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## Hygienic assessment of the occurrence and development of emotional burnout syndrome among medical students and its prevention

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### ABSTRACT

**Introduction and aim.** Emotional burnout syndrome has become increasingly common in recent decades, regardless of the field of professional activity. The purpose of our study was to compare the prevalence of emotional burnout in medical students of Vinnytsia National Medical University before the beginning of the academic semester and during the passing of exams.

**Material and methods.** An anonymous, voluntary survey before the start of study was taken by 300 students, among them 82.3% were women, 17.7% were men.

**Results.** During the exams, 362 students took part, including 76.2% women and 24.1% men. According to the results of the study, the proportion of the "average" degree of exhaustion increased in second-year students by 15.6%; third-year students by 44.4%. The "high" degree of emotional exhaustion according to the results of the study before the start of training was found in male students of the third year – 44.4% and 36.4% of male students of the sixth year. During the exams, the rate of "high" emotional exhaustion was observed in first-year students, increasing from 12.5% to 18% and in sixth-year students from 36.4% to 50%.

**Conclusion.** Thus, it was found that female students are the most adapted to the educational load, to passing exams, which affects the psychosomatic state of future doctors.

**Keywords.** COVID-19 pandemic, doctors, emotional burnout syndrome, exhaustion, medical students, stress

## **Introduction**

Emotional burnout syndrome (EBS) has been increasingly common in recent decades, regardless of the field of professional activity. Most often, we observe EBS among the following professions: teachers, doctors, social workers, psychologists, etc., which are based on person-to-person communication and involve constant work with people and direct interaction with them in the course of performing professional duties.<sup>1</sup> Due to the high demands placed on such workers, these professions are the most potentially exhausting in terms of psychological health and progressively increase the likelihood of emotional burnout, exhaustion, and stress. There is a large number of scientific studies around the world on this phenomenon.<sup>2</sup> An advantage in the study of EBS is given to the study of its prevalence in the healthcare sector. Reviews of domestic and foreign literature emphasize the problematic and multifactorial nature of burnout for various professions in the medical field: doctors, residents, nurses, students of higher education institutions (HEIs), and mental health workers.<sup>3,4</sup>

With the full-scale war in Ukraine, a number of major changes have recently taken place, especially the increase in people in need of medical care for mental health problems. As a result, domestic doctors, combat medics, students, interns, and health care workers involved in providing medical care to soldiers and internally displaced persons (IDPs) suffer from stressful situations and conditions.<sup>5</sup> This is manifested by excessive workload, high occupational stress, work-life imbalance, lack of time to provide care, potential health risks, etc. Extreme fatigue and exhaustion of doctors can easily provoke negative consequences in the future, including deterioration of doctor-patient and colleague relations and escalation of conflicts in the healthcare system. An endless series of problems and a range of negative emotions caused by professional burnout are likely to reduce the job satisfaction of healthcare workers, which ultimately leads to a decrease in motivation to continue working and building a career in medicine. Professional burnout in the field of medicine attracts constant attention of scientists around the world to develop preventive measures.<sup>6</sup>

The study of the peculiarities of the manifestation of EBS, symptoms and factors that determine its formation and progression in both experienced doctors and medical students, with the aim of implementing scientifically proven health programs aimed at preventing occupational stress and diseases, as well as restoring the psychoenergetic potential of the individual and society.<sup>7</sup>

## **Aim**

We have conducted a study of the socio-psychological determinants of the phenomenon of emotional burnout in medical students before the beginning of the academic semester (September) and during the passing of tests, exams, and modules (December). Medical students of the 1st-6th years of study at Pirogov National Medical University took part in the voluntary, anonymous survey – 661 applicants, including 78.9% of women (n=522) and 21,1% of men (n=140).

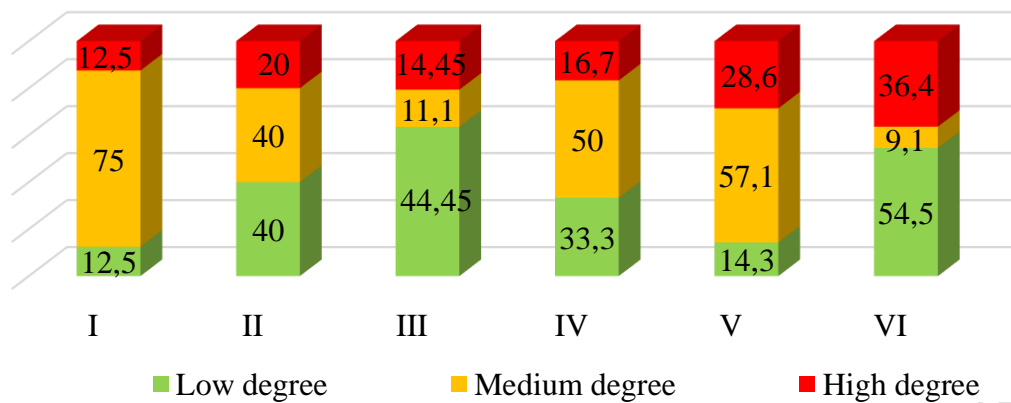
## **Material and methods**

An anonymous, voluntary survey before the start of study (September 2022 - the first survey) was taken by 300 students of Vinnytsia National Medical University named after Pirogov, among them 82.3% were women, 17.7% were men. During the exams/modules (December 2022 – second survey), 362 students took part, including 76.2% women and 24.1% men. The degree of emotional burnout of university students was determined by the Gibson's Assessment of Personal Burnout Potential. This methodology contains 18 questions that define three components: emotional exhaustion, depersonalization, and personal satisfaction. Medical students are asked to choose one of 6 answers to each question. For each component, the average score is calculated and the degree of "low", "medium", and "high" is determined. A search was conducted on the basis of PubMed and Google Scholar databases for the period 2015-2022 on SEB in healthcare professionals and medical students.

## **Results**

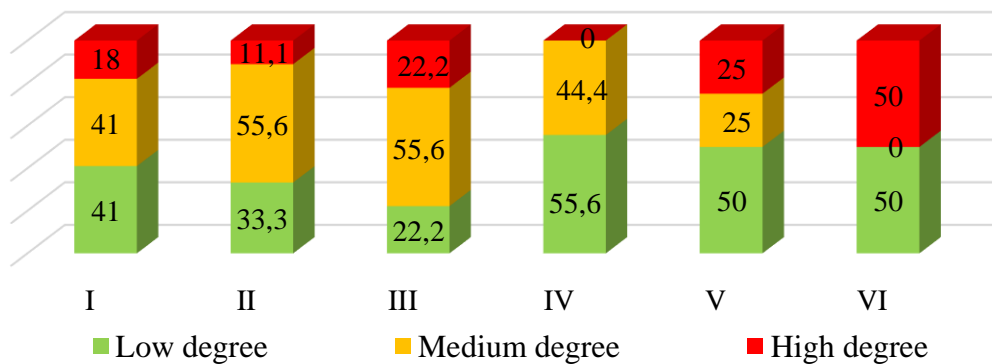
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Emotional exhaustion was identified as the first component of the SES and is the main component in medical students. The manifestations of emotional exhaustion are indifference to duties, environment, studies, deterioration of health, mood, motivation and overwhelm in the emotional background. The research data showed the following (Fig. 1 and 2).



**Fig. 1.** The proportion of emotional exhaustion before the start of medical students' training (male), %

According to the results of the study, the proportion of the "average" degree of exhaustion increased in second-year students by 15.6%; third-year students by 44.4%.

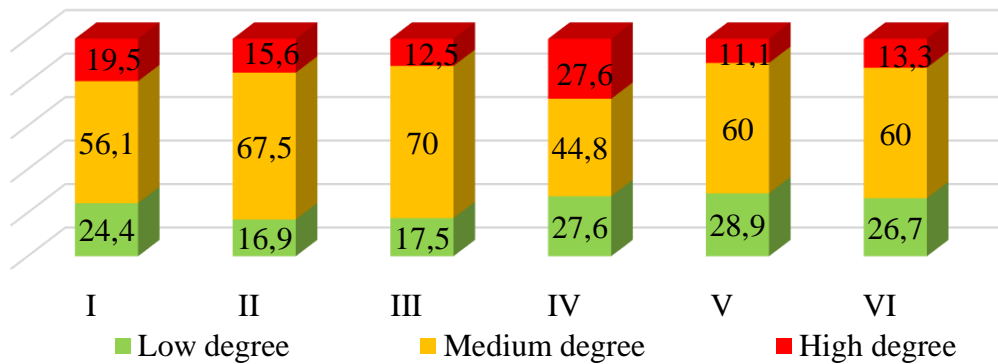


**Fig. 2.** The proportion of emotional exhaustion during exams/modules of medical students (male), %

The "high" degree of emotional exhaustion according to the results of the study before the start of training was found in male students of the third year – 44.4% and 36.4% of male students of the sixth year. However, during the exams/modules, the rate of "high" emotional exhaustion was observed in first-year students, increasing from 12.5% to 18% and in sixth-year students from 36.4% to 50%.

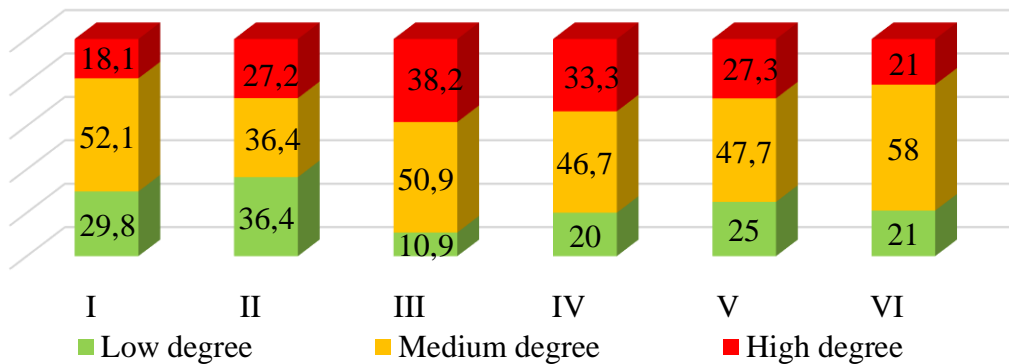
The increase in both "medium" and "high" degree of emotional burnout during the study may be a risk of deterioration of mental health of medical students, which will negatively affect academic performance.

According to the questionnaire data from female students, we found changes in emotional exhaustion. The "average" degree of emotional exhaustion in female students was observed in all courses before the start of training compared to male students (Fig. 3).



**Fig. 3.** The proportion of emotional exhaustion before the start of medical students' studies (female), %

According to the results of our study, during the exams/modules, female students' rates of "high" emotional exhaustion increased, namely, in the third year students by 25.7%; in the fifth year – 16.2%; in the second year – 11.6% (Fig. 4).



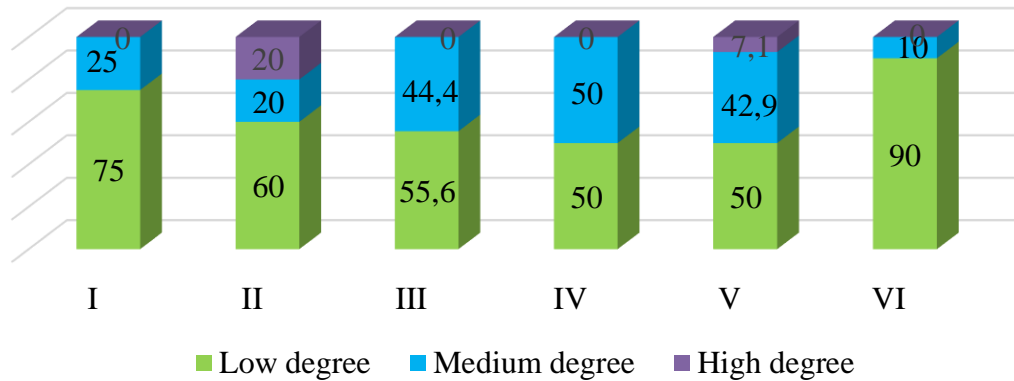
**Fig. 4.** Share of emotional exhaustion during exams/modules of medical students (female), %

In terms of emotional component, female students were the most vulnerable group and had the highest rates. For timely detection/prevention of SES, it is necessary to conduct regular surveys/testing in higher education institutions for timely detection, preventive measures to minimize them, overcome them and prevent the transition from pre-disease states to disease.

Based on the results of the survey of medical students, the following component "depersonalization" was identified. It is manifested in deterioration of relationships and increased frequency of conflicts in the student group in which the applicant studies, conflicts with university teachers.

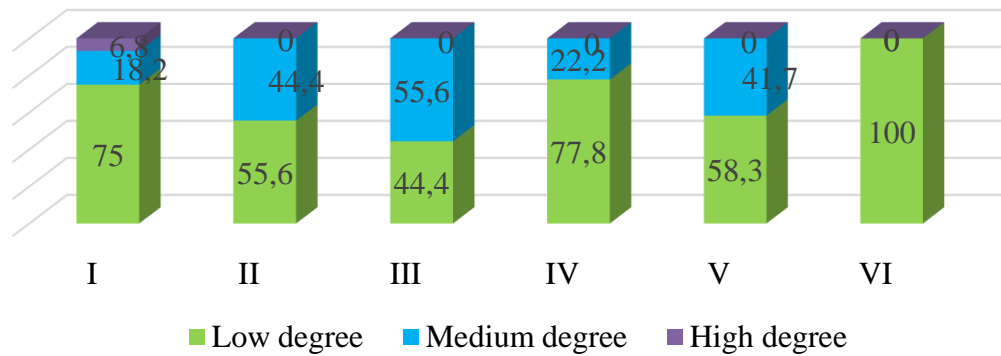
The second component of emotional burnout, "depersonalization", is characterized by increased psychological distancing from anything: from learning and communication, a decrease in empathy and indifferent/cynical attitude towards friends/students, relatives, teachers, pessimistic thoughts about learning, life, which negatively affects the attitude towards one's own life, towards one's choice of a correctly chosen future profession.

According to the results of the study, "depersonalization" both before the start of studying and during exams/modules showed high rates of "low" and "medium" degree (Fig. 5 and 6).



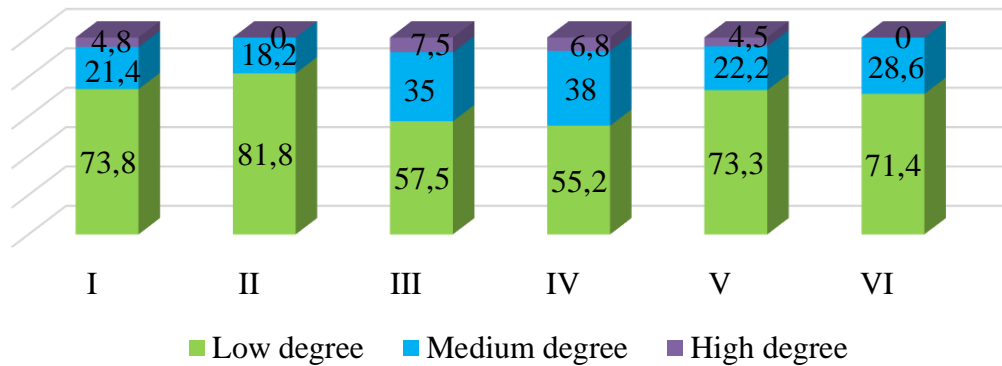
**Fig. 5.** The proportion of the degree of "depersonalization" before the start of training of male medical students, %

The "medium" degree of "depersonalization" according to the research results was observed to increase in second- and third-year students during exams/modules by 24.4% and 11.2%, respectively. The "high" degree of "depersonalization" among first-year students amounted to 6.8% among male students during exams and modules.



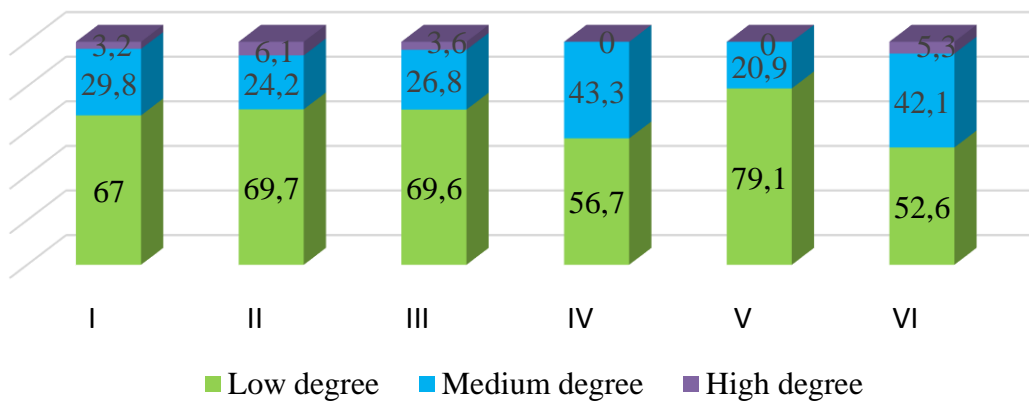
**Fig. 6.** The proportion of "depersonalization" grade during exams/modules for male medical students, %

A characteristic increase in the "depersonalization" component was observed among female students during exams/modules of all levels according to the questionnaires: "low", "medium", "high" (Fig. 7 and 8).



**Fig. 7.** The proportion of the degree of "depersonalization" before the start of training of female medical students, %

The increase in the "average" degree of "depersonalization" in female students of the VI year was 13.6%, 8.4% in the I year, 6.0% in the II year, and 5.3% in the IV year.



**Fig. 8.** The proportion of "depersonalization" degree during exams/modules of female medical students, %

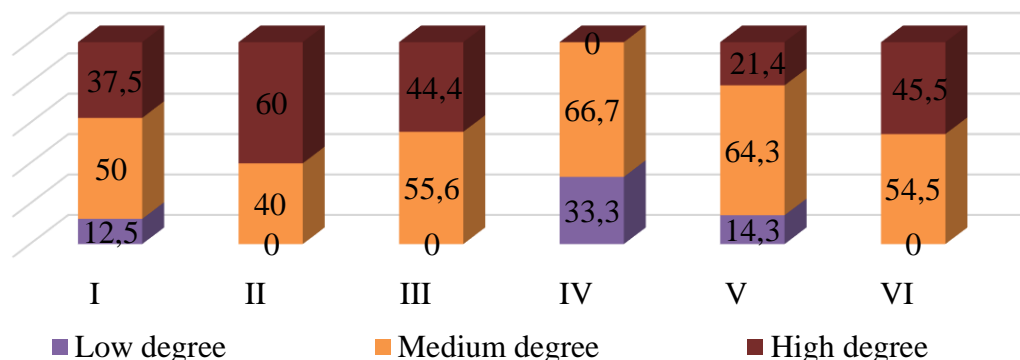
The "high" degree of "depersonalization" according to the survey results was 6.1% for female students of the second year and 5.3% for the sixth year.

The third component of emotional burnout, personal satisfaction, is characterized by negative self-assessment, the emergence of feelings of uncertainty, incompetence in their professional field, awareness of failure in it, hesitation in choosing a professional activity, indifference to learning, friends, decreased motivation and self-esteem at a "low" level.

This component of emotional burnout, personal satisfaction, can be manifested either in a tendency to negatively evaluate oneself, underestimate one's professional achievements and successes, negativity towards job responsibilities and opportunities, or positively evaluate one's own attributes.

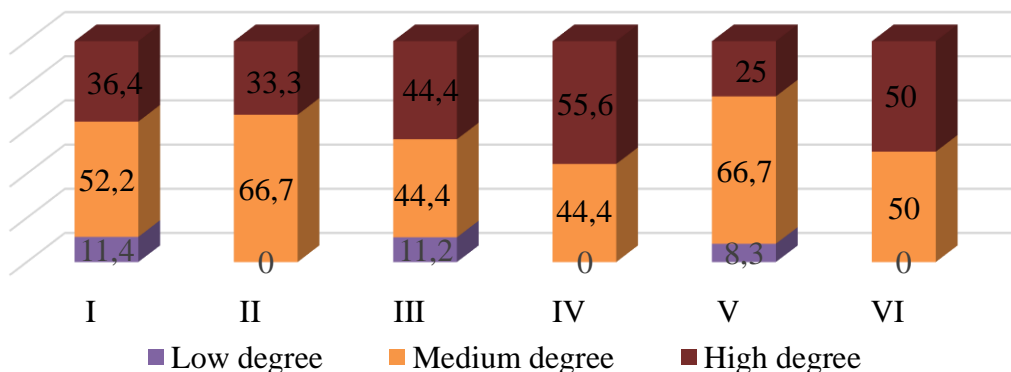


According to the results of our study, among male applicants, the "average" degree of personal satisfaction during exams/modules was observed in the first year, second year, and fifth year of study, which increased compared to the indicators before the start of study (Fig. 9).



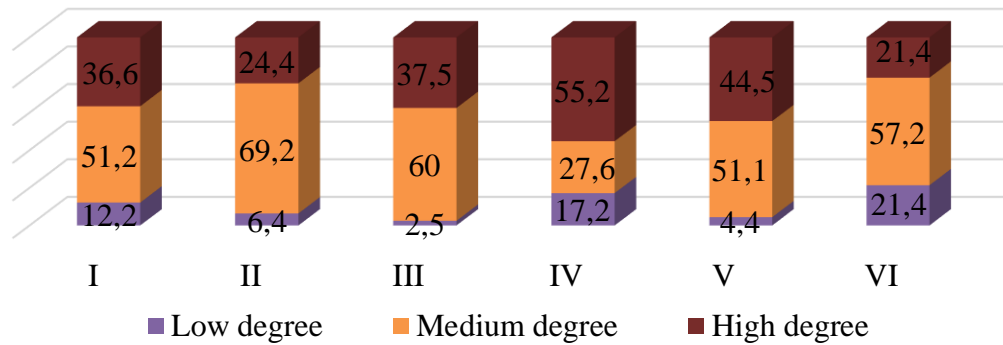
**Fig. 9.** Share of personal satisfaction before the start of training of male medical students, %

Before the start of training and before taking exams/modules, the degree of personal satisfaction in male students of the IV year increased by 55.6%, the VI year by 4.5% and the V year by 3.6%, which characterizes the positive dynamics of reducing emotional exhaustion. In male medical students of the III year, there was a negative trend in personal satisfaction, which can lead to more pronounced signs of transition from a pre-disease to a disease of psychological health (Fig. 10).



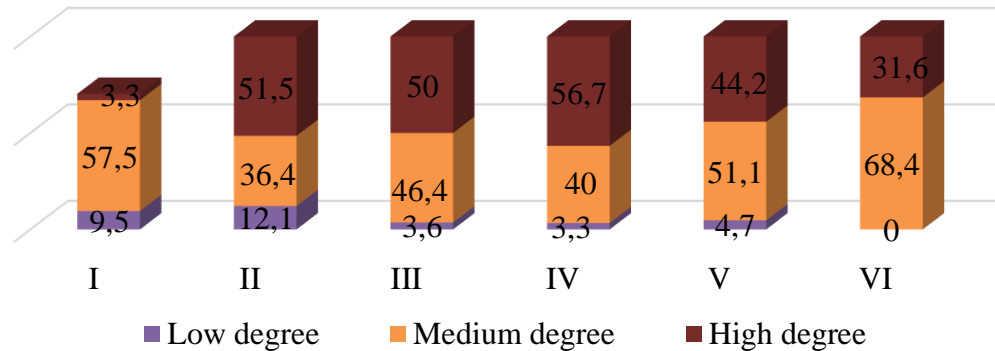
**Fig. 10.** Share of personal satisfaction during the exams/modules for male medical students, %

The indicators of personal satisfaction among female applicants were higher during the exams/modules of both "medium" and "high" degree, which characterizes the lowest vulnerability to emotional burnout on the part of the female gender and their better adaptability to academic workload (Fig. 11 and 12).



**Fig. 11.** The share of personal satisfaction before the start of training of female medical students, %

According to the questionnaire, the rate of "high" degree of personal satisfaction among female applicants increased by 27.1% – second year; 12.5% – third year; 10.2% – sixth year, indicating successful overcoming of the academic load.



**Fig. 12.** Share of personal satisfaction during exams/modules for female medical students, %

Thus, it was found that female applicants are the most adapted to the educational and informational load, to passing exams/modules, which affects the psychosomatic state of future doctors. However, all students of higher education institutions need timely psychological assistance and correction.<sup>8</sup>

## Discussion

EBS is a psychological syndrome that occurs as a long-term reaction to chronic professional stressors in the course of professional activity and education. EBS is a loss of energy, which is now a massive social and psychological phenomenon characterized by impaired productivity, fatigue, anxiety, poor health, insomnia, a pronounced predisposition to somatic diseases, and reduced quality of professional activity.<sup>9</sup>

The term "emotional burnout syndrome" was coined and introduced into the psychological field by the American psychiatrist Freudenberger in the 70s of the twentieth century.<sup>10</sup> The scientific literature later

presented a slightly modified idea of burnout by the American psychologist Maslach in 1981, which was explained as a gradual increasing process of fatigue, cynicism and reduced commitment among social care professionals.<sup>9,11</sup> The turning point between the two definitions was the consideration of burnout as a syndrome, where a syndrome is understood as a set of symptoms and signs that exist simultaneously and clinically define a certain condition that is distinct from others.

The World Health Organization in 2019 proposed and included "burnout" as a syndrome as a professional phenomenon in the list of diseases of the 11th edition of the International Classification of Diseases (ICD-11). It was noted that this condition/status is exclusively related to certain features of a person's specialization and is not a medical disease. The syndrome, which occurs due to chronic stress in the workplace, is currently classified as premorbid manifestations: "Adaptation disorder" – F43; "Burnout" – Z73.0; "Neurasthenia" – F48.<sup>12,13</sup> It is a multidimensional phenomenon characterized by feelings of exhaustion, increased levels of negativity towards one's work, and decreased work performance and is inherent in individuals who have to work closely with other people, healthcare professionals, students, and service providers.

There are two categories of EBS factors that influence the development of predictors of EBS:

1. Individual – peculiarities of temperament and personality traits, i.e. psychophysiological processes of the human body;
2. External – communication between colleagues, working conditions, workload, financial situation, psychologically unhealthy team.<sup>14</sup>

EBS starts slowly, which leads to a complicated course of psychological exhaustion in the future. We have compiled a model for the development of EBS (Table 1).

**Table 1.** Model of development of PBS/EBS

Professional burnout syndrome		Emotional burnout syndrome	
Stages of development of the PBS	Signs	Stages of EBS development	Signs
<b>1) Honeymoon</b>	<ul style="list-style-type: none"> <li>- filled with energy and strength,</li> <li>- satisfaction with the work performed,</li> <li>- commitment to the goals set,</li> <li>- positive dynamics of professional activity.</li> </ul>	<b>1) Tension</b>	<ul style="list-style-type: none"> <li>- dissatisfaction with yourself,</li> <li>- unable to resolve the situation constructively,</li> <li>- feeling of hopelessness,</li> <li>- increased fatigue and dissatisfaction with work, position.</li> </ul>

<b>2) Onset of stress</b>	<ul style="list-style-type: none"> <li>- periodic fatigue,</li> <li>- decreased productivity at work,</li> <li>- feeling of lack of strength and energy,</li> <li>- poor performance of professional duties,</li> <li>- work is less and less satisfying,</li> <li>- difficulty sleeping,</li> <li>- periodic manifestations of indifference.</li> </ul>	<b>2) Strong feeling and experience of stress</b>	<ul style="list-style-type: none"> <li>- anxiety and depressive psychosomatics,</li> <li>- non-perception of information and lack of concentration,</li> <li>- increased excitability and irritation,</li> <li>- excessive emotionality or vice versa apathy and isolation.</li> </ul>
<b>3) Chronic stress</b>	<ul style="list-style-type: none"> <li>- the above symptoms will appear on a permanent basis,</li> <li>- extreme depletion of internal resources,</li> <li>- poor quality and untimely performance of work,</li> <li>- closedness in communication,</li> <li>- postponement of tasks "for later",</li> <li>- tension between colleagues,</li> <li>- reduced body resistance to diseases.</li> </ul>	<b>3) Physiological, affective-cognitive, behavioral reactions</b>	<ul style="list-style-type: none"> <li>- <i>physiological</i>: feeling of chronic fatigue, generalized asthenization, causeless headaches, weight loss or gain, shortness of breath, sleep problems,</li> <li>- <i>affective and cognitive</i>: dissatisfaction with oneself, loss of interest in life, fixation on one's problems, cynical attitude towards others, decreased concentration, attention, demoralization, depersonalization,</li> <li>- <i>behavioral</i>: maladjustment, distancing from professional duties, reduced motivation and work productivity</li> </ul>
<b>4) Burnout phase or crisis</b>	<ul style="list-style-type: none"> <li>- people are focused only on their own problems,</li> <li>- frequent development of chronic diseases of both the neurological and other internal systems of the body,</li> <li>- full or partial loss of ability to work,</li> <li>- changes become quite noticeable to others and loved ones.</li> </ul>	<b>4) "Burning out" - physical and emotional exhaustion</b>	<ul style="list-style-type: none"> <li>- complete exclusion of emotions,</li> <li>- psychosomatic and psycho-vegetative disorders,</li> <li>- personal detachment,</li> <li>- emotional alienation,</li> <li>- obsessive thoughts,</li> <li>- physical discomfort.</li> </ul>
<b>5) Habitual burnout or "hitting the wall"</b>	<ul style="list-style-type: none"> <li>- exacerbation of all problems,</li> <li>- development of dangerous diseases,</li> <li>- the emergence of extreme dissatisfaction with the quality of life,</li> <li>- the emergence of suicidal thoughts.</li> </ul>		

The signs of EBS in each person have their own characteristics and peculiarities, which is explained by the different condition, degree of mental health disorder, level of stress resistance and specifics of the person's

professional activity. Emotional burnout is now a massive socio-psychological phenomenon, an individual response to chronic work stress that develops progressively and, if untimely, can turn from a pre-disease into a disease, causing changes in psychosomatic health in people.<sup>15</sup>

The syndrome causes harm both at the cognitive (avoidance of communication with others, suicidal thoughts, difficulty performing everyday activities) and emotional (anxious thoughts about different situations) levels, which translates into negative behavior towards their professional duties, colleagues, patients, friends of students, teachers.<sup>16</sup>

Given the high rate of predictors of emotional burnout development among general medical students, the study of predictors of emotional burnout development among healthcare workers, its impact on their mental health, and the transition to pre-occupational disease states is relevant, requiring a thorough study and development of preventive countermeasures.<sup>17</sup>

EBS is defined as a state of psychological, emotional and physical stress that occurs under the constant influence of stressors.<sup>18,19</sup> Healthcare workers during the COVID-19 pandemic were constantly under stress. According to epidemiological data, 5-7% of the world's population suffered from mental illness (before COVID-19). According to the Ministry of Health, during the pandemic in Ukraine, there were 625 new cases of psychological diseases per 100 thousand people. According to scientific studies around the world, the level of emotional burnout in healthcare facilities ranged from 31.4% to 85.8%. However, in Ukraine, this figure is somewhat higher and ranges from 73% to 89.3%. During the COVID-19 pandemic, according to WHO, psychosomatic disorders increased to 50%.<sup>20,21</sup>

Globally, the COVID-19 pandemic has been a serious threat to global health and a challenge to health systems, and has highlighted healthcare strengths and weaknesses, emergency competence and preparedness, and the linkages between public and global health issues.

Scientific studies have shown that it may take the world more than a decade to recover from COVID-19 medically, socially, psychologically, and economically.<sup>22,23</sup> The new epidemiological features of COVID-19 associated with the rapid spread of the virus have not only emphasized the unpreparedness of many countries for such situations, but also generated anxiety, depression, stress, etc. According to Yavorovsky's research, psychological, physical, and chemical factors, as well as the lack of personal protective equipment (PPE), are more harmful than the virus itself. In Ukraine and in European countries, during the COVID-19 pandemic, there was a lack of specific protocols for the treatment and care of seriously ill patients, longer working hours, and a high workload for medical staff. The prevalence of high-level stress, depressive symptoms requiring treatment, and anxiety symptoms, depression requiring further examination among medical staff ranged from 3.7% to 17.7%.<sup>24,25</sup>

EBS are a common and growing problem among healthcare workers, especially those working in emergency settings: infection with the virus, skin diseases from prolonged use of PPE, exposure to toxic components of disinfectants, psychological distress, stigmatization, and chronic fatigue.<sup>10,26</sup>

During the COVID-19 pandemic, the need for communication, online consultations and remote work in the medical field has arisen due to social isolation, which has led to adaptations in medical activities to provide medical care to patients. Online consultations, online training courses, and the rapid need to exchange medical information have forced doctors to use telemedicine resources: to communicate with patients, to prescribe treatment, etc.

Dincer found that first-line healthcare workers, especially those involved in the diagnosis and treatment of patients with COVID-19, reported high levels of burnout associated with symptoms such as insomnia, depression, and anxiety.<sup>27</sup> Based on this, striking conclusions have been drawn that every doctor and medical student is also a patients<sup>28</sup>, so it is important to identify early signs of burnout as predictors of future crises that contribute to exhaustion and develop preventive measures to overcome EBS.

EBS among medical students is confirmed by the latest data on the increase in the prevalence of burnout syndrome among students.<sup>29</sup> According to the results of the study by Navarro-Abal, it was found that burnout can affect both students and teachers of any level of education and institution.<sup>30</sup> Salmela-Aro found that SEB in students during their studies can lead to dramatic changes in mental health: depression, anxiety, suicide attempts, which increases the risk of suspension four times, while a passion for science can contribute to both life satisfaction and success in future educational achievements.<sup>31</sup>

There are internal and external factors that are associated with the increasing prevalence of EBS among medical students, including a perceived high workload, stress, and anxiety before modules/exams. EBS has a detrimental effect on the satisfaction with life and learning of future doctors, leading to poor academic performance and motivation.<sup>32,33</sup> The consequences of EBS have a negative impact on mental health, cardiovascular system, gastrointestinal tract, musculoskeletal and respiratory system, nervous system: depression, sleep disorders, alcohol abuse, suicidal thoughts, fatigue.<sup>30,34</sup>

The COVID-19 pandemic has led to a deviation from the usual regimen, forcing a shift from classical face-to-face education to distance learning. According to the results of the study by Fawaz, a decrease in student satisfaction with distance learning was found.<sup>35,36</sup> Online education includes the following negative factors: lack of physical presence in class, less informal discourse, and reduced social interaction between students and teachers.

They can lead to misunderstandings in communication, which can further manifest itself in the form of negative emotions and misconceptions, and behavior. Research has shown that social affinity is often associated with academic success in both face-to-face and distance learning settings, so it would be important to support student interaction in any learning environment.<sup>37</sup>

Models of learning demands are as follows: motivational, in which resources associated with distance education can lead to increased engagement in learning, and health deterioration, in which increased demands lead to tension, stress, and mental health problems, requiring medical students to quickly adapt to new digital learning practices and switch to social media platforms to maintain relationships with teachers

and other students.<sup>38</sup> As a result of EBS, medical students may be at high risk of developing depression and suicidal thoughts. Cross-sectional data from several higher education institutions showed that students experiencing burnout syndrome were 3 times more likely to have thought about suicide in the past. Students who previously reported burnout tend to recover from this condition and related suicidal thoughts.<sup>8</sup>

Thus, COVID-19 has created unique risks to psychological well-being, leading to increased stress, depressive disorders, and anxiety symptoms among students.<sup>39</sup> In order to overcome the negative impact of the development of EBS, it is necessary to identify resources that promote resilience during a psychological crisis.

The life of Ukrainians has changed dramatically during the full-scale invasion of Russia. Numerous human casualties, huge damage to the population, and the destruction of infrastructure – all these factors lead to serious mental health problems for Ukrainians, in addition to physical disorders.

Risks of the psychological impact of war: First, a war-related trauma is a traumatic event that threatens life or health because a person is directly exposed to psychological violence and witnesses' cruelty.<sup>40</sup> Direct exposure to war is a detrimental life event that can lead to long-term changes in mental well-being, can cause harm and mental health disorders such as post-traumatic stress disorder (PTSD), depression, anxiety, and EBS in adults and children.<sup>2,41,42</sup> The factors underlying wartime stress include both direct trauma and other psychosocial stressors, such as multiple human losses. To date, according to the United Nations (UN), 8,173 Ukrainian civilians alone have been killed and 13,620 wounded in the war. The war has had an impact on Ukraine's medical system, as 106 medical workers were killed during the year of war, 33 of them at their workplace. In addition, the Russians destroyed 174 medical institutions and severely damaged another 1,106.<sup>39,43</sup> These factors have an extremely detrimental impact on the development of EBS, both for the population and for healthcare workers and medical students who see their profession as the future and are prone to disappointment and a sense of uncertainty as a result of such developments.

Second, emotional suffering related to war can occur not only as a result of direct exposure, but also through indirect sources, such as watching violent scenes of war on television or social media. In particular, the social network "Telegram" has become a leader among other sources of information, and as noted, Ukrainians spend a lot of time in front of the gadget, reading news and following events. Outside of Ukraine, graphic images of the war on social media can also have a negative impact on people's psychological health. Through indirect exposure, people who are concerned about the war but live outside the war zone may also experience negative mental health consequences. Since the beginning of the war, more than 17 million people have left for European countries, and more than 9.1 million people have returned to Ukraine so far. As a result, two-thirds of Ukraine's children have become IDPs. More than 2.4 million Ukrainians have lost their homes and 406 educational institutions where students received their education. Each internally displaced family is constantly in despair, unable to cope with their negative obsessive thoughts and grief

for their loved ones. According to the Ministry of Healthcare, about 15 million Ukrainians will need psychological support in the future, of which about 3-4 million will require medication.

Research shows that IDPs have higher levels of depression, anxiety, and SES than the general population that was not affected by the war.<sup>44</sup> Such people often develop survivor's syndrome, a feeling of guilt experienced by those who managed to get out of hot spots and go abroad, but after the adaptation period, they often experience a sense of betrayal and brokenness, stress from the fact that they have lost their loved ones and homes.

Thirdly, changes in the structure of society during the war lead to a decrease in the body's resistance, which leads to the development of depression, anxiety and diseases of the whole body.

First responders and volunteers in the combat zone are at particularly high risk of psychological morbidity due to the fact that they work at the limit of their physical and moral capabilities, often witness death, experience separation from loved ones and lack access to the most basic necessities. The fear and uncertainty created by the war is likely to have a lasting impact on the mental health of Ukrainians and people in other parts of the world. In addition, the war in Ukraine is the first war in history to be reported almost continuously by the media, with dramatic scenes and images available to virtually anyone with access to the Internet and television around the world. Risk factors associated with the development of depression, anxiety, stress, and EBS symptoms include self-rated health status, past psychiatric history, and avoidance of stress management.<sup>45</sup>

Timely diagnosis and prevention are essential in the case of EBS. We propose two approaches to overcoming EBS: individual and group approaches (Table 2).



**Table 2.** Preventive measures against EBS

Methods of prevention of EBS	Measures to overcome EBS
<b>Individual recommendations for students/employees</b>	
<ul style="list-style-type: none"> <li>✓ improving communication skills through active learning methods (social and psychological training),</li> <li>✓ studying effective communication styles and conflict resolution,</li> <li>✓ trainings that stimulate motivation for self-development, personal and professional growth,</li> <li>✓ observance of sleep, rest, nutrition and safety rules,</li> <li>✓ mastering time management skills,</li> <li>✓ physical activity and outdoor activities,</li> <li>✓ creating an effective daily routine, with the possibility of realizing one's values, interests, dreams in order to enjoy the opportunities achieved (Work-life balance),</li> <li>✓ methods of self-regulation (natural methods of self-regulation of the body).</li> </ul>	<ul style="list-style-type: none"> <li>✓ practical skills to be fully present "here and now", to notice habitual states of our consciousness, to control attention and behavior through concentration (Mindfulness),</li> <li>✓ refusal to use the Internet and gadgets in communication for a certain period of time in order to take a break from the virtual world and switch attention to live communication (Digital Detox),</li> <li>✓ personally oriented activities aimed at improving the ability to cope with stress,</li> <li>✓ group/rational/cognitive-behavioral psychotherapy,</li> <li>✓ autogenic training (self-hypnosis) - Schultz autogenic training and Jacobson progressive muscle relaxation;</li> <li>✓ art therapy,</li> <li>✓ search for new interests not related to academic activities.</li> </ul>
<b>Recommendations for heads of higher education and healthcare institutions</b>	
<ul style="list-style-type: none"> <li>✓ psychoeducation,</li> <li>✓ trust in communication with students,</li> <li>✓ continuous monitoring of students' emotional state,</li> <li>✓ encouraging the creation of support groups,</li> <li>✓ organizing and conducting trainings (balint groups),</li> <li>✓ teaching students time management and various relaxation techniques,</li> <li>✓ equal distribution of tasks among students,</li> <li>✓ providing satisfactory learning and remuneration conditions,</li> <li>✓ establishment of trusting, compliant relationships,</li> <li>✓ social skills training,</li> <li>✓ advisory assistance in adaptation to studies.</li> </ul>	<ol style="list-style-type: none"> <li>1. organization of systemic educational interventions, trainings, lectures, conferences on mental health and its disorders, development and implementation of educational topics with elements of medical ethics, morality and deontology aimed at developing stress resistance in students,</li> <li>2. allocate a separate room in the home with appropriate equipment for psychological relief (comfort): a recreation/psychological relaxation area for group or individual psychotherapy/counseling; a gym area (with sports equipment) for breathing exercises (including various individual methods of relieving concussion),</li> <li>3. develop a system of individual psychological counseling for students of higher education institutions at the main place of study who are experiencing academic stress to identify predictors of emotional burnout in students.</li> </ol>

Today, creative art therapy (CATs) is a very effective means of combating SEPD. It is the creative use of artistic means (art, music, dance) as a means of non-verbal or symbolic communication to achieve personal and/or social therapeutic goals that meet individual needs.<sup>34,46</sup>

In order to implement effective preventive measures to prevent and reduce the manifestation of EBS, the specific needs of people affected by war should be taken into account. Particular attention should be paid to internally displaced persons (IDPs). These people are under constant stress, experiencing increased fear and anxiety, which manifests itself in uncertainty about their safety and future. In addition to providing material assistance, clothing, food, and accommodation, it is imperative to take care of providing psychological assistance to such people.<sup>5</sup>

Psychologists advise that when providing assistance to IDPs, the basic rule is "LOOK, LISTEN, DIRECT". Guided by this principle, a specialist will be able to clearly understand the basis of a person's problem and find an approach to solving it. For IDPs, it is important to provide information on the activities of social and volunteer organizations, practical assistance centers, coaching on available resources in the material and psychological sphere, providing opportunities to contact family and friends, and referrals to psychological and medical centers to help those in need.

Psychocorrection techniques have been successfully proven to overcome PTSD and are currently being used quite successfully, such as EMDR (Eye Movement Desensitization and Reprocessing). This psychotherapy allows people to reduce or even get rid of the symptoms of emotional stress that result from disturbing life experiences.

Repeated studies show that with EMDR therapy, people can experience psychotherapy results that once took years to achieve. Some studies show that 84-90% of victims of single trauma no longer have post-traumatic stress disorder after just three 90-minute sessions. EMDR therapy includes eight phases of treatment. Eye movements (or other bilateral stimulation) are used for one part of the session. After the clinician has determined which memory to focus on first, he or she asks the patient to hold in mind different aspects of the event or thought and use the eyes to follow the clinician's hand as it moves back and forth in the field of vision. EMDR involves a patient suffering from post-traumatic stress disorder focusing on a traumatic image, thought, emotion, and bodily sensation while receiving bilateral stimulation, most often in the form of eye movements.<sup>47,48</sup>

Cognitive behavioral therapy, which was developed by Aaron Beck in the 1960s, is also widely used today, but its effectiveness has been scientifically proven only recently. It is a structured, didactic, and focused form of therapy. This approach is based on hands-on interaction, where the therapist and patient work in collaboration to change thinking and behavioral patterns to promote positive changes in the patient's mood and lifestyle. It is used to address a wide range of problems, and appropriate treatment protocols are applied depending on the diagnosis and problems faced by the patient, including PTSD caused by military actions and negative impact on psychological health.<sup>49-51</sup>

Summarizing the results of the questionnaire, it should be noted that female applicants are the most adapted to the educational and information load, to passing exams/modules, stress, which affects the psychosomatic state of future doctors.<sup>52</sup> Prospects for further research are the development and implementation of a

program for the prevention of emotional burnout syndrome among medical students of higher education institutions.

## **Conclusion**

Thus, it was found that female applicants are the most adapted to the educational and informational load, to passing exams/modules, which affects the psychosomatic state of future doctors. However, all students of higher education institutions need timely psychological assistance and correction.

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### ***Author contributions***

Conceptualization, V.C. and H.S., M.S.; Methodology, S.K.; Software, V.P., L.H.; Validation, V.C., Y.S., and M.S.; Formal Analysis, V.C., S.K.; Investigation, V.P.; Resources, L.H.; Data Curation, V.C.; Writing – Original Draft Preparation, V.C., Y.S. and M.S.; Writing – Review & Editing, H.S., M.S.; Visualization, H.S. and M.S.; Supervision, V.C.; Project Administration, V.C.; Funding Acquisition, V.P., L.H.

### ***Conflicts of interest***

The authors declare no competing interests.

### ***Data availability***

The datasets used and/or analyzed during the current study are open from the corresponding author on reasonable request.

### ***Ethics approval***

All subjects gave informed consent to the inclusion prior to participating in the study. The study has been approved by the Bioethics Committee at the University No 2023/09/01.

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