

THE BODY'S RESPONSE TO STRESS

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ABSTRACT

Stress, an undeniable reality of everyday life, is a natural reaction of the body to any pressure, threat or demand that requires an intense physical or mental response. It has a positive aspect, "good stress", which can provide additional motivation to complete tasks or face challenges. On the other hand, there is also a negative aspect, excessive stress affecting physical, mental and emotional health.

In my opinion, in order to be able to cope with stress, it is important to manage changes, accept failures, put our own needs first, communicate clearly and effectively, eliminate negative thoughts and take emotional risks. Deep understanding and developing stress management skills can significantly contribute to improving the quality of life of each individual.

INTRODUCTION

Stress can be defined as the body's general response to any form of stress or pressure, including both the stressor itself and how the body reacts to it. (Vrăbete et al. 2003)

Stress is a phenomenon that we all know and, inevitably, experience to varying degrees. It is like an alarm signal that informs us that we have to face a difficult situation and, if we do not learn to manage it, it makes us sick.

In 1998, Băban appreciated the fact that "*stress is a complex psychosocial phenomenon, which arises from the person's confrontation with demands, tasks, situations that are perceived as difficult, painful or of great importance for the person*".

(<https://www.medicub.ro/reviste/farmacist-ro/managementul-stresului-si-comunicarea-farmaceutica-rolul-farmacistului-in-constientizarea-cauzelor-si-efectelor-stresului-id-191-cmsid-62>)

Omnipresent in our lives, stress is a kind of shadow that seems to hover over us every day. The problem comes when this stress becomes overwhelming and persistent, affecting our quality of life and our mental and physical health.

"It is not what happens that causes us stress, but what we are afraid will happen in the future," said Dr. Tim Cantopher, in his book entitled "*Diseases caused by stress. Advice for people who consume too much*" published in 2021, by Litera Publishing House.

Stress is an inevitable component of everyday life, affecting individuals in different ways and at varying levels of intensity. As a student, I have personally experienced varying levels of stress throughout my years of study. In my opinion, in order to be able to cope with stress, it is important to understand its nature, the factors that generate it and its impact on our health and well-being. I was curious, therefore, to explore the various sources of stress and to understand how they can interact with each other.

Stress can be caused by a variety of factors, which provide interesting material for a variety of subtopics that can be analyzed - excessive tasks or responsibilities at school, family problems, financial problems, traumatic events such as an accident, illness or loss of a loved one, poor health, the fast pace of our daily lives, social pressure, problems at work.

As a result of his numerous studies, Prof. Dr. Hans Selye, founder of the concept of stress and stressology, creator of the International Institute for Stress Research, Montreal, Canada, has shown that there are three forms of stress: distress, eustress and hyperstress.

The negative, bad, harmful, destructive, life-damaging stress that Selye called distress, comes from our response to situations that seem beyond our control and ability to influence. When we feel threatened or afraid, the body releases chemicals that give rise to a succession of events that lead to an increase in the pulse, this state being called "*fight or flight*". (Carnegie 2020)

Distress increases vulnerability, weakens health and causes illness and is in total contradiction with eustress through harmful consequences on the human being. (Riga & Riga 2008)

Positive, good, vitalizing, life-friendly stress, which Selye called eustress, is a special ingredient that motivates us to achieve performance that gives us energy and increases our power of concentration. This stress comes from situations that we feel we have some level of control over, such as a presentation at work or a musical performance. It tends to increase our level of creativity and productivity, if it is kept under control. (Carnegie 2020)

Eustress strengthens adaptation, well-being and health. (Riga & Riga 2008)

Hyperstress is the state of continuous stress, with negative effects on relationships, health and performance at work. Hyperstress leads to exhaustion, stomach ulcers, heart attacks and nervous breakdowns. (Carnegie 2020)

On the other hand, Dr. Tim Cantopher, shows that there are 2 types of stress, a harmless one and the stress that makes you sick, the most important aspect that distinguishes them being the long duration of time. We can cope with a short period of stress, as long as it is not too overwhelming. Problems arise when we remain stressed for long periods of time, because that is not how we were designed. Dr. Cantopher mentioned that, for the most part, the causes of stress are unpleasant thoughts from the past, certain life changes, traumatic experiences, loss of loved ones, which can even lead to depression. He said that the most difficult part is identifying the causes of stress, which vary in each individual. The author agrees with psychologist H.J. Eysenck, who said that in psychological development, the environment is twice as important as genetics.

First of all, stress is a global health problem. There are numerous studies that show that chronic stress affects millions of people around the world and can have variable consequences on health, producing diseases that can seriously affect: the cardiovascular system, the gastrointestinal system, the immune system, the

peripheral nervous system, the musculoskeletal system, the endocrine system, the reproductive system. Also, psychological illnesses, anxiety, depression, phobias, obsessive-compulsive disorders, post-traumatic stress disorder, addictions, psychotic illnesses, can affect the human body even more seriously, putting our lives in danger. (Cantopher 2021)

As we mentioned before, in addition to the negative aspects, stress also has positive effects. Stress can motivate us to succeed in what we set out to do. Positive stress (eustress) is exactly what we need to perform important tasks. The key is to look at stressful situations as challenges we can face, rather than overwhelming obstacles. For example, "positive stress" can be associated with preparing a presentation at work. Some of us have the same Thinking, namely that reality entails challenges, which affect our ability to adapt. Other people, who grew up in families where stress was not properly managed, may be tempted to avoid it at all costs. (<https://www.andreearosca.ro/coralia-sulea/>)

Robert M. Yerkes and John D. Dodson, researchers at Harvard, have shown that "*a little stress*" doesn't hurt. Thus, they conducted a study in which they identified the situations that predisposed medical students to stress and their effects on academic performance and demonstrated that performance and efficiency increase with stress levels, but up to a certain point. It has also been observed that stress has more beneficial effects in women, compared to men. (<https://pubmed.ncbi.nlm.nih.gov/25464682/>)

Stress can improve our memory and learning. The results of studies by McEwen, 1999 showed that stress can cause atrophy and neurogenesis disorders, functional and structural changes in the area of the brain with the highest level of stress response - the hippocampus. Memory is not always affected by stress. In a 2012 study, Schwabe et al. demonstrated in participants who had to take a written exam that stress can temporarily improve brain function and therefore memory. According to many studies, high concentrations of stress hormones can cause negative effects on learning. Neurologist Connor Liston of Cornell University, on the other hand, states that short-term bursts of the stress hormone cortisol can increase learning ability.

Stress can increase our immunity in the short term. In 1990, Khansari et al., showed that people under permanent stress suffer more frequently from diseases because they are more likely to have an impaired immune system. On the other hand, Dhabhar et al. have shown that immune function is stimulated when we are subjected to a short-term stressful episode, the body being prepared for various challenges, including the acquisition of injuries and infections that can be imposed by a stressor (sports competitions, medical procedures). (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5579396/>)

Stress can speed up our healing. In a study conducted by the Stanford University School of Medicine, it was observed that patients who had increased levels of stress in the short term before knee surgery had twice as long recovery times. (<https://blog.grile-admitere.ro/stresul-ca-aliat/>)

Stress can make us stronger. Dr. Richard Shelton argued that "*Repeated exposure to stressful events helps the body develop a control mechanism both physically and psychologically.*" By learning to cope with stressful situations, the body will manage similar situations much more easily.

(<https://www.reginamaria.ro/articole-medicale/stresul-are-si-efecte-pozitive>)

MATERIAL AND METHODS

This work is based on a statistical study conducted in the academic year 2023-2024, a study that involved a sample of students in the 3rd year of the Biology Specialization, Faculty of Horticulture, University of Craiova. The study included 26 individuals, 1 male and 25 female, aged between 20 and 59 years, who participated in the study by completing a questionnaire focused on assessing stress levels. The individuals of the study group were divided according to sex (male and female), according to the age group (20-29 years, 30-39 years, 40-49 years and 50-59 years), but also according to the results of the answers to the questionnaire questions. Through the statistical processing of the results obtained after filling in the questionnaire, a database was created that was used for their graphic and tabular representation, for interpreting and discussing the results, as well as for drawing conclusions. The working method we used in this study was to evaluate the answers to the questionnaire applied to the study group.

RESULTS AND DISCUSSIONS

An analysis of the distribution of cases by sex revealed that the majority of people involved in the study are female (25), while only 1 person is male. This can also be attributed to the fact that the Biology specialization is more frequently followed by girls.

Regarding the distribution by age groups of the individuals in the studied sample (20-29 years old, 30-39 years old, 40-49 years old and 50-59 years old), it results that the largest number of participants is in the age group between 20 and 29 years old, with a total number of 20 participants, followed by the 40-49 years old group, with 3 participants. The age groups 30-39 years and 50-59 years each have 1 and 2 participants respectively (Figure 1).

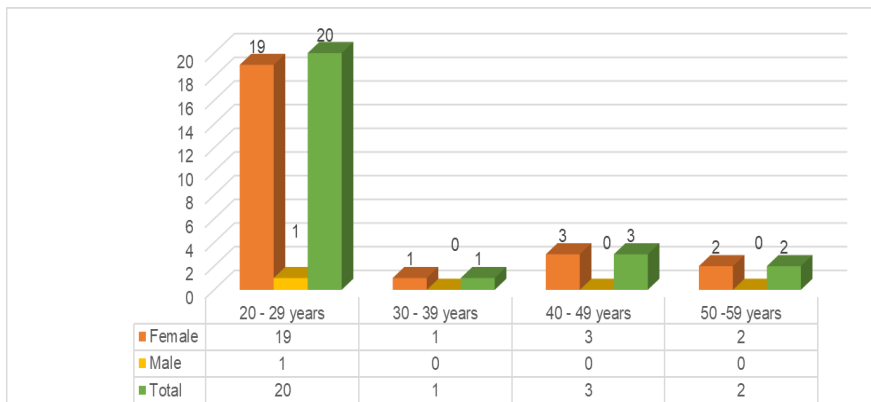


Figure 1. Distribution by age group and gender

The breakdown by the most stressful stage of education shows that the majority of participants (17) consider university to be the most stressful stage. This underlines the prevalence of an intense concentration of stress during this period, due to the complexity of study subjects, academic pressure and career concerns. On the other hand, 6 participants identify high school as the stage with the highest

level of stress, and only 3 participants consider that gymnasium was the most stressful stage (Figure 2).

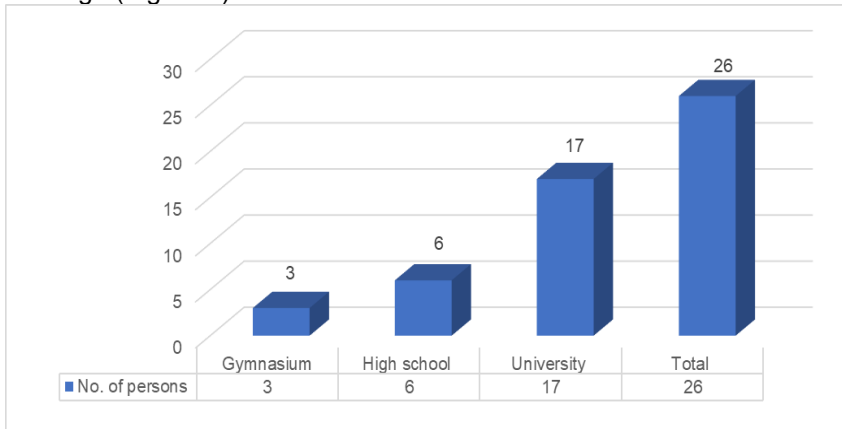


Figure 2. Distribution by the most stressful stage of education

If we look at the distribution by stress level in the college years, it can be seen that most of the participants (13) reported a high level of stress in the first year of college, and 8 participants mentioned a high level of stress in the second year. At the opposite pole is the third year of the faculty, in which 5 participants reported a high level of stress. This may be due to the fact that, in the first year, students have switched from high school to university education, which involves a different approach, preparation, a different study program. At the same time, we must not forget that, in the first year, my colleagues went through the pandemic period, and the courses were mainly held online (Figure 3).

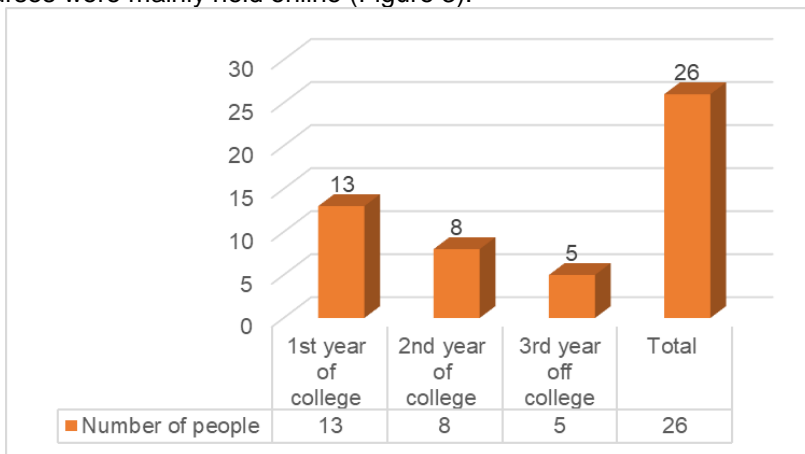


Figure 3. Distribution by stress level during college years

The breakdown by stress level in students' lives reveals that most participants (13) identified stress as a big problem, and 11 participants indicated that stress is a moderate problem in their lives. On the other hand, there are students

(2) who mentioned that stress is a small problem for them. There are no participants who stated that stress is not a problem (Figure 4).

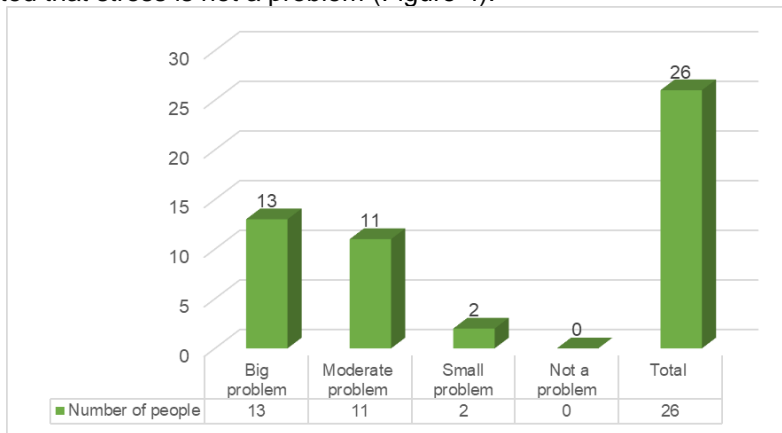


Figure 4. Distribution according to the level of stress in students' lives

Regarding the distribution by the aspects that most often determine stress in students' lives, it can be seen that exams and tests are the most frequent stress factor in students' lives, being mentioned by 10 participants. The next aspect that generates significant stress is the large volume of academic tasks, mentioned by 8 participants. Time management between classes, extracurricular activities and personal life was indicated as a source of stress by 6 participants, and deadlines for projects and works were mentioned by 2 participants. There is no student who mentioned stress generated by relationships with faculty colleagues, relationships with teachers, or financial concerns related to school fees, expenses, and part-time jobs (Figure 5).

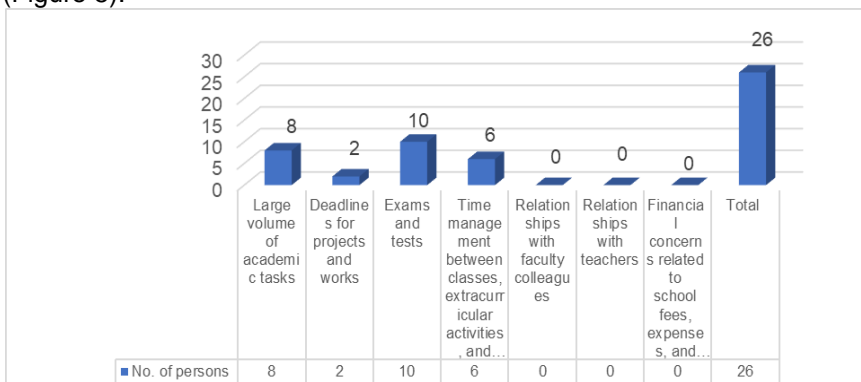


Figure 5. Distribution according to the aspects that cause the most stress in students' lives

On the other hand, the distribution by stress level and impairment of academic performance shows that most participants (13) indicated that stress affects their academic performance consistently, and 12 participants mentioned that this phenomenon occurs occasionally. At the opposite end of the scale, there is only one

participant who stated that stress does not affect their academic performance (Figure 6).

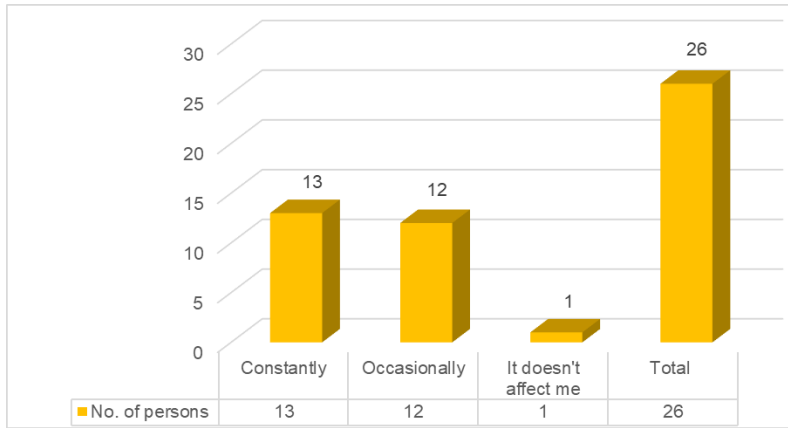


Figure 6. Distribution by stress level and the impact of academic performance

The majority of participants (13) mentioned that they manage their stress by planning and prioritizing tasks, while 7 participants mentioned that they participate in extracurricular activities for relaxation, and 5 participants said they sought emotional support from friends or family. Only one person mentioned that they seek counseling or psychological therapy to manage stress in college (Figure 7).

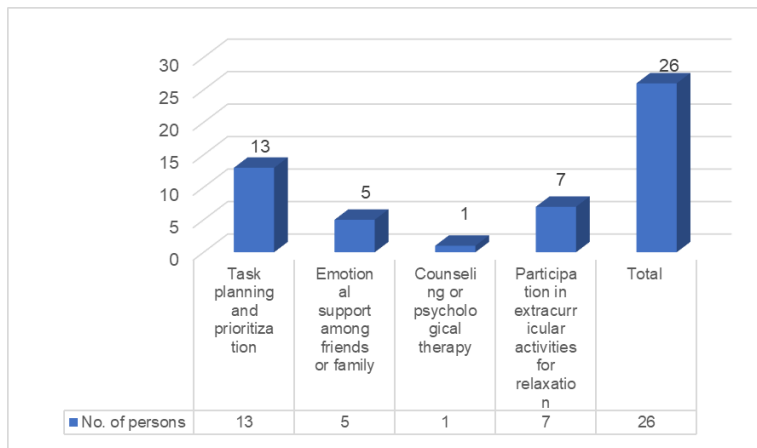


Figure 7. Distribution by stress management in college

Regarding the distribution by students' opinion on the resources and services for stress management offered by the university, it can be seen that the majority of participants (15) answered affirmatively regarding these resources and services, and 6 participants answered negatively, expressing their opinion that these resources are useless. On the other hand, 5 participants were unsure about the usefulness of these resources (Figure 8).

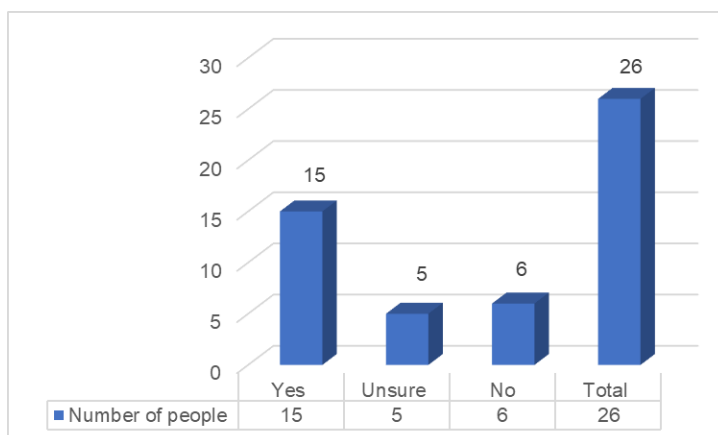


Figure 8. Distribution by students' opinion on the resources provided by the University for stress management

CONCLUSIONS

The level of stress in students' lives is perceived as predominantly a large or moderate problem, while a small proportion of participants consider stress to be a small problem for them. The main aspects that cause stress in students' lives are exams and tests, followed by the large volume of learning materials and academic assignments. Stress constantly affects the academic performance of most participants, while for others this phenomenon occurs occasionally. Most participants manage their stress by planning and prioritizing tasks, and a significant number turn to extracurricular activities for relaxation. Overall, these findings suggest that stress is a significant issue in students' lives and that managing it effectively is essential for their academic and personal well-being.

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