sciendo

DOI: 10.2478/rjom-2018-0008

Original papers

Stress vulnerability assessment among medical and political science and public administration students

Claudia- Mariana Handra[1], Eugenia Naghi[1], Marina Ruxandra Oțelea[2]

[1] Occupational Medicine Department, "Carol Davila" University of Medicine and Pharmacy ", Bucharest, Romania
[2] Clinical Department 2, "Carol Davila" University of Medicine and Pharmacy ", Bucharest, Romania

Corresponding author
Claudia-Mariana Handra
claudia.handra@gmail.com

Abstract

Context. Stress is a complex psychosocial phenomenon that significantly influences health. The individual differences in stress response depend on sensitivity to stressors, named "stress vulnerability".
Objectives. The aims of the study were to determine the level of perceived vulnerability to stress and compare stress vulnerability among students from 2 universities in Bucharest: University of Medicine "Carol Davila" and National University of Political Studies and Public Administration.
Methods. An approximately equal number of students from the two selected universities completed the Romanian version of the Miller-Smith stress vulnerability questionnaire.
Results. A number of 86 (60 women and 26 men) students agreed to participate. Average age was 23.56 years with a standard deviation of 4.86 years. The high vulnerability group included 18 (38%) medical students and 27 (60%) political science and public administration students. The difference was statistically significant (chi^2 test, p=0.02) between the two groups. The average health score for medical students (MS) was 15.97, with a median of 15, while for the political science and administration students (PSPAS) the average health score was 24.91, with a median of 26. The average psychosocial score for MS group was 20.41 and the median was 20. In the PSAPS group, the psychosocial score was 26.14 and the median 24. The difference was statistically significant for both health score (p<0.00001) and psychosocial score (p=0.0006).
Conclusions: Stress is a common problem among undergraduated students. In this study the vulnerability to stress was higher for students PSAPS group compared to the students from MS group.

Keywords: *stress vulnerability, assessment, students*

Introduction

Stress is a complex psychosocial phenomenon that significantly influences health. It has an important subjective component, meaning that what is provocative, easy or even relaxing for one person may become threatening or impossible to accomplish for another person [1]. The individual differences in stress response are due to both genetic components and different life experiences. Some people have an increased sensitivity to minor, common stressors; this sensitivity makes them more vulnerable to stressors and has been named "stress vulnerability". The stress-vulnerability model

was proposed by Zubin and Spring in 1977 [2] and was used for identifying and treating relapses of mental illness. There are two major components of vulnerability: the congenital and the acquired. The congenital component of vulnerability is laid down in the genes and reflected in the internal environment and the neurophysiology of the body, while the acquired component is due to the influence of traumas, diseases, family experiences, during childhood and adolescent period and other life events. The highly vulnerable person is one for whom challenges in everyday life are sufficient to create a psychological imbalance. The low vulnerable person (or resilient) is able to withstand high intensity stressors without developing symptoms.

Vulnerability to stress can be measured using the Stress Vulnerability Questionnaire adapted from the test "How vulnerable are you to stress?" (University of California, Berkeley Wellness Letter, August, 1985, developed by Lyle Miller and Alma Dull Smith of Boston University Medical Center). This questionnaire has 20 items with a rating scale from 1 (Always) to 5 (Never). Lower scores indicate excellent resistance to stress [3].

Coping refers to the way a person responds to perceived stress and depends on individual vulnerability. The ability to cope with stress is very important in the attempt to reduce stress-related health effects. Medical school has long been acknowledged as cumulating various stressors that can affect student well-being. Throughout university studies young individuals are put in different situations in which they have to demonstrate use of their skills and ability to cope with many challenges related to professional and social demands. These challenges include information and input overload, low financial resources, lack of leisure time, pressures of work, work relationship and career choices [4]. Symptoms of anxiety and depression are prevalent in medical students and humanities students [5]. In medical and administrative-political careers, some common stressors such as work overload and frequent interactions with vulnerable or sometimes aggressive individuals are widely acknowledged.

We have conducted a study to identify the level of stress vulnerability and to compare students from these two professional groups, for at least two purposes: at group level the assessment provides rationale for therapeutic interventions, and on an individual level, an early identification of risk could reduce the impact of career-related stress by selecting jobs with lower levels of time pressure, work load and patient or client interactions.

Objectives

The aims of the study were to determine the level of perceived vulnerability to stress and to compare stress vulnerability among students from 2 universities in Bucharest: University of Medicine "Carol Davila" and National University of Political Studies and Public Administration.

Population and methods

The study population consisted of medical students (MS) and students in political science and administration students (PSPAS) during the 2015-2016 academic years. An approximately equal number of students were selected from 2 universities (41 from medicine and 45 from PSPAS). The medical students had clinical activity in hospitals, including patient care and theoretical courses; the total in class or in-hospital activity is consisted of 6-8 hours a day excluding the time spent for individual study and exam preparation. Students belonging to political science and public administration group prepared for careers in politics, business and management practice and consultancy and their academic activity ranged between 4 to 6 hours a day. Both semester curricula structure and the number of examinations/year were similar among the two groups. Students from the two selected universities were invited to participate. The participation was voluntary, without any criteria for exclusion. The study was conducted among fourth year medical students and among third year students from the other group. A total of 100 questionnaires were distributed, of which 86 were returned and collected in a manner that maintained anonymity. Demographics (age, sex) were recorded. Each student completed the Romanian version [6] of the Miller-Smith stress vulnerability questionnaire [3]. The questionnaire, based on the Likert scale included 5 possible answers: always, frequently, neutral, sometimes and never. The interpretation of test scores considered that the lower the score, the less vulnerable to the effects of stress that person is. Based on the final score, the study group was initially divided into low vulnerability to stress students (score < 30) and high vulnerability to stress students (score >30). Age, sex and university membership were compared for the identification of differences. Following this analysis of the global score, the items of the vulnerability test questionnaire were further divided in health related items and psychosocial related items. Items 1,2,5,6,7,8,14 and 19 of the questionnaire were considered health

Table 1. Comparison of the health and psychosocial score between the vulnerability groups

	Low vulnerability group		High vulnerability group		
	Average	Median	Average	Median	p
Total final score	19.16	21	39.42	33	<0.001
Health score	23.73	20	33.24	27	<0.003
Psychosocial score	17.50	17	26.42	25	<0.001

health related items. These items explored the healthy habits and attitudes such as smoking, coffee drinking, alcohol consumption and nutritional habits, sleep hygiene and self-perceived health status. The total sum of responses to health related items represented the health score. Items 3,4,9,10,11,12,13,15,16,17 and 20 of the questionnaire were considered psychosocial related items. The total sum of responses to psychosocial related items represented the psychosocial score.

The psychosocial items referred mainly to social interaction and group support, assertive attitude and personal beliefs. Health and psychosocial scores were compared in the two vulnerability groups and between university membership groups. Initially, a normality test for all variables was performed. As none of the variables had normal distribution, comparison between the quantitative variables was done using Mann-Whitney U test. Qualitative variables were compared using chi2 test. A 95% threshold was selected for the definition of a significant difference. Computation of data was performed using a StatPlus:macPro version 6.4.71 software.

Results

A number of 86 (60 women and 26 men) students agreed to participate. Average age was 23.56 years with a standard deviation of 4.86 years. Among the participants, 41 were medical students (MS) and 45 were students in political science and public administration students (PSPAS). The low vulnerability group included 33 women and 15 men, while group 2 consisted of 27 women and 11 men. The difference in gender distribution was not statistically significant (chi^2 test, p= 0.82). There was also no significant difference in age between the two groups (Mann Whitney, p= 0.53).

Concerning the university membership, 18 (38%) medical students had a high vulnerability score compared to 27 (60%) in the political studies and administration group (Figure 1). The difference was statistically significant (chi^2 test, p= 0.02). The average health score of the whole study group was 27.93 (standard deviation = 13.52). The psycho-social index was 21.44 (standard deviation = 6.32).

The average health index and emotional index among the two vulnerability groups are presented in Table 1. The average health score in MS was 15.97, with a median of 15, while in the PSPAS the average health score was 24.91, with a median of 26. The average psychosocial score in MS was 20.41 and the median 20. In the PSAPS group, the psychosocial score was 26.14 and the median 24. The difference was statistically significant for both health score (p <0.00001)(Figure 2) and psychosocial score (p= 0.0006) (Figure 3).

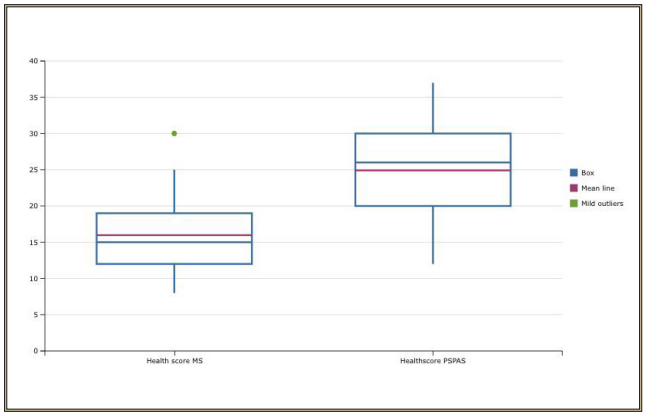

Figure 1. The low and high vulnerability status among medical and political science and public administration student groups. MS: medical students; PSAS: political science and administration group.

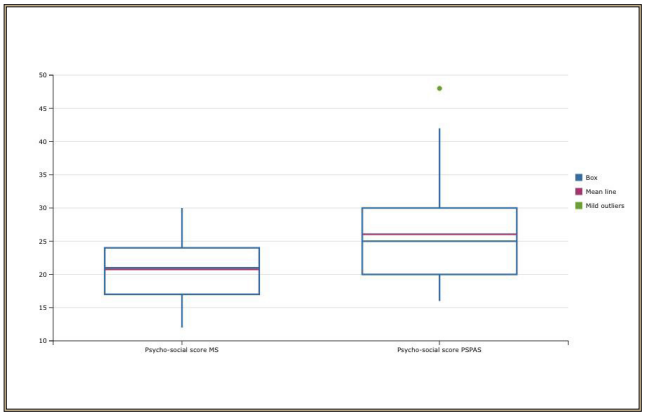

Figure 2. Comparison of the health score between medical and political science and public administration student groups.

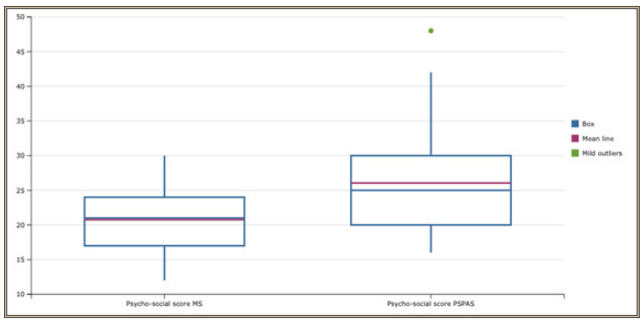

Figure 3. Comparison of the psychosocial score between the medical and the political science and public administration student groups.

Concerning the psychosocial related items, the largest difference was the rate of the affirmation "I get strength from my religious beliefs"; MS agreed more frequently to this affirmation than SPPAS. However, only 29% of the MS answered that their religious beliefs always gave them strength. Aside from this item, MS had, on average, more friends and relatives to rely on and seem to have a larger network of friends and acquaintances. The frequency of mentioning a constant good psychosocial interaction (student that selected "always" to the item) is presented in Table 3.

Table 2. Comparison of responses to health-related items in medical and political science and public administration students

Questionnaire item	MS number of students responding "always"	%	PSPAS number of students responding "always"	%
I eat at least one balanced meal a day	16	39	11	24
I only get 7-8 hours of sleep at least four nights a week	11	27	16	36
I exercise to the point of perspiration at least twice a week	7	17	7	16
I limit myself to less than half a pack of cigarettes a day	25	61	21	47
I take fewer than five drinks of alcohol a week	29	71	26	58
I am the appropriate weight for my height	13	32	15	33
I am in good health (including eye-sight, hearing, teeth)	17	41	10	22
I drink fewer than three cups of coffee a day	23	56	22	49

Legend. MS: medical students; PSPAS: political science and public administration students.

Table 3. Comparison of responses to psychosocial-related items in medical and political science and public administration students

Questionnaire item	MS number of students responding "always"	%	PSPAS number of students responding "always"	%
I give and receive affection regularly	12	29	11	24
I have at least one relative within 50 miles, on whom I can rely	29	71	22	49
I get strength from my religious beliefs	12	29	4	9
I regularly attend social activities	16	39	9	20
I have a network of friends and acquaintances	29	71	24	53
I have one or more friends to confide in about personal matters	23	56	23	51
I am able to speak openly about my feelings when angry or worried	14	34	6	13
I have regular conversations with the people I live with about domestic problems	10	24	10	22
I do something for fun at least once a week	19	46	13	29
I take some quite time for myself during the day	13	32	15	33

Legend. MS: medical students; PSPAS: political science and public administration students.

Discussions

In this study we found that stress vulnerability was higher for students in the political science and public administration group (60%) than for students in the medical group (38%). There are few studies on political and administrative students, but in medical students' communities the level of stress seems to be significant. In a Spanish study focused on dental students the stress was assigned to two major components, frustration and tenseness [7]. In the United States, a survey on 9 medical schools found that 47% of student respondents had at least one major issue related to mental health or substance use and that stress affected 26% within this group [4]. The severity of symptoms of anxiety and depression in medical students is negatively related to emotional stability and positively associated with to stress vulnerability [5]. In comparison to other undergraduate students, medical students had higher levels of stress and the explanation found in other studies was that higher personnel standards were associated with maladaptive perfectionism, fear of not having academic results, lack of awareness, and the use of coping methods and supporting services for students [4, 8]. A stressor-reactivity path has been described [9] and it illustrates how health and psychosocial factors can change the way daily stressors impact everyday wellness. In order to apply this theory and for the purpose of identifying more specific influencing factors we have divided the items of the vulnerability questionnaire in health related items and psychosocial related items. Significant differences in the average score regarding health related items were found between the two groups. Medical students exercised more, had a positive perception about their health, smoked less, had more frequent one hot meal a day and drank less frequently. The other group had an average better score for sleep duration of 7-8 hours for at least 4 nights/week. The inadequate duration and quality of sleep in medical students has also been reported in other studies [10]. Alcohol consumption is a stress predictor [11]. There is a direct relationship between stress, alcohol use and unhealthy nutritional habits [12]. We can also consider the relationship between stress and alcohol as bilateral, because experimental studies showed that alcohol increases stress response by stimulating the production of stress hormones [13]. These data are also confirmed in our study, as almost two thirds of the medical students had less than 5 drinks of alcohol/week, a higher percentage than that of the administrative and political studies students. When referring to smoking, a similar relationship with stress as for alcohol intake was described. The stress levels in adult smokers were slightly higher than those of non-smokers [14]. In this study, more than half of the medical group never smoked more than half a pack of cigarettes per day. These aspects related to alcohol consumption and smoking have a significant contribution to lower level of stress vulnerability for medical students. A qualitative study conducted on students showed that smoking contributes to the perceived stress reduction and management by creating the opportunity for a brief social interaction during study times and serves as a nonverbal signal to others that they were stressed [15]. As the self-perceived stress is influenced by stress vulnerability, we can consider that our results are aligned with these findings.

The psychosocial factors are sources of stress when students don't take time for attending social activities and meet with friends, when they don't offer and receive affection regularly. Studies among medical students found that using problem solving techniques (discussing it with seniors) and emotion focused (walks, cooking etc.) coping strategies [16]. It is an unexpected finding that students in political sciences, presumably good communicators, are less engaged in these type of activities. As the number of students is rather low, we cannot have a final conclusion; however, there is need of further investigation of these characteristics in order to better adjust support interventions. As for the medical students group, it is of interest to notice the high level of agrreement to the affirmation that their religious beliefs give them strength, followed by the assertions that they have more friends and relatives to rely on and a more extended network of friends and acquaintances. The students who are the most vulnerable are those with fewer social networks [17] and, therefore, a constant, good psychological interaction represents a coping strategy to deal with stress. The differences between the two groups could be attributed to the particularities of training and healthy attitude, with medical students being more aware of the impact of unhealthy habits. In this respect, a greater effort would be recommended in promoting a healthy lifestyle, particularly among the administration and political sciences students.

The main limitation of the study concerns the low number of participating students from each university; because of it, we can consider this study a pilot study, that showed nevertheless interesting differences between the two student communities and encourages continuation of this research.

Conclusions

Stress is a common problem among undergraduated students. In this study the vulnerability to stress was higher in students in political science and public administration than in the medical group.

Determining the degree of vulnerability to stress is an important instrument to understand better ways to support young individuals by increasing the adaptation mechanisms or changing environmental factors that might reduce this vulnerability and improve stress resistance. This kind of approach shall be used in future studies as an initial assessment for health promotion programs. In career orientation, the psychological profile has a well-established role. The place of the stress-vulnerability test as part of the psychological assessment for job orientation needs further specific investigation studies.

References

1.Roesch S, Weiner B, Vaughn A. Cognitive Approaches to Stress and Coping. Curr Opin Psychiatry 2002; 15:627-632.
2.Zubin J, Spring B.Vulnerability- A New View of Schizophrenia. Journal of Abnormal Psychology 1977; 86:103-126.
3.Miller L, Smith, AD. Stress Vulnerability Scale: University of California; 1985.
4.Yiu V. Supporting the well-being of medical students. CMAJ 2005; 172:889- 890.
5.Bunevicius A, Katkute A, Bunevicius R. Symptoms of Anxiety and Depression in Medical Students and Humanities Students: Relationship with Big- Five Personality Dimensions and Vulnerability to Stress. International Journal of Social Psychiatry, 2008; 54:494-501.
6.Popescu Brumă S. Psihologia Sănătăţii, 2005, Ed. Paralela 45, Piteşti.
7.Montero-Marin J, Piva Demarzo MM, Pereira JP. Reassessment of the Psychometric Characteristics and Factor Structure of the 'Perceived Stress Questionnaire' (PSQ): Analysis in a Sample of Dental Students. PLoS ONE, 2014; 9: e87071.
8.Fares J, Al Tabosh H, Saadeddin Z. Stress, burnout and coping strategies in preclinical medical students. North Am J Med Sci 2016; 8:75-81.
9.Tariq Q, Mujeeb S. Impact of stress vulnerability on anxiety and depression. Asian Journal of Social Sciences& Humanities, 2013; 2:501-508
10.Azad MC, Fraser K, Rumana N. Sleep disturbances among medical students: a global perspective. J Clin Sleep Med 2015; 11:69-74.
11.Melaku L, Mossie A, Negash A. Stress among Medical Students and Its Association with Substance Use and Academic Performance. Journal of Biomedical Education 2015;2015:1-9.
12.Britton PC. The relation of coping strategies to alcohol consumption and alcohol- related consequences in a college sample. Addiction Research and Theory, 2004; 12:103- 114.
13.Brady KT, Sonne SC. The role of stress in alcohol use, alcoholism treatment, and relapse. Alcohol Research and Health, 1999; 23: 263-271.
14.Parrot AC. Does cigarette smoking cause stress? American Psychologist, 1999; 54:817-820.
15.Nichter M, Carkoglu A et al. Reconsidering stress and smoking: a qualitative study among college students. Tobacco Control, 2007; 16:211-214.
16.Sohail N. Stress and Academic Performance Among Medical Students. Journal of the College of Physicians and Surgeons Pakistan, 2013; 23 : 67-71.
17.Wilkinson et al. Identifyng medical students at risk of underperformance from significant stressors. BMC Medical Education, 2016; 16:43.