

Stress in medical students

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Abstract

Stress has been defined as the state of a body threatened by imbalance under the influence of agents or conditions endangering its homeostatic mechanisms but the concept have multiple meanings in correlation with the origin and biological support of its effects. Also, stressors are multiple, recording one of the highest levels during the academic studies. For the medical students, stress represents an important challenge, especially during the first year of medical school, caused by the absence of a learning strategy, the sleepless night before the exam and also an unhealthy food intake during the exams. The coping strategies are important, their background being represented by the social support, especially within the family, and emotional, the passions of the medicine students being the most important stress-combating factor. Gender represents also an important factor for the stress vulnerability, manifested through medical and psychiatric symptoms. In order to train good doctors, fair and above all healthy, it is important to consider not only the information we want to transmit, but also the context in which we educate.

Keywords: stressors, behavior, coping.

☞ Introduction

Stress in educational environment is getting more and more attention, as we are trying to build an educational system that has the students and their needs in the limelight. The quality of the training we offer depends on how well we understand the challenges raised by the processes and phenomena beyond the curriculum, but without which the informational content becomes null. In fact, we all presume that medical students are stressed. This review shows why, how much and what effects stress has on the academic evolution and career of our future medical doctors.

☞ The term 'stress'

Stress has been defined as 'the state of a body threatened by imbalance under the influence of agents or conditions endangering its homeostatic mechanisms' [1]. Stress defines both the action of the stressing agent and the body's reaction to it. According to Selye, who introduced this concept in the '50s, the unspecified response is connected to the neuroendocrine mechanisms [2]. The external factors with detrimental potential, which may endanger the body's physical and mental balance, no matter their nature, are referred to as stressing agents. The initial expression used by the 'father of stress' was 'general adaptation syndrome', defined as the body's effort to handle the demands of the situation, describing it as including three specific stages: the first stage in which the body makes efforts to defend against the stressing agent, followed by the second stage, in which the individual hangs on and adjusts to the situations, and the final one in which the exhaustion arises, caused by extended action of the stimulus [3].

Multiple researches have shown that the alteration and even the invalidation of the body's defense mechanism against illness, and, as a result, the increase in the risk of

contracting serious conditions, including cancer, are caused by emotional shocks, such as the loss of a close friend or loved one [4].

Stress represents an unavoidable, normal and life-requisite phenomenon, since it favors the adjustment, as fundamental requirement of survival, if its level is a justified one for the situation in which the subject finds himself/herself. However, if case the stress level is higher, then it alters the health condition by an exaggerated reaction affecting the organs and systems' functions, favoring illnesses and hindering the adjustment.

Stress is difficult to define, since the notion knows multiple meanings. Stress has four meanings: a physical and psychological stimulus causing tension, a result of an action exerted by a stressor, stressing agent and simultaneously the result of its action and, last but not least, a defense mechanism against stimuli [5].

We can also refer to a secondary mental stress, to define the effect of the phenomenon determined by the initial mental stress. For example, the primary mental stress generated by the work overload causes a somatic illness, and in turn, through its somatic and mental symptoms, it also causes a stress reaction, which continues the first one [6].

There have been proposed two meanings of stress:

- A stimulus causing a state of body tension;
- The excessive tension state of the body, determining a mobilization of the mechanisms through which the individual can handle the aggression.

This state of tension is especially expressed by exaggerated emotional responses, visibly expressed by the behaviors involved in language and motor skills [3].

☞ Stress sources

There are three stressor categories:

- Frustrations, felt when the efforts to achieve a goal

are hindered by an external or internal obstacle or by the impossibility to achieve it.

- Conflicts, situations in which two completely opposite motivations or needs occur simultaneously, and the fulfillment of one of them blocks the achievement of the other. There are three types of conflicts: one which includes the tendency to avoid and to approach a goal simultaneously, another one in which an individual must choose between two equally important things and a third type, which presumes that the individual has to choose between two or several actions, which are equally unpleasant. The stress types and implicitly the coping ones depend on the features of the three.

- Pressure, tensions determined by the action of an inner or outer force to increase the pace or efforts made to reach a certain goal or to completely change the strategy to reach it [7].

To these categories, which are rephrases of the causes described in the initial theories, we can also add the situations involving material and emotional losses, causing a certain specific feeling and presenting as having no resolution, irretrievable, demanding a passive coping from the individual, and also prolonged negative emotional states, awakened by the action of stimuli associated with the situation causing them in the first instance. The accent falls on the individual's particular manner of interpreting outer demands, in lack of which stress could not cause an imbalance [8].

☒ **Stress in the academic environment**

A determining factor of a person's status in his/her career is the social status it acquired during the academic studies [9], and the time spent studying in a university is considered to be one of the most stressful periods. The bigger the psychological issues as anxiety or depression, the more power their impact on the scholar performance, which can occur in the form of a decreased concentration ability and low motivation [10]. It seems that academic stress is also influenced by the students' level of creativity. The lower their creativity level, the higher the stress caused by the academic environment, by the obtained results and less by the anxiety states and unexpected situations, while students with a higher creativity degree tend to be more likely stressed by their health condition [11]. Stress during the first year of medical school has a higher impact than during the other years, especially before the exam and during it and mainly due to the highly competitive environment and the absence of extra-curricular activities, with very few differences between men and women. The identified causes were the absence of a learning strategy, the sleepless night before the exam and also an unhealthy food intake during the exams [12]. On the contrary, other studies suggest a higher stress level during the second and third year, determined during the second year by the increased fears related to the future profession and the high number of clinical and preclinical subjects and during the third year, by the massive competition to the post-graduate jobs. Concurrently, the students who obtained high grades at the admission indicated higher stress levels, which confirm the major role of the pressure caused by personal expectations, but also by the ones of the parents and

colleagues. The importance of the coping strategies was also proven, since the ones with escape, detachment and responsibility acceptance strategies are less stressed than the ones using a positive reassessment. As for the perceived social support, which is absolutely necessary in reducing the stress, family proved to be of importance during the first year, friends during the second year, while the friends' support decreases during the third year, due to the competition increase among the students. Overall, the passions of the medicine students are the most important stress-combating factor [13].

The student's feeling of control over the situation can reduce the stress level, while an organizational approach in this respect, significantly changes the obtained results. The efficient time management to reach goals was recognized as an important factor in the partial annulment of the stress effects. If to the aforementioned we add a cognitive reaction when confronted with stress, to determine the use of problem resolution strategies, which is an essential coping type in such cases, with a demonstrated effect to reduce stress and its effects, the students will be able to handle daily stressful situations and the emotional effects thereof. Although the female students make more efficient use of their available time to carry out the tasks as opposed to male students, the measured stress level was identical in both categories. One of the reasons provided by the authors was that, no matter the number of stressing agents, which can be lower in women, their anxiety level – in important predictor of stress – seems to be high and the satisfaction related to leisure time seems to be smaller, since they assess the stressful situations more negatively and frequently than men and the less intense reactions of the latter to the stressing agents come from social interactions, teaching them that to express feelings is a sign of weakness and an invalidation of their masculinity. The male subjects registered a higher degree of satisfaction related to leisure time [14]. One of the implications would be that that, to have good results on the short term (at the exams) and long term (in the future profession), in addition to the basic training provided by the teachers during educational activities, an efficient strategy should be provided for the use of temporal resources and resolution of difficult academic issues, the students have to deal with, differentiated according to the students' gender. Thus, the students would also take advantage of the social support of their trainers, in addition to the one provided by friends and family, which is very important in the discussed issue.

Barefoot *et al.* (1983) showed in a longitudinal study carried out during 25 years on 255 medicine students, that hostility, an important feature of the type A behavior described by Friedman and Rosenman, with a higher vulnerability to stress and characterized by ambition, among others, a feeling of stringency and competition and a level of maximum professional involvement, is a predictor of coronary illness and also of death due to all causes. The increased hostility contributed not only to the pathogenesis or progression of the cardiovascular illness, but it also affected the capacity to survive other disorders [15].

An important connection exists between the high

level of perceived stress and various gastrointestinal symptoms in nursing students, suggesting following the results' analysis, the inclusion of a stress management programme in the faculty training [16].

Figley (1955) spoke of the stress incurred by professionals working with traumatized people, whom they provide care and/or healing form, and the phenomenon is referred to either as secondary traumatic stress or compassion fatigue. The necessary empathy to understand the patient or client's story makes the professional feel the same emotions expressed by her/his client. The author's researches proved that efficient therapists are the ones which prove to be most vulnerable to this type of stress, since to absorb the information on suffering means to absorb suffering in itself, to take over the victims' emotional tension and load [17]. Medical students have a high level of secondary traumatic stress; furthermore, the ones who choose medicine because they wish to help people or the ones following their parents' suggestions have a significantly higher stress level than the ones driven by the fact that this faculty will lead them towards a respected profession and material benefits, a motivation which seems to have a protective role by preventing the implication in the patient's story to the detriment of the latter; and last, but not least, the medicine students which choose this job to help others show the most features which predispose them to the stress caused by their job. Thus, the better we prepare the students for a job dealing with enormous pressure, the more powerful the fatigue and exhaustion, especially in lack of a risk prevention programme which the future doctors should be subject to [18].

Lloyd and Gartrell (1984) studied the psychiatric symptoms of medicine students. Although by comparison with psychiatric patients, the number of the identified symptoms in medical students was rather small, if the comparison term is changed with the general population, medical students showed a considerably higher number of symptoms [19, 20]. Thus, compared to the general population, students registered a slightly increased level of somatic symptoms, a moderate level of anxiety and depression symptoms and an elevated level of obsessive-compulsive symptoms and interpersonal sensitivity. The latter can be explained by a sensitization caused by the intense pressure to achieve performance, manifested by an anxiety-induced difficult cognitive functioning, expressed by blockage, memory disorders, incapacity to make decisions and increased sensitivity to the appraisals of others. The differences also occur according to the biological gender; hence, the women have higher scores than men, especially in the depression and interpersonal sensitivity area.

Firth (1986) shows that medicine students have a higher stress level than employed youngsters, due to the constant assessments and lack of time and money and that an alarming percentage between 15% and 26% among them need professional help to mitigate it. The more stressful the city in which the university is located, the deeper the issues. The author states that one university year or another spent is not necessarily more stressful than the others are, but the stress felt in a certain year expands the previous one. Using alcohol as a de-stressing technique is more present in students with high stress

levels and, even if during the clinical years the alcohol consumption increases, medical students do not seem to do it more than the other students. The issue is still a concerning one, especially since the longer leisure time in the final years and the increased maturity are expected to have their say in this. Contrary to the expectations, exhaustion was not the main stressing factor, but the feeling of uselessness and also the effect of the academic training on their personal life, the anxiety arisen by the active involvement in the medical act and the fact that they have to deal with death and patients' suffering. Firth suggests that teaching subjects so stressful for students, connected to the patients' death should be taught using teaching techniques with small groups and not by major classes or individual reading. Another delicate issue, stirring up strong emotions is the one related to the discussions with mentors, during which they often felt humiliated, which forms a belief that the profession has disappointed them and that they can repeat the pattern. In addition to anxiety or tension, frustration and powerlessness were often reported as being stress related. Firth says that, although they can be regarded as inevitable in the life of a medicine student, they contribute to the creation of a taught helplessness feeling, closely associated with depression and suggests again teaching in small groups as a solution aiding the students to have their progresses acknowledged and to be visibly supported in studying [21].

An important series of studies focused on proving a significant correlation between stress and depression, based on isolated stress episodes, with a profound negative effect and content. There has been reported a high level of depression in medicine students, as well as in the other students and one of the risk factors was the family depression history, but one of the main reasons of the medicine students was the impossibility to talk to their mentors regarding the emotions and feelings that might stigmatize them [22]. Depression in first year students is more frequent than in 3rd year ones, owing to the change of the study environment and the stress level, which is different in the university as opposed to high-school and this result is in agreement with the other similar research showing that final years cause a decrease in the depression prevalence and clarify the need of an institutional intervention and prevention. One of the reasons might be related to the challenges occurring in connection with the future job, which is more future-oriented, a fundamental prerequisite in treating depression. The stress felt during the first and third year is attributed to the erratic lifestyle of the students [23]. The *American Foundation for Suicide Prevention* notes that approximately 400 American medical doctors commit suicide each year, the male doctors having a 70% higher risk than men in other professions, and the women having a 400% higher risk than the ones with other jobs [24].

The stress of medical students is a unanimously acknowledged phenomenon. Nevertheless, the research does not strongly support the fact that it would be more increased in this case than in other fields. One can argue the fact that the pressure of the made decisions and implicitly, of the training to make them in a safe and correct manner is often higher and the consequences

thereof are more important and more serious. No matter the side you wish to take, the psychological, educational and most of all the ethical implications of these discoveries are enormous, especially in the Romanian superior medical education system. The noted research seems to open even more doors and to raise many more questions than answers. Considering the fact that the current strive of the medicine faculties is oriented towards training professionals who would not leave the system after graduation, we can not ignore the alarm signals we receive to grant attention not only to the educational process, but also to the context in which it is carried out, to train good, honest and enthusiast medical doctors, genuinely interested in their profession and especially healthy ones.

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