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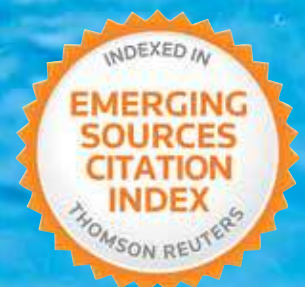
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## ● HEALTH-RESORT MEDICINE ● PHYSICAL MEDICINE ● BIOCLIMATOLOGY

- Efficiency of High-Intensity Gait Training in the Rehabilitation of Post-Stroke Patients
- Analysis of Static and Dynamic Baropodographic Parameters in Post COVID-19 Patients
- Satisfaction with the Physical Therapy in Patients with Adhesive Capsulitis and Myofascial Pain Syndrome
- Rehabilitation Features for Patients with Diaphyseal Humerus Fractures During Conservative Treatment
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# ASSESSMENT OF MENTAL HEALTH PROBLEMS CAUSED BY THE WAR THROUGH THE EYES OF STUDENTS: PREREQUISITES FOR REHABILITATION MEASURES

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## ABSTRACT

**Aim:** To identify the leading factors of mental health problems by establishing interconnections them with other challenges of full-scale war.

**Materials and Methods:** Sociological and statistical methods of descriptive statistics, the method of pairwise correlation of psychological problems with other challenges with disaggregation by gender, the logistic regression analysis for factors that were statistically significantly related to mental health problems (95% CI,  $p < 0.05$ ) were used.

**Results:** Since the beginning of the war respondents identified medical problems as the most important challenge (83.6%), which were combined with forced change of residence and restrictions on movement and communication (20.7%), financial problems (8.0%) and restrictions on non-medical services (1.1%). Statistical analysis revealed a weak direct correlation between male' mental health problems with age (20 and older) ( $r = 0.225$ ), restrictions on travelling abroad ( $r = 0.221$ ) and restrictions on habitual communication ( $r = 0.215$ ). Financial ( $r = 0.190$ ) and psychological ( $r = 0.252$ ) problems in relatives were the leading factors in the development of psychological disorders. In case of female, the most important factors in the occurrence of psychological problems were restrictions on usual communications ( $r = 0.138$ ), financial problems ( $r = 0.104$ ), illness ( $r = 0.121$ ), volunteering before the full-scale invasion ( $r = 0.105$ ), hearing about deaths ( $r = 0.143$ ) and mental health of loved ones ( $r = 0.435$ ).

**Conclusions:** Psychological problems among students had great significance (77.4%). The psychological state is most affected by the problems of loved ones, and this was a two-way connection. As part of rehabilitation measures, we anticipate an increasing role for primary health care and mental health promotion.

**KEY WORDS:** mental health, war, Ukraine, students, rehabilitation

## INTRODUCTION

The war in Ukraine has triggered the most critical international geopolitical crisis with heavy human losses, including civilian casualties and mass migration [1]. From the very first days, the invasion of Russian troops with full-scale military operations in a large part of Ukraine's territory had a negative impact on the physical and mental health of all segments of the population. In the short term, treatment of chronic diseases and preventive health services, such as diabetes, heart disease, or cancer screening, were left without proper attention. Long-term consequences, such as depression and post-traumatic stress disorder, will affect future generations, especially with mental health conditions already exacerbated by the COVID-19 pandemic [2-4]. Previous studies have confirmed that armed conflict poses a huge burden on public health. Citizens of Ukraine are exposed to the threats on their lives on a daily basis, including shelling [5]. It is believed that the

equivalent of studying reports on injuries and deaths as a result of military operations is to consider the impact of these events on mental health [6]. A number of studies on military conflicts have been limited to post-event surveys of veterans; studies have not examined mental health in real time during war. No any "special military operation" in the modern world has ever been accompanied by so many civilian casualties [7]. Surveys of Ukrainian citizens abroad, including university students, have revealed high levels of anxiety and depression [8, 9]. Surveys by an independent analytical center Cedos documented experiences and feelings of Ukrainian civilians of all ages in the first days of the full-scale invasion [10] and the dynamics of changes in emotional states during the first year of the war [11]. The need for further research is noted, including in certain socio-demographic groups. If it is impossible to fully accumulate statistical and epidemiological data during the war, it is sociological surveys that provide information about certain



changes in life, including in the field of public health. The choice of students for the online survey was made due to their high level of digital literacy and social activity. In addition, during crisis situations, the mental health of adolescents and young adults is at high risk [9, 12].

## AIM

To find out the opinion of Ukrainian students about the importance of health-related problems in general and mental health in particular that have arisen since the beginning of the full-scale war. Identify the leading factors of mental health problems by establishing interconnections them with other challenges of full-scale war faced by students in order to develop long-term rehabilitation measures.

## MATERIALS AND METHODS

The materials that were used are from an online survey of young people studying at higher education institutions in different regions of Ukraine (523 respondents (130 male and 393 female) from 16 educational institutions in different regions of Ukraine, except the South). The cross-sectional study was conducted by the Ptukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine to examine the impact of the Russian-Ukrainian war on the lives and health of students in May 2022 (fill out the Google form). The specially designed questionnaire included questions about the most important problems that students have faced since 02/24/2022. The block of questions related to health or medical care (hereinafter referred to as medical problems) included: injuries as a result of hostilities (wounds, traumas, burns, contusions, etc.); development (exacerbation) of diseases; restrictions on access to medical services; lack of medicines and equipment; psychological problems (mood swings, stress, depression). Students were allowed to choose several answers, and open-ended questions were also offered. Informed consent was obtained from all online survey respondents. This study was compliant with regulations Declaration of Helsinki of the World Medical Association.

Sociological and statistical methods of analysis using PIVOT and SPSS software were applied, in particular, the

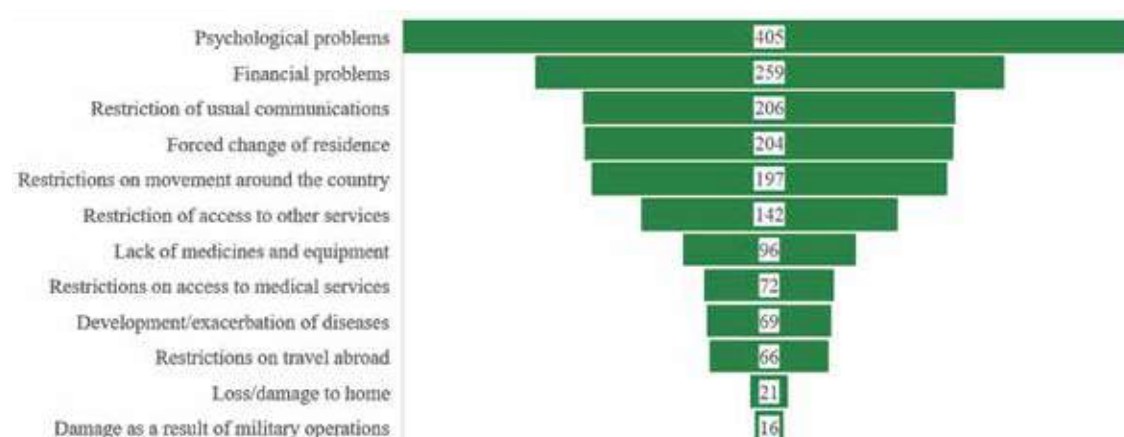
method of pairwise correlation of existing psychological problems with other life circumstances and challenges of war faced by respondents and their loved ones separately for male and female. The logistic regression analysis for factors that were statistically significantly associated with mental health problems (95% CI,  $p < 0.05$ ) to build a regression equation with the determination of the probability of the expected event. To compare the frequency of individual responses among male and female, the Student's t-test was used, significance was set at  $p < 0.05$ .

## RESULTS

The respondents were asked to choose from a list of 12 problems that they personally or their relatives have experienced as a result of Russia's full-scale invasion and the outbreak of hostilities in Ukraine, and to select those that they would consider the most important. An analysis of the responses showed that 83.6% of respondents identified medical problems as the most important. Medical problems were also combined with forced change of residence and restrictions on movement and communications (20.7% of all respondents), financial problems (8.0%) and restrictions on non-medical services (1.1%). Most often, a combination of three (30.4%) or four different problems were chosen (11.3%). Psychological problems were rated as the most important for themselves and their loved ones by almost the same proportion of respondents. Instead, respondents faced restrictions on movement within the country more often than their loved ones (37.7% vs. 28.7%), ( $p < 0.01$ ). All the problems rated as the most important were unevenly distributed, with a clear predominance of psychological problems (Fig. 1).

For male, the problems of the same direction were more typical in answers (30%) than female (17%), ( $p < 0.01$ ), (Fig. 2). Female (89.6%) were more concerned about medical problems than male (65.4%) ( $p < 0.01$ ).

The importance of psychological problems (mood swings, stress, depression) for students during the war increased compared to those during the COVID-19 pandemic (77.4% vs. 55.1%), ( $p < 0.001$ ). Female were more likely to report having psychological problems than male (85.2% vs. 53.8%), ( $p < 0.001$ ).



**Fig. 1.** Distribution of the sum of all the most important problems mentioned by respondents that have arisen since 02/24/22, N

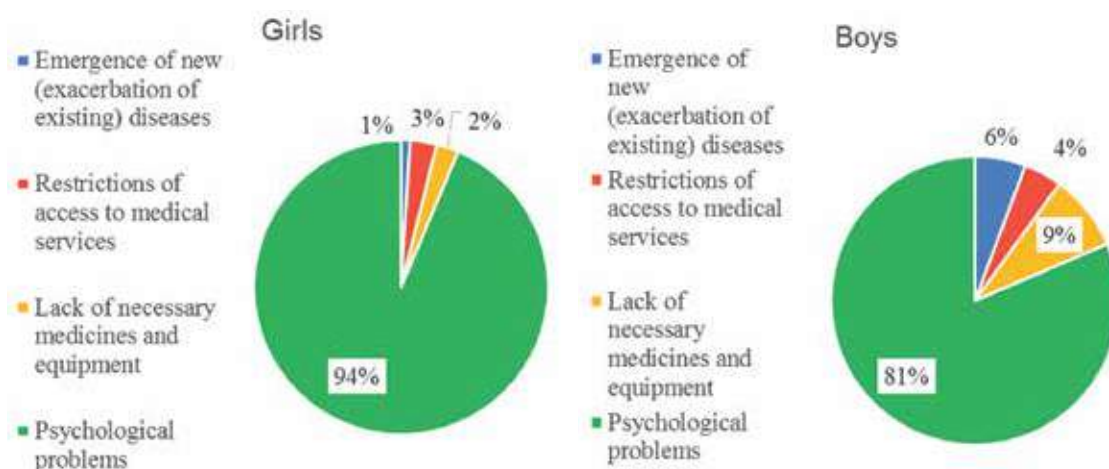


Fig. 2. Distribution of answers about the presence of medical problems by gender

Some respondents reported deaths in their immediate environment due to injuries caused by hostilities (2.5%) and, in the respondents' opinion, war-related (3.4%). Many more people confirmed the fact of such losses among friends/neighbors (32.3% and 11.9%). 30.0% and 21.6% of respondents respectively indicated that they had heard about such cases. The majority (more than 80%) of those who reported actual volunteer activities (both before and after the outbreak of war) simultaneously reported having psychological problems since 02/24/22.

The analysis revealed a weak correlation between male' mental health problems and age (20 and older) ( $r=0.225$ ,  $p<0.01$ ), restrictions on traveling abroad ( $r=0.221$ ,  $p<0.05$ ) and restrictions on habitual communication ( $r=0.215$ ,  $p<0.05$ ). The likelihood of psychological disorders increased in the presence of problems in relatives: financial ( $r=0.190$ ,  $p<0.05$ ) and psychological ( $r=0.252$ ,  $p<0.01$ ) with a 98% probability:  $z_{\text{male}} = -9.009 + 1.539 X_1 + 1.11 X_2 + 1.271 X_3 + 1.302 X_4$ , where  $X_1$  – age;  $X_2$  – restrictions on traveling abroad;  $X_3$  – financial problems in relatives;  $X_4$  – psychological problems in loved ones.

In the occurrence of psychological problems in female, the following were important: restrictions on usual communication ( $r=0.138$ ,  $p<0.01$ ), financial problems ( $r=0.104$ ,  $p<0.05$ ), the occurrence of new or exacerbation of chronic diseases ( $r=0.121$ ,  $p<0.05$ ), volunteering BEFORE the full-scale invasion ( $r=0.105$ ,  $p<0.05$ ), and problems of relatives: restriction of usual communication ( $r=0.169$ ,  $p<0.01$ ), their illness ( $r=0.117$ ,  $p<0.05$ ) and limited access to medical services ( $r=0.109$ ,  $p<0.05$ ). We found a weak direct correlation between female' mental health problems and hearing about deaths among neighbors/acquaintances ( $r=0.143$ ,  $p<0.01$ ) and a medium-strength direct correlation with the mental state of their relatives ( $r=0.435$ ,  $p<0.01$ ). The logistic regression analysis revealed that the latter two were the leading factors with a 99% probability of mental health problems:  $z_{\text{female}} = -13.145 + 2.265 X_1 + 1.093 X_2$ , where  $X_1$  – mental health problems in loved ones;  $X_2$  – hearing about deaths.

## DISCUSSION

We recognize the methodological limitations of the survey. First, the different regions of the country were unevenly represented, with the smallest share of respondents from the Eastern and Southern regions, where the most active hostilities are taking place. Secondly, the ability to receive information about the survey and fill out the form offered by Google depended on the availability of a smartphone or PC, access to the Internet and, finally, electricity. Thirdly, the significant disproportion of respondents by gender (three quarters were female) was caused, in our opinion, not only by the fact there was a real predominance of female among those who received higher education in the pre-war period, but also to the involvement of some young men in military service. Nevertheless, we consider the results of the survey to be a valuable reflection of the assessments and perceptions of the importance of health (physical and mental) and medical care issues of a large group of students during a specific period of full-scale war. Through the eyes of the students, we were able to look into the problems of their families.

The burden of students' psychological problems will increase as the war continues and will accompany them for a long time after it ends. For example, a survey [11] showed that war-related experiences were more likely to bother respondents a year after the war began than at the beginning. The fact that almost two-thirds of students knew or heard about the deaths of loved ones/acquaintances from injuries as a result of hostilities, and more than every third knew about deaths from other causes directly/indirectly determined by the war, could not but affect their well-being. Most of the answers to the open-ended question in the same questionnaire about adding (if you wish) something about the changes that have taken place since 02/24/2022 relate to the psychological state and worries [13].

Since the beginning of the war, 32.5% of respondents said that they had started volunteering (8.6% reported this activity before 02/24/22). The survey "Youth Employment in the Context of War" (April 2022) showed that 15% of



respondents aged 20-35 reported that they had done volunteer work [14]. The National Institute of Mental Health (USA) defines self-care as “taking time to do things that help you live well and improve both your physical and mental health” [15]. In our opinion, caring for others and helping in difficult circumstances has become an activity that, among other things, has helped minimize one’s own problems and maintain mental health.

The occurrence of mental health problems in female who volunteered before the war may indicate a special sensitivity to the problems of other people. This is confirmed by the correlation between female mental health and hearing about deaths among neighbors/acquaintances. It is important that information about deaths not only in the family (3.4%), but also among friends/neighbors (21.6%) wounds the psyche of young people, especially female. “I have seen and heard a lot through social media,” read the answers to open-ended questions, meaning that both fellow countrymen and fellow citizens can be considered close. The results resonate to the findings of a study in the Czech Republic, where a moderate correlation was found between the frequency of watching news about the war and the occurrence of feelings of anxiety among students (higher among female students) [8]. For male, one of the factors of experience was age (20 and older), which correlates with the higher risk of mental health disorders during the war in women and with reaching an older age [7].

The proportion of those who chose other problems from the medical block (injuries caused by hostilities, complications or development of new diseases, reduced access to necessary medical services, medicines and equipment) was lower. This can be explained by the young age when the body is not yet burdened by existing diseases, as well as by the fact that most people live in areas that are safer than the East and South of the country. The open-ended question “other” also mentioned the death of relatives, conflicts with parents, and gender discrimination (men), which could also determine psychological problems. One young man identified “not being able to see his beloved” as the most important problem that arose with the outbreak of war.

In 2023, the International Self-Care Day 2023 theme is “Resilience, adaptability, and thriving in adversity”. One of the recommendations for preserving mental health

not only for young people but also for people of any age is to combine conscious self-care with caring for others, including volunteering. Relaxation, grounding, breathing exercises, and yoga practices can also be used to minimize the burden of psychological problems, either individually or in groups, including online, which is effective for students with experience of the distance learning during the pandemic. As part of rehabilitation measures, we can already anticipate the growing role of primary care physicians as part of multilevel models of mental health care and preclinical prevention to maximize coverage of the civilian population. Important tasks include improving access to medical services, restoring adherence to treatment for patients with chronic diseases, training medical personnel and introducing educational technologies for the general population on mental health.

## CONCLUSIONS

At the time of the study, in May 2022, a set of issues related to health in general and mental health in particular among Ukrainian students was of great importance (77.4%), which requires monitoring the situation in the dynamics and supporting activities to increase resilience and skills to overcome stress and manage their own psychological state, aimed at the target audience.

The leading factors of psychological disorders in male were age (20 and older) ( $r=0.225$ ), restrictions on traveling abroad ( $r=0.221$ ), financial ( $r=0.190$ ) and psychological ( $r=0.252$ ) problems in relatives. For female, the leading factors were information about deaths ( $r=0.143$ ) and the psychological problems of loved ones ( $r=0.435$ ).

In the context of war, the psychological state of students is most affected by the problems of family and relatives, and this is a two-way relationship. Establishing communication, free movement and security are essential for restoring the psychological health of families.

Within the framework of rehabilitation measures, the role of primary medical care is expected to grow in multi-level models of mental health care and preclinical prevention, with the appropriate training of medical workers and the introduction of educational technologies, including those aimed at the target audience (students, military personnel, internally displaced persons, etc.).

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#### CONFLICT OF INTEREST

The Authors declare no conflict of interest

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## 6th EXPERTS MEETING PHYSIOTHERAPY-ORTHOPEDICS-RHEUMATOLOGY

Term

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*The Experts Meeting is a special initiative, which has been providing scientific experiences for six years. It gives the opportunity to confront different ideas, exchange views and find new solutions. Every year we invite outstanding practitioners from all over Poland and selected guests from other countries to elaborate new standards of conduct and cooperation between the specialists in the field of physiotherapy, orthopedics, rheumatology and other. The theme of this year's meeting of eminent Polish and foreign Experts will be the broadly understood issue of low back pain and its treatment. The essence of the meeting will be to emphasize the role of physician and physiotherapist cooperation in order to increase the effectiveness of the proposed procedures and medical interactions, shorten the time of patient's disability and improve his quality of life.*

Yours faithfully

Prof. dr hab. W. Samborski  
Chairman of the Scientific Committee

Yours faithfully.

Dr M.W. Romanowski.  
Chairman of the Scientific and Organizing Committee

