

PERCEIVED STRESS AMONG MEDICAL AND LAW STUDENTS IN MANSOURA, EGYPT

By

El-Gilany, A.H.* , Amr, M.** , Awadalla, N.* , El-Khawaga, G*

Departments of Community Medicine and Psychiatry**,*

Faculty of Medicine, Mansoura University

Abstract:

Objective: this study aims to determine whether there is a difference in the perceived stress levels between medical and law students in Mansoura University, Egypt. **Method:** This is a comparative study between Medical and law students, conducted during October to December 2007. The sample consisted of 283 medical and 277 law students selected through the cluster sampling method. A self-reported questionnaire was used which covered four categories including 15 items of sources of stress. Perceived stress scale and Hospital anxiety and depression scale were used to measure stress, anxiety and depression. **Results:** Law students were more likely to cite personal, environmental and relationship categories as stressors. The top five stressors in medical students identified in this study were troubles with the instructors, excessive workload, problems with coursemates, close contact with serious illness and personal injury or illness. The high level of preceived stress was reported by 20.1% and 41.2% of medical and law students, respectively. Independent predictors of stress among students were anxiety, depression and number of stressors. **Conclusions:** Stressors and stress are frequent among medical and law students. Counseling and preventive mental health services should be an integral part of the routine clinical facilities caring for university students

Key word: Medical students – Law students – perceived stress – Anxiety – Depression

Introduction

The topic of stress among university students has been the subject of much research for many years. Researchers have found that the perception of high stress levels in students can lead to poor academic performance, depression, attrition and serious health problems.¹⁻³

Medical school can be a very stressful environment for students. A variety of sources of stress have been identified. These included, among others, the academic pressures, social pressures and financial problems.⁴ Other studies suggested that high levels of stress and psychiatric morbidity are not limited to medical students but occur also among law students.⁵

Many students experienced stress as they pursue a law degree.⁶ Archer and Peter⁷ suggested that much of this excessive stress may have its origins in law school. The Socratic method of teaching, high expectations, competitive environment, heavy work load, final examinations, social isolation, and family tension have been identified as stressors, though they are not necessarily ranked in that order. The effect of profession on stress in students varies. While some studies suggested that medical students have higher level of stress than their law counterparts⁵, other studies did

not reveal such difference.⁸ There are also suggestions that profession may influence the way medical students perceive stress.⁹ To the best of authors' hand no similar comparative studies were done in Egypt, where the situation appears to be different.

The objectives of the study were to :

- (1) assess the level of perceived stress of medical and law undergraduates
- (2) identify common sources of stress in their lives
- (3) assess the psychiatric disorders such as anxiety and depression
- (4) observe any association between the high level of stress and sociodemographic profile.

Method

Participants

This is a comparative study between Medical and law students in Mansoura University, Egypt, conducted during October to December 2007. Filled questionnaires were collected one month before the first term examination period so as to minimize the extra stress symptoms. The undergraduate medical course is six years with the fourth to sixth year consisting of clinical training along with didactic courses. While the law courses

are didactic throughout the four years. Written approval was obtained from the authorities of both colleges to conduct the survey in the setting. After obtaining this approval for data collection the researchers introduced themselves to the student in each grade and informed them about the aim of the study and about guarantees of anonymity and confidentiality and the need for verbal consent. The students were allowed to respond in their own time and privacy. The participation was entirely on voluntary basis. All students who agreed to participate were given questionnaires; all incomplete questionnaires were excluded. A total of 620 (283 medical, 277 law) students provided complete questionnaires. Those who participated the study, represented 4.1% and 2.9% of the enrolled students in both colleges, respectively.

Study tools

Participants were given a packet with three Arabic instruments used and validated in previous studies.¹⁰⁻¹² The first instrument enquires about sociodemographic data and sources of stress during the past year. In the second perceived stress levels were measured by Cohen's Perceived Stress Scale. The third instrument was the hospital anxiety and depression scale.

Sources of stress included 15 items divided into 4 categories of potential

sources of stress: 3 items representing the relationship sources of stress, 5 representing personal sources of stress, 5 representing academic sources of stress and 2 representing environmental sources of stress with respect to the research question "what are the greatest stressors in the last year?". The time frame of 12 months was deliberately chosen based on the assumption that a 12-month period is long enough to obtain a reasonable estimate of variation in exposure to recent life events, and short enough to avoid inaccurate recall and perception of the events¹³. Students were asked to list the four categories of stress. Viz, relationship, personal, academic, and environmental situations or conditions that they found were most stressful. The four categories and the fifteen items were developed from the responses given by students. Student responses were placed into the categories by a psychiatrist and a psychologist working independently. The raters agreed upon 85% of the categorizations.

Relationship sources result from interactions with other people, such as trouble with course mates; personal sources result from internal sources such as personal injury or illness or death of a family member. Academic sources arise from college related activities such as relationship with

the instructor. Environmental sources result from problems in the environment outside the academics such as accommodation problems.

Stress was measured by a previously validated 14-item perceived stress scale (PSS). Cronbach α coefficient of internal consistency was reported to be 0.85, and test-retest reliability during a short retest interval (several days) was 0.85¹⁴ and the Arabic version was tested among a sample of US Arab immigrants.¹¹ The PSS does not tie appraisal to particular situation; it is sensitive to the non-occurrence of events as well as to ongoing life circumstances. The stress score was stratified into no, mild, moderate (merged as low level) stress or severe (high level) stress according to first, second and third quartiles. The degree of anxiety and depressive symptoms were measured by Hospital Anxiety and Depression Scale (HAD), where a score of 12 or more for either the anxiety or the depression components denotes possible anxiety or depression¹⁵. This cut off point had sensitivity of 0.89 and specificity of 0.75.¹⁶ The Arabic version of the HAD scale was validated by El-Rufaie and Absood¹². The overall Cronbach alpha measures of internal consistency were 0.7836 and 0.8760 for anxiety and depression, respectively.

Sampling

Sample size was calculated using Epi info program version 6.02. According to students' affairs administration, the total number of registered medical students in 2007 was 6843 students of both sexes in the six years. A previous study¹⁰ reported that 20.3% of medical students suffer high level of stress. With the worst acceptable level 25%, the sample needed for the study was estimated to be at least 237 students at a study power of 80% and 95% confidence level. To overcome the attrition due to cluster sampling 15% was added to the sample size with a final number of 273 students. An equal number of law students was targeted.

Students were selected through stratified cluster sampling technique. First students were stratified into the different academic years (first to sixth in medicine and first to fourth in law). From each year a section or group (cluster) was randomly chosen. All students in the chosen clusters were included. A total of 366 and 412 students were registered in chosen clusters in medicine and law colleges, respectively. The response rates were 77.9% (285 of 366) in medicine and 67.2% (277 of 412) in law with an overall response rate of 70.2%. None participation was due to lack of interest in the study, absence during the study period and incomplete questionnaires.

Data analysis

Data were analyzed using SPSS (Statistical Package for Social Sciences) version 11. In quantitative data, unpaired student's t-test was used for group comparison. In categorical data, Chi-squared test was used for comparison between groups. Significant factors predicting high stress level on univariate analysis were entered into multivariate logistic regression analysis to find out the independent predictors of stress. Odds ratio and 95% confidence interval were calculated. $P \leq 0.05$ was considered statistically significant.

Results

Compared to medical students law students included more females (66.1% vs. 47.7%), were of younger age (18.9 vs. 20.7 years), of rural residence (53.4% vs. 40.6%), with unsatisfactory family income (26.0% vs. 11.3%), with less than secondary educated parents (52% vs. 14.8% for fathers and 58.1% vs. 23% for mothers, respectively) working as non-professional. Housewife mothers accounted for 71.5% in law vs. 43.7% in medical students. Thus the two groups of students were not matched regarding their basic sociodemographic characteristics (data not shown in tables).

On comparison three main categories of potential stressors distinguished law from medical students (Table 1). Law students were more likely to cite personal, environmental and relationship categories as stressors. Findings revealed that difficulty coping with the course of the study, inconsiderate and insensitive instructors (33.9%, each) and troubles with coursemates (27.6%) were the most common among medical students. The most common items in law students were anxiety and depression (62.8%); limitation of time for recreational activities (43.3%); problems with opposite gender (38.6%) and congested classrooms (37.9%).

Table (2) shows that high stress level and anxiety were significantly reported more by law students than medical students.

Univariate analysis revealed that high level of stress was reported by law students of female sex; with unsatisfactory family income; low educated and non-professional fathers and presence of anxiety and depression (table 3).

However the logistic regression analysis revealed that the significant independent predictors of high level of stress are, in order; presence of anxiety (OR=4.5), being a law student (OR=2.3), presence of depression (OR=1.4) and number of stressors (OR=1.3) (table 4).

Table 1: Stress factors and circumstances reported by the students

	College		Significance
	Medicine N (%)	Law N (%)	
Number of stressors Min - Max X± SD	1-11 3.3±2.3	1-13 4.2±2.6	t=4.1,P<0.001
Stressors*			
Relationship problems	127(44.9)	155(56.0)	$\chi^2=6.9,P=0.009$
Relationship problems with parents	48(17.0)	64 (23.1)	$\chi^2=3.3,P=0.1$
Problems with the opposite gender	50(17.7)	107(38.6)	$\chi^2=30.5,P<0.001$
Trouble with coursemates	78(27.6)	54(19.5)	$\chi^2=5.1,P=0.03$
Personal problems	195(68.9)	218(78.8)	$\chi^2=6.9,P=0.008$
Personal illness or injury	64(22.6)	34(12.3)	$\chi^2=10.4,P=0.001$
Death of a family member	15(5.3)	44(15.9)	$\chi^2=16.7,P<0.001$
Change of a family member's health	62(21.9)	59(21.3)	$\chi^2=0.03,P=0.9$
Financial problems	67(23.7)	73(26.4)	$\chi^2=0.5,P=0.5$
Anxiety or depression	82(29.0)	174(62.8)	$\chi^2=64.6,P<0.001$
Academic problems	166(58.7)	154(55.6)	$\chi^2=0.5,P=0.5$
Congested classrooms	50(17.7)	105(37.9)	$\chi^2=28.6,P<0.001$
Excessive workload	96(33.9)	67(24.2)	$\chi^2=6.4,P=0.01$
Inconsiderate and insensitive instructors.	96(33.9)	33(11.9)	$\chi^2=38.2,P<0.001$
Fear of future	40(14.1)	95(34.3)	$\chi^2=31.1,P<0.001$
Environmental problems	87(30.7)	162(58.5)	$\chi^2=43.6,P<0.001$
Accommodation problems**	62(21.9)	92(33.2)	$\chi^2=9.0,P=0.003$
Close contact with serious diseases and illness	44(15.5)	3(1.1)	$\chi^2=38.1,P<0.001$
Time limitation for recreational activities	43(15.2)	120(43.3)	$\chi^2=53.7,P<0.001$

*Categories are not mutually exclusive.

**e.g. overcrowded accommodation, noisy living environment, transportation problems.

Table 2: Stress, anxiety and depression among studied students

	College		Significance
	Medicine N (%)	Law N (%)	
High stress level	57(20.1)	114(41.2)	$\chi^2=29.1, P<0.001$
Anxiety	95(33.6)	158(57.0)	$\chi^2=31.1, P<0.001$
Depression	46(16.3)	56(20.2)	$\chi^2=1.5, P=0.2$

Table 3: Univariate analysis of predictors of high levels of stress among total population

Predictor	Total	High stress	Significance	OR (95% CI)
Overall	620(100)	171(27.6)		
College:				
Medicine	283	57(20.1)	$\chi^2=29.1, P<0.001$	1(r)*
Law	277	114(41.2)		2.8(1.9-4.1)
Sex: Male	242	62(25.6)	$\chi^2=4.9, P=0.03$	1(r)
Female	318	109(34.3)		1.5(1.03-2.2)
Family residence:				
Urban	297	90(30.3)	$\chi^2=0.02, P=0.9$	1(r)
Rural	263	81(30.8)		1.0(0.7-1.5)
Family income:				
Unsatisfactory	104	49(47.1)	$\chi^2=16.6, P<0.001$	1(r)
Satisfactory	456	122(26.8)		0.4(0.3-0.7)
Family size: Up to 5	298	90(30.2)	$\chi^2=0.03, P=0.9$	1(r)
≥ 5	262	81(30.9)		1.03(0.7-1.5)
Father's education:				
<secondary	186	76(40.9)	$\chi^2=2.3, P=0.2$	1(r)
Secondary	135	44(32.6)		0.7(0.4-1.1)
> secondary	239	51(21.3)		0.4(0.3-0.6)
Father's occupation:				
Farmer/Manual worker	130	42(32.3)	$\chi^2=1.6, P=0.2$	1(r)
Professional/semiprof.	314	83(26.4)		0.8(0.5-1.2)
Others	102	39(38.2)	$\chi^2=0.9, P=0.3$	1.3(0.7-2.3)
Mother's education:				
<secondary	226	93(41.2)	$\chi^2=6.4, P=0.012$	1(r)
Secondary	145	41(28.3)		0.6(0.4-0.9)
> secondary	189	37(19.6)		0.4(0.2-0.6)
Mother's occupation:				
Housewife	320	107(33.4)	$\chi^2=2.5, P=0.1$	1(r)
Work outside home	236	64(27.1)		0.8(0.5-1.1)
Anxiety: No	110	8(7.3)	$\chi^2=34.9, P<0.001$	1(r)
Yes	450	163(36.2)		7.2(3.3-16.5)
Depression: No	249	59(23.7)	$\chi^2=9.9, P=0.002$	1(r)
Yes	311	112(36.0)		1.8(1.2-2.7)

*(r) reference group

Table 4: Logistic regression analysis of significant independent predictors of high level of stress among all students

Predictor	β	P	OR (95% CI)
College of law	0.8	<0.001	2.3(1.5-3.4)
Anxiety	1.5	<0.001	4.5(2.1-9.7)
Depression	0.4	=0.04	1.6(1.03-2.4)
Number of stressors (continuous)	0.2	<0.001	1.3(1.2-1.4)
Constant			-3.8
Model χ^2			104.0, P<0.001
% correctly predicted			73.6

Discussion

Marked significant difference in the response rate to the questionnaire was noted between the medical and law students (77.9% vs. 67.2%, respectively, $P < 0.001$). Law students take lectures in several departments for varying length of time, making them less accessible when compared to the medical students who are fewer in number and do not have contact with many different departments.

Law compared to medical students had a lower socioeconomic state and belonged to the low and middle classes. The study examined the family income, education and occupation of the parents as markers

of socioeconomic state. In contrast to our findings, Astin¹⁷ reported that law students do not mirror the socio-economic makeup of the society from which they come; instead, they come from an elite background of higher socioeconomic status than the general population.

PSS scores generally increased as household income decreased, the number of people living in the respondent's household increased.¹⁸ This social disadvantage is associated with increased stress. One explanation for this pattern is that individuals lower down the socioeconomic status ladder have fewer psychological resources for meeting the stress of the

increasingly more challenging environment that may negatively impact physical and psychological well-being.¹⁹

We found that environmental, personal and relationship sources of stress were the more common in law students, with the five most frequent stressors being anxiety and depression, limited time spent for recreational activities, problems with opposite gender, congested classrooms and accomodation problems. Most of the law students came from remote villages and towns outside Mansoura and study for four years in that city. Thus, for these students, living in university campus may cause more stress than for those who live in Mansoura. In addition, these data were collected during the first semester, when students were at begining of their courses, being away from home, having difficulty with adjustment to a new environment and taking the responsibilty for themselves. They tried to begin more intimate relationships and seek acceptance from their peers. Also they had difficulty in maintaining relationship with the opposite sex as most of them were from rural conservative communities, facing a world of mixed values. They had to cope with living in a crammed campus and congested classrooms, the heavy demands of the law school and inadequate recreational facilities. In college students,

some stress is motivating, whereas too high level interferes with learning. Excessive stress can be harmful to a student's academic performance and students who perceive their stress as very high may often suffer from depression, anxiety, attrition and serious health problems.²⁰

The top five items of stressors in medical students identified in this study were troubles with the instructors, excessive workload, problems with coursemates, close contact with serious illness and personal injury or illness. These findings are in keeping with Dyrbye et al.¹, in their meta-analysis of stresses in medical students in other parts of the world. Coles³ commented on the enormous overload of information that medical student face, and workload was the most common source of stress in the study by Guthrie et al.²

The problem of poor relationship with teachers appears to be quite widespread in the health profession. Student nurses and medical students regularly mention this stressor²¹ and it has been reported that the culture of abuse of medical students is deeply ingrained in medical education, associated with the false belief by teachers that it helps students learn.²²

As reported in previous studies of major stressors for students^{21,23} the importance of

perceived financial situation is evident in the study. Egypt, despite its wealth and its natural and human resources, has ranked poorly in many aspects of development. Important problems include high inflation, flat wages, lack of job opportunities and slow economic growth because of loss of traditional economy, low productivity and innovation and rapid expansion of population.²⁴

The results of this study indicate significantly higher prevalence of stress and anxiety in our undergraduate law students than medical students. Depression is more frequent in the law group, although it does not reach a significant statistical difference. This increased level of stress indicates a decrease of psychological health in our students which may impair students' behavior, diminish learning, and play a role in alcohol and substance abuse.

Ko et al.⁵ reported that 57% of medical students versus 47.3% of law students scored above cut-off points on the General Health Questionnaire (GHQ). Helmers et al.⁹, found that medical students are not greatly stressed relative to other groups and they had subjective feelings of stress that are marginally above population norms, but their total-stress scores related to environmental factors, personality mediators, and emotional responses were

below those of the general population, the law students, and the graduate students.

On the other hand, a study of American law and medical students revealed no difference in overall stress levels, but law students showed higher perceived stress on the academic and fear-of-failing subscales than medical students.²⁵ Furthermore, Kellner et al.²⁶ and Benjamin et al.²⁷ reported that law students had significantly more depression, obsessive compulsive personality, interpersonal sensitivity, anxiety, and hostility as compared to the general population.

The legal profession in Egypt has a long, illustrious history but the current education policy allows increasing numbers of admitted law students depending on the total marks alone, and this does not reflect the student's real desire to choose the field of specialization.²⁸ This policy increases pressure on the limited resources of universities, reduces performance of faculty members and lowers the efficiency of the graduates, reducing their chances of making a successful careers. The legal education program was of the traditional type and students lack the skills of the labor market as multi-language abilities, knowledge of international law and technological skills.²⁹

Misra and McKean³⁰ investigated the interrelationship among independent

predictors of stress in undergraduate university students. It was hypothesized that a student's academic stress would show a positive correlation with anxiety. Stress- as measured by the PSS- would be moderately correlated with the number of life events that respondents indicated they had experienced within the last year.¹⁸

Due to the major impact that perceived stress levels may have on a student, it is important that the problem be identified and dealt with effectively. Counseling and preventive mental health services should be an integral part of the routine clinical facilities caring for university students to help students make smooth transitions between different learning environments with changing learning demands and a growing burden. Studies of the effects of stress on practicing members of the legal profession are needed to further explore the possible effects of law school stress in the subsequent career years and to examine the specific effects of excessive stress on practicing attorneys.

Study limitations

- 1-The findings of this study are based on self reported information provided by students and some potential for reporting bias may have occurred because of respondents' interpretation of the questions or desire to report their emotions in a certain way or simply because of inaccuracies of responses.
- 2- The study took place at one university which will affect the generalizability to other institutions. Consequently, the results will only be applicable to similar institutions in similar settings.
- 3- The study took place at one point in time which will limit the ability to generalize the findings to other time periods, this is referred to as a threat to temporal validity.
- 4- The study was limited to all medical and law students and did not address freshmen, sophomores, seniors or juniors.
- 5- The study did not take into account faculty characteristics or teaching styles which could have an effect on student's perceived stress levels.

References

1. Dyrbye LN, Thomas MR and Shanafelt TD. Systematic review of depression, anxiety and other indicators of psychological distress among U.S. and Canadian Medical students. *Acad Med* 2006;81(4):354-373.
2. Guthrie EA, Black D, Shaw CM, Hamilton J, Creed FH and Tomenson B. Embarking upon a medical career: Psychological morbidity in first year medical student. *Med Educ*1995;35:619-621

3. Coles C. Medicine and stress. *Med Educ* 1994;28:3-4
4. Morrison J. More on medical student stress. *Med Educ* 2001;35:617-618
5. Ko SM, Kua EH and Fones CS. Stress and the undergraduates. *Singapore Med J.* 1999; 40 (10):627-30
6. Dammeyer MM and Nunez N. Anxiety and depression among law students: Current knowledge and future directions. *Law Hum Behav* 1999;23(1):55-73
7. Archer J and Peters MM. Law student stress. *NASPAJ* 1986;23:48-54
8. Heins M, Fahey SN and Leiden LI. Perceived stress in medical, law, and graduate students. *J Med Educ* 1984;59(3):169-79.
9. Helmers KF, Danoff D, Steinert Y, Leyton M and Young SN. Stress and depressed mood in medical students, law students, and graduate students at McGill University. *Acad Med* 1997;72(8):708-14.
10. Amr M, El-Gilany A, El-Sayed M and El-Sheshtawy E. Study of stress among medical students at Mansoura University. *Banha Med J* 2007; 37(5):25-31
11. Jaber LA, Brown LA, Hammad A, Zhu Q and Herman WH. Lack of acculturation is a risk factor for diabetes in Arab immigrants in the U.S. *Diabetes Care* 2003;26:2010-2014
12. EL-Rufai OE and Absood GH. Retesting the validity of the Arabic version of the Hospital Anxiety and Depression (HAD) scale in primary health care. *Soc Psychiatr Psychiatr epidemiol* 1995;30:26-31
13. Turner RJ and Wheaton B. Checklist measurement of stressful life events. In S. Cohen, RC Kessler, LU Gordon (Ed.) *Measuring stress: a guide for health and social scientists.* New York:Oxford University Press. 1995 pp.29-35
14. Cohen S, Kamarck T and Mermelstein R. A global measure of perceived stress. *J Health Soc Behav* 1983;24:385-396
15. Zigmond S and Snaith RP. The hospital anxiety and depression scale (HADS). *Acta Psychiatr Scand* 1983;67:361-370.
16. Olsson I, Mykletun A and Dahl AA. The hospital anxiety and depression rating scale: A cross-sectional study of psychometrics and case finding abilities in general practice. *BMC Psychiatry* 2005; 5:46
17. Astin AW. Pre-law Students-A National Profile. *J Legal Educ* 1984;34(1):73-85
18. Cohen S and Williamson GM. Perceived stress in a probability sample of the United State. In Spacapan S, Oskamp S (Eds.) *The social psychology of health.* Newbury Park, CA: Sage 1988 pp. 31-67
19. Grant KE, Compas BE, Thurm AE, et al. Stressors and child and adolescent psychopathology: evidence of moderating and mediating effects. *Clinical Psychology Review* 2006;26(3):257-83.
20. Evans W and Kelly B. pre-registration diploma student nurse stress and coping measures. *Nurse Educ Today* 2004;24(6):473-482
21. Trimmins F and Kaliszer M. Aspects of nurse education programs that frequently cause stress to nursing students –fact finding sample survey. *Nurse Educ Today* 2002;22:203-211

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22. Kassebaum DG and Culter ER. On the culture of student abuse in medical school. *Acad Med* 1998;37:49-58
 23. Omigbodun OO, Odukogbe AA, Omigbodun AO, Yusuf OB, Bella TT and Olayemi B. Stressors and psychological symptoms in students of medicine and health allied health professions in Nigeria. *Soc Psych Epidemiol* 2006;41:415-421
 24. Okasha A. Focus on Psychiatry in Egypt. *Brit J of Psychiatry* 2004;185:266-272.
 25. Heins M and Fahey SN. Comparison of perceived stress levels among medical and law students. *Annu Conf Res Med Educ* 1981;20:201-6
 26. Kellner R, Wiggins RJ and Pathak D. Distress in medical and law students. *Compar Psychiatry* 1986;27(3):220-223
 27. Benjamin GA, Kazniak A, Sales B and Shanfield SB. The role of legal education in producing psychological distress among law students. *Am Bar Found Res J* 1986;11(2):225- 252
 28. Moustafa AF. The axes of the future dimension of the development of university education in Egypt to face the unemployment of graduates. *J Financ Commerc Stud.* 2004; 2:213-220
 29. Kenawy EM. University Education and its Relation to Development in Egypt. *J Appl Sci Res* 2006; 2(12): 1270-1284.
 30. Misra R and McKean M. College students' academic stress and its relation to their anxiety, time management, and leisure satisfaction. *Am J H Stud* 2000;16(1):41-51