

COVID-19 pandemic and quarantine-related health disorders in combatants of Ukraine

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Here we expand the existing knowledge about disorders associated with the COVID-19-related pandemic and quarantine. We show that the COVID-19-related pandemic and quarantine can reduce the combat effectiveness of the military, provoking a deterioration in the health of combatants and requires hospitalization.

Aim. Investigate the impact of the COVID-19 pandemic and quarantine on the health of Ukrainian combatants.

Material and methods. A study was conducted between March 12, 2020 and May 22, 2020 at the Department of Psychiatry, Psychotherapy, General and Medical Psychology, Narcology, and Sexology in Zaporizhzhia State Medical University and Zaporizhzhia military hospital (Ukraine). All combatants who were hospitalized during this period were examined. We analyzed medical records, anamnestic data, and performed psychopathological and psychological examinations of all patients.

Results. In 56 % of combatants hospitalized during high quarantine measures, the cause of health disorders is negative COVID-19 pandemic and quarantine-related thoughts that provoke stress. These stressful thoughts associated with the COVID-19 pandemic and quarantine provoke the development of hypertensive emergency (57 % vs 18 %), anxiety syndrome (29 %), dissociative [conversion] disorder (7 %), and exacerbate the negative effects of pre-pandemic diseases, namely, hypertension (43 % vs 27 %), somatoform autonomic dysfunction of the cardiovascular system (29 %), panic disorder [episodic paroxysmal anxiety] (7 %), adjustment disorders (7 %), post-traumatic stress disorder (7 %).

Conclusions. Preventive measures need to be developed and applied to combatants to prevent their deteriorating health due to the effects of the COVID-19 pandemic and quarantine stress.

Ключові слова:
COVID-19,
пандемія,
карантин, розлади
здоров'я, учасники
бойових дій.

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Розлади здоров'я, пов'язані з пандемією COVID-19 і карантинном, у військовослужбовців України

Н. В. Данілевська

У статті розширюємо наявні знання про розлади здоров'я, пов'язані з COVID-19-зумовленими пандемією та карантинном. Показано, що пандемія COVID-19 і карантин здатні призводити до зниження боєздатності військовослужбовців, спричиняючи погіршення здоров'я, яке потребує екстреної госпіталізації.

Мета роботи – дослідити вплив пандемії COVID-19 та карантину на здоров'я комбатантів України.

Матеріали та методи. Дослідження здійснили в період із 12 березня 2020 року до 22 травня 2020 року на кафедрі психіатрії, психотерапії, загальної та медичної психології, наркології та сексології Запорізького державного медичного університету та Запорізького військового госпіталю (Україна). В рамках дослідження обстежили всіх учасників бойових дій, яких госпіталізували в цей період. Здійснили клініко-анамнестичне, психопатологічне та психодіагностичне обстеження контингенту.

Результати. У 56 % учасників бойових дій, які госпіталізовані в період найжорсткіших карантинних заходів у країні, в генезі причин порушень здоров'я лежали стресогенні переживання, асоційовані з пандемією COVID-19 і карантинном. Ці стресогенні переживання – чинники розвитку гіпертонічного кризу (57 % vs 18 %), тривожного синдрому (29 %), дисоціативного [конверсійного] розладу (7 %), екзацербували прояви передпандемічних захворювань: гіпертонічної хвороби (43 % vs 27 %), соматоформної вегетативної дисфункції серцево-судинної системи (29 %), панічного розладу [епізодичної пароксизмальної тривоги] (7 %), розладу адаптації (7 %), післятравматичного стресового розладу (7 %).

Висновки. Виявили зв'язок між пандемією COVID-19, карантинном і погіршенням здоров'я військовослужбовців. Це вказує на необхідність розроблення та впровадження профілактичних заходів для учасників бойових дій, аби запобігти погіршенню їхнього здоров'я під впливом стресогенних переживань, що пов'язані з COVID-19-зумовленими пандемією та карантинном.

Ключевые слова:
COVID-19, панде-
мия, карантин,
расстройства здо-
ровья, участники
боевых действий.

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Нарушения здоровья, связанные с пандемией COVID-19 и карантинном, у военнослужащих Украины

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В статье расширяем имеющиеся знания о расстройствах здоровья, связанных с COVID-19-обусловленными пандемией и карантинном. Показано, что пандемия COVID-19 и карантин способны приводить к снижению боеспособности военнослужащих, провоцируя ухудшение здоровья, требующее экстренной госпитализации.

Цель работы – исследовать влияние пандемии COVID-19 и карантина на здоровье комбатантов Украины.

Материалы и методы. Исследование проводили в период с 12 марта 2020 года по 22 мая 2020 года на кафедре психиатрии, психотерапии, общей и медицинской психологии, наркологии и сексологии Запорожского государственного медицинского университета и Запорожского военного госпиталя (Украина). В рамках работы обследовали всех участников боевых действий, госпитализированных в этот период. Осуществили клинико-anamnestическое, психопатологическое и психодиагностическое обследования контингента.

Результаты. В 56 % случаев у участников боевых действий, госпитализированных в период жёстких карантинных мероприятий в Украине, в генезисе причин нарушений здоровья лежали стрессогенные переживания, ассоциированные с пандемией COVID-19 и карантином. Эти стрессогенные переживания – факторы развития гипертонического криза (57 % vs 18 %), тревожного синдрома (29 %), диссоциативного [конверсионного] расстройства (7 %), экзacerbировали проявления предпандемических заболеваний: гипертонической болезни (43 % vs 27 %), соматоформной вегетативной дисфункции сердечно-сосудистой системы (29 %), панического расстройства [эпизодической пароксизмальной тревоги] (7 %), расстройства адаптации (7 %), посттравматического стрессового расстройства (7 %).

Выводы. Установленная связь между пандемией COVID-19, карантином и ухудшением здоровья военнослужащих указывает на необходимость разработки и применения профилактических мер к участникам боевых действий для предотвращения ухудшения их здоровья под влиянием стрессогенных переживаний, спровоцированных COVID-19-обусловленными пандемией и карантином.

COVID-19 disease caused by the novel Coronavirus strain severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a new coronavirus disease, which was first discovered in late 2019 in Wuhan, China [1,2].

Since the beginning of 2020, COVID-19 has spread rapidly to other countries and has been accompanied by the introduction of unprecedented quarantine measures in the affected countries.

In Ukraine, the first laboratory-confirmed case of COVID-19 was registered on March 3, 2020. On March 11, the World Health Organization (WHO) announced that the COVID-19 outbreak was a pandemic [3]. On the same day, the Government of Ukraine approved medical and social restrictions aimed at preventing the spread of COVID-19 in Ukraine – COVID-19-related quarantine [4].

From the very beginning, COVID-19 caused a great deal of alarm and caused the neuroticism of society. This was facilitated by the significant mortality from COVID-19, the lack of effective treatment algorithms, the unprecedented quarantine measures implemented in the countries, and the widespread media coverage of the COVID-19 problem [5–7].

The number of deaths and the lack of vaccines is a very important point that has given rise to public awareness of COVID-19. Psychological discomfort was added by the requirements of social isolation and organizational restrictions on the part of the government to the population, which were introduced in parallel with the growing incidence of COVID-19. It is possible that they became the basis of neurotic society.

Many researchers have noted the significant impact of the COVID-19-related pandemic on the mental health of the population. From the first months of the first reports of the COVID-19 problem, information about deteriorating mental health associated with pandemics began to emerge [8–10].

Existing disorders can be divided into two types, first one being COVID-19-related mental disorders that arose as a reaction to the Coronavirus strain SARS-CoV-2, and the second one being pandemic and quarantine related mental disorders that arose as a reaction to pandemic or quarantine related constraints [11–15].

It can be concluded that the COVID-19-related pandemic affects the mental health of all population segments

of the affected country: children and adults, health workers, clinical populations, and ordinary citizens [16–20].

We assumed that this impact would be different for different social groups. We were primarily interested in the impact of the COVID-19-related pandemic and quarantine on the military. This is due to the fact that fighting is currently taking place directly on the territory of Ukraine, which attracts a significant number of servicemen [21,22].

In this situation, the mental health of servicemen is as important as possible for a warring country. Ukrainian servicemen are currently vulnerable to traumatic circumstances associated with hostilities, and now more traumatic circumstances associated with COVID-19 have been added. We expect that this may affect the combat effectiveness of the army.

Aim

To investigate the impact of the COVID-19 pandemic and quarantine on the health of Ukrainian combatants.

Materials and methods

Study design and participants. This was a clinical prospective single-center trial. The study was conducted at the Department of Psychiatry, Psychotherapy, General and Medical Psychology, Narcology, and Sexology in Zaporizhzhia State Medical University and Zaporizhzhia military hospital (Ukraine). As part of the study, all combatants who were admitted to the Zaporizhzhia military hospital from March 12, 2020 to May, 22 2020, a period when COVID-19 containment measures (quarantine) in Ukraine were maximal, were examined. During the study, the hospital provided medical care to patients in accordance with the quarantine measures (anti-epidemic measures) implemented in the country. This means that patients with COVID-19 were not hospitalized (special hospitals were designated by the state for patients with COVID-19). Also, during this period, scheduled hospitalizations were canceled due to anti-epidemic measures. Only patients with severe emergencies that prevented servicemen from performing their duties were admitted to the hospital. Thus, all servicemen hospitalized during this period did not suffer from COVID-19. This is very important because we were focused on investigating the COVID-19-related

pandemic and quarantine health disorders in the military, not COVID-19-related health disorders. The quarantine measures introduced by the state were in the nature of social restrictions, which significantly disrupted the normal way of life of the population.

Coronavirus-associated quarantine measures in Ukraine included the following:

- closure of non-strategic enterprises, including the closure of non-food stores and supermarkets, hairdressers, sports facilities, entertainment centers, etc.;
- ban on visiting places of large crowds: sports grounds, playgrounds, parks, beaches, etc.;
- termination of kindergartens;
- closure of secondary and higher education institutions with the transfer of pupils and students to distance learning;
- prohibition of intercity, interregional, international transport connections;
- reducing the number of people in the cabin of public transport at the same time;
- prohibition of planned hospitalizations in medical institutions, only urgent hospitalization was allowed;
- introduced requirement for the population to wear personal protective equipment outside the home – masks and gloves;
- a strict need for social distancing and self-isolation was proclaimed.

During the study period, 25 combatants with health disorders making it impossible for them to serve were hospitalized. The average age of combatants was 40.24 ± 1.96 years old.

This trial was approved by the medical ethics committee of Zaporizhzhia State Medical University. All methods were carried out in accordance with relevant guidelines and regulations. All participants gave informed consent to participate in the trial.

We have carefully reviewed all medical records of patients related to this hospitalization, as well as all previous hospitalizations, to systematize the health disorders that patients have now and those that were in the past. We also carefully analyzed the anamnestic data. Next, in the context of this study, we conducted a psychiatric examination of all patients to examine their mental state. The next step was to conduct additional psychopathological and psychological research to identify the links between deteriorating military health and the COVID-19-related pandemic and quarantine. We used a Fear of COVID-19 Scale, a seven-item reliable and valid psychometric scale for determining fears and worries related to COVID-19. If the subjects received 14 points or higher, we considered that they had COVID-19-related negative thoughts and stress [23]. This helped us determine whether or not the diseases that were diagnosed in servicemen are COVID-19-related pandemic and quarantine-associated. We considered health disorders as associated with the COVID-19 pandemic and quarantine if such a link was identified simultaneously through a psychopathological study, a psychological interview, a psychoanalytic study, and the Fear of COVID-19 Scale.

Analysis was done using TIBCO Statistica® 13.0 (TIBCO Software Inc. No. JPZ8041382130ARC10-J) and Microsoft Excel 2013 (license No. 00331-10000-

00001-AA404). Methods of clinical, descriptive, and mathematical statistics (determination of arithmetic mean and standard error $M \pm m$) were used for statistical data processing. Fisher's test (φ^*) we also applied. And we to determine differences between data variables of interest and P-value was considered significant at $P \leq 0.05$.

Results

Twenty-five combatants with deteriorating health were hospitalized in a military hospital during the 2 months throughout maximum quarantine restrictions.

Among them, COVID-19 -related pandemic and quarantine health disorders were diagnosed in 14 combatants (56 %) (Fig. 1A). COVID-19-related pandemic and quarantine health disorders included disorders caused by COVID-19-related pandemic stress and disorders exacerbated by COVID-19-related pandemic stress.

These 14 servicemen (56 %) had stressful thoughts associated with the COVID-19-related pandemic and quarantine and it was associated with the existing deterioration in health (Fig. 1B). The remaining 11 combatants (44 %) had deteriorating health not associated with the COVID-19-related pandemic.

Thus, we found that at maximum quarantine measures, health disorders associated with COVID-19-related pandemic and quarantine were 12 % more likely to hit servicemen than disorders not associated with COVID-19-related pandemic and quarantine, and hence more often reduced the fighting capacity of the army.

For those servicemen with negative thoughts, associated with COVID-19-related pandemic and quarantine, these experiences provoked stress-related hypertensive emergency with too high blood pressure indicators in 8 servicemen (57 %) (systolic blood pressure reached 184.26 ± 5.19 mm Hg, diastolic blood pressure reached 114.29 ± 2.18 mm Hg). These high blood pressure values were significantly higher than the blood pressure values of servicemen with hypertension who did not have the negative thoughts associated with the COVID-19-related pandemic.

Among the servicemen with COVID-19-stress-related hypertensive emergency were 4 servicemen (29 %) with chronic hypertension and 4 servicemen (29 %) with somatoform autonomic dysfunction of the cardiovascular system. In these combatants, the symptoms of hypertension and somatoform autonomic dysfunction of the cardiovascular system were exacerbated by COVID-19-related pandemic stress.

Fig. 2 shows that among all combatants hospitalized with a hypertensive emergency during the maximum quarantine measures in the country, hypertensive emergency associated with COVID-19-related stress was diagnosed significantly more often than hypertensive not associated with COVID-19-related stress. The same significant statistical dependence existed for somatoform autonomic dysfunction of the cardiovascular system (Fig. 1B, Table 1).

COVID-19-related anxiety syndrome, associated with pandemic and quarantine, was diagnosed in 4 servicemen (29 %) and was accompanied by destabilization of chronic hypertension in patients. Also, the dissociative [conversion]

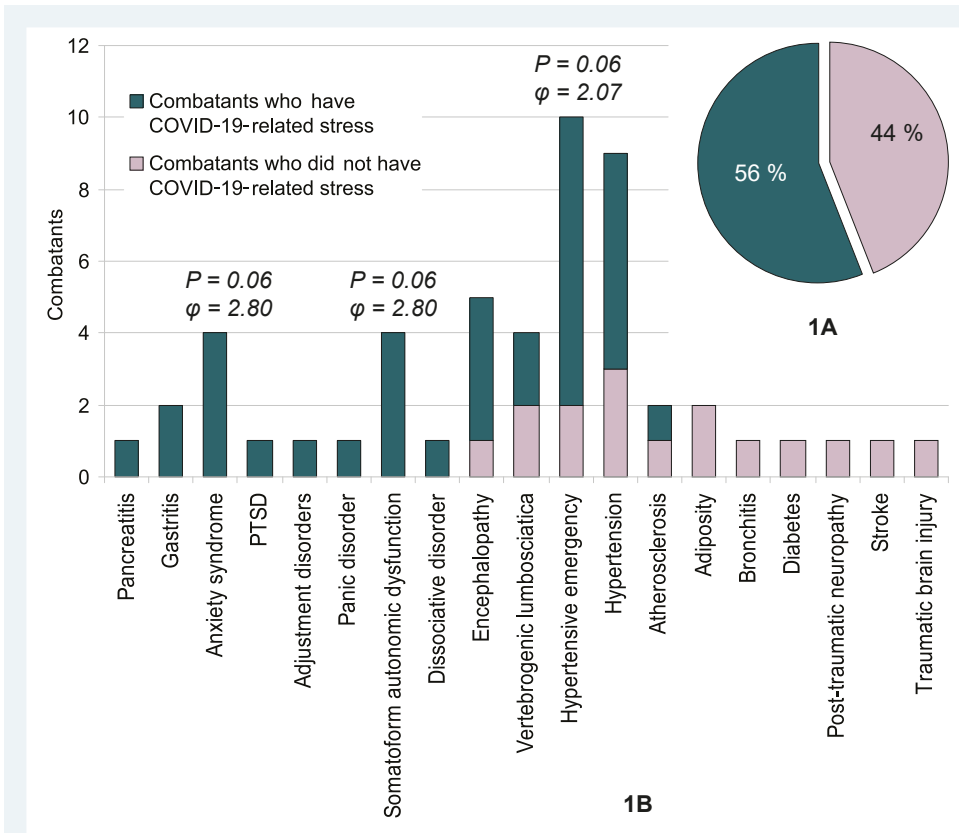


Fig. 1. Distribution of health disorders according to the criterion of association with COVID-19-related pandemic stress.

A: The ratio of all health disorders associated with COVID-19-related pandemic stress and not associated with it in combatants.

B: The relationship of observed differences in the incidence of health disorders during maximal quarantine measures with COVID-19 pandemic and quarantine-related stress in combatants.

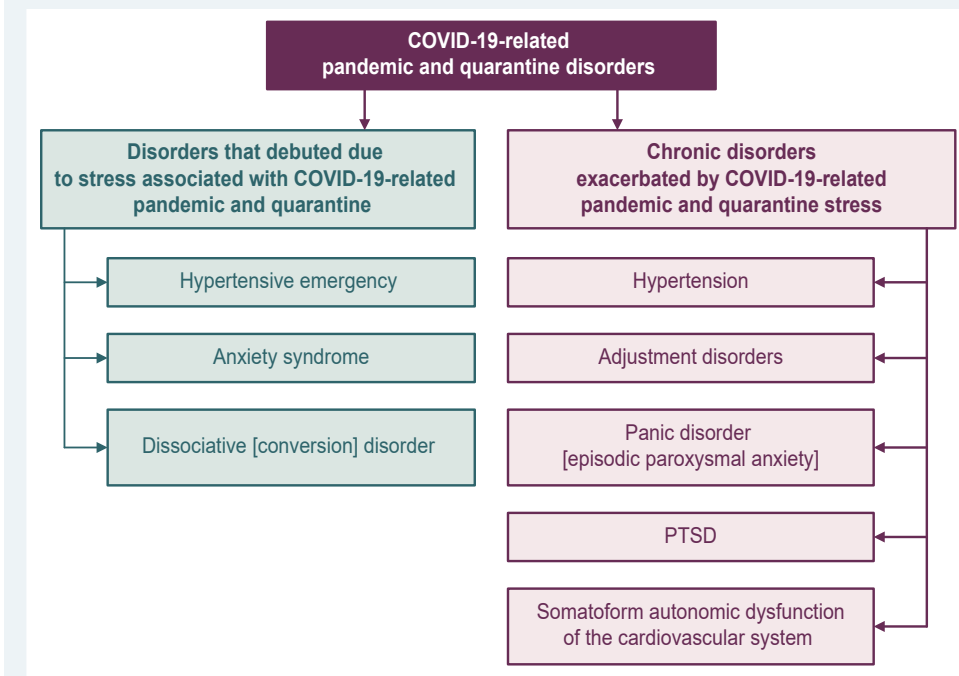


Fig. 2. Graphical representation of groups of health disorders associated with the COVID-19-related pandemic and quarantine.

disorder associated with COVID-19-related pandemic and quarantine stress was diagnosed in 1 serviceman (7 %).

Therefore, we found that COVID-19-related stress associated with pandemic and quarantine can worsen the manifestations of other disorders. We diagnosed 1 serviceman (7 %) with COVID-19-related exacerbation of panic disorder [episodic paroxysmal anxiety], 1 serviceman (7 %) was diagnosed with COVID-19-pandemic-related exacerbation of symptoms of adjustment disorders, also COVID-19-pandemic-related deterioration of mental state was diagnosed in 1 serviceman (7 %) with post-traumatic stress disorder (PTSD). Two servicemen diagnosed with gastritis not associated with *H. pylori* had COVID-19-related stress. We hypothesize that stress associated with the COVID-19-related pandemic could cause exacerbation of gastritis symptoms.

Two servicemen diagnosed with gastritis not associated with *H. pylori* had COVID-19-related stress. We hypothesize that stress associated with the COVID-19-related pandemic could cause exacerbation of gastritis symptoms.

Table 1. Characterization of health disorders depending on their association with the COVID-19 pandemic and quarantine-related stress in combatants

Health disorders, n (%)	Examined patients, n = 25		φ^*	P
	Combatants who had COVID-19-related stress, n = 14	Combatants who did not have COVID-19-related stress, n = 11		
Hypertensive emergency	8 (57 %)	2 (18 %)	2.07	0.06
Hypertension	6 (43 %)	3 (27 %)	1.10	0.42
Anxiety syndrome	4 (29 %)	–	2.80	0.06
Somatoform autonomic dysfunction of the cardiovascular system	4 (29 %)	–	2.80	0.06
Dissociative [conversion] disorder	1 (7 %)	–	1.34	0.38
PTSD	1 (7 %)	–	1.34	0.38
Adjustment disorders	1 (7 %)	–	1.34	0.38
Panic disorder [episodic paroxysmal anxiety]	1 (7 %)	–	1.34	0.38
Atherosclerosis	1 (7 %)	1 (9 %)	0.18	0.86
Encephalopathy	1 (7 %)	4 (36 %)	1.87	0.08
Vertebrogenic lumbosciatica	2 (14 %)	2 (18 %)	0.26	0.79
Gastritis	2 (14 %)	–	1.92	0.21
Pancreatitis	1 (7 %)	–	1.34	0.38
Adiposity	–	2 (18 %)	2.19	0.11
Bronchitis	–	1 (9 %)	1.52	0.26
Type 2 diabetes	–	1 (9 %)	1.52	0.26
Post-traumatic neuropathy	–	1 (9 %)	1.52	0.26
Stroke	–	1 (9 %)	1.52	0.26
Traumatic brain injury	–	1 (9 %)	1.52	0.26

Encephalopathy was not exacerbated by the COVID-19-related pandemic, but 4 out of 5 servicemen diagnosed with encephalopathy had COVID-19-related stress. We also suggest that patients with encephalopathy may be more vulnerable to COVID-19-related pandemic stress than others.

A limitation of the study was small data sampling, but the observed trend suggests a significant association between COVID-19-related stress and the deteriorating health of combatants.

The above has led us to believe that most disorders associated with the COVID-19-related pandemic and quarantine are psychosomatic disorders.

This means that we should expect that a new renewal of the maximum quarantine measures will be able to exacerbate the distribution of this group in combatants.

Based on the above, we systematized health disorders associated with the COVID-19-related pandemic and quarantine into two groups (Fig. 2).

Disorders that debuted due to stress associated with COVID-19-related pandemic and quarantine: hypertensive emergency (n = 8; 57 %), anxiety syndrome (n = 4; 29 %), and dissociative [conversion] disorder (n = 1; 7 %).

So, the military medical service should be vigilant about the possibility of these disorders in combatants during high quarantine measures and take action to prevent them.

Chronic disorders exacerbated by COVID-19-related pandemic and quarantine stress: hypertension (n = 6; 43 %), adjustment disorders (n = 1; 7 %), panic disorder [episodic paroxysmal anxiety] (n = 1; 7 %), PTSD (n = 1; 7 %), and somatoform autonomic dysfunction of the cardiovascular system (n = 4; 29 %).

We consider these chronic disorders from this group to be medical predisposing factors for the deterioration in health associated with the COVID-19-related pandemic and quarantine. This means that combatants

suffering from these disorders are at risk of developing COVID-19-related pandemic and quarantine-associated deterioration.

Discussion

Many studies indicate that the COVID-19-related pandemic affects human health. But all of these studies describe the civilian population, patients with COVID-19 disease, or health workers [7,24–26]. We focused on studying the effects of the COVID-19-related pandemic and quarantine on military personnel.

Here we prove that the COVID-19-related pandemic and quarantine may be a factor in reducing the combat capability of the army by provoking somatic diseases and mental disorders in servicemen that require emergency hospitalization. In total, 56 % of servicemen hospitalized during the maximum quarantine measures in the country required emergency hospitalization due to pandemic and quarantine-related disorders.

It is known that COVID-19-related pandemic and quarantine can provoke mainly depressive spectrum disorders, anxiety, and phobic spectrum disorders, insomnia, cognition disorders in civilians. In health care workers, it can also be PTSD [16–18,20].

We show that COVID-19-related pandemic and quarantine, due to the stress they cause, can trigger the following problems in servicemen:

- occurrence of disorders associated with COVID-19-related pandemic and quarantine, such as stress-related hypertensive emergency, dissociative [conversion] disorders, and anxiety;
- exacerbation of existing disorders in patients, such as PTSD, panic disorder, adjustment disorders, somatoform autonomic dysfunction, destabilization of hypertension.

Conclusions

1. The presence of certain mental disorders and chronic somatic diseases in the anamnesis was a factor in reducing tolerance to stress associated with the COVID-19-related pandemic and quarantine.

2. COVID-19-related pandemic and quarantine are able to exacerbate mental disorders in patients. Patients with PTSD, panic disorder, somatoform autonomic dysfunction, and adjustment disorders were more vulnerable to the deterioration in mental health associated with the COVID-19-related pandemic and quarantine.

3. COVID-19-related pandemic and quarantine can also provoke the onset of mental disorders such as dissociative [conversion] disorders and anxiety.

4. In patients with somatoform autonomic dysfunction and hypertension, COVID-19-related pandemic and quarantine can provoke blood pressure destabilization and hypertensive emergency.

We believe that knowledge about pandemic and quarantine related disorders will help prevent and treat them.

Conflicts of interest: author has no conflict of interest to declare.
Конфлікт інтересів: відсутній.

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