An Anthropo-Medical Approch on Stress Among Teenagers and Young People in Romania

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Abstract: *Objectives:* This study aims to determine of multi-inter-disciplinary perspective, the extent to which young people perceive mental stress, the main factors of stress and its consequences on the human body, highlighting the electrographic characteristics of the mental stress condition.

Materials and Methods: This cross-sectional study was conducted in 2014, in Bucharest, during the Educational project of partnership no 812/2013, involving 407 subjects (156 boys, 251 girls), aged 14-21 years. The participants in the study were 198 adolescents- pupils at college (aged 14-18 years) and 209 young people-students in the first year at Faculty of Medicine (aged 18-21 years). The subjects were medically and anthropometrically examined and there were created ordinal, nominal and binar questionnaries, including 67 items, to complete the data. During the study we have used six items wich refer to mental stress, highlighting the electrophysiological and biophysical features of certain mentally stressed teenagers and young people. The statistical analysis (Pearson Chi-Square test) was performed with the help of SPSS version 13.

Results: Most of the participants of both sexes believe that young people are very much exposed to psychological stress (Chi-Square=2.608, p=0.271). Most of the young participants consider that the main consequences of stress are illnesses, especially mental ones, followed by digestive and cardiovascular conditions (Pearson Chi-Square=16.224, p=0.023). A large number of the participant girls consider themselves to be stressed, while most of the boys think they are not stressed (Pearson Chi-Square=20.308, p= 0.000). Most of the boys and girls believe that drug therapy is less effective in combating psychological stress (Pearson Chi-Square=0.711, p=0.871), relaxation being considered the most effective remedy. The electrographic image under stress conditions presents rare and sporadic electric discharges (streamers), which are asymmetrically distributed on left and right sides and which are common for the individuals with certain pathological conditions. After a 15 minutes exposure to relaxing music, strong electrical discharges are visible, which are symmetrically distributed on left and right sides and which are common for the psycho-emotional and somatic balance.

Conclusion: Stress is a real problem found in most countries, which can affect people, causing many diseases and suffering. It is important that the stress factors are known, along with the remedies of such conditions, because stress, even if it is not considered a disease, it can hugely affect people in time, causing even death. The response to stress is influenced by both individual characteristics (personality traits, tolerance, adaptability or vulnerability), as well as external factors.

Keywords: Medical anthropology, Multi-inter-disciplinarity, Stress factors, Pupils, Students.

INTRODUCTION

Mental stress is a psychological dimension of the contemporary world, which shoes a continuous extension, having biological implications and being included between the risk factors of pathogenesis. The stress term was created by the Selye's brilliant attempt to show the variety of body responses to environmental manipulation, in the context of the general adaptation syndrome. Hans Selye used the term in 1950 to designate a set of reactions of human organism to external actions of physical (trauma, burns), chemical, biological (infections), psychological contexts, highlighting the appearance of various morphological and functional cha nges, particularly endocrine (hypophysis, adrenal) [1]. Grigoroiu argues that stress is an "illness" of our times, which affects people regardless of their lifestyle. Stress is present everywhere, more frequently felt in the most developed countries. Stress has various ways of manifesting itself: physical, emotional, intellectual, and is characterized by the experience and the subjective perception of feeling overwhelmed, unable to cope with any situation [2]. Stress has been and still is one of the most disputed concepts in the history of science. Nowadays, no one can deny that the definition of stress is very different, depending on the perspective of the scientific discipline that studies it [3].

An overview of stress shows that family conflict situations in either private or public life, including the social conflicts, are the main causes of stress [2]. Stress has become the most common cause of illness in the work context, people being affected on long terms and in such manners that stress is considered the "Black Death" of the 21st century [4]. The costs of

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stress effects on society are extremely high. World Health Organization (WHO) estimates that 50% of all mortality and morbidity causes are due to lifestyle, stress having a leading role in the adoption of inappropriate behaviors (WHO, 1989). Cardiovascular diseases, mental disorders, addiction drugs, have become the diseases of present society [3]. Romania has the highest European value in terms of the number of people affected by stress (52%, compared to the European average of 33%), followed by hypertension, sight issues, high cholesterol, sleep disorders, obesity, depression, last being the mobility issues [5].

Stress occurs in response to the body's adaptation to those external factors that we perceive as aggresive, which often cause a state of stress, felt at both mental (fear, anxiety) and physical (increased secretion of adrenaline, increased heart rate, sweating) state[6]. Stress is part of our daily life. To learn how to distinguish or to avoid stress consequences on our mental or health status (and implicitly, on life's duration), we have felt it fully on ourselves, naming it: annoyance, impatience, boredom, fatigue, anger, disgust, shame, fear, panic, frustration, and so on, etc., all of these states - mostly emotional – being, actually, masks of stress [2].

Named also the *invisible disease*, stress is usually the result of work at the rate of adapting professional life to the private one [7]. Stress has been called "the disease of the 20th century". In 1998, World Health Organization has produced a report which shows that professional and private life stress determines a poor health. The report concluded that professional stress increases the risk of illness. It depends not only on the mental condition of the individual, but also on the context the person works in [8].

Increasing the frequency and intensity of psychological stress is justified by both the symbolic nature of the inducing agents – which cover a wide range of causes (not just mental), and the exponential increase of people contact, specific to developed societies, which pay such a tribute of mental wear, in exchange for physical and psychological comfort, which was not common some decades ago [1].

The objectives of this study are:

- Determining whether young people of our society perceive mental stress and its consequences on human body;
- Determining the main stress factors, which act on young people in schools;
- Determining awareness among young people of remedies for stress;
- Highlighting the electrographic characteristics of the mental stress state;
- Emphasizing the importance of recognizing stressful conditions and certain methods to control stress.

MATERIALS AND METHODS

This study is based on data collected in Bucharest, during the Educational project of partnership no. 812/2013. This cross-sectional study from 2014 was created with the help of 407 subjects, out of which 156 boys (38.3% of the total) and 251 girls (61.7% of the total), aged 14-21 years. The participants in the study were 198 adolescents-pupils at college (aged 14-18 years) and 209 young people-students in the first year at Faculty of Medicine (aged 18-21 years).

The subjects were medically and anthropometrically examined and there were created ordinal, nominal and binar questionnaries, including 67 items, to complete the data. In this study we used six items referring to mental stress. The paper was completed by highlighting the electrophysiological and biophysical reactions of the electrographic tests that stressed young people were exposed to. The investigation was conducted following the electrographic method that captures a complex bioelectric activity, visible throughout the whole living organism. The images were perceived by radiological films visible on the glass screen of the electrograph and on the irradiative sites of the studied bodies. The bioelectric activity inside our bodies creates electromagnetic actions and the exploration of the carried out activities of such equipment brings information on the interaction of electromagnetic acts in our bodies exposed to the external environment. Highlighting these interactions allow us to extract information on our organisms, having a visible value for the typological classification: Dielectric, Hydric, Semiconducting, Mineral, Mixed and Amorphous, and also for the medical diagnosis [9-11].

The statistical analysis was performed with the help of SPSS version 13. The statistical instrument was represented by the nonparametric Chi-Square test.

This study follows the ethical standards of scientific research, the inclusion of participants being done with their free and informed consent, and with a written consent of parents in the case of children. During the research the principles of anonymity and confidentiality are followed.

RESULTS

The Table **1** shows that the majority of the participants of both genders believe that young people in modern societies are heavily exposed to psychological stress (Pearson Chi-Square=2.608. p=0.271).

Most young people, both male and female, believe that the main consequences of stress are illnesses, especially mental, followed by digestive diseases and cardiovascular conditions (Pearson Chi-Square=16.224, p=0.023), according to Table **2**.

The Table **3** shows that a large number of the girls participating to the study consider themselves as stressed, while most of the boys in the study believe

Table 1: **Batch Distribution by Gender and the Stress Degree that Young People are Exposed to in Modern Society**

If Yes, How Much?			From your Point of View, are People Exposed to Stress in Modern Society?			Total
			Yes	No	I don't Know	
A lot	Gender	Male	86	1	0	87
		Female	185	0	1	186
	Total		271	1	1	273
A little	Gender	Male	37		4	41
		Female	46		2	48
	Total		83		6	89
Almost never	Gender	Male	1	4	1	6
		Female	0	1	0	1
	Total		1	5	1	7

Table 2: Batch Distribution by Gender and Major Stress-Related Illnesses

		Which Do You Consider to be the Main Stress Related Diseases?						Total
		Cardiovascull are Diseases	Digestive Diseases	Mental	Cancer	Metabolic Diseases	Other	
Gender	Male	15	25	33	2	13	8	96
	Female	52	47	46	4	18	31	198
Total		67	72	79	6	31	39	294

Table 3: Batch Distribution by Gender and by the Way People Consider Themselves Stressed or Not

		Do You Consider Yourself Commonly Stressed?			Total
		Yes	No	I don't Know	
Gender:	Male	57	78	19	154
	female	131	68	42	241
Total		188	146	61	395

they are not stressed (Pearson Chi-Square=20.308, p=0.000).

Most of the girls and boys who participated in the study believe that the main stress factor which they are exposed to are exams (Pearson Chi-Square=5.397, p=0.369), a context justified by the fact that the participants are pupils and students at a faculty recognized being very demanding (Table **4**).

Most of the boys and girls who participated to the study believe that drug therapy is less effective in combating psychological stress (Pearson Chi-Square=1.267, p=0.531) (Table **5**), relaxation being considered the most effective remedy (Pearson Chi-Square=0.711, P=0.871) (Table **6**).

The electrographic image of a student girl, aged 14 years, continuously exposed to family conflicts (arguments, violences between parents), reason for which she considers herself stressed, shows electric discharges (called streamers), which are rare and sporadic, asymmetrically distributed on left and right sides, specific to the Dielectric type, characteristic of the individuals with certain pathologies (Figure **1**).

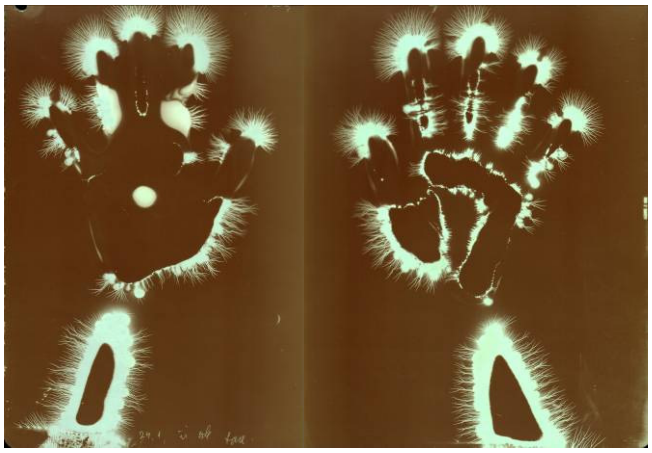

Figure 1: Palm Electrographic Images of a Mentally Stressed Subject.

The Figure **2** shows the same electrographic image of the same girl, aged 14, after being exposed to relaxing music for 15 minutes, which has specific

Table 4: Batch Distribution by Gender and the Stress Factors they are Exposed the Young People

		Which Do You Consider to be the Main Factors of Stress for Young People					Total
		Exams	Economic Factors	Family Issues	Internet	Other	
Gender	Male	67	8	19	1	27	122
	Female	11	13	32	6	60	221
Total		177	21	51	7	87	343

Table 5: Batch Distribution by Gender and the Effectiveness of Drug Therapy in Stress Contexts

		How Efficient Do You Consider Medical Therapy to be in Stress Related Contexts?			Total
		A Lot	A Little	Rarely Effective	
Gender:	Male	21	80	45	146
	Female	27	132	85	244
Total		48	212	130	390

Table 6: Batch Distribution by Gender and Effective Stress Remedies

		From Your Point of View, Which are the Most Efficient Remedies of Stress?				Total
		Relaxation	Socialization	Rest	Other	
Gender:	Male	26	4	18	57	105
	Female	62	7	37	108	214
Total		88	11	55	165	319

relaxing sounds repeated once at 10 seconds. We may observe rich electric discharges (streamers), symmetrically distributed on left and right sides, specific to the Mineral type, usually present in a balanced psycho-emotional and somatic state of mind.

Figure 2: Palm Electrographic Images of a Stressed Subject, after Being Exposed to Relaxation Music.

DISCUSSION AND CONCLUSION

Most of the participants, both girls and boys, believe that young people of our society are highly exposed to psychological stress. Unrealistic goals are a source of stress for students, whether they refer to parents or school. The need to be successful in modern societies is very important. If it becomes a haunting motivation, it will certainly cause stress [6]. Schabracq and colab. wrote in their article that elements from different stress models are embedded in a phenomenological framework for work and organization stress based on practical insights on the one hand and ideas and methods from ethology, microsociology, and cultural anthropology on the other. They considered that inadequate integrity may result from underdevelop-ment, decay, change, and intrusions by external events or an ongoing stress process and these can be described as (overlapping, and often coinciding) stress sources [12].

As a result of the study, it was found that most young people of both genders consider that the main consequences of stress are major diseases, especially mental, digestive and cardiovascular. Known for the stress term, Selye introduced the concept of “the adaptation illness”. He shows that there is no disease for which the unique and exclusive cause would be stress, but a stress that is too strong can cause collapse of the body’s defense mechanisms. The increased heart rate and blood pressure due to prolonged stress can lead to hardening of the arteries, which can cause heart attacks. The growth of gastric acid can cause irritation of the stomach lining, causing duodenal or gastric ulcer, as a direct response to stressful conditions. Besides these effects, there are other stress consequences that need to be considered. Severe depressions, as a result of prolonged stress can lead to drug or alcohol addiction [6]. Tytherleigh and colab. investigated the relationship between job stressors and employee mental health (depression). They showed that increased exposure to job stressors was directly associated with higher levels of depression and the objective informal social support and distancing buffered the negative effect of job stressors on depression [13]. Sometimes, stress is considered one of the diseases of modern societies; it is a fact that stress can play a catalytic role that can aggravate other diseases [2].

In the group of pupils and students, the number of girls who consider themselves stressed is higher than the one of boys. In their article, Muhonen and colab. revealed some gender differences concerning the stressors, *e.g*. female managers more frequently reported heavy workload and work-family/leisure conflict [14]. Bellman and colab. showed that males and females may differ in their perceptions of stress sources and outcomes and their use of social support across stressors and their results suggest that social support interventions will produce different results for males and females [15].

The study shows that most of the boys and girls believe the main stress they are exposed to is exams. An exam is a stress conductor because it requires solving a number of specific issues, Hence, there exists the possibility of not getting the expected result. The surprise factor is present as well, near the unknown of situations never experienced by the young persons. The exam is a real challenge, even for those who feel confident and believe they cannot be surprised. Stress is inevitable in case of exams [16]. The study also shows that the young people participating to the study are stressed also because of the uncertain future or family conflicts, although the majority of participants (80.20%) live in small families consisting of three to five members.

Most of the boys and girls participating in the study believe that drug therapy is less effective in combating psychological stress, relaxation being considered the

most effective remedy. Ways to reduce daily stress are within our reach, and sometimes we use them to relax, without even knowing. Spending a certain time in solitude and silence, a quiet devotion of 20 minutes daily for calm and contemplation, relaxing and regaining inner balance help us to maintain an effective control over any circumstances, enhancing mental comfort and reducing stress [6].

As for the electrographic state (which illustrates the dynamic of the bioelectric phenomena), the stress condition is characterized by a pronounced disorder compared to a normal quasi-balanced state, where the distribution of electric discharges is relatively homogeneous and equally balanced on right and left sides. Stress can accumulate and lead to greater disruption in the body's bioelectric balance. The same disruption occurs in situations of illness: gastric, pulmonary, cardiovascular, mental or endocrine conditions. Typically, for healthy people, the symmetry of the electrographic (bioelectric) image between the two hands is about 70%. Under stress conditions, the symmetry decreases, sometimes up to 10%. In the situations of intense stress, the bioelectric field crashes. If this stimulus disappears after 10-15 minutes the bioelectric image becomes normal [10]. Stress causes a variety of reactions for different people [6]. Faced with the same stress, people will not react identically. Thus, each person will have different reactions. The main stress factors are not necessarily the most dangerous. In other words, stress depends on the reaction of each person to stress factors, if we find out what is happening in our bodies when we are exposed to stress, we can have a clear view on the situation causes and use the reacting mechanisms to defeat the distress and amplify the eustress [2]. C. Guja and colab. consider that a big part of the anthropological criteria, as gender, age, constitutive physiological, bioelectrical, psychological, cultural types, play an important role in emphasizing the effects of one and the same stress factor [17].

In conclusion, the stress is a real, complex problem found in most countries, which may affect us in many ways, causing many diseases and suffering, reason must be addressed of *multi-inter-disciplinary perspective*. It is important to recognize the stress factors and their cure. Although stress itself is not considered a disease, if it persists, it becomes dangerous and sometimes life threatening. The response to stress is influenced by both individual characteristics (personality traits, tolerance, adaptability and vulnerability) as well as external factors.

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