

## ORIGINAL ARTICLE

# Determining Major Stressors for Students at a Private Medical College in Lahore, Pakistan, Using MSSQ.

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## ABSTRACT

**Background:** Undergraduate medical studies are tough and require long hours of study and thus can lead to significant stress for the students both physically and emotionally. Stress can affect a student's mental wellbeing and can lead to anxiety, fatigue and depression. Medical undergraduates report a greater level of perceived stress than general population. We need to understand the stressors affecting the health of our students in order to prevent psychological and emotional consequences.

**Methods:** A descriptive cross-sectional study using the Medical student stressor questionnaire (MSSQ) was designed to determine the different stressors that a medical student deals with during their educational career at the University College of Medicine (UCM) at University of Lahore (UOL). Student participation in this study was voluntary. 1st, 2nd and 3rd year MBBS students of UCM were included in the study. The questionnaire has 20 questions that determine the academic, interpersonal & intrapersonal, teaching and learning, social, drive and desire, and group activities related stressors. The students were further asked to answer questions related to their gender, study routine and physical activity. They were also asked about family and social support available to them. SPSS software version 23 was utilized for data analysis.

**Results:** Data revealed that the 2nd and 3rd year students regard academic related stressors as the most bothersome for them, whereas the desire related stressors were regarded by them as causing mild to moderate stress. The remaining four domains were rated as causing only moderate stress.

1st year students graded the academic related stressors as the cause of most stress for them, while the teaching and learning related stressors, interpersonal related stressors and social related stressors were rated less than it. Drive and desire related stressors were regarded as causing mild stress. When we compared the data from all three years, we found that group activities related stressors were regarded as least stressful by 3rd year students.

3rd year MBBS students rated the intrapersonal & interpersonal stressors, social related stressors, drive and desire related stressors and group activity related stressors at a level that was lower than the 1st & 2nd year MBBS students.

**Conclusions:** Academic related stressors and teaching and learning related stressors were rated as being most stressful by students of all three years. Institutions should take to make the learning environment less stressful for the students as continued stress can adversely affect the health and mental well-being of the students.

**Keywords:** Undergraduate Medical Students, Stress, Medical student stressor questionnaire (MSSQ)

## INTRODUCTION

Medical students are required to master a considerable volume of learning material in order to show competence to graduate. On a typical day, the students spend around 7 hours in the campus, where they are required to attend classes in the form of interactive lectures, practical sessions and small group discussions, and during hospital visits for clinical teaching, they are required to take history from the patients and to practice their clinical skills on them.

Medical students frequently complain that they feel tired and exhausted due to their routine. A continued high level of stress can negatively affect the students physical and emotional health (Pascoe et al., 2020) (Rosal, Milagros C, Barrett et al., 1997). In the early years they have limited clinical knowledge and are thus not very confident during their patient interactions. Medical students

are required to present their clinical findings in front of others and less confident students find such interactions difficult. All of this can contribute to immense stress for the medical students and high academic related stress can lead to poor performance (Pascoe et al., 2020).

Studies have reported that medical students are stressed to the point that it may lead to psychological disturbance and adverse effects on physical health (Pascoe et al., 2020) (Guthrie et al., 1995). Students are stressed about the amount of study that is required of them in the course of their medical training. The structure and the course design and the way the content is delivered contributes to that stress (Miller, 1994).

The astounding number of assessments that the medical undergraduate student has to undergo, from discipline based test to modular exams to combined block assessments to the ward test and end of year examination,

little spare time is left for personal activities and relaxation (Radcliffe & Lester, 2003).

## METHODOLOGY

The study was carried out at the UCMD from July to Sep 2018. A descriptive cross-sectional study was undertaken. Non-randomized purposive sampling was done. MBBS students of 1st, 2nd and 3rd year were allowed to participate in the study, as at the time of data collection only the initial three years were following the integrated curriculum, whereas fourth and final year were still following traditional curriculum. There are 150 students enrolled in each year. The Google form link for the questionnaire was shared on MOODLE in the respective courses for each year, and the link remained active for one week. The data obtained was analyzed by SPSS version 23.

**MSSQ:** Medical Student Stressor Questionnaire (MSSQ) is a questionnaire developed by Dr. Muhammad Saiful Bahri Yusoff to identify stressors in medical students. It is a validated and reliable tool to assess the stressors in medical students (Saiful & Yusoff, 2017) (Yusoff, 2013) (Yusoff, 2011). MSSQ initially consisted of 40 questions but following a confirmatory factor analysis study, it was concluded that a 20 item MSSQ is more reliable and valid than a 40 item MSSQ and it has better psychometric value (Muhamad Saiful Bahri Yusoff, 2011).

It measures stressors in six different domains, Academic Related Stressors (ARS), Intrapersonal and Interpersonal Related Stressors (IRS), Teaching and Learning Related Stressors (TLRS), Social Related Stressors (SRS), Drive and Desire Related Stressors (DRS), and Group Activities Related Stressors (GARS) (Yusoff & Abdul Rahim, 2010). The following questions of the MSSQ questionnaire corresponded to the domains of stressors,

- Domain 1 (Academic Related Stressors) (ARS) = Q1, Q2, Q3, Q4, Q5
- Domain 2 (Intrapersonal and Interpersonal Related Stressors) (IRS) = Q12, Q13, Q14, Q15
- Domain 3 (Teaching and Learning Related Stressors) (TLRS) = Q18, Q19, Q20
- Domain 4 (Social Related Stressors) (SRS) = Q9, Q10, Q11
- Domain 5 (Drive and Desire Related Stressors) (DRS) = Q16, Q17
- Domain 6 (Group Activates Related Stressors) (GARS) = Q6, Q7, Q8

## OPERATIONAL DEFINITION

### DEFINITION OF STRESS

The term "stress" was first introduced by Hans Selye in 1936, he defined it as "the non-specific response of the body to any demand for change" (Szabo et al., 2017) (Szabo et al., 2012).

In literature, stress has also been defined as a state of mental or emotional strain or tension resulting from adverse or demanding circumstances.

Stress is the relationship between the demands on an individual, the feelings of that individual about those

demands and the ability of that individual to cope with those demands.

## RESULTS

Out of 450 students of the 1st, 2nd and 3rd year MBBS combined, 77% (346) responded to the questionnaire, out of which 126 (36%) were from 1st year, 117 (34%) from 2nd year and 103 (30%) were from 3rd year MBBS. 60% (208) of the respondents were female while 40 (138) were male students. 56% of the respondents were day-scholars while 44% (153) were hostel residents. 55% of the respondents reported doing no physical activity during their free time, while 38% (131) respondents engaged in only an hour of physical activity during their free time. Majority of the students reported being connected to the internet either all the time or using internet for at least a couple of hours every day 79% (272). Of the surveyed students 92% (318) reported not smoking at all, while only 3.5% (12) reported smoking a pack a day or more.

Data revealed that the 2nd and 3rd year students regard academic related stressors as the most bothersome for them, whereas the desire related stressors were regarded by them as causing mild to moderate stress. The remaining four domains were rated as causing only moderate stress.

1st year students graded the academic related stressors as the cause of most stress for them, while the teaching and learning related stressors, interpersonal related stressors and social related stressors were rated less than it. Drive and desire related stressors were regarded as causing mild stress. When we compared the data from all three years, we found that group activates related stressors were regarded as least stressful by 3rd year students.

3rd year MBBS students rated the intrapersonal & interpersonal stressors, social related stressors, drive and desire related stressors and group activity related stressors at a level that was lower than the 1st & 2nd year MBBS students.

Both male and female students of third year MBBS rated the academic related stressors at an equal level that is higher than the first- and second-year students. Female students of second year MBBS rated all the six stressor domains at a level slightly higher than the male students of second year MBBS.

Hostel residents of first and second year rated the intrapersonal & interpersonal related stressors, teaching and learning related stressors, social related stressors and drive & desire related stressors at a level that is lower than their day scholar counterparts.

Students who rated the academic related stressors at a higher level tend to spend at least four to six hours studying at home, and consequently reported engaging in little physical activity.

Students who reported using the social media websites, rated the stressors at a lower level than the students who do not use social media websites at all.

Students who rated the stressors higher than their counterparts, also reported smoking from a couple of cigarettes a day to a pack a day.

Students who reported a lack of family support also rated the stressors at a level that was higher than their

counterparts who had reported having a close relationship with their parents and siblings.

Similarly, students who lacked social support or those who did not have close friends who they could confide in, rated the stressors at a higher level than those students who did. Interestingly, in all three years, the students with close friends rated the social related stressors at a higher level than those without close friends.

First and second year students who reported being sleep deprived rated the stressors at a level that was higher than their counterparts who reported being well

rested. It was intriguing to find that the third-year students, who reported being sleep deprived, rated the stressors at a level that was lower than their counterparts, who had reported being well rested. This was in contrast to the findings in first- and second-year students.

Having breakfast before coming to the university, had little impact on the rating of the stressors. As, there was very little difference in the ratings of various stressors amongst the students who did or did not take breakfast before coming to the university to attend the classes.

Table 1: Demographic Data

		1 <sup>st</sup> yr MBBS	2 <sup>nd</sup> yr MBBS	3 <sup>rd</sup> yr MBBS	Total
Number of Respondents		126 (36%)	117 (34%)	103 (30%)	346 (100%)
Gender	Male	54 (43%)	50 (43%)	34 (33%)	138 (40%)
	Female	72 (57%)	67 (57%)	69 (67%)	208 (60%)
Residing	Scholars	73 (58%)	57 (49%)	63 (61%)	193 (56%)
	Hostel residents	53 (42%)	60 (51%)	40 (39%)	153 (44%)
Time spent studying at home	less than one hour	32 (25%)	37 (32%)	49 (48%)	118 (34%)
	two to four hours	82 (65%)	77 (66%)	44 (43%)	203 (59%)
	four to six hours	12 (10%)	3 (7%)	10 (10%)	25 (7%)
Amount of physical activity each day	No physical activity at all	70 (56%)	68 (58%)	52 (51%)	190 (55%)
	One hour of physical activity everyday	47 (37%)	41 (35%)	43 (42%)	131 (38%)
	2 to 4 hours of physical activity everyday	9(7)	8(7%)	8(7%)	25 (7%)
Use of Social media websites	Don't use at all	4 (3%)	3 (3%)	3 (3%)	10 (3%)
	1 to 2 hours every day	57 (45%)	32 (27%)	48 (47%)	137 (40%)
	3 to 6 hours everyday	21 (17%)	29 (25%)	14 (14%)	64 (18%)
	I am always connected	44 (35%)	53 (45%)	38 (37%)	135 (39%)

Table 2: Comparison of mean MSSQ scores of first, Second and third-Year Students according to stressor domains. (The score is out of 4 in each domain, with 0=causing no stress at all, 1 = causing mild stress, 2 = causing moderate stress, 3 = causing high stress, 4 = causing severe stress).

		1 <sup>st</sup> yr MBBS	2 <sup>nd</sup> yr MBBS	3 <sup>rd</sup> yr MBBS
Close relationship with my parents & siblings	Agree	100(79%)	88 (75%)	89 (86%)
	Neutral	17 (14%)	29(25%)	11(11%)
	Disagree	9(7%)	0	3(3%)
Cigarette smoking	I do not smoke	120(96%)	103(88.0%)	95(93.1%)
	Once in a while	1(0.8%)	3(2.56%)	2(1.94%)
	One or two cigarettes everyday	0	3(2.56%)	6(5.82%)
	A pack a day or more	4(3.2%)	8(6.83%)	0
I have friends who I can confide in	Agree	95 (75%)	74(63%)	71(69%)
	Neutral	25 (20%)	32(27%)	27(26%)
	Disagree	6(5%)	11(9%)	5(5%)
When I reach the class in the morning	I am well rested and eager to start my day	74 (59%)	66(56%)	4 (41%)
	I am sleepy as I had little sleep the night before	41 (33%)	45(39%)	59(57%)
	I am very sleepy because I usually don't sleep at night	11 (9%)	6 (5%)	2 (2%)
Breakfast before coming to class	Never	26 (21%)	40(34%)	13(13%)
	Sometimes	45 (36%)	32(27%)	31(30%)
	Often	25 (20%)	15(13%)	17(16%)
	Always	30 (24%)	30(26%)	42(41%)

Figure 1: Cumulate MSSQ scores of the 346 respondents. (The score is out of 4, with 0 = causing no stress at all, 1 = causing mild stress, 2 = causing moderate stress, 3 = causing high stress, 4 = causing severe stress). Note: Each question is colored according to the domain to which it corresponds.

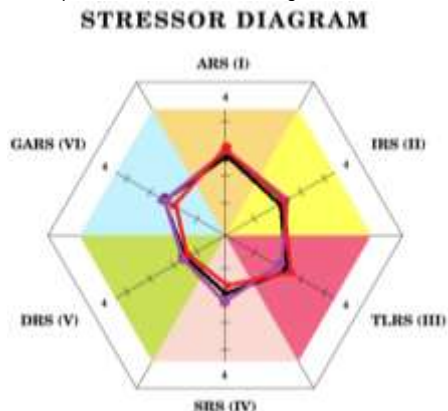


Figure 2: Six domains of Stressors [Redrawn from MEDICAL STUDENT STRESSOR QUESTIONNAIRE (MSSQ)] First year score (Black), Second year score (Purple), Third year score (Red).

	1 <sup>st</sup> year MBBS	2 <sup>nd</sup> year MBBS	3 <sup>rd</sup> year MBBS
Domain 1: Academic Related Stressors (ARS)	2.85	2.98	3.11
Domain 2: Intrapersonal and Interpersonal Related Stressors (IRS)	2.19	2.25	2.01
Domain 3: Teaching and Learning Related Stressors (TLRS)	2.35	2.29	2.36
Domain 4: Social Related Stressors (SRS)	1.96	2.07	1.86
Domain 5: Drive and Desire Related Stressors (DRS)	1.49	1.62	1.46
Domain 6: Group Activates Related Stressors (GARS)	2.21	2.34	2.12

MSSQ	No Stress At All (0)	Mild Stress (1)	Moderate Stress (2)	High Stress (3)	Severe Stress (4)
Q#1: Tests/examinations	9(3%)	24(7%)	96(28%)	88(25%)	129(37%)
Q#2: Falling behind in reading schedule	17(5%)	47(14%)	94(27%)	111(32%)	77(22%)
Q#3: Large amount of content to be learnt	3(1%)	13(4%)	39(11%)	115(33%)	176(51%)
Q#4: Lack of time to review what have been learnt	14(4%)	15(4%)	72(21%)	114(33%)	131(38%)
Q#5: Heavy workload	9(3%)	12(3%)	35(10%)	139(40%)	151(44%)
Q#6: Participation in class presentation	53(15%)	60(20%)	98(28%)	75(22%)	51(15%)
Q#7: Need to do well (imposed by others)	36(10%)	51(15%)	111(32%)	70(20%)	78(22%)
Q#8: Feeling of incompetence	33(9%)	58(17%)	83(24%)	87(25%)	85(25%)
Q#9: Unable to answer questions from patients	61(18%)	54(16%)	108(31%)	83(24%)	40(12%)
Q#10: Talking to patients about personal problems	94(27%)	96(28%)	101(29%)	37(11%)	18(5%)
Q#11: Facing illness or death of the patients	36(10%)	47(14%)	75(22%)	69(20%)	119(34%)
Q#12: Verbal or physical abuse by other student(s)	97(28%)	55(16%)	65(19%)	52(15%)	77(22%)
Q#13: Verbal or physical abuse by teacher(s)	52(15%)	57(16%)	63(18%)	61(18%)	113(33%)
Q#14: Verbal or physical abuse by personnell(s)	67(19%)	68(20%)	63(18%)	66(19%)	82(24%)
Q#15: Conflict with teacher(s)	56(16%)	50(14%)	78(22%)	54(16%)	108(31%)
Q#16: Unwillingness to study medicine	115(33%)	58(17%)	76(22%)	53(15%)	44(13%)
Q#17: Parental wish for you to study medicine	138(40%)	45(13%)	61(18%)	67(19%)	35(10%)
Q#18: Not enough feedback from teacher (s)	44(13%)	76(22%)	91(26%)	83(24%)	52(15%)
Q#19: Uncertainty of what is expected of me	30(9%)	52(15%)	95(27%)	86(25%)	83(24%)
Q#20: Lack of recognition for work done	25(7%)	39(11%)	96(28%)	101(29%)	85(25%)

## DISCUSSION

Our study was carried out at the UCM and included students currently registered in the 1st, 2nd and 3rd year MBBS. These students were being taught in a spirally integrated curriculum that offered early clinical exposure. During literature review we found several studies that dealt with the issue of stress amongst medical students, narrative review by Pascoe et al listed myriad effects of academic related stress on students well-being (Pascoe et al., 2020).

Radcliff and Lester had reported that the students felt that the need to master the content for exams and to acquire the knowledge, skills and attitude to be part of the profession were most stress inducing for them (Radcliffe & Lester, 2003). Support and guidance from the school administration reduced while the perceived lack of support and understanding from the medical school authorities aggravated the stress level of the students (Radcliffe & Lester, 2003). Moss and McManus have reported that interactions with patient (Firth, 1986) and senior staff is an anxiety inducing event. Presenting patient cases on the ward rounds, getting humiliated and embarrassed, in front of their peers, by the senior doctors and dealing with

patient suffering and death is reported in various studies as very stressful for students. Stress was perceived as a negative aspect of undergraduate medical education (Radcliffe & Lester, 2003). Living up to the standards set by the society for doctors can be stressful for students (Radcliffe & Lester, 2003) thrust into the clinical environment at the early stages of their educational carrier.

As students enters in to a clinical environment at the very start of their undergraduate medical training in the guise of early clinical exposure, they feel ill-equipped to handle that stress, as they have not yet learned how to act and behave like doctors do, a trait that takes time and effort to master. Many a times students are treated as they are in the way of things and are thus made to feel unwelcomed especially during their early clinical exposure. Stress also brings students together as they feel comradery with the fellow students who are facing the similar circumstances (Radcliffe & Lester, 2003). With early clinical exposure students are unclear of the depth of knowledge expected of them, in subjects they often associate with final year of medical education. Proper guidance in this regard would reduce the stress level experienced by the students during their early clinical years (Moffat et al., 2004). A study published in JPMA in 2015 identified lack of contact with the family, pressure of studies, study schedule, bullying or negative remarks, being away from home and cold weather as some of the major stressors affecting the students at the Army Medical College (Qamar et al., 2014). These findings especially pressure of studies, tough study routines with regular exams and little preparation time match with our findings of Academic Related Stressors and Teaching and Learning Related Stressors being ranked as greatest stress inducers for students. Students from all three years rated exams and academics as the most stressful which corresponds with the findings at Aga Khan University (Shaikh et al., 2004). In a study carried out at King Edward Medical University (KEMU), the researchers used the DASS 21 scoring system for assessing levels of depression, stress and anxiety amongst medical students. The study reported a gender related difference in the level of stress, with stress being more common in female students (Khan et al., 2017). In our study, only the female students of second year MBBS rated the stressors at a level higher than their male counterparts. While the female students of first and third year rated the stressors at same level or slightly lower than their male counterparts, which is counter to what the study at KEMU had reported. Several other studies have also reported finding no difference in stress level among male and female students (Melese et al., 2016) (Niemi & Vainiomäki, 2006).

A study conducted at the Combined Military Hospital Lahore Medical College and the Institute of Dentistry in Lahore (CMH LMC), Pakistan, had reported a very high prevalence of academic stress and poor sleep quality among medical students (Waqas et al., 2015), which is in congruence with our findings. In our study, 1st and 2nd year students, who reported being sleep deprived also rated the stressors at a level that was higher than their counterparts who reported being well rested. But the 3rd year student data reflected a different picture, where the students who had reported being sleep deprived had rated the stressors at a lower level than the students who had

reported being well rested. This finding did not agree with the findings reported by Waqas et al.

In our study, the participants rated the academic related stressors and the teaching and learning related stressors higher than other stressors. In a study published in the professional medical journal, the authors reported that high achievers rated the academic related stressors and teaching and learning related stressors higher than the low achievers (Kausar et al., 2018). A study carried out at Chennai Medical hospital also reported students rating academic related stress to be the highest which corroborates with our findings where students from all three years rated academic related stressors to be the cause of most stress for them (B. et al., 2017). Similarly severe academic related stress was reported by Al-Qahtani et al amongst the female students (Al-Qahtani M & Alsubaie A, 2020). Gavali et al and Shankar et al also reported students having high academic related stressors with various coping strategies to deal with it, ranging from more constructive e.g. planning to more self-destructive e.g. drug abuse (Gavali & Deore, 2020) (Shankar et al., 2019). Nihal et al, Battula et al, Muhammad et al, Behzadnia et al, Othman et al and Isnayanti et al also reported that students identified the academic related stressors as cause of most stress (Nihal et al., 2020) (Battula et al., 2021) (Muhammad, et al., 2019) (Behzadnia et al., 2018) (Othman et al., 2018) (Isnayanti & Harahap, 2018). Thimmappa et al reported that students who reported severe stress due to academic related stressors also exhibited high diastolic blood pressure thus indicating the adverse health effects associated with high stress (Thimmappa & Yogeeshwaran, 2018). Afridi et al similarly reported academic related stressors to be causing most stress for the physical therapy students (Afridi & Fahim, 2019). Our results differ from the findings of Marlina et al who reported interpersonal related stressors to be the source of highest stress, followed by teaching and learning related stressors and academic related stressors (Mona Marlina, 2019).

## CONCLUSIONS

The stressors regarded as most stressful by the students from all three years were academic related stressors and teaching and learning related stressors. Institutions should take to make the learning environment less stressful for the students as continued stress can adversely affect the health and mental well-being of the students

(Shaikh et al., 2004) (Pascoe et al., 2020) Stress management training can help the students in coping with these stressors (Kumari et al., 2020).

**Impact of Study:** The study highlighted the major stressors that the medical students are facing in the integrated curriculum with early clinical exposure. Steps can now be taken to mitigate the negative impact of these stressors.

**Limitations:** The study was conducted at one institution only. The study included only the students of the 1st, 2nd and 3rd year while the 4th and final year students were excluded.

**Way forward:** Future studies should include the fourth and final year students as the variation in stressors in all five years of medical education can be assessed. A comparative study of the stressors in students enrolled in integrated curriculum with early clinical exposure and those

enrolled in a traditional curriculum should be carried out to identify if early clinical exposure increases the stress amongst students. Integrated Medical Student Stressor Questionnaire (i-MSSQ Apps) (Saiful et al., 2017) can be used to collect data at regular intervals to see if the stressors change over the course of the academic year.

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