to severe. These different levels of stress may affect learning performance differently. Psychological stress increases the activity of hypothalamic-pituitary-adrenocortical (HPA) axis.

The types of stress are acute, acute episodic and chronic.

Stress can affect the following in a medical student:

- 1) Performance
- 2) Physical state
- 3) Behavior
- 4) Sleep
- 5) Diet

Medical college environment is stressful to the newcomers because they have to adapt themselves to learn difficult terms. Examination stress can be in students from mild to severe and thus affects the performance accordingly.

It is clear that medical education is not an optimal state of health and may, in fact, be a health hazard for many young and impressionable incoming medical students.

LITERATURE REVIEW

According to a research conducted on 129 students, the prevalence of stress was found to be about 61.47%. The prevalence of stress was higher (73.33%) in 1st year

medical students, followed by 2nd year (55.31%) and 3rd year students (53.33%).^[1]

According to a research conducted on Malaysian and Saudi Arabian medical students, the prevalence of stress was 41.9% and 57% respectively.^[2]

A study has suggested that the prevalence of psychological stress was only slightly higher among the female medical students (42.2%) compared to the male medical students (41.4%). The same study has suggested that 71% of the total stressed medical students had sleep problems.^[3]

Stress is process oriented not trait oriented as stress was not found to be significantly more in students having their personality factors contributing to stress (type A-52/67) as compared to others (type B-123/171).^[4]

The prevalence of stress in medical students who attended their classes regularly was less (54.8%) while those who did not attend college regularly had stress prevalence of (73.9%).^[5]

Study showed that main sources of stress for the medical students were, exams (73.0%), load of study(49.5%), homesickness (16.7%), stress among medical students(15%), and relationship problems (12.9%).The lowest rate as the source of stress was the family problems(12.2%).^[5]

Levels of stress assessed in fourth year medical students at three British universities shows that the estimated prevalence of emotional disturbances was 31.2%. Of these, 4% students reported high intake of alcohol.^[6]

12% of all medical students become clinically depressed during their medical study years.^[7]

According to a research, medical students with mild and moderate stress showed higher performance in academics (65%-70%) while the students with severe stress had lower performance (55%).^[8]

Mean Derogate Stress Profile (DSP) scores for 201 medical students in their basic science years (first and second year) and 156 medical students in their clinical years (third, fourth and final year) showed that basic science students mean score (SD) in subjective stress was 48(10) while was 51(9) for clinical students.^[9]

A literature on stress and health identified some common themes in different cultures in relation to stresses. These include academic demands, personal and interpersonal issues and financial responsibilities. It included medical students from China, India and Malaysia. According to this research, the Chinese students reported significantly less “academic stress” than the Malaysian students and the Malaysian students reported significantly less “financial stress” compared to the Chinese and Indian

students. There were no significant differences between the other variables.^[10]

According to a study, the weight and body mass index (BMI) are affected by stress. Both of these were found to be low in stressed medical students.^[11]

A study suggested that the prevalence of stress varies geographically to some extent in the medical students. It was found that the stress level was higher in first and third year medical Malaysian students than in Non-Malaysian students.^[12]

According to a study, the medical students going abroad for medical education are more stressed as compared to those students studying in their own country because of certain problems like accommodation, finance, communication, disruption of social support and most importantly adjustment with the medical institute.^[13]

OBJECTIVES

The objectives of this study were to

1. Find the level of stress in medical students
2. Find effects of stress.

Operational Definition

Stress is the psychological and physical state that results when the resources of the individual are not sufficient to cope with the demands and pressure of the situation.

MATERIAL AND METHODS

Study Design

Cross sectional study.

Study Setting

The study was conducted in Allama Iqbal Medical College attached with Jinnah Hospital, Allama Shabbir Ahmed Usmani Road Lahore.

Duration of Study

Three months.

Sample Size

350 students

Sampling Technique

Non probability / purposive sampling.

Sample Selection

Inclusion criteria

The medical students from all five classes of AIMC.

Exclusion criteria

The medical students who were irregular.

The medical students who have been recently migrated.

Data Collection Procedure

260 medical students were included in our study. A structured questionnaire regarding stress and its effects

of medical students in AIMC was given and all the information was entered. (attached).

Data Analysis Procedure

Data was entered and analyzed in SPSS Ver.: 17.0. Frequency and percentages was calculated for nominal variables like stress, and effect on academic performance. Cross tabulation was done for variable of interest like gender, class, academic performance and presence of stress. Chi-square test was used to assess the significance between variables with $p < .05$ as statistical significance.

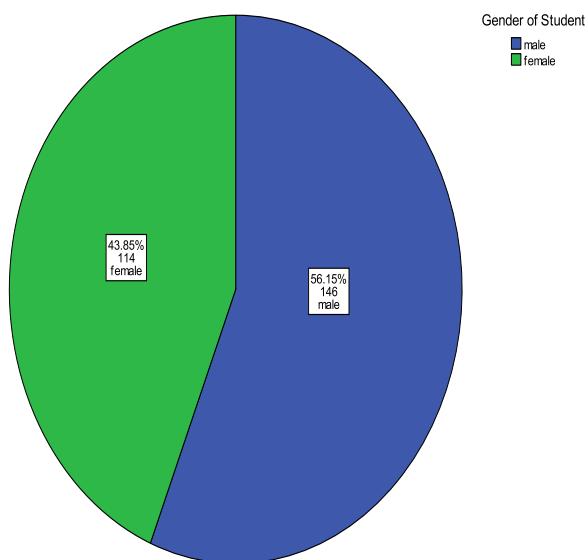
RESULTS AND MAIN FINDINGS

The study included 350 students out of which 260 (74.29%) responded. The mean age of the students was 20.77 ± 1.681 years. The range of the ages of the students was 17-24. (Table No. 1)

Table 1: Age of Student Statistics.

N	Valid	260
Mean		20.77
Std. Deviation		1.681
Minimum		17
Maximum		24

Out of 260 students, 146 (56.15%) were males and 114 (43.85%) were females. (Graph No. 1)



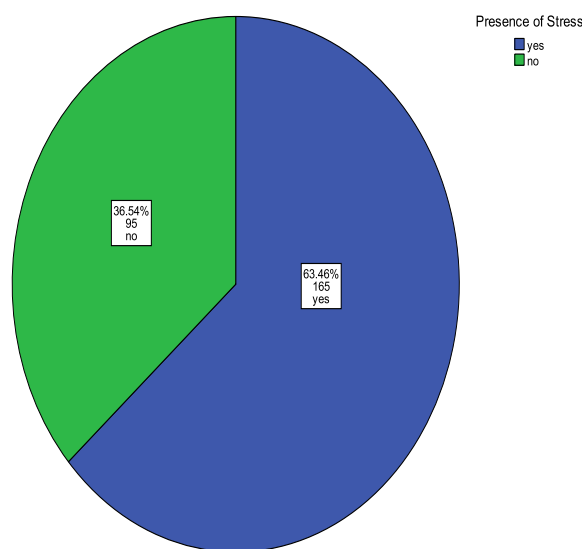
Graph 1: Gender of the Students.

The study included all the five MBBS classes of AIMC. In which, No. of 1st year students were 52 (20%), 2nd year 60 (23.1%), 3rd year 58 (22.3%), 4th year 53 (20.4%) and of final year 37 (14.2%). (Table No. 2)

Table 2: Class of the Student.

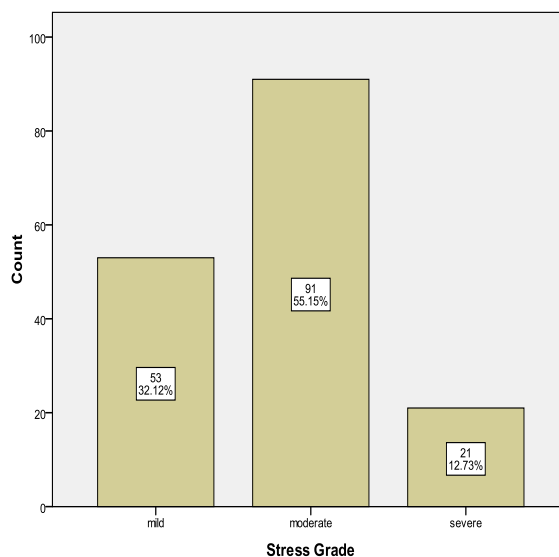
		Frequency	Percent
Valid	1st year	52	20.0
	2nd year	60	23.1
	3rd year	58	22.3
	4th year	53	20.4
	final year	37	14.2
	Total	260	100.0

Out of 260 students, 165 students (63.46%) had stress while 95 students (36.54%) had no stress. (Graph No. 2)



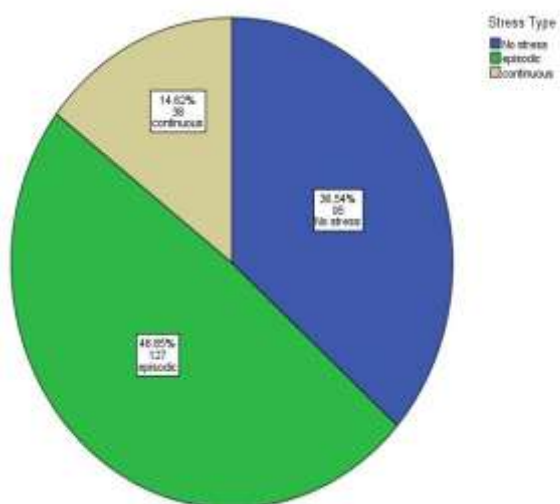
Graph 2: Presence of Stress.

Out of 260 students, 91 students (55.15%) had moderate stress, 53 (32.12%) had mild stress while 21 (12.73%) had severe stress. (Graph No. 3)



Graph 3: Stress Grade.

Out of 260 students, the episodic type of stress was present in 127 students (48.85%) and 38 students (14.62%) had continuous stress. 95 students (36.54%) claimed to have no stress.



Graph No. 4: Stress Type.

The No. of stress episodes in 165 stressed students (out of 260 students) were found to be as follows: 79 students (30.4%) were having 1-2 episodes of stress during the recent past, 64 students (24.6%) were having 2-4 episodes and 22 students (8.5%) were having more than 4 episodes during the recent past. (Table No. 3)

Table 3: No. of Stress Episodes.

		Frequency	Percent
Valid	No Stress	95	36.5
	1-2	79	30.4
	2-4	64	24.6
	>4	22	8.5
	Total	260	100.0

Out of 165 stressed students, 65 students (25%) had stress due to exam/test, 26 students (10%) had stress due to boarding, 13 (5%) due to financial problems and 61 (23.5%) had stress due to other reasons. (Table No. 4)

Table 4: Reason of Stress.

		Frequency	Percent
Valid	No Stress	95	36.5
	Exam/Test	65	25.0
	Boarding	26	10.0
	Financial Problems	13	5.0
	Other	61	23.5
	Total	260	100.0

During their usual stress, the feelings of 260 students were depression in 106 students (40.8%), restlessness in 96 (36.9%), anger in 35 students (13.5%) and fear in 23 students (8.8%). (Table No. 5)

Table 5: Feeling while stressed.

		Frequency	Percent
Valid	Restless	96	36.9
	Depressed	106	40.8
	Frightened	23	8.8
	Angry	35	13.5
	Total	260	100.0

Out of 260 students, 155 (59.6%) had stress-related frustration while 105 (40.4%) had no such frustration. (Table No. 6).

Table 6: Stress related Frustration.

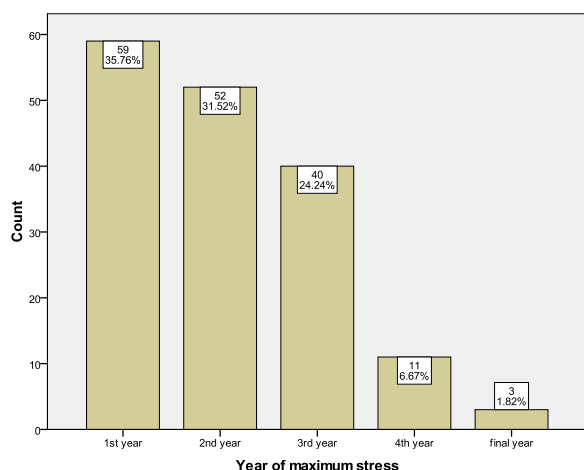
		Frequency	Percent
Valid	yes	155	59.6
	no	105	40.4
	Total	260	100.0

Multiple response table was designed to determine the various effects of stress. Out of 165 stressed students, 131 students (79.4%) were having effect on their sleep, 129 students (78.2%) were having effect on their routine behavior, 124 students (75.2%) were having mood changes, 116 students (70.3%) were having effect on their diet and 111 students (67.3%) were having effect on their academic performance.

Table 7: Stress Effects Frequencies.

		Responses		Percent of Cases
		N	Percent	
\$StressEffects ^a	Mood Swings	124	14.1%	75.2%
	Normal Routine while Stressed	83	9.4%	50.3%
	Effect on Diet	116	13.2%	70.3%
	Effect on weight	84	9.6%	50.9%
	Effect on sleep	131	14.9%	79.4%
	Effect on Routine Behavior	129	14.7%	78.2%
	Stress before medical college	101	11.5%	61.2%
	Effect on academic performance	111	12.6%	67.3%
Total		879	100.0%	532.7%
a. Dichotomy group tabulated at value 1.				

When students from 2nd to final year were asked about their own perception of year of maximum stress, 59 students (35.76%) told to have maximum stress in their 1st year, 52 students (31.52%) in 2nd year, 40 students (24.24%) in 3rd year, 11 students (6.6%) in 4th year and 3 students (1.82%). (Graph No. 5)

**Graph 5: Year of Maximum Stress.**

Different cross-tabulations are given in the following section:

A cross-tabulation was drawn between stress effects and gender. Out of 131 students who had effect on their sleep, 67 (82.7%) were females and 64 (76.2%) were males. Out of 129 students who had effect on their routine behavior, 68 (84%) were females and 61 (72.6%) were males. Out of 124 students who had mood swings, 66 (81.5%) were females and 58 (69%) were males. Out of 116 students who had effect on their diet, 62 (76.5%) were females and 54 (64.3%) were males.

Table 8: Stress Effects*Gender Crosstabulation.

			Gender of Student		
			male	female	Total
StressEffects ^a	Mood Swings	Count	58	66	124
		% within Gender	69.0%	81.5%	
	Normal Routine while Stressed	Count	42	41	83
		% within Gender	50.0%	50.6%	
	Effect on Diet	Count	54	62	116
		% within Gender	64.3%	76.5%	
	Effect on weight	Count	44	40	84
		% within Gender	52.4%	49.4%	
	Effect on sleep	Count	64	67	131
		% within Gender	76.2%	82.7%	
	Effect on Routine Behavior	Count	61	68	129
		% within Gender	72.6%	84.0%	
	Stress before medical college	Count	58	43	101
		% within Gender	69.0%	53.1%	
	Effect on academic performance	Count	55	56	111
		% within Gender	65.5%	69.1%	
Total		Count	84	81	165
Percentages and totals are based on respondents.					
a. Dichotomy group tabulated at value 1.					

A cross-tabulation between gender of students and presence of stress shows that out of 146 male students, 84 (57.5%) were having stress while out of 114 female

students, 81 (71.1%) were having stress. ($X^2=5.045$, $df=1$, $p=0.025$ i.e $p<0.05$)

Table 9: Gender of Student * Presence of Stress Crosstab.

			Presence of Stress		
			yes	no	Total
Gender of Student	male	Count	84	62	146
		% within Gender of Student	57.5%	42.5%	100.0%
	female	Count	81	33	114
		% within Gender of Student	71.1%	28.9%	100.0%
Total		Count	165	95	260
		% within Gender of Student	63.5%	36.5%	100.0%
Chi-Square= 5.045 df= 1 p value= .025					

A cross-tabulation between gender of students and effect of stress on their academic performance shows that out of 146 male students, 91 (62.3%) were having no effect on their academic performance while out of 114 female students, 58 (50.9%) were having no effect on their academic performance. ($X^2=3.431$, $df=1$, $p=0.064$ i.e $p>0.05$).

Table 10: Gender of Student * Effect on academic performance Crosstab.

			Effect on academic performance		
			yes	no	Total
Gender of Student	male	Count	55	91	146
		% within Gender of Student	37.7%	62.3%	100.0%
	female	Count	56	58	114
		% within Gender of Student	49.1%	50.9%	100.0%
Total		Count	111	149	260
		% within Gender of Student	42.7%	57.3%	100.0%
Chi-Square= 3.431 df= 1 p value=.064					

A cross-tabulation between class of the students and presence of stress shows that out of 52 students of 1st year, 35 (67.3%) were having stress. Out of 60 students of 2nd year, 34 (56.7%) were stressed. Out of 58 students

of 3rd year, 40 (69%) were stressed. Out of 53 students of 4th year, 37 (69.8%) were having stress. Out of 37 students of final year, 19 (51.4%) were stressed. ($X^2=5.546$, $df=4$, $p=0.236$ i.e $p>0.05$).

Table 11: Class of the Student * Presence of Stress Crosstab.

			Presence of Stress		
			yes	no	Total
Class of the Student	1st year	Count	35	17	52
		% within Class of the Student	67.3%	32.7%	100.0%
	2nd year	Count	34	26	60
		% within Class of the Student	56.7%	43.3%	100.0%
	3rd year	Count	40	18	58
		% within Class of the Student	69.0%	31.0%	100.0%
	4th year	Count	37	16	53
		% within Class of the Student	69.8%	30.2%	100.0%
	final year	Count	19	18	37
		% within Class of the Student	51.4%	48.6%	100.0%
Total		Count	165	95	260
		% within Class of the Student	63.5%	36.5%	100.0%
Chi-square = 5.546 df= 4 p value= .236					

A cross-tabulation was made between class of the students and effect on their academic performance. It showed that out of 52 students of 1st year, 32 (61.5%) were having no effect on their academic performance. Out of 60 students of 2nd year, 37 (61.7%) were having no effect on their academic performance. Out of 58 students of 3rd year, 31 (53.4%) were having no effect on their academic performance. Out of 53 students of 4th year, 28 (52.8%) were having no effect on their academic performance. Out of 37 students of final year, 16 (43.2%) were having no effect on their academic performance. ($X^2=1.638$, $df=4$, $p=0.802$ i.e $p>0.05$).

Table 12: Class of the Student* Effect on academic performance Crosstab.

		Effect on academic performance		Total
		yes	no	
Class of the Student	1st year	20	32	52
		38.5%	61.5%	100.0%
	2nd year	23	37	60
		38.3%	61.7%	100.0%
	3rd year	27	31	58
		46.6%	53.4%	100.0%
	4th year	25	28	53
		47.2%	52.8%	100.0%
final year	16	21	37	
	43.2%	56.8%	100.0%	
Total		111	149	260
		42.7%	57.3%	100.0%
Chi-square= 1.638 df= 4 p= .802				

DISCUSSION

According to a study of stress in medical students at Seth G.S Medical College,^[4] the **stress was present** in 73% while in our research, the stress was present in 63.46% of the students.

According to a cross-sectional study at a College of Medicine in Saudi Arabia,^[2] the stress was present in 56.9% **males** and 75.7% females which is similar to our research i.e 57.5% males and 71.1% females.

According to a research conducted in Lahore Medical and Dental College, Lahore,^[1] the **level of stress** among most medical students was moderate (43%) and the research conducted in Allama Iqbal Medical College (AIMC) Lahore shows about the similar level of stress i.e moderate (55.15%).

The **trend of stress** in medical students of different classes according to College of Medicine in Saudi Arabia^[2] and at AIMC Lahore was similar in 1st and 2nd years but was different in 3rd, 4th and final years. In College of Medicine in Saudi Arabia,^[2] the stress in 1st and 2nd year medical students was 78.7% and 70.8% respectively which is similar to 67.3% and 56.7% in our research. The stress in 3rd, 4th and final year classes of College of Medicine in Saudi Arabia,^[2] 64%, 43.2% and 48.3% respectively. The stress in 3rd, 4th and final year classes of AIMC Lahore is 69%, 69.8% and 51.4% respectively.

According to a study conducted in Tikrit University College of Medicine,^[5] the most common **reason of stress** was exams (73.9%) and in our research, it was also the most common cause of stress (39.39%).

According to a research conducted in Universiti Putra Malaysia, 43400 Serdang, Selangor,^[3] the **depression**

was seen in 33.6% students and in our study, 40.8% were depressed due to stress.

According to a research conducted in Universiti Putra Malaysia, 43400 Serdang, Selangor,^[3] the **decrease in sleep** was 71% and in our research, the decrease in sleep is 69.23% which shows similarity between the two researches.

CONCLUSION

The conclusion of our study is

- The medical students of AIMC Lahore who complain of stress mostly had moderate stress.
- The most common reason of stress was found to be the exams.
- The most common feeling was of depression while stressed.
- The most common effect of stress was the change in sleep pattern.
- Most of the students perceived maximum stress during their 1st year MBBS.

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