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STRESS LEVEL AMONG MEDICAL STUDENTS IN GEORGIA AND ITS CAUSATIVE FACTORS

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Abstract

The study is aimed to determine the prevalence and the stressors among medical students, as well as to observe an association between the level of stress and its causative agents. A questionnaire, consisting of 2 sections, one defining the stress level and the other - causation, was sent to the medical students from year 1 to year 6 of the Tbilisi State Medical University (USMD Program). Perceived stress varied among the academic years, with the mean of 22.4 (on the scale of 0-40), which indicates the moderate level of stress. The first four years had significantly higher stress levels compared to the last two. The most significant stressors were exams and the studying process, whereas least stressful turned out to be communicative stressors. The findings can be useful for medical school professors and administration to understand the students' well-being, which will be helpful to create a more comfortable study environment.

Introduction

Stress is defined as the body's non-specific response to demands made upon it, or to disturbing events in the environment. It is not just a stimulus or a response but rather, it is a process by which we perceive and cope with environmental threats and challenges [1].

Medicine is a highly competitive field, thus being a medical student requires a lot of effort and time. Medical students experience significant stress during medical school, which can lead to depression, burnout, and anxiety [2]. In fact, there are several studies in different countries indicating higher than average stress levels among undergraduate medical students [3]. High levels of stress may have a negative effect on cognitive functioning and learning [4]. The results of studies suggest that mental health worsens after students begin medical school and remain poor throughout the training [5]. Many researches have shown that there are more emotional disturbances in the medical student community than in the general population and identifying the main stressors is an important aspect. A study in a north Indian medical university showed that stress amongst medical students is a dynamic process as the stressors keep changing with the year of study and constantly changing expectations of the students and the system [6]. Thai medical school results showed that about 61.4% of students had some degree of stress and academic problems were found to be a major cause of stress among all students [7].

The local studies estimating the levels of stress in the medical students of Georgia could barely be located with the extensive internet-based search. The present study was conducted, with the goal of determining the levels of stress of the medical students doing the bachelors in the country. The aim further includes defining the specific causative agents and linking them to each year of the medical school.

The study results are beneficial for the students, to identify the upcoming difficulties each year can bring and they can implement some modifications to at least partly avoid the causative factors in the next academic year. The research results are also thought to be insightful for the university administration, they will have more perspective on the main stress-inducing factors for their students and subsequently will be able to improve their experience.

Methodology

The study was quantitative, using an online questionnaire as a tool, which was composed of 2 parts. First part was assessing general stress levels using a widely used "perceived stress questionnaire" by Cohen, which consists of 10 questions and is widely used. The questions asked about one's feelings and thoughts during the last month. The participants were asked to indicate by circling how often they felt or thought a certain way. For example, inability to control irritation or inability to cope with some things etc. Each question has a 4-point scale and individual scores range from 0 to 40. Higher score indicates higher perceived stress level. The calculated scores can be put in 3 categories: cumulative score 0-13 (low

stress); 14-26 (moderate stress); 27-40 (high stress). The results were divided by the academic year, thus mean, median and mode were calculated for each year.

The second part of the questionnaire consists of 28 questions, which are specifically designed for the study sample with the goal of determining the most stressful factors for the students of each academic year (1st, 2nd, 3rd, 4th, 5th and 6th). The above-mentioned 28 questions are themselves divided into 5 parts. The sections are titled accordingly: Evaluating stressors, Studying Process, Social Stressors, Communicative Stressors and Language Barriers. The scoring system for each question consists of 4 ranges: <1.5 (low stress), 1.5- 2.0 (moderate stress), 2.0-2.5 (high stress), >2.5 (extremely stressful). The answers are divided according to the academic years; the mean of the results is calculated and depicted on the charts.

The questionnaire was sent with Google Forms via Gmail and the results were analysed using Microsoft Excel.

Results and Discussion

Analyses of the perceived stress questionnaire are shown in **Table 1** and **Figure 1**.

Table 1. Perceived stress scale results; 0-13 (low stress); 14-26 (moderate stress); 27-40 (high stress).

Year	Mean	Median	Mode
1st	23	24	30
2nd	26	26.5	27
3rd	25.3	28	28
4th	24.8	27	27
5th	17.3	17	17
6th	18	19	25

Figure 1. 0-13 (low stress); 14-26 (moderate stress); 27-40 (high stress)
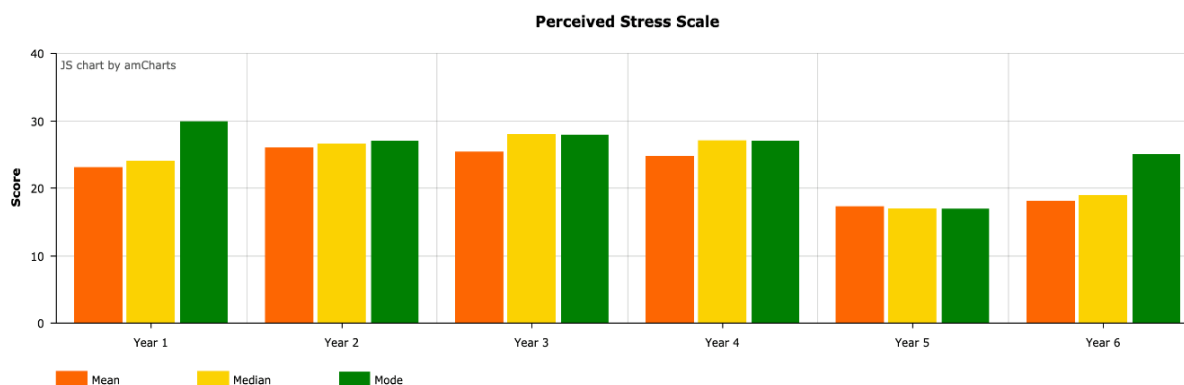
The second part of the questionnaire consists of 5 subgroups. The first subgroup of the questions was about evaluating stressors, emphasizing on homework and exams. The results showed that, the amount of homework given to students is more stressful on the first two academic years of medical school: 1st year (mean 2.208) peaking for 2nd year students (mean 2.214), followed by 4th (mean 2.13), 6th (mean 2.0), 3rd (mean 2.06), and the 5th year (mean 1.72). This could be explained by the transition from the school to the medical university, as adapting to the new environment and the different study process can be challenging.

Final exams turn out to be one of the biggest obstacles for each academic year. The 2nd year students have found the final exams most stressful (mean 2.857), followed by the 4th year (mean 2.666), then the 3rd year with (mean 2.647), 6th year (mean 2.5), 1st year with (mean 2.458), and at last the 5th year (mean 1.77). The fact that the first 3 academic years and 1st semester of the 4th year are more theory-based can play a role in students' perception of the exams.

The exam preparation time was most stressful for the 1st year students (mean 2.66), followed by the 3rd year (mean 2.411), 4th year (mean 2.4), 2nd year (mean 2.28), 6th year (mean 2.0) and lowest for

the 5th year (mean 1.5). This could be explained by the fact that students at the beginning of the medical school might find it difficult to overcome the huge study material compared to the senior students as it is significantly decreased in 5th year.

As many students are preparing for the United States Medical License Exam (USMLE) throughout the medical school, it is not surprising to see that it is one of the biggest stressing factors for each year. Especially for the 2nd year students (mean 2.69), as this is the time when the preparation for the USMLE begins, followed by the 3rd year (mean 2.56), 6th year (mean 2.5), 5th year (mean 2.44) and 1st year (mean 1.53).

Competition with peers is not a main stress inducing factor for most academic years except the 3rd (mean 2.23) and the 2nd year (mean 2.14). Followed by the lower mean scores for the 4th year (mean 1.866), 1st year (mean 1.75), 6th year (mean 1.5) and the 5th year (mean 1.22).

These results are demonstrated in **Figure 2**.

Figure 2. <1.5 (low stress), 1.5- 2.0 (moderate stress), 2.0-2.5 (high stress), >2.5 (extremely stressful).
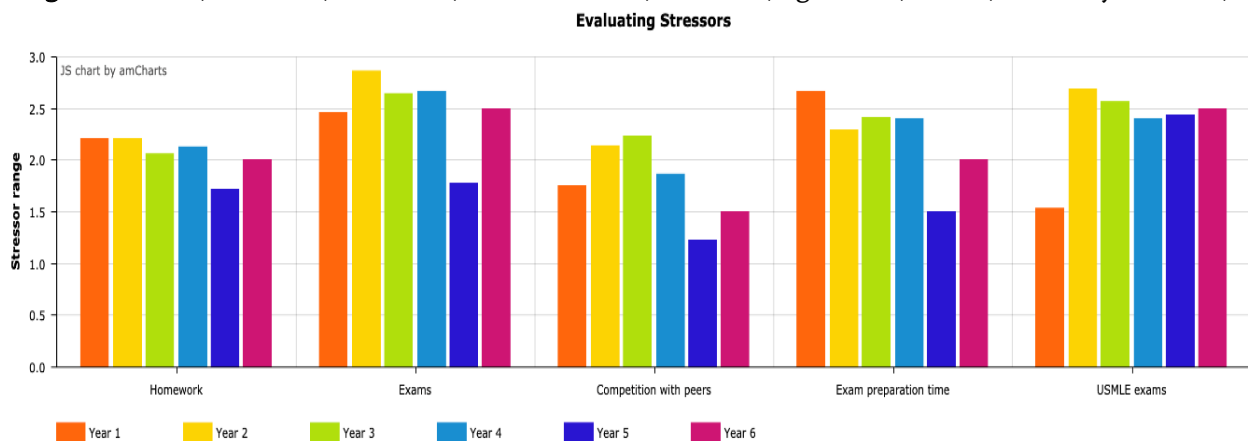
Another subgroup of the questions was about social stressors as it can influence students' health and academic performance. Variable options were financial responsibilities, lack of infrastructure, sleep schedule, social and private life, living far from family, relationship with seniors.

The graph of financial responsibilities was designed to find out how stressful the financial side was for the students. As the results show, financial instability is the most stressful for the 4th year (mean 2.6), followed by 3rd year (mean 2.4), 2nd and 6th years with (means 2.5), 5th year (mean 2.0) and lastly year one with the (mean 1.8).

The lack of infrastructure, such as: student spaces, a campus, parking spaces or a cafeteria in the university, has the biggest impact on the 3rd year students (mean 2.8), 6th year (mean 2.66), followed by the 5th year (mean 2.6), 4th year (mean 2.3), 2nd year (mean 2.2) and 1st year (mean 2.08).

Sleep schedules have a huge influence on students' everyday performance. Balanced sleep schedule is a very good indicator of health. The students in the 1st, 2nd and 3rd years had the most problems with the sleep schedule (mean 2.6), followed by the 4th year (mean 2.24), 6th year (mean 2.25) and the 5th year (mean 2.1).

For a medical student, it is difficult to balance the social and academic life. According to the results it was the 3rd year students have the highest score (mean 2.3), followed by the 2nd year (mean 2.14), 4th year (mean 2.07) and the 1st and 6th years (mean 2.0), lastly the 5th year (mean 1.8).

Living apart from the family can contribute to the students' stress and can have an influence on many different aspects of life, including academic performance. Surprisingly, the 3rd year showed the highest scores (mean 2.6), followed by 4th year, (mean 2.4), 6th year (mean 2.33), 2nd year (mean 2.2), the 1st year (mean 2.15) and the 5th year (mean 1.90).

In the medical world, supporting each other is crucial. Relationships with seniors could be one the most effective ways to share experiences with each other and get valuable pieces of advice. Thus, difficulties with the seniors can also be a stressor. The 2nd, 3rd and the 4th years have the same mean score (mean 1.5), followed by the 1st and the 5th year (mean 1.2).

These results are demonstrated in **Figure 3**.

Figure 3. <1.5 (low stress), 1.5- 2.0 (moderate stress), 2.0-2.5 (high stress), >2.5 (extremely stressful).
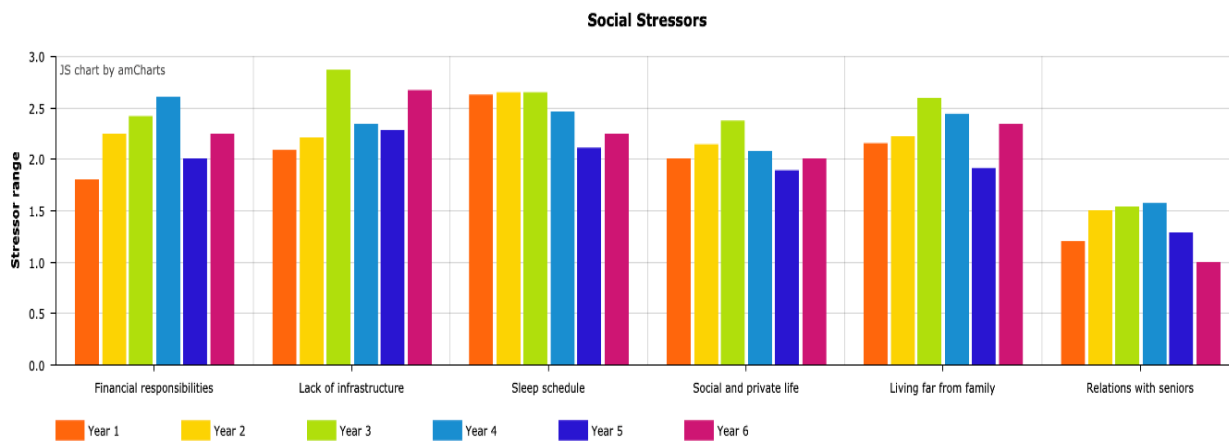
Language barriers are the next subgroup of the questionnaire. The stressors include adapting to English, English among lecturers, language barriers at clinic, translating at clinic and communication with patients. Since at the Tbilisi State Medical University there are a lot of international students, having a language barrier could be significantly stressful for them. The questions were asked to find out how students were affected by these stressors.

The first question was about adapting to studying in English, since most of the student's first language is not English. It turned out to be the most stressful for the 1st year (mean 1.23), followed by the 3rd and the 6th years (mean 1.25), the 2nd and the 4th years (mean 1.08) and lastly year 5 (mean 1).

The next question was about the level of English among the lecturers, which was the biggest stressor for the 5th year students (mean 2), followed closely by the 1st year (mean 1.96), 4th year (mean 1.93) and the 3rd year (mean 1.81) and lastly 2nd year (mean 1.71) and the 6th year students (mean 1.5).

Language barriers at clinics could contribute to a very stressful situation between the student doctors and the Georgian patients. The next question was specifically asked about that. According to the questionnaire, it turned out to be the most stressful for the 3rd year students (mean 2.81), following the 4th year (mean 2.7), 2nd year (mean 2.57), 5th year (mean 2.44) and at last 6th and the 1st years (mean 2). This could be explained by the lack of clinical exposure for the first-year students and as for the 6th year students, years of practice.

As many medical students are not Georgian, translating from the Georgian to English during the clinical rotations and history taking is crucial, which turned out to be particularly stressful for the 2nd year students (mean 2.75), followed by the 4th year (mean 2.18), 5th year (mean 2.09), the 1st and the 3rd years (mean 1.5) and lastly the 6th year students (1.0).

The last section was about communication with patients, which once more was the biggest stressor for the 2nd year students (mean 2.67), followed by the 3rd and the 6th years (mean 2.0), the 4th year students (mean 1.8), the 1st year (mean 1.75) and finally the 5th year students (mean 1.5).

These results are demonstrated in **Figure 4**.

Figure 4. <1.5 (low stress), 1.5- 2.0 (moderate stress), 2.0-2.5 (high stress), >2.5 (extremely stressful).
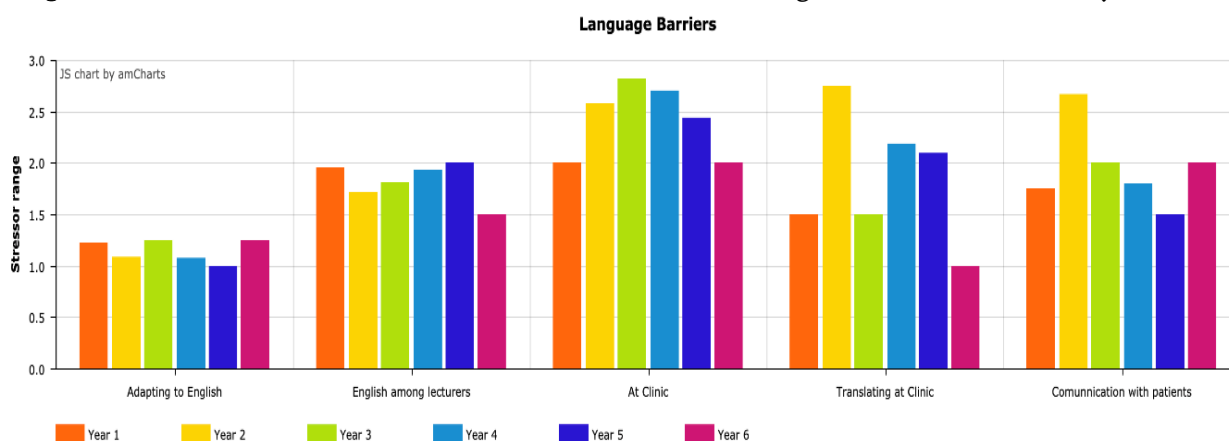
The next section in the questionnaire is about communicative stressors. For example, getting feedback from the professors, receiving criticism about the performance, atmosphere created by the lecturers and generally the ability to communicate with administration. Good communication between students, lecturers and administration is extremely important for establishing a good and productive atmosphere.

Communication with lecturers turned out to be the most stressful for the 3rd year students (mean 1.94) followed by the 4th year (mean 1.8), 2nd year (mean 1.57), 6th year (mean 1.5) and lastly year 1 and 5 (mean 1.33).

3rd year students also have the highest score for communication with the administration (mean 2.0) as well as the 6th year students (mean 2.0), followed by the 4th year (mean 1.67), 2nd year (mean 1.57), 5th year (mean 1.28) and lastly 1st year (mean 1.08).

Receiving critical evaluation from the lecturers was the most stressful again for the 3rd year students (mean 2.17). Followed by 2nd and 6th year (mean 2), 4th year (mean 1.86), 1st year (mean 1.59) and lastly 5th year (mean 1.27).

Getting insufficient feedback from the lecturers is the biggest stressor for the 2nd year students (mean 2.14). Followed by the 3rd year (mean 2.05), 4th year (mean 1.93), 1st year (mean 1.86), 6th year (mean 1.75) and lastly 5th year (mean 1.5).

The atmosphere created by the lecturers turned out to be the most stressful for the 3rd year students (mean 2.23), followed by the 6th year (1.75), 4th year (mean 1.73), 1st year (mean 1.72), 2nd year (mean 1.64) and finally 5th year (mean 1.38). These results are demonstrated in **Figure 5**.

Figure 5. <1.5 (low stress), 1.5- 2.0 (moderate stress), 2.0-2.5 (high stress), >2.5 (extremely stressful).
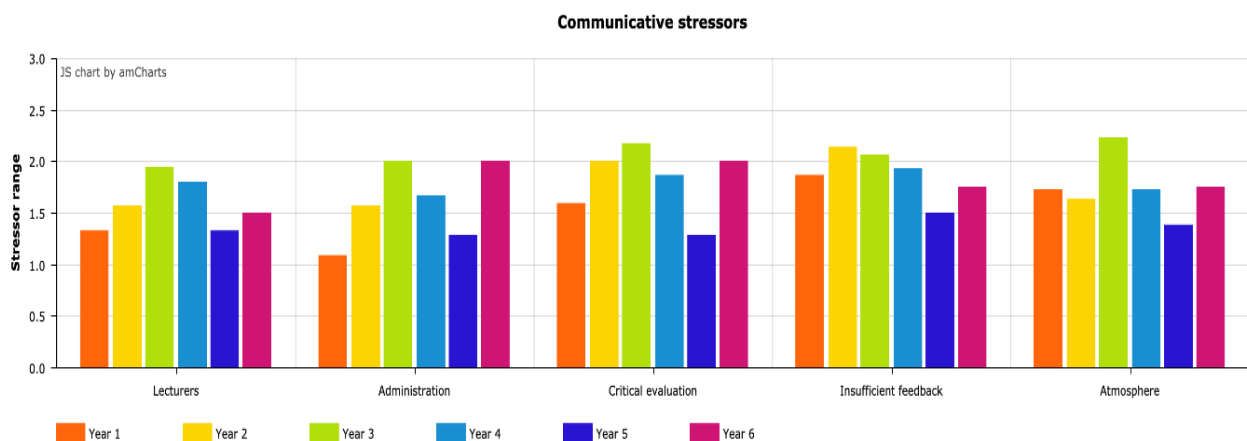
The next subgroup of questions is about the studying process and how the different factors, such as: the parents' expectations, patient reporting to the doctors, lack of workshops and the first aid training, studying non-medical subjects and the duration of seminars influence it. Overall, the duration of seminars and parents' expectations were least stressful for the students.

As parents play a major role in every student's life, the students were asked to assess if the parents' expectations play a role in their stress. The 2nd (mean 2.35) and the 3rd year students (mean 2.23) shared increased scores. Followed by the 1st year (mean 2.04), the 4th and the 5th (mean 1.7) and the 6th year students (mean 1.8).

The lack of first aid training was equally stressful for the 2nd, 3rd and 4th year students (mean 2.6), followed by the 5th year (mean 2.1) the 1st year (mean 1.9) and lastly the 6th year students (mean 1.75).

About the duration of seminars and its effect on students' stress level, surprisingly, the 6th year (mean 2.75) is followed by the 2nd and the 3rd years (mean 1.9), the 4th and the 5th year students (mean 1.7) and at last the 1st year (mean 1.5).

As practical workshops are important part of practicing medicine, the next question is about the intensity of workshops provided to the students, where with the 2nd year students (mean 2.7) expressed their concern, followed by the 3rd year students (mean 2.6), 4th year (mean 2.5), 1st year (mean 2.2), 5th year (mean 2.05) and lastly the 6th year students (mean 1.75).

Patient-doctor and doctor-doctor communications are without a doubt the most important parts of medicine, the students were asked to evaluate the effectiveness of communication with patients. The 2nd year students (mean 2.5) have the biggest problem with the interaction. Overall, with the low means, the 5th year (mean 1.8), followed by the 3rd year (mean 1.7), 6th year (mean 1.75) and the 1st and the 4th year students (mean 1.6).

Lastly, non-medical subjects have the biggest impact on the 1st year students (mean 2.4) as they are substituted by the medical ones from the 2nd academic year. The 1st year students are followed by the 3rd and the 6th years (mean 2.2), 2nd and the 4th years (mean 2) and the 5th year students (mean 1.7). These results are demonstrated in **Figure 6**.

Figure 6. <1.5 (low stress), 1.5- 2.0 (moderate stress), 2.0-2.5 (high stress), >2.5 (Extremely stressful).
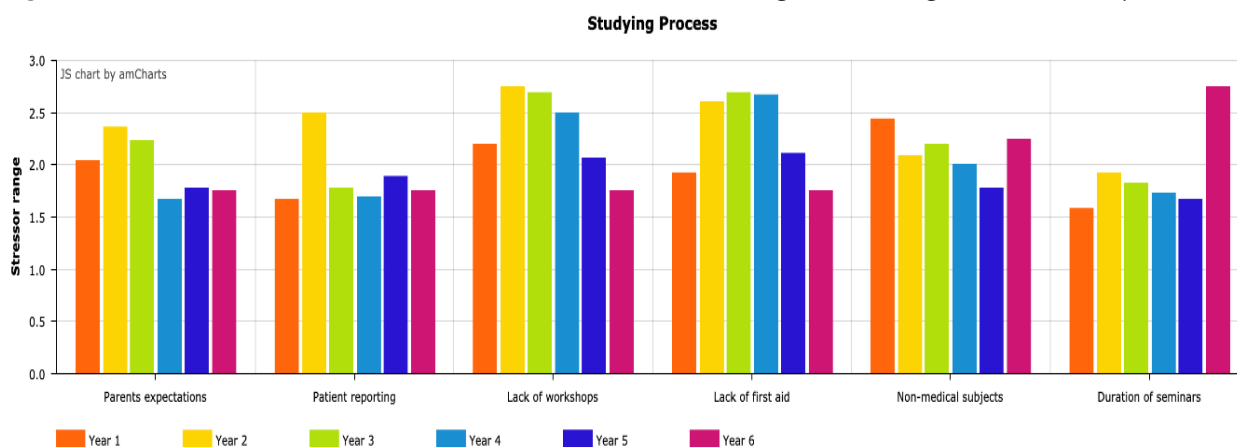
Conclusion

Being a medical student is a difficult challenge as there are many factors causing stress during the studying years.

The research conducted showed that even though overall it gets easier to cope with the specific stress inducing factors as the students advance (4th, 5th and 6th years), there are some new things that become stress inducers at this point, such as the financial issues and the factors more connected to the clinical experiences.

As described, every year of medical school comes with a specific stressor, with the most difficult being the 1st, 2nd and 3rd years as the most important changes happen during this time. Moving from high school to the medical school is the toughest, as well as the transition from the first 2 years to the following ones, as the non-medical or basic subjects are substituted with the pathology and clinical rotations.

However, even though the research shows quite a few highly stress inducing factors varying throughout the different years of the medical school, on the overall perceived stress scale the moderate mean result was calculated.

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