

Factors Associated with Stress and its Severity in Medical Students of Medical School of Pakistan

Factors of
Stress on
Medical
Students

Tayyaba Mubeen, Muhammad Aamir Adnan, Anam Bilal and Muhammad Sulaiman Saeed

ABSTRACT

Objective: In this study, we assessed perceived stress and its severity, sources and determinants.

Study Design: Cross sectional study

Place and Duration of Study: This study was conducted at the all MBBS classes of Nishtar medical college & hospital, Multan, from January 2014 to July 2016.

Materials and Methods: A total of five hundred and ten (510) subjects included in the study. Major subjects were (Anatomy, Physiology Biochemistry, Pharmacology, Surgery and Medicine) that are taught in five years of MBBS (Bachelor of Medicine and Bachelor of Surgery) tenure. This study period consist of lectures on medical topics and result evaluating system named as examination. Study style in medical field include one year study period and than at the end of year a written and oral examination system is designed to evaluate clinical and knowledge based skills of medical professionals.

Results: A total number of five hundred and ten (510) female parturient were enrolled in the study, one hundred and thirty eight (27.1%) from 1st year class of MBBS, one hundred and thirty three (26.1%) from class 2nd year, eighty three (16.2%) from 3rd year MBBS class, one hundred and seventeen (22.9%) from 4th year and thirty nine (7.6 %) from final year class of MBBS. Among these fifteen (2.9%) were married female and a big strength four hundred ninety five (97.1%) were unmarried. Chi-square test and logistic regression test were applied to see the effect modification and association respectively.

Conclusion: The students of medical school were reported to be under an uncertain condition of high stress. Student's academic profile and psychosocial circle are considered to be the main stressors in our study. But there is a big gap in limited literature available on this evaluation, there is more need to find out correlation between stressors and student's psychosocial academics.

Key Words: Stress, Severity, Medical Students

Citation of article: Mubeen T, Adnan MA, Bilal A, Saeed MS. Factors Associated with Stress and its Severity in Medical Students of Medical School of Pakistan. Med Forum 2017;28(5):50-54.

INTRODUCTION

Medical school education is a stressful period of a medical school going person because of very tough education and busy life style. Some other factors like far from family and friends and enjoyable environment also contribute. Study of drugs and their application is also a tough task¹, it's also observed that some medical students have multiple suicidal attempts due to severe depression and anxiety disorders². This stressful time period also results in poor academic record and physical activities and physical life of students⁴.

All these factors that take part in unhealthy lifestyle of a student are called "stressors". Most common stressors in this time period include a bright future, family issues, parent's expectations, social attachments and atypical environment⁵.

Along with academic pressure and financial problems examination system in medical field also labeled as a stressor⁶ because of intensity of stress in this time duration^{7,8}. Lot of research work has been done on under and post graduates of medical education and profession but there is limited knowledge available on comparison of its effects during different classes¹⁰.

In most studies stress was reported among medical students in under developed countries like Pakistan, Malaysia and India and most common stressor was academics. Not only education but marital status, gender difference, age factor and poor clinical grip also labeled as stressors because of unpleasant events in this age, hormonal changes in different genders and lack of confidence in clinical grip¹¹.

MATERIALS AND METHODS

This cross sectional study was conducted at all MBBS classes of Nishtar medical college & hospital, Multan, from January 2014 to July 2016. Major subjects were (Anatomy, Physiology Biochemistry, Pharmacology, Surgery and Medicine) that are taught in five years of MBBS (Bachelor of Medicine and Bachelor of Surgery) tenure. This study period consist of lectures on medical

Department of Pathology, Nishtar Medical College, Multan

Correspondence: Muhammad Sulaiman Saeed, Biochemist, Department of Pathology, Nishtar Medical College, Multan.
Contact No: 0322-9740751
Email: muhammadsulaimansaeed@gmail.com

Received: March 03, 2017; Accepted: April 10, 2017

topics and result evaluating system named as examination. Study style in medical field include one year study period and than at the end of year a written and oral examination system is designed to evaluate clinical and knowledge based skills of medical professionals.

A handmade performa was used to collect data of all variables. A total number of five hundred and ten medical school going students of five years of medical students were enrolled. All students were asked to fill up that performa about their demographics, academics, and a list of 33 items list of stressors.

RESULTS

Five hundred and ten parturients (510) of female gender were enrolled in our study. Mean age of parturients was 20.08 +- 1.55 with minimum age 17 years and 25 maximum.

Table No.1: Demographic Variables

Students in classes	Frequency	%age	Chi-Square P Value
1 st Year	138	27.1%	0.024
2 nd Year	133	26.1%	
3 rd Year	83	16.2%	
4 th Year	117	22.9%	
Final Year	39	7.6%	
Marital Status			0.773
Married	15	2.9%	
Unmarried	495	97.1%	
Living In			0.265
Hostel	318	62.4%	
Day Scholar	192	37.6%	
Area Belongs To			0.260
Urban	435	85.3%	
Rural	75	14.7%	

Table No.2: Responses of Medical Student to the Perceived Stress Scale

Statement	Never	Almost Never	Sometimes	Often	Very Often	Chi-Square P Value
In the last month, how often you because of that happen unexpectedly?	68 (13.3%)	36 (7.1%)	214 (42%)	87 (17.1%)	105 (20.6%)	0.000
In the last month, how often have you felt that you were unable to control the important things in your life?	76 (14.9%)	68 (13.3%)	165 (32.4%)	118 (23.1%)	83 (16.3%)	0.000
In the last month, how often have you felt nervous and "stressed"?	31 (6.1%)	38 (7.5%)	204 (40%)	132 (25.9%)	104 (20.4%)	0.000
In the last month, how often have you dealt successfully with day to day problems and annoyances?	33 (6.5%)	34 (6.7%)	185 (36.3%)	168 (32.9%)	90 (17.6%)	0.000
In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	41 (8.0%)	54 (10.6%)	151 (29.6%)	197 (38.6%)	66 (12.9%)	0.000
In the last month, how often have you felt confident about your ability to handle your personal problems?	36 (7.1%)	36 (7.1%)	126 (26.3%)	193 (37.8%)	111 (21.8%)	0.004
In the last month, how often have you felt that things were going your way?	65 (12.7%)	70 (13.7%)	227 (44.5%)	117 (22.9%)	31 (6.1%)	0.004
In the last month, how often have you found that you could not cope with all the things that you had to do?	71 (13.9%)	98 (19.2%)	210 (41.2%)	87 (17.1%)	43 (8.4%)	0.000
In the last month, how often have you been able to control irritations in your life?	52 (10.2%)	62 (12.2%)	169 (33.1%)	160 (31.4%)	67 (13.1%)	0.000
In the last month, how often have you felt that you were on top of things?	94 (18.4%)	86 (16.9%)	208 (40.8%)	79 (15.5%)	43 (8.4%)	0.001
In the last month, how often have you been angered because of things that happened that been outside of your control?	50 (9.8%)	65 (12.7%)	183 (35.9%)	116 (22.7%)	96 (18.8%)	0.000
In the last month, how often have you found yourself thinking about things that you have to accomplish?	30 (5.9%)	36 (7.1%)	157 (30.8%)	159 (31.2%)	128 (25.1%)	0.001
In the last month, how often have you been able to control the way you spend your life?	50 (9.8%)	54 (10.6%)	175 (34.3%)	162 (31.8%)	69 (13.5%)	0.002
In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	76 (14.9%)	98 (19.2%)	165 (32.4%)	78 (15.3%)	93 (18.2%)	0.000

Table No.3: Frequency of Stressors

Stressor	Never	Rarely	Sometime	Often	Always	Severity Mean \pm SD	Chi-Square P Value
Performance in module examination	69 (13.5%)	103 (20.2%)	152 (29.8%)	100 (19.6%)	86 (16.7%)	5.45 \pm 2.27	0.002
Performance in practical	135 (26.5%)	101 (19.8%)	119 (23.3%)	75 (14.7%)	80 (15.6%)	4.60 \pm 2.10	0.000
Competition with peers	180 (34.9%)	113 (22.2%)	100 (19.6%)	63 (12.4%)	54 (10.6%)	3.70 \pm 2.23	0.001
Lack of special guidance from faculty	155 (30.4%)	87 (17.1%)	137 (26.9%)	70 (13.7%)	61 (12%)	4.40 \pm 2.03	0.000
Dissatisfaction with class lectures	81 (15.9%)	80 (15.7%)	122 (23.9%)	125 (24.5%)	102 (20%)	4.79 \pm 1.99	0.000
Unavailability of learning materials	79 (15.5%)	68 (13.3%)	153 (30%)	123 (24.1%)	87 (17.1%)	4.86 \pm 2.12	0.001
Becoming a doctor	90 (17.6%)	80 (15.7%)	126 (24.7%)	122 (23.9%)	82 (16.1%)	5.09 \pm 2.44	0.223
Frequency of examination	32 (6.3%)	79 (15.5%)	152 (29.8%)	126 (24.7%)	121 (23.7%)	5.65 \pm 2.42	0.000
Difficulty in reading text books	114 (22.4%)	141 (27.6%)	152 (29.8%)	72 (14.1%)	31 (6.1%)	4.07 \pm 2.11	0.000
Family problems	232 (45.4%)	71 (13.9%)	77 (15.1%)	80 (15.7%)	50 (9.8%)	4.10 \pm 2.48	0.000
Lack of recreation	67 (13.1%)	82 (16.1%)	131 (25.7%)	124 (24.3%)	106 (20.8%)	5.19 \pm 2.48	0.220
Living condition in hostel	92 (18%)	44 (8.6%)	104 (20.4%)	69 (13.5%)	201 (39.4%)	6.08 \pm 3.00	0.000
Loneliness	111 (21.8%)	85 (16.7%)	120 (23.5%)	99 (19.4%)	95 (18.6%)	5.29 \pm 2.81	0.334
Inability to socialize with peers	120 (23.5%)	135 (26.5%)	136 (26.7%)	72 (14.1%)	41 (9.2%)	3.85 \pm 2.12	0.000
Accommodation away from home	60 (11.8%)	47 (9.2%)	102 (20.0%)	151 (29.6%)	110 (21.4%)	7.05 \pm 2.41	0.000
Worried about future	49 (9.6%)	43 (8.4%)	167 (32.7%)	112 (22%)	149 (29.2%)	5.02 \pm 2.41	0.000
Relation with opposite sex	189 (37.1%)	103 (20.2%)	78 (15.3%)	45 (8.8%)	97 (19.0%)	3.55 \pm 2.13	0.995
Adjustment with roommates	155 (30.4%)	71 (13.9%)	184 (36.1%)	50 (9.8%)	50 (9.8%)	4.82 \pm 1.87	0.000
Lack of entertainment	78 (15.3%)	68 (13.3%)	154 (30.2%)	71 (13.9%)	139 (27.3%)	5.27 \pm 2.20	0.000
Difficulty in journey to back home	141 (27.6%)	111 (21.8%)	102 (20.0%)	70 (13.7%)	86 (16.9%)	3.00 \pm 2.25	0.000
High expectations of parents	25 (4.9%)	25 (4.9%)	97 (19.0%)	70 (13.7%)	293 (57.5%)	5.70 \pm 2.28	0.000
Number of fertility	129 (25.3%)	209 (41.0%)	101 (19.8%)	36 (7.1%)	35 (6.9%)	3.37 \pm 1.64	0.654
Lack of personal interest in medicine	228 (44.7%)	72 (14.1%)	134 (26.3%)	44 (8.6%)	32 (6.3%)	5.08 \pm 2.09	0.000
Financial instability in family	221 (43.3%)	85 (16.7%)	123 (24.1%)	42 (8.2%)	39 (7.6%)	4.56 \pm 1.96	0.030
Political situation in surrounding	192 (37.7%)	80 (15.7%)	103 (20.2%)	81 (15.9%)	54 (10.6%)	6.51 \pm 2.65	0.457
Having drugs/smoking	318 (62.4%)	31 (6.1%)	42 (8.2%)	27 (5.3%)	72 (14.1%)	1.99 \pm 2.26	0.002
Quality of mess	64 (12.5%)	3 (7.1%)	84 (16.5%)	171 (33.5%)	150 (30.4%)	7.38 \pm 2.13	0.001
Over eating/under eating	92 (18.4%)	116 (22.7%)	121 (23.7%)	69 (13.5%)	110 (21.6%)	5.18 \pm 1.95	0.687
Class attendance	157 (30.8%)	64 (12.5%)	93 (18.2%)	91 (17.8%)	105 (20.6%)	6.16 \pm 2.30	0.145
Sleeping difficulty impact have impact	74 (14.5%)	57 (11.2%)	160 (31.4%)	97 (19%)	122 (23.9%)	5.36 \pm 2.06	0.006
Physical disability	221 (43.3%)	92 (18%)	89 (17.5%)	56 (11%)	52 (10.2%)	4.19 \pm 1.99	0.001
Inadequate exercise	143 (28%)	106 (20.8%)	122 (23.9%)	66 (12.9%)	73 (13.4%)	4.45 \pm 2.07	0.000

Out of these 15 (2.9%) were married and a big total of 495(97.1%) unmarried. Among these enrolled participants 138(27.1%) were enrolled from 1st year class of MBBS, 133(26.1%) from second year, 83(16.2%) from third session, 117(22.9%) from 4th year and remaining 39 (7.6%) were enrolled from final session of MBBS. A big number of participants were hospitalized 318(62.4%) and remaining 192(37.6%) were living in third homes/day scholars. Among these total participants 435(85.3%) from Urban areas and

75(14.7%) were living rural areas of community (table-1). Status of students about response to perceived stress scale was described in table no.2.

Similarly categorical description of most frequent frequency were mentioned in table-3. It was observed that most frequent stressor was parents expectations 293(57.5%), 2nd most common cause was examination system percentage of this stressor was 121(23.7%), condition of hostel and living standard was 3rd frequent stressor which have a percentage of 201(39.4%),

sleeping problem was found in 122(23.9%), stress about thirty better future was found to be 149(29.2%). Remaining stressors include quality of mess 150(30.4%), far from home and family 150(30.4%).

Effect modification was calculated by applying Chi-square test and noted that class of parturients, happening of things unexpectedly, desire of copying matter, confidence about handling life problems and ability to handle them, confidence to control irritation in life, broad and wide syllabus, examination results, unsatisfactory knowledge containing lectures, class competition, lack in literature availability, lack of interest in medical field, hostel accommodation, financial issues, lack of exercise and unhealthy environment have significant effects on life of a student and produce stress.

In our study stress was a binary responsive variable can be measured by yes and no labelling, to see it's correlation with other variables logistic regression was applied, it was found that stress was depended on loneliness, sleeping problem, dissatisfaction with class lectures, and coping with important changes in difficult situations of life.



Figure No.1: Percentage of stress according to its severity.

Table No.4: Logistic Regression

Terms	Coefficients	S.E	P-Value
Constant	1.907	0.632	0.000
Dissatisfaction with class lectures	0.425	0.122	0.000
Loneliness	-0.374	0.128	0.003
Sleeping difficulties	0.3563	0.0974	0.000
happened unexpectedly			0.000
Almost Never	-1.783	0.538	
Sometimes	0.390	0.411	
Often	1.414	0.608	
Very often	2.373	0.701	
Effectively coping with important changes that were occurring in your life			0.000
Almost Never	1.848	0.660	
Sometimes	2.396	0.566	
Often	1.376	0.492	
Very often	1.228	0.601	

DISCUSSION

This study was conducted in Nishtar medical college & hospital, Multan, from January 2014 to July 2016. A total number of five hundred and Ten (510) female parturients were enrolled in this study. Among these total parturients one hundred and thirty five (27.1%) were from 1st year class of MBBS, 2nd big ratio from 2nd year class about one hundred and thirty three (26.1%), eighty three were from (16.2%) from 3rd year class, one hundred and seventeen (22.9%) from and 4th year and thirty nine (7.6 %) from pioneer/final year MBBS class. Among these fifteen (2.9%) were married and a large number of parturients about four hundred and ninety five (97.1%) were unmarried. Mostly students living in hostel and about three hundred and eighteen (62.4%) and remaining one hundred and ninety two (37.6%) were day scholar, further results found that a big strength belongs to urban areas four hundred and thirty five (85.3%) and remaining seventy five (14.7%) were belongs to rural areas.

Throughout its tenure medical education and profession is very stressful, some professionals found it mild and some found it moderately and severely.^{12,13} Where we are considering marital status and self respect as predictor of stress, academic performance in medical. It is found that students of 1st MBBS are at high risk due to new arrival in medical forum.¹⁴ Similarly severity of stress changes according to the environment, syllabus of medical education, examination system behavior of collogues.¹⁵ A similar study from India reported 37% stress rate during medical tenure¹⁶. A long time ago a study was conducted on Spanish incidence of stress was 61.7%.¹⁷

In this study we used perceived stress scale to evaluate and analyze all aspect of stress. On other hand we recommended that use of this scale should be used limited, because it analyze as educational stress, cannot be used for personal stress.

A study conducted by Cohen et al suggested that gender difference is not concern with tress and severity of stress except those people who are working in private places. But with comparison of Cohen study we conducted our study only on female students¹⁸.

In our study it was observed that most frequent stressor was parents expectations 293(57.5%), 2nd most common cause was examination system percentage of this stressor was 121(23.7%), condition of hostel and living standard was 3rd frequent stressor which have a percentage of 201(39.4%), sleeping problem was found in 122(23.9%), stress about thirty better future was found to be 149(29.2%). Remaining stressors include quality of mess 150(30.4%), far from home and family 150(30.4%).

In this study it is found that perceived stress and academic skills were strongly correlated but a minimum literature availability. It is reported that early and acute

stress has deep dependency on student's examination and results¹⁹. Conclusion of these studies also reported that not only acute but chronic or old stress also have effects on students educational profile. Among medical students, examination and results are the main stressors^{20, 21}, but this system cannot be changed because it is a single, effective and refined procedure to test the student's knowledge and assessment of clinical skills. Lack of recreational activities and limited social circle also considered as stressor. Study conducted in USA reported that low examination burden and self learning behavior and recreational activities are effective and give relaxation by reducing stress.

CONCLUSION

The students of medical school were reported to be under an uncertain condition of high stress. Student's academic profile and psychosocial circle are considered to be the main stressors in our study. But there is a big gap in limited literature available on this evaluation, there is more need to find out correlation between stressors and student's psychosocial academics.

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

- Beiter R, Nash R, McCrady M, Rhoades D, Linscomb M, Clarahan M, et al. The prevalence and correlates of depression, anxiety, and stress in a sample of college students. *J Affect Disord* 2015;173:90–6.
- Pozos-Radillo BE, Preciado-Serrano MJ, Acosta-Fernández M, Aguilera-Velasco K, Delgado-García DD. Academic stress as a predictor of chronic stress in university students. *Psicología Educativa* 2014;20(1):47–52.
- Sohail N. Stress and academic performance among medical students. *J Coll Physicians Surg Pak* 2013;23(1):67–71.
- Lovallo WR. *Stress and health: Biological and psychological interactions*. New York: Sage publications; 2015.
- Yusoff MS, Abdul Rahim AF, Baba AA, Ismail SB, Mat Pa MN, Esa AR. Prevalence and associated factors of stress, anxiety and depression among prospective medical students. *Asian J Psychiatr* 2013;6(2):128–33.
- Murphy L, Denis R, Ward CP, Tartar JL. Academic stress differentially influences perceived stress, salivary cortisol, and immunoglobulin-A in undergraduate students. *Stress*. 2010;13(4):365–70.
- Klemenc-Ketis Z, Kersnik J, Eder K, Colaric D. Factors associated with health-related quality of life among university students. *Srp Arh Celok Lek* 2011;139(3-4):197–202.
- Gade S, Chari S, Gupta M. Perceived stress among medical students: To identify its sources and coping strategies. *Archives Medicine Health Sci* 2014;2(1):80.
- Read JP, Colder CR, Merrill JE, Ouimette P, White J, Swartout A. Trauma and posttraumatic stress symptoms predict alcohol and other drug consequence trajectories in the first year of college. *J Consult Clin Psychol* 2012;80(3):426–39.
- Papier K, Ahmed F, Lee P, Wiseman J. Stress and dietary behaviour among first-year university students in Australia: sex differences. *Nutrition* 2015;31(2):324–30.
- Saias T, du Roscoat E, Veron L, Guignard R, Richard JB, Legleye S, et al. Psychological distress in French college students: demographic, economic and social stressors. Results from the 2010 National Health Barometer. *BMC Public Health* 2014;14:256.
- Ortmeier BG, Wongang AP, Martin BC. Career commitment, career plans, and perceived stress: a survey of pharmacy students. *Am J Pharm Educ* 1991;55:138–42.
- Lajane KI, Hughes CM. Job satisfaction and stress among pharmacists in the long-term care sector. *Consult Pharm* 2006;21:287–92.
- Wolf TM, Von Almen TK, Faucett JM, Randall MM, Franklin FA. Psychosocial changes during first year of medical school. *Med Educ* 1991;25:174–81.
- Shaikh BT, Kahloon A, Kazmi M, Khalid H, Nawaz K, Khan N, Khan S. Students, stress and coping strategies: a case of Pakistani medical school. *Educ Health (Abingdon)* 2004;17:346–53.
- Supe AN. A study of stress in medical students at Seth G.S. Medical College. *J Postgrad Med* 1998;44:1–6.
- Saipanish R. Stress among medical students in a Thai medical school. *Med Teach* 2003;25:502–6.
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385–96.
- Linn BS, Zeppa R. Stress in junior medical students: relationship to personality and performance. *J Med Educ* 1984;59:7–12.
- Guthrie EA, Black D, Shaw CM, Hamilton J, Creed FH, Tomenson B. Embarking upon a medical career: psychological morbidity in first year medical students. *Med Educ* 1995;29:337–41.
- Coles C. *Medicine and stress*. *Med Educ* 1994;28:3–4.
- Redwood SK, Pollak MH. Student-led stress management program for first-year medical students. *Teach Learn Med* 2007;19:42–6..