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## FEATURES OF MENTAL AND BEHAVIOR DISORDERS AMONG MILITARY PERSONNEL IN PEACE TIME AND SPECIAL PERIOD AND ITS MEDICAL AND SOCIAL IMPORTANCE

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A retrospective analysis of statistical data on the level, structure, dynamics of the general, hospitalized morbidity rate of mental disorders among military personnel of Ukrainian Armed Forces and health status dismissal based on long-term observation data (2008–2017) as well as comparison of indicators of the period 2008–2013 and 2014–2017 on the basis of official statistical reporting has been performed. It was discovered that in the structure of the total incidence of military personnel of Ukrainian Armed Forces on the class V for the period 2014–2017 there was a redistribution of all categories of military personnel in comparison with 2008–2013 (in the case of officers as well as contract servicemen, the overall morbidity decreased reliably). It has been established that, starting from 2014, the rates of health-related layoffs for class V diseases increased among officers with the highest rates by 2015 (in comparison with 2013 at 7 times) and the contract servicemen by 2016 (as compared to 2013, 5.3 times) with subsequent decrease. The revealed features of mental health disorders in military personnel and their consequences on the basis of long-term observation are priority for development and the introduction of an effective psycho-medical intervention system in defense forces based on NATO standards.

**Key words:** military personnel of the Armed Forces of Ukraine, general morbidity, hospitalized illness, dismissal due to health state, mental and behavior disorders.

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## ОСОБЛИВОСТІ РОЗЛАДІВ ПСИХІКИ ТА ПОВЕДІНКИ У ВІЙСЬКОВОСЛУЖБОВЦІВ В МИРНИЙ ЧАС ТА ОСОБЛИВИЙ ПЕРІОД ТА ЇХ МЕДИКО-СОЦІАЛЬНЕ ЗНАЧЕННЯ

Було проведено ретроспективний аналіз статистичних даних рівня, структури, динаміки загальної, госпіталізованої захворюваності на психічні розлади у військовослужбовців ЗС України та звільнень за станом здоров'я за даними багаторічного спостереження (2008–2017 рр.) та порівняння показників періоду 2008–2013 рр. з 2014–2017 рр. за даними офіційної галузевої статистичної звітності. Виявили, що в структурі загальної захворюваності військовослужбовців ЗС України за V класом за період 2014–2017 рр. відбувся перерозподіл у всіх категорій військовослужбовців у порівнянні з 2008–2013 рр. (у офіцерів та військовослужбовців за контрактом загальна захворюваність достовірно зменшилась). Встановили, що починаючи з 2014 р. показники звільнень за станом здоров'я за V класом хвороб у офіцерів мала тенденцію до збільшення з максимальними показниками у 2015 р. (у порівнянні з 2013 р. у 7 разів) та військовослужбовців за контрактом у 2016 р. (у порівнянні з 2013 р. у 5,3 рази) з подальшим зниженням. Виявлені особливості порушень ментального здоров'я у військовослужбовців та їх наслідки за даними багаторічного спостереження є пріоритетними для розроблення та запровадження дієвої системи медико-психологічної допомоги в силах оборони, адаптованої до стандартів НАТО.

**Ключові слова:** військовослужбовці ЗС України, загальна захворюваність, госпіталізована захворюваність, звільнення за станом здоров'я, розлади психіки та поведінки.

*The study is a fragment of the research project “Development of modern methods of physical and rehabilitation medicine for combat wounds and injuries”, state registration number 0121U109354.*

In the last decade, in Ukraine, as in many countries of the world, under the influence of economic, social, psychological and environmental factors, there has been an increase in the incidence of mental diseases, which is mainly due to non-psychotic mental disorders, which include neuroses, reactions to stress, personality disorders and other violations [1]. In the conditions of a long socio-economic crisis, the socio-psychological factors of mental disorders acquire a significant specific weight, which leads to the strengthening of the internal conflict of a person and contributes to their even greater prevalence [7].

Specialists in the field of mental health from many countries of the world express great concern about the scale of mental pathology, the number of costs to society and the state due to its significant prevalence and medical and social consequences of mental disorders (comorbidity, suicides, disorders of social functioning). A significant economic burden caused by temporary and permanent loss of working capacity due to mental disorders is manifested in the loss of the gross domestic product [0–0].

The risk group in relation to mental disorders are certain professional groups, to which, first of all, military personnel belong, in which acute and prolonged stress states can be layered on individual typological and personal characteristics. It has been established that military personnel, especially conscripts, are affected by numerous factors of mental traumatization, both non-specific (illness or death of loved ones, financial difficulties of the family, family conflicts) and specific (loads related to the performance of official duties, restrictions and objections, which are caused by military service, material and household problems). Modern military service is characterized by a high level of requirements, an increase in the price of erroneous actions of a military specialist, and rapidly changing, intensively saturated daily rhythms do not allow the individual to sufficiently recover and adapt to the service regulations [2, 7].

Even more powerful prerequisites for the formation of mental pathology in servicemen arise in the conditions of conducting combat operations. The need to survive in an environment of death and destruction, negative impressions, moral and psychological unpreparedness, fear of not being able to cope with responsibilities, guilt towards the dead, uncertainty and lack of information, violations of sleep, rest and nutrition regimes, illnesses, injuries and injuries, absence of the former experience of the reserve of possible appropriate reactions are the main factors of influence on the psyche of military personnel in modern war. During hostilities, 75 % of servicemen may develop short-term psychological stress reactions, accompanied by partial or complete loss of combat capability [3].

A significant number of servicemen who sought psychiatric help and were discharged due to mental health from the Armed Forces of Ukraine indicates the need to review the entire system of providing psychiatric, medical-psychological and social assistance to servicemen in a special period [3]. All of the above makes the problem of mental and behavioral disorders one of the most urgent medical and social problems in the modern army.

**The purpose** of the study was to reveal the medical and social aspects of the problem of mental and behavioral disorders among servicemen of the Armed Forces of Ukraine in peacetime and a special period for the justification, development and introduction of a system of medical and psychological care in the defense forces, adapted to NATO standards.

**Materials and methods.** A retrospective analysis of statistical data on the level, structure, and dynamics of general, hospitalized morbidity for mental disorders among servicemen of the Armed Forces of Ukraine and discharges due to health conditions was carried out according to long-term observation data (2008–2017) and a comparison of indicators for the period 2008–2013 with 2014–2017 years.

The source material was the data of the official industry statistical reporting in the form 2/MED. Statistical data for filling out the reporting form 2/MED was entered into the automated information system for keeping medical reports of health care institutions “Contingent” directly in health care institutions. The indicated medical and statistical indicators were studied for the period 2008–2013 and 2014–2017 separately for each category of military personnel (officers, contract military personnel, and conscript military personnel). Groups of diseases and individual nosological forms were assessed in accordance with ICD-10.

Statistical processing of the sample results was carried out using Microsoft Excel and STATISTICA 8.0. The arithmetic mean ( $\bar{x}$ ) and the error of the mean (M) of the indicators were calculated. When comparing indicators for different periods (2008–2013 from 2014–2017), the significance of the difference in relative values was assessed using the Student's t-test.

**Results of the study and their discussion.** The analysis of indicators of general morbidity due to mental and behavioral disorders among servicemen of the Armed Forces of Ukraine in the dynamics of long-term observation for the years 2008–2017 showed that in 2008–2013 (during the period of peaceful functioning of the Armed Forces of Ukraine), the most indicative value of general morbidity was noted in 2008 from further downward trend (fig. 1).

Since 2014, these indicators for all categories of servicemen have increased almost 4 times with peak values in 2015 (officers – 22.4%, servicemen under contract – 28.4 %, conscripts – 20.4 %, which reliably higher ( $p \leq 0.001$ ) compared to 2013). In 2016, the morbidity rate of officers and conscripts decreased by almost 2 times (13.2 % and 11.0 %, respectively), and a slight decrease was noted among contract servicemen from 28.4 % to 21.6 %. In 2017, a sharp increase (1.8 times) in the rate of conscript

servicemen compared to 2016 is noteworthy, while the rate of officers and contract servicemen has a tendency to decrease, albeit compared to 2013 remains significantly higher.

It was established that in the structure of the general morbidity of servicemen of the Armed Forces of Ukraine by class of mental and behavioral disorders for the period 2008-2013, the share of mental disorders among conscripts is significantly higher ( $p \leq 0.001$ ) compared to the indicators of the corresponding nosology among officers and significantly higher ( $p \leq 0.01$ ) in comparison with the indicators of the corresponding nosology in military personnel under contract.

Also, during the specified period, the share of other syndromes, personality and behavior disorders among conscripts is significantly higher ( $p \leq 0.01$ ) compared to the indicators of the corresponding nosology among officers and significantly higher ( $p \leq 0.05$ ) compared to the indicators of the corresponding nosology in servicemen under contract. The share of neurotic, stress-related and somatoform disorders is significantly higher ( $p \leq 0.001$ ) in officers compared to conscripts, and no significant difference was found in contract servicemen compared to officers.

In the period 2014–2017, the incidence of mental and behavioral disorders in all categories of servicemen is represented mainly by neurotic, stress-related and somatoform disorders. This pathology prevailed most in officers – 79.9 % ( $10.93 \pm 1.1$  %), in contract servicemen it is – 77.6 % ( $15.95 \pm 3.03$  %), in conscript servicemen – 36.9 % ( $6.63 \pm 2.07$  %).

The redistribution of the structure in all categories of servicemen draws attention. Thus, in 2014–2017, in comparison with 2008–2013, the share of other syndromes, personality and behavior disorders among officers and servicemen under contract significantly decreased ( $p \leq 0.001$ ) due to a significant increase ( $p \leq 0.001$ ) in the share of mental disorders. Among conscripts, the share of mental disorders significantly increased ( $p \leq 0.001$ ) at the expense of a significant decrease ( $p \leq 0.001$ ) in the share of neurotic, stress-related and somatoform disorders.

The specific gravity of total morbidity by class mental and behavioral disorders in the structure of the main diseases of military personnel from 2008 to 2017 is presented in fig. 2.

It was established that the specific weight of the incidence of mental and behavioral disorders in the structure of the main diseases of all categories of military personnel for 2008–2013 is almost the same in the range from 0.5 % to 0.9 %, namely: for officers – from 0.5 % up to 0.9 %; for servicemen under contract – from 0.6 % to 0.8 %; for conscripts – from 0.5 % to 0.7 %. There is no significant difference between the average rates of morbidity according to the V class of diseases in all categories of servicemen. In the period 2014–2017, compared to 2013, the specific weight of the incidence of mental and behavioral disorders in the structure of the main diseases among all servicemen increased significantly with peak values in 2015 (officers – 2.21 %, contract servicemen – 3.8 %, conscripts – 1.11 %, which is significantly higher ( $p \leq 0.001$ ) compared to 2013) with a further decrease in 2016–2017.

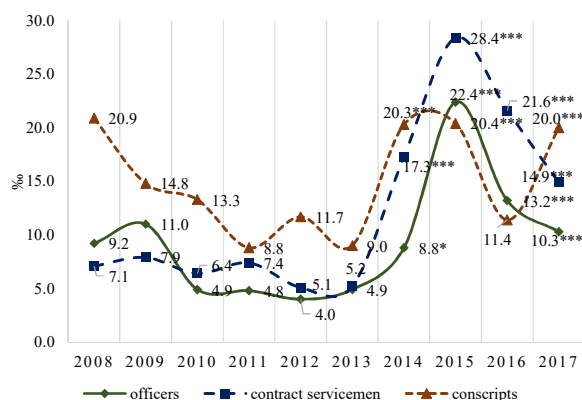


Fig. 1. Dynamics of general morbidity by class of mental and behavioral disorders among servicemen of the Armed Forces of Ukraine in 2008-2017. Note: \*, \*\*, \*\*\* – the difference in the levels of general morbidity class V between 2013 and 2014, 2015, 2016, 2017 according to the Student's test corresponds to the levels  $p < 0.05$ ,  $p < 0.01$  and  $p < 0.001$ .

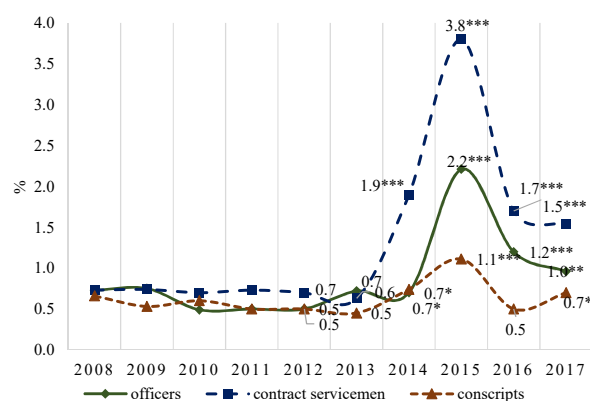


Fig. 2. The specific weight of total morbidity by class of mental and behavioral disorders in the structure of the main diseases of military personnel from 2008 to 2017, (%). Note: \*, \*\*, \*\*\* – the difference in the share of total morbidity by the class of mental and behavioral disorders in the structure of all diseases between 2013 and 2014, 2015, 2016, 2017 according to the Student's test corresponds to the level of  $p < 0.05$ ,  $p < 0.01$  and  $p < 0.001$ .

In a further study, we analyzed the dynamics of hospitalized morbidity for Class V diseases among officers, contract servicemen and conscripts in 2008–2017.

Dynamics of hospitalized morbidity by class of mental and behavioral disorders among servicemen of the Armed Forces of Ukraine for 2008–2017 is shown in fig. 3.

It was established that the highest rates of hospitalized morbidity for the V class of diseases ( $p \leq 0.001$ ) in comparison with the rates for previous years among contract servicemen and officers during the research period were observed in 2015 (19.31 ‰ and 15.42 ‰, respectively).

Attention is drawn to the increase in hospitalized morbidity due to mental and behavioral disorders among conscripts in 2014 with a further decrease in 2015–2016 and a sharp increase ( $p \leq 0.001$ ) in 2017 (1.8 times compared to 2016).

In the periods during which the hospitalization incidence of mental and behavioral disorders in all categories of servicemen was studied, it was presented mainly due to neurotic, stress-related and somatoform disorders.

In the period 2014–2017, a change in the structure of hospitalized morbidity among all categories of military personnel draws attention. Thus, in comparison with 2008–2013, the share of mental disorders among officers and servicemen under contract increased significantly ( $p \leq 0.001$ ) (4.5 and 1.7 times, respectively) and the share of other syndromes, disorders decreased significantly ( $p \leq 0.001$ ) personality and behavior (8.0 and 3.0 times, respectively). Conscripts had a 2-fold increase ( $p \leq 0.001$ ) in the share of other syndromes, personality and behavioral disorders, and a significant 1.5-fold decrease ( $p \leq 0.01$ ) in the share of neurotic, stress-related, and somatoform disorders.

Also, during the period of 2014–2017, the share of other syndromes, personality and behavioral disorders among conscripts is significantly higher ( $p \leq 0.001$ ) and the share of neurotic, stress-related and somatoform disorders is significantly lower ( $p \leq 0.001$ ) compared to indicators according to the relevant nosology in officers and servicemen under contract.

It was established that the specific weight of hospitalized morbidity according to the V class of diseases in the structure of the main diseases of all categories of military personnel for 2008–2013 is almost the same. For the period of 2014–2017, compared to 2013, this indicator increased significantly ( $p \leq 0.001$ ) in 2015 among officers and servicemen under contract (3.0 and 3.6 times, respectively), with a sharp decrease in 2016–2017. Moreover, for officers, this indicator is reliably ( $p \leq 0.001$ ) 2.5 times lower compared to the index of 2013.

Among conscripts, the specific weight of hospitalized morbidity for mental and behavioral disorders in the structure of the main diseases remained unchanged.

The next stage of the research was the study of indicators of discharges of military personnel from military service according to the state of health by the class of mental and behavioral disorders for 2013–2017 (fig. 4).

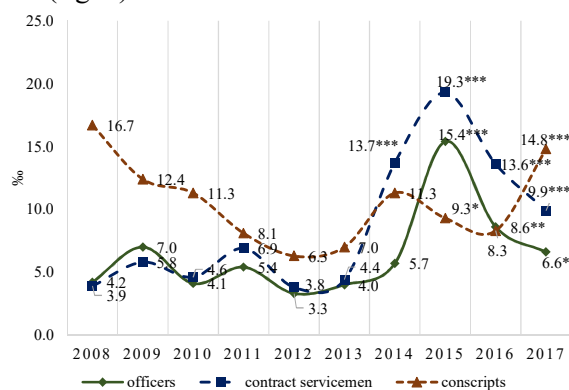


Fig. 3. Dynamics of hospitalized morbidity according to class V diseases among servicemen of the Armed Forces of Ukraine for 2008–2017. Note: \*, \*\*, \*\*\* – the difference in the level of hospitalized morbidity V class diseases between 2013 and 2014, 2015, 2016 and 2017 according to the Student's test corresponds to the levels  $p < 0.05$ ,  $p < 0.01$  and  $p < 0.001$ .

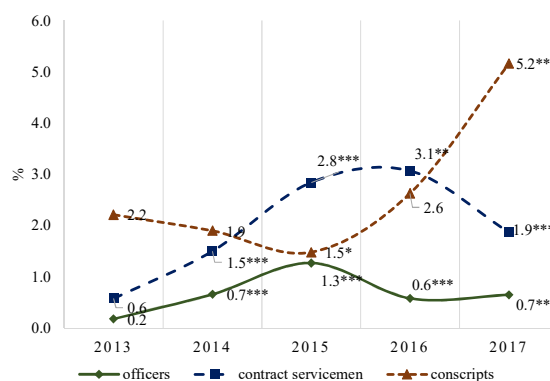


Fig. 4. Dynamics of discharges by class mental and behavioral disorders among servicemen of the Armed Forces of Ukraine in 2013–2017. Note: \*, \*\*, \*\*\* – the difference in the level of discharges due to the V class of diseases between 2013 and 2014, 2015, 2016 and 2017 according to the Student's criterion corresponds to the levels of  $p < 0.05$ ,  $p < 0.01$  and  $p < 0.001$ .

It was established that starting from 2014, the indicators of discharges due to the state of health according to the V class of diseases among officers had a tendency to increase with the maximum indicators in 2015 (compared to 2013 by 7 times) with a further decrease in 2016 and 2017 y., however, in comparison with 2013, it remained significantly higher ( $p \leq 0.001$ ).

Among military personnel under contract, the dismissal rate increased every year with the maximum value in 2016 (compared to 2013 by 5.3 times). It is interesting that the indicators of general and hospital morbidity in 2016 tended to decrease. In 2017, the indicator decreased by almost 2 times, but compared to 2013, it remained significantly higher ( $p \leq 0.001$ ).

Attention is drawn to the indicators of discharges among conscripts, which decreased from 2013 to 2015, while the indicators of general and hospitalized morbidity increased. Since 2016, the indicator has been increasing with a decrease in the indicators of general and hospitalized morbidity. In 2017, with a sharp increase in the indicators of general and hospitalized morbidity, the indicator of dismissals due to the state of health due to mental and behavioral disorders also increased sharply.

It should be noted that if the ranking of indicators of general and hospitalized morbidity among servicemen of all categories is in the range of 9 -13, then the indicators of discharges according to the state of health according to the V class of diseases occupy the first places (for servicemen under the contract for 2015 – 2017 and place, for officers – I – II, for conscripts – II – III places).

Thus, 2015 was the most significant in terms of the increase in mental and behavioral disorders among military personnel as a negative consequence of the armed conflict in eastern Ukraine. This is also confirmed by the rapid increase in the level of suicides in the Armed Forces of Ukraine (the number of suicides in 2015 increased almost 3 times compared to 2014) [10]. In the structure of expert decisions of the medical commission based on the results of treatment of psychiatric patients who participated in the ATO in the National Military Medical Clinical Center (for the period 2014–2017), 30.0 % of patients were recognized as unfit for military service in peacetime or had complete unfitness for military service with deregistration.

The experience of the armed conflict in the east of Ukraine shows that it has a significant negative impact on the development of mental health disorders of servicemen and the corresponding medical and social consequences, which require the development of effective preventive measures and the provision of appropriate medical and psychological assistance to servicemen [4, 5]. The highest incidence rates of mental and behavioral disorders in 2015 can be explained by the influence of a number of factors, namely: the performance of combat missions in the area of anti-terrorist operations by the majority of officers and servicemen under contract, who experienced acute or delayed consequences of an acute reaction to stress; the conscription of a significant number of servicemen for mobilization and the low quality of their selection. In addition, according to scientists [4], during the first period of formation of the system of providing psychiatric care to military personnel (2014 – 2015), there was no unified system of providing medical and psychological care to military personnel. Such help was provided unsystematically, mainly by psychiatrists temporarily seconded to military mobile hospitals, who successively replaced each other throughout the entire period of the ATO.

The analysis of own research and the experience of NATO countries became the basis for developing effective measures to preserve the mental health of servicemen in the area of deployment of troops (forces) and during the restoration of combat capability of military units (units) [8, 10]. This work implements the standardized NATO agreements “Protection of mental health during the deployment of the Defense Forces” and “Prevention of psychosomatic diseases during the restoration of combat capability of military units (units)” (AmedP 8.6 Forward mental health care and AmedP-63 Management of post deployment somatoform complaints), take into account the requirements of the US manual FM 4-02-51 “Stress control in military personnel during their use in operations” and section 8 of the US manual FM 4-25.11 “First aid for stress disorders”, WHO recommendations for providing psychological first aid in the field conditions, other guidelines of the USA and Canada regarding the prevention of suicides among military personnel.

## Conclusion

1. The analysis of the dynamics of the general, hospitalized incidence of mental disorders among servicemen of the Armed Forces of Ukraine and discharges due to health conditions according to long-term observation data (2008–2017) showed that starting from 2014, for all categories of servicemen, they are reliably increasing with a tendency to decrease in 2016–2017.

2. It was established that in the structure of the general morbidity of servicemen of the Armed Forces of Ukraine according to the V class for the period 2014–2017, there was a redistribution in all categories of servicemen in comparison with 2008–2013. Thus, in the case of officers and servicemen under contract, there was a significant decrease ( $p \leq 0.001$  and  $p \leq 0.01$ , respectively) the share of other syndromes, personality and behavior disorders due to a significant increase ( $p \leq 0.001$ ) in the share of mental disorders. Among conscripts, the share of other syndromes, personality and behavioral disorders significantly increased ( $p \leq 0.001$ ) at the expense of a significant decrease ( $p \leq 0.001$ ) in the share of neurotic, stress-related and somatoform disorders.

3. The specific weight of general and hospitalized morbidity for mental and behavioral disorders in the structure of all diseases for the period 2008–2017 among officers and servicemen under contract

significantly increased with peak values in 2015 ( $p \leq 0.001$ ) and a further decrease in 2016–2017, while among conscripts it remained unchanged.

4. It was established that starting from 2014, the indicators of discharges due to the V class diseases among officers had a tendency to increase with the maximum indicators in 2015 (compared to 2013 by 7 times) and servicemen under contract in 2016 (compared to 2013 by 5.3 times) with a further decrease. Among conscripts, the indicators of medical discharges from 2013 to 2015 decreased, while the indicators of general and hospitalized morbidity increased.

5. Identified features of mental health disorders in servicemen and their consequences based on long-term observation data (both in peacetime and in a special period) are a priority for the development and implementation of an effective system of medical and psychological care in the defense forces, adapted to NATO standards.

*Prospects for further research are in the development of effective preventive measures to preserve the mental health of military personnel, which, on the one hand, will be aimed at improving the system of occupational selection for the defence forces, the development of modern methods of training human stress resistance, and on the other – objectifying the process of assessing stressogenic factors under during the day-to-day activities of troops (forces), risk management in the field of mental health preservation through the development of modern measures to prevent the development of maladjustment in servicemen (neurotic and mental disorders, pre-suicidal forms of behavior), as well as conducting training sessions by mental health specialists issues of providing medical and psychological assistance, psychological counseling according to the standards of NATO member countries.*

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