

Interrelation of stress resistance and adaptability at doctors and students of medical institute

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Abstract — Relevance of research. The profession of the doctor belongs to one of the most difficult, psycho-emotionally intense and responsible kind of activity. The quantity of occupation types which carry to activity in special and extreme conditions constantly extends. Extreme conditions of professional activity accompany such professions like the pediatrician, the surgeon, the stomatologist, the resuscitator, the emergency doctor, the obstetrician-gynecologist and others. Extremeness of conditions and a professional stress is caused by high level of responsibility for other people's life, tension and large volume of work, complex relationship with patients and colleagues and a lot of factors of the industrial environment. The relevance of the studied problem is caused by need of maintaining physical and psychological health of medical workers in order to increase their adaptability and resistance to extreme factors in professional activity and in the conditions of daily tension. For health care quality improvement it's important not only to establish stress factors of doctor's professional activity, but also to define conditions of rising his adaptability and resistance to stress.

The aim of research is to study the dominating stress factors for employees of medical institutions and students of medical school, their adaptability and resistance to stress.

Methods and techniques of the research

There were used "Scale of an Organizational Stress (SOS)" of McLean, adapted by N.E. Vodopyanova; "Assessment of emotional and activity adaptability" (N.P. Fetiskin, V.V. Kozlov, G.M. Manuylov); the questionnaire "The description of professional activity" developed by E.A. Klimov (modified by us). The reliability of test results was

confirmed by use of statistical methods: t-Spirmen's rank correlation and Styudent's t-criterion. The hypothesis of existence of interrelation between adaptability and resistance to stress at doctors was verified in research.

The following results were received. As stressful factors for doctors are named limited time for appointment the patient, the discrepancy between payment and labor costs, physical exercises, communication with emotionally unbalanced patients and their parents, night watches, high rate of work, high level of responsibility for life and health of other people, inability and impossibility to switch attention to other not working problem, difficulties after the end of the working day, great demands to professional characteristics placed by patients.

The age and longevity or track record don't correlate with the level of an organizational stress and level of adaptability. Specific stress factors can be at each age stage and level of professional growth, but on some doctors they can make stronger impact, on others this factors make weaker impact. The profile of the doctor and his official functionality in many ways determine the level of an organizational stress.

The primary doctor, his deputy, managers of department (pediatric, therapeutical), the hospital manager, and the psychiatrist show the maximum indicators of a stress and the minimum indicators of adaptability. The highly reliable negative correlation (-0.779) takes place between the stress level and level of adaptability. Most of the doctors affected to the high influence of stressful factors have low adaptability and don't cope with the stress influence, paying off with own health and professional burning out. It's shown that heads of medical department with high level of

responsibility have more susceptibility to develop a syndrome of professional burning out. However, some dentists, surgeons, resuscitators (in all cases man), having the high level of influence of stressful factors, show high or average (closer to high) adaptability level. The found interrelation of adaptability and stress resistance at doctors shows that rising of adaptability indicators has to increase resistance to stress for extreme work factors.

Keywords—stress, doctors, job burnout, mental health

I. INTRODUCTION

The profession of the doctor belongs to one of the most difficult, psychoemotionally intense types of activity. This activity can be referred to special because of incomparable with any other type of activity the level of constant responsibility for life of other people which lies on the doctor. Now the class of "special" conditions of activity strongly approached a class of extreme conditions.

The extreme mode in work of the doctor arises owing to increase in tension and rate of work, high responsibility, considerable complication of tasks, repeated increase of document flow, because of deficiency of time for decision-making, external restrictions, possible decrease in internal opportunities, high price of a mistake and other reasons. In this situation the doctor cannot well cope with performance of professional duties without use of psychophysiological reserves and existence of skills of self-control [1] any more. Extreme conditions of professional activity accompany work of the pediatrician, surgeon, stomatologist, resuscitator, emergency doctor, obstetrician-gynecologist and others [2].

II. PROFESSIONAL STRESS AND EMOTIONAL BURNOUT

The professional stress is caused by high level of responsibility for life of other people, tension and large volume of work, complexity of relationship with patients and colleagues and also a number of factors of the production environment which treat including organizational issues. [3, 4, 5]. A considerable part of stresses in medical institution arises because of dissatisfaction of medical staff with a condition of organizational issues of work. Such stresses are called organizational. Factors of developing of an organizational stress are very different. K. Cooper, J. Dave and M. O'Draskoll allocate six main groups of factors of developing of a stress at work: features of work, organizational roles, relationship at work, work and career, organizational roles, interrelation of work and family. The mental strain resulting from these stresses can prove in individual and personal characteristics of the doctor and in efficiency of interaction the doctor patient, the doctor - the doctor, the doctor administration of medical institution [6].

Lack of resources for performance of the work, working load, low level of remuneration and the intense, long working day most often were defined as stressful factors for health workers [7, 8]. E.M. Zaripova marks out a certain category of stresses which are caused by high personal responsibility for colleagues and subordinates. Heads of medical institutions, managers of offices are subject to such stress. Therefore, at persons with high level

of responsibility the stress syndrome of "professional burning out" is probable to a large extent [8].

Questions of a professional stress, measurement of its level, emotional burning out at doctors were discussed repeatedly in works of various authors [9, 10, 11, 12]. Burning out is the widespread syndrome observed at workers of health care, especially at doctors who are exposed to the high level of a stress at work. It includes emotional exhaustion, depersonalization and low interest in professional growth. Professional burning out is shown as set of the symptoms which are negatively affecting working capacity, professional activity, health and interaction with colleagues and patients in some cases is the reason of professional mistakes. As a basic reason of emotional burning out P.I. Sidorov and A.V. Parnyakov consider psychological overfatigue when requirements (internal and external) a long time prevail over resources (internal and external), as leads to disturbance of equilibrium state and emergence of this syndrome [13].

Burning out among doctors drew considerable attention also because of negative impact which it has on process of treatment and patient care [14.15]. Besides, at people of extreme professions to whom we substantially can carry also the doctor the complex of signs of mental disadaptation comes to light: psychological and behavioural disturbances, disturbances of the emotional sphere, psychosomatic symptoms, low mental stability. It is established that the most significant individual and psychological factors of mental disadaptation are: high levels of an organizational stress and personal uneasiness, low education level and intelligence, low communicative potential, use of non-adaptive coping-strategy (confrontation) [16].

In domestic health care, according to V.A. Vinokur and O.V. Rybina [17], in the 1980th of 60% of health workers considered that their work is followed by emotional pressure, noticeable for them, in 2004 their number increased – constant and high psychological voltage was noted by 74% of doctors and 82% of nurses. In 2016 N.V. Govorin, E.A. Bodagova revealed signs of emotional burning out at 67% of respondents doctors [18]. However and in other countries emotional burning out in a health care field meets much more often than in the main population. The research Siril Hellen, etc., carried out in Tanzania attracts attention. 73% of medics reported about the minimum stress connected with work or about its absence, 48% good motivations to work, almost all (98%) noted confidence that they can help the patients, but at the same time, 41% from them feel emotional exhaustion [19]. Therefore, the problem of high tension of professional activity of doctors is observed even under other rather favorable conditions. If there is their constant complication, not always organizationally and socially justified, it is necessary to expect increase in frequency and expressiveness of emotional burning out of health workers.

Lead intra family problems to strengthening of expressiveness of emotional burning out [20]. By the researches A. Kruger it is et al. shown that most of female doctors would prefer to work on flexible hours and to have an opportunity to work part-time to balance family duties and professional life. Many of them are going to continue the career outside public sector that possibly explains the

high fluidity of doctors in this sector [21]. Thus, the reasons of psychoemotional tension of doctors have gender features.

Students of medical schools are also subject to influence specific a stress factors, connected with high responsibility, a big emotional and exercise stress. In the research Mary E. Rogers is shown that students of the Australian medical schools are subject to professional burning out, at a grade level. This process is connected with their work, and is followed by the depressive symptoms which are completely mediated by a stress [22]. Such factors as a social origin, lines of the personality (a nevrotizm and self-criticism), a stress at medical school, often lead overfatigue, emotional pressure, intensity of work to problems with mental health at students of medical schools and young doctors. [23, 24, 25, 26]. In the researches C. Peisah with colleagues it is shown that adaptability level at elderly doctors is higher, than at young people and respectively below their susceptibility to emotional exhaustion and mental diseases. Elderly doctors connect this fact with the lessons learned for years of practice. It can be of great importance for search of ways of more effective transfer of this experience to young doctors to help them to cope with professional problems [27]. At the same time, N.E. Vodopyanova and E.S. Starchenkova characterize such professional periods as the first 5 years of work and after 15 flyings of work, as the most vulnerable concerning development of emotional burning out and professionally caused crises [28].

For improvement of quality of health care important not only to establish a stress factors of professional activity of the doctor, but also to define conditions of increase in resistance to stress and adaptability.

Research objective – to study dominating a stress factors for employees of medical institutions and students of medical school and also a condition of increase in adaptability and resistance to stress of health workers.

III. METHODS AND TECHNIQUES OF THE RESEARCH

Base of a research: medical institutions of Irkutsk and Irkutsk region, FGBOOU WAUGH "Irkutsk state medical university". 60 doctors (26 men, 34 women) participated in a research: 26 doctors of district hospital of the Brotherly region of the Irkutsk region (the northern region of the Irkutsk region), 10 doctors from district hospitals of the southern areas of the Irkutsk region (Alarsky, Ziminsky, Olkhon, Chunsky districts), 24 doctors from city hospitals of Irkutsk. Average age of 44.7 years, an average experience of professional activity on the specified specialty of 13 years, among them young doctors (an experience less than 3 years) – 5 people. Also participated in a research. 66 students of 1 course of the Irkutsk medical university, pediatric and medical faculties, average age of 18 years, 52 girls and 14 young men.

Research methods: the scale of an organizational stress (SOS) of McLean adapted by N.E. Vodopyanova [29]; technique of assessment of emotional and activity adaptability (N.P. Fetiskin, V.V. Kozlov, G.M. Manuylov) [30]; the questionnaire – the description of professional activity, developed by E.A. Klimov (modified by us). The

reliability of results of a research was confirmed by application of statistical methods (methods of rank correlation t-Spirmena, Styudent's t-criterion).

IV. RESULTS AND DISCUSSION

From results of questioning in which doctors characterized the real professional activity and students – representation about future deyatelnosty, follows that the increased responsibility for life and health of other people are felt by 85% of doctors and 94% of medical students. 15% of doctors and only 6% of students consider that they have an average responsibility or usual. That is, coming to medical school, young people it is realized approach choice of profession, understanding all measure of responsibility for life and health of other people which is assumed by this choice.

Among the factors causing psychological tension, are noted by doctors: night shifts; risks for life; communication with the offenders sick with mental diseases and "inadequate parents of patients"; physical activities and long stay in one situation; such specific conditions as unpleasant smells; accurately set rhythm and rate of work and at the same time – unreal standards for reception of patients; discrepancy of compensation to labor costs. Students on the first place among the factors causing psychological tension put the high rate and a rhythm of work. Differences between doctors and medical students in assessment of degree of problematical character of labor situations are not reliable. 42% of doctors and 39% of students estimated degree of problematical character of labor situations as high; 58% of doctors and 61% of medical students – as average (tab. 1). Thus, it is realistic estimating degree of difficulty of the acquired profession, students see them in the sphere of its organization, but not the relations arising in interaction in the course of medical activity to a large extent.

Both groups of respondents attributed the factors of decrease in working capacity to the lack of time, fatigue, large amount of work, large document flow, stressful situations, night shifts, physical and emotional loads; poor sleep after duty, high moral responsibility, professional burnout (for doctors).

Doctors most often name the sources of conflicts as a patient's misunderstanding, patient inadequacy, unwillingness of a patient to be healthy (including psychological reversion), sabotage of treatment to patients (low compliance); lack of competence of the doctor, inadequate self-esteem, negligence in the work of colleagues, violation of ethics and deontology; relation to the work performed.

TABLE I. EXPRESSIVENESS A STRESS FACTORS AND RESISTANCE TO STRESS PARAMETERS AT DOCTORS AND MEDICAL STUDENTS (% OF THE TOTAL NUMBER OF RESPONDENTS)

The analyzed parameters	Doctors			Students of medical school		
	Expressiveness level			Expressiveness level		
	low	average	high	low	average	high
level of responsibility	-	15	85	-	6	94
degree of problematical character of labor situations	-	58	42	-	61	39
stress level	20	30	50	6	12	82
level of adaptability	20	40	40	61	34,5	4,5

Among the personal qualities that contribute to success in work, high professional competence and professionalism are noted in the first place, then - diligence, humanity, interest and love for work, attentiveness, concentration, responsiveness, patience, attention and responsibility towards the patient, to colleagues, to work.

According to doctors, opposing qualities hinder professional growth: professional incompetence, laziness, lack of interest and motivation to work, inability to listen to others, work in a team, nervousness, negligence, superficial attitude towards patients, low intelligence, unwillingness to take responsibility, cowardice, negligence, hypocrisy; lack of discipline, low sociability; poor health; diffidence. Most of the noted personality traits that are necessary in the doctor's daily activities (confidence, dedication, integrity, initiative, attentiveness, responsibility) also determine readiness for professional activity in extreme conditions [31].

The difficulties of initial vocational adaptation for young doctors are novelty of work; high degree of responsibility; lack of proficiency in professional skills; inadequate knowledge and inability to integrate into real medical practice; large amount of information; severe conditions of patients; in district hospitals - the absence of colleagues with the same specialty (no mentoring).

Attention is drawn to the fact that young doctors positively evaluate career options for a specialist of their medical institution with a favorable set of circumstances, they determine the level of this growth (head of department, clinic manager). Doctors with a long professional career see it in the growth of the authority of the doctor, in learning new knowledge and treatment methods, and in leaving the medical profession.

Analysis of the results of diagnostics according to the "Scale of Organizational Stress" (SCO) Maclean showed that half of the doctors and 82% of medical students had a high level of susceptibility to organizational stress. It is associated with an insufficient ability to communicate, accept other people's values, adequately assess the situation without compromising one's health and performance, inflexibility and passivity in relation to active forms of recreation and restoring vitality. For first-year students this

is also evidence that the adaptation process for studying at a university has not yet been completed or has not been successfully completed.

The high level of organizational stress is associated with a predisposition to type "A" behavior (English type A behavior), which is characterized by a number of personality traits: a constant desire to move up the career ladder; persistent search for recognition; active participation in various activities; lack of time; high readiness for action; lack of security; high rate of life and acceleration of many physical and mental functions; inability to relax. That is, the more pronounced in the behavior of the doctor the personality traits related to the type "A", the greater the predisposition to experiencing distress and various stress syndromes, including the professional burnout syndrome. For medical students who are predisposed to this type of behavior, there is also a high risk of developing neuroses and disrupting psychological adaptation.

Border indicators of organizational stress were found in 30% of the examined doctors, 20% are stress-resistant and have tolerance to organizational stress. Among students, low levels of organizational stress and, consequently, high levels of stress tolerance were found in only 6% of those examined. In other words, 80% of doctors and 94% of medical students are in a state of organizational stress or approach it.

According to the results of the analysis of the diagnosis "Evaluation of Emotional-Activity Adaptability" the following results were obtained. A high level of adaptability is manifested in 40% of doctors, an average - in 40% of doctors, a low level of adaptability, respectively, in 20% of doctors, a very low level was not detected. 61% of students have a low and very low level of adaptability, and only 4.5% of students with a high level of adaptability.

An assessment of the relationship between the studied parameters using the Spearman's rank correlation method showed that there is a statistically significant relationship between the magnitude of organizational stress and the level of adaptability $r_s = -0.784$ ($P < 0.001$) among doctors; $r_s = -0.361$ ($P < 0.01$) for medical students. Low rates of adaptability contribute to the development of high organizational stress, and accordingly stress has a negative effect on adaptability.

At the same time, the higher the indicators of emotional and activity adaptability of a doctor, the higher his resistance to stress and tolerance, which is associated with the ability to communicate, adequately assess the situation without prejudice to his health and efficiency, actively and interestingly rest, quickly restoring his strength.

V. CONCLUSIONS

Most doctors and medical students have a high level of organizational stress, the main reasons for which is an increased level of responsibility for the lives and health of others, high tension and rhythm of work. Mental stress can manifest itself in the effectiveness of the doctor's interaction with patients, colleagues and the administration, provoking the development of conflict situations.

At the same time, 80% of doctors have a high or medium level of adaptability and successfully cope with professional stress, while among students these figures are

much lower. 61% of students demonstrate a low or very low level of adaptability and instability to the effects of stress. Low adaptability to stress factors among students and young doctors is associated with a lack of professional and life experience, an insufficiently developed temporal and communicative competence.

The results of the study of the levels of stress tolerance and adaptability of doctors can be used to develop anti-stress measures, programs for students of medical universities, aimed at correcting personal susceptibility to organizational stress in future specialists.

The high tempo and rhythm of work, lack of time, disturbances of daily and near-daily rhythms during night duty, noted as one of the main factors of psycho-emotional stress in both doctors and students, indicate the need to refer, especially when teaching students, to relative resources time management, to the development of temporary competence. Increasing adaptability can be one of the ways to solve the problem of emotional exhaustion among health workers. The development of adaptability will be facilitated by the training of elements of stress management and the formation of skills for effective behavior in difficult labor situations.

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