Comparison of perceived stress and sources of stress in students of basic, preclinical and clinical levels of medical education

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ABSTRACT

Objective: To compare the stress and the sources of stress among the medical students in basic, preclinical and clinical levels of medical education.
Study Design: Descriptive cross sectional study.
Place and Duration: Wah Medical College, from 1st to 15th August, 2018
Methodology: By Convenient sampling, data from students was collected. The students were divided into three groups, basic medical sciences (1st year), preclinical (3rd year) and clinical (Final year). They were provided with perceived stress scale (PSS-14) questionnaire along with the scale for sources of stress.
Results: All the three groups (N=300) had high stress scores. The mean stress score in basic science group was significantly higher than preclinical and clinical groups (p value=0.002) Significant high stress was found in female students (60%) as compared to male students (26%). The basic science and preclinical groups had mean academic stressors significantly higher (20.2 and 20.42) as compared to clinical group (18.4). The psychosocial factors were contributing more to stress in preclinical group (26.6) as compared to basic (24.1) and clinical groups (24.6).
Conclusion: High stress was found in medical students of all the three groups, with significantly high stress in basic science group as compared to clinical group. Among the sources of stress, academic burden was highest with some role of psychosocial stressors.
Keywords: Perceived stress, Sources of stress, Medical students, Medical education, Basic science, Preclinical, Clinical

INTRODUCTION

Stress is a condition that disturbs an individual both mentally and physically. It can be understood as a perceived imbalance between the demands that one faces in daily life and the

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capability to respond[1]. The importance of mental health has always been emphasized not only in students but in young adults. Perceived stress has been linked to current mental distress and forthcoming health problems. The sad incidents of suicide among the young individuals always cause an alarming but temporary reaction yet the factors behind anxiety and stress are often overlooked by the society[2]. It is found in number of studies that higher education is stressful and medical education is even more stressful as compared to other fields. A high prevalence of stress among medical students is a subject of concern these days, as it may impair behavior of students, affect their learning, and ultimately impair patient care after their graduation[3]. Medical students may experience stress when academic demands exceed their capability to deal with them. They have been reported to suffer from higher perceived stress compared to the general population and students in other academic fields[4]. The potential negative effects of emotional distress on medical students include poor classroom and clinical performance and psychological disorders. Some studies have shown depression and even suicide thoughts among medical undergraduates[3].
Different sources of stress have been documented in medical students. Academic burden, lack of relaxation time, depth of material to be learned, repeated examinations and a competitive environment in medical schools are some of the

stressors[5]. Stress during medical school can lead to problems later in professional life that ultimately affect the patient care.

In medical colleges of Pakistan, the students belong to diverse backgrounds and different cities. Students are subjected to the pressures of academics with an obligation to succeed, an uncertain future and difficulties of integrating into the system[6]. They may also face social, emotional, physical and family problems which may affect their learning ability and academic performance.

In order to design the strategies that may help the medical students to cope with daily life stressors, it is important to identify the degree of stress in different stages of medical education. The purpose of our study is to explore the sources of stress in medical students and to compare the stress level among the students attending the basic science subjects, the preclinical subjects and the clinical subjects by dividing them into three groups. This may help to develop strategies to minimize the stress for the students. The stress is also compared on the basis of gender, in day scholars and students availing the hostel facility. The objective of our study is to compare the stress and the sources of stress among the medical students in basic, preclinical and clinical levels of medical education.

METHODOLOGY

This descriptive cross sectional questionnaire based study was carried out at Wah medical college, from 1st to 15th August, 2018. By using convenient sampling, data from (N=300) students was collected The students were divided into three groups, basic medical sciences, preclinical and clinical. One hundred students from Ist year (basic medical sciences group) 100 from 3rd year (preclinical group) and 100 from final year (clinical group) were provided with the questionnaires. Data was also recorded with reference to gender and whether the student is boarder or day scholar. At the time of distribution of the questionnaire the students were briefed about the study, any queries raised were solved and verbal consent was taken.

The already validated and reliable Perceived Stress Scale (PSS-14) was used in this study for measuring perceived stress and to identify the sources of stress under the categories of academic, psychosocial and health related issues[7]. The reliability of PSS in our study is (Cronbach's Alpha= 0.85). Out of the total fourteen items, seven are positive (4, 5, 6, 7, 9, 10, 13) and seven negative (1, 2, 3, 8, 11, 12, 14). Each item was rated on a five-point Likert-type scale (0 = never to 4 =very often). After reversing positive items' scores and then summing up all scores, the total scores were computed. The range for total scores for PSS-14 is from 0 to 70. This scale has numerical values and a higher value points out more stress and a lower value signifies low stress.

The potential stressors included in the study questionnaire were classified as academic, health-related and psychosocial[7]. For each stressor, the frequency of occurrence was taken as never, rarely, sometimes, often and always, and these were scored as 1, 2, 3, 4 and 5, respectively.

The severity of each stressor using a Likert scale (1–10) was taken as not severe to very severe. The students were required to indicate if they had been affected by any of the stressors.

Data Analysis: The data was analyzed using SPSS (Statistical Package for Social Sciences) version 21. Descriptive statistics with Mean ± SD was obtained for quantitative variables. Frequency and percentage were calculated for each statement of Perceived Stress Scale (PSS). Mean ± SD was given for quantitative variables, i.e., PSS. One way ANOVA were used to compare mean difference of PSS and sources of stress with each group level (basic science, preclinical and clinical). By using Chi-square test cross tabulation of stress scores with gender and living style (boarder/non-boarder) was developed. All p- value less than 0.05 was taken as significant

RESULTS

A total of 210 completely filled questionnaires were received in which 88(40%) were from basic science group, 66(30%) from pre-clinical group and 65(30%) from clinical group of students. Among the total students, the male students were 88(40%) and females were 131 (60%). 117(53%) students were boarders and 100(46%) were non-boarders (Table-I)

Table-I: Demographic profile of students of basic, preclinical and clinical levels (N=300)

Profile	Frequency N	%age
Gender		
Male	88	40.2%
Female	131	59.8%
Living Style		
Non boarder	117	53.4%
Boarder	100	45.6%
Groups		
Basic	88	40.2%
Pre-Clinical	66	30.1%
Clinical	65	29.7%
AGE	**Mean ±SD**	
	20.92 ± 1.792	

The response of students against each stress statement was calculated. After reversing positive items' scores and then summing up all scores, the total scores were computed. The range for total scores for PSS-14 is from 0 to 56. This scale has numerical values and a higher value points out more stress and a lower value signifies low stress. 0-23 total score indicates low stress, 24-40 indicates moderate stress and score of more than 40 indicates high stress in the students. The mean stress in all the three groups of students were compared by one way ANOVA. P- value less than 0.05 was taken as significant. All the three groups of students were found to have high stress. The basic medical sciences group showed stress level significantly higher as compared to pre-clinical and clinical groups by using Tukey HSD test (Table-II)

Table-II: Mean comparison between the stress score and each group of students. (N=300)

Measures	Mean	Standard deviation	95% C.I for mean		p-value
			Lower Bound	Upper Bound	
Basic (88)	46.24**	7.575	.38	6.40	
Pre-clinical (66)	42.85	6.279	-4.11	2.35	0.002*
Clinical(65)	41.97	9.409	1.25	7.29	

*p- value less than 0.05 is considered statistically significant

The stress scores were compared according to gender and living style (boarder /non-boarder) by using chi-square test. Significant difference was found in high stress score of male students (26%) and the female students (60%). At the same time 72% male students and 53% female students were found suffering from moderate level of stress. (Table-III). There was no significant difference of stress scores among the boarder and non-boarder students.

Table-III: Cross tabulation of stress scores with Gender and living style (N=300)

	Stress Scores Ranges				
	Low Stress 0-23 N (%)	Moderate Stress 24-46 N (%)	High Stress 47-70 N (%)	Total	p-value
Gender					
Male	1(1.1%)	64(72.7%)	23(26.1%)	88(100.0%)	0.012*
Female	1(0.8%)	70(53.4%)	60(45.8%)	131(100.0%)	
Living Style					
Boarder	1(1.0%)	68(68.0%)	31(31.0%)	100(100.0%)	0.202
Non Boarder	1(0.9%)	66(56.4%)	50(42.7%)	117(100.0%)	

* p - value less than 0.05 is considered statistically significant.

Table-IV: Mean comparison between sources of stress and each group of students. (N=300)

Sources	Basic		Pre-clinical		Clinical		p-value
	Mean	Std	Mean	Std	Mean	Std	
Academic Stressors	20.20	3.291	20.42	3.273	18.40**	5.491	0.007*
Psychosocial Stressors	24.14	6.189	26.67	6.254	24.06	7.933	0.039*
Health related stressors	9.05	2.888	9.62	3.037	9.08	3.465	0.472

*p- value less than 0.05 is considered statistically significant.

DISCUSSION

The mental health of university students is an area of increasing worldwide concern as this population has been shown to be prone to depression, anxiety, and stress. In our study, we are observing the perceived stress and then comparing it in medical students according to their level of education. The students of all the three groups that is basic science group, preclinical group and clinical group were found to have high stress. This is similar to the results in the study done by Gazzaz et al in which 59% of medical students were found to be suffering from severe stress[7]. It was proved in the study that high stress adversely affects the academic performance of the students. James et al also showed high stress levels in medical students of Nigeria. Three quarter of the students in that study were having the symptoms of depression and anxiety[8]. Medical students reported higher levels of perceived stress and higher levels of anxiety and depression than reference samples in study done by Heinen et al[3]. Perceived stress scale (PSS) was used in that study similar to our study to observe the stress level of the students.in another study conducted in a medical college of Lahore, the students were reported to have high levels of perceived stress[9]. In our study, we have compared the stress level in medical students divided into three groups according to their study years into basic science group, preclinical group and clinical group. In basic science group, the stress level was significantly higher as compared to the clinical group. In preclinical and clinical groups, the students start attending the hospitals regularly while in first two years (basic science group) they are in pure academic environment with frequent assessments, lectures and case based discussions. That could be the reason of high stress levels in these students. This is similar to the studies done by Brazeau et al and Aktekin et al in which the stress level was found to be high in the initial years of medical education[10,11]. In study done by Erschens et al, the stress is compared in medical students of first, third, sixth and ninth semesters[12]. The study showed the stress to steadily increase from initial years to final year. The stress was found to be higher in middle stages of medical training in study done by Ludwig et al[13]. This could be the due to start of the clinical rotations and gradually increased interactions with patients.

In our study we compared the stress in medical students according to gender and living style (whether utilizing the boarding facility or not). We found significantly high stress scores among the female students. This result is similar to the study done by Shah et al in which female students were found to be more stressed[9]. Abdus Salam et al conducted similar study in Malaysia where female medical students were again more stressed[14]. Rab et al found high prevalence of anxiety and depression in female students in a medical college of Lahore[15]. Saravanan also found more anxiety and stress in female students as compared to male students[16]. No statistically significant difference in stress scores was found between male and female students in study conducted by Heinen et al[2].

We compared the stress among the boarder and non-boarder students and we did not find any statistically significant difference between them. But in study by Rab et al, more stress

in students availing the boarding facility was found[15]. This shows that academic and social burdens could have more impact when students are dealing them away from home.

Among the sources of stress in medical students, our study shows the academic factors to play the most prominent role in students of basic science group. While the psychosocial factors were important stressors for the students of preclinical group. In study by Shah et al, main stressors were from the academic and psychosocial domains[9].

The high stress documented in medical students in all stages of their education that may impair their academic performance and adversely affect their mental health needs consideration by the medical educationists and the medical institutions. Well organized counselling sessions and revision of tough schedules may help the students to cope with the stress of medical education.

CONCLUSION

Medical students in all levels of education are stressed with significantly high stress in basic science group as compared to preclinical and clinical groups. Academic and psychosocial factors play role in stress development in the medical students.

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CONTRIBUTION OF AUTHORS

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Iqbal S: Data analysis
Sheikh GM: Data collection, Manuscript review
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