

# Inducing situations and pathogenetic chains of health deterioration in combatants in the context of COVID-19 and quarantine

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## ABSTRACT

**Introduction:** The purpose of the study was to investigate the mechanisms underlying COVID-19 (coronavirus disease 2019) pandemic and the ensuing health problems associated with quarantine.

**Methods:** All combatants who were hospitalized during the first and most severe quarantine restrictions in Ukraine (from 12 March 2020 to 22 May 2020) were surveyed. Through clinical, anamnestic, psychopathological, and psychodiagnostic examination, including psychoanalysis and the fear of COVID-19 scale, the authors identified combatants' health disorders and their association with pandemic and quarantine-related experiences.

**Results:** The authors found that the following situations could provoke deterioration in the health of combatants due to fear: contact with a patient with COVID-19, planned posting to the hotbed of COVID-19, military service in the area of high risk of contact with patients with COVID-19, receiving information about COVID-19, receiving false information about COVID-19, disruption of critical infrastructure due to quarantine measures. The authors have provided an algorithm by which these traumatic situations provoke the development of health disorders. In particular, they cause fear of social and work stigmatization due to infection with SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), fear of suffering or death during COVID-19, fear that family members will become infected, erroneous conclusions about someone deliberately exaggerating the dangers of COVID-19, feeling of injustice and incorrectness of the quarantine measures, household discomfort and organizational stress. These experiences change the subjective picture of the future of combatants, and this provokes the development or exacerbation of pre-existing mental and somatic disorders. The impact of information on COVID-19 on combatant health disorders was investigated.

**Conclusions:** The authors believe that this knowledge will help to develop special psychoprophylactic approaches that would prevent the development of mental and somatic disorders due to the COVID-19 pandemic and improve the quality of quarantine measures. It will also allow measures to be taken to prevent a reduction in the army's combat effectiveness through a pandemic and quarantine.

**Keywords:** coronavirus, pandemic, pathology, army, fear

## INTRODUCTION

In the fourth quarter of 2019, the world faced the new coronavirus disease 2019 (COVID-19). The disease was first diagnosed in Wuhan, China, but soon spread to other countries. On May 11, 2020, World Health Organization (WHO) announced that COVID-19 has the character of a pandemic. It became the first disease in mortality since the Middle Ages, so many people are worried about this situation [1-3]. COVID-19 is caused by coronavirus strain severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). This disease can provoke atypical pneumonia, acute respiratory syndrome, and different other unexpected symptoms. Since COVID-19 is a new disease, no one knew what to expect yet. This uncertainty has added tension in society [4, 5].

Since there is no specific treatment for COVID-19 and given the large scale of the spread of the disease, the only way out for

the countries was the introduction of emergency quarantine restrictions in order to control the spread of COVID-19 and reduce the number of cases [6-8]. These quarantine restrictions have become unprecedented and have significantly changed the way of life of the population. People were not psychologically prepared for such significant changes. In some countries, COVID-19-related restrictions have been chaotic and excessive. This was justified given the urgency and complexity of the COVID-19 situation, but it entailed negative social, economic, and medical consequences [9, 10].

Since the beginning of the pandemic and quarantine, reports about their impact on the psychological and physical health of people began to appear. It was revealed that the COVID-19-related pandemic and quarantine can lead to mental health problems, including anxiety, depression, eating disorders, and even post-traumatic stress disorder (PTSD). It as well as causes obesity, cardiovascular problems, etc. [11-14]. The COVID-19 problem received widespread press coverage.

The amount of information about COVID-19 faced by ordinary citizens is overwhelming and even excessive. This is not only official and scientific information, but also information on social networks, messengers, oral information, etc. [15, 16]. Such a large array of information has not been devoted to any disease before.

Scientific reports indicate that some of the publicly available information about COVID-19 is disinformation that can negatively affect the population, increasing the level of neuroticism in society. Also, researchers noted a significant amount of misinformation about COVID-19, pandemic, and quarantine and its negative impact on the population [17, 18]. Therefore, the victims of this situation can be not only people who contract the COVID-19, but also people who have negative consequences from the COVID-19-related pandemic and quarantine. The aim of the study was to investigate the mechanisms underlying COVID-19 (coronavirus disease 2019) pandemic and the ensuing health problems associated with quarantine.

## MATERIALS AND METHODS

**Study design and participants.** On the basis of the Department of Psychiatry, Psychotherapy, General and Medical Psychology, Narcology and Sexology of Zaporizhzhia State Medical University and Zaporizhzhia Military Hospital, all combatants who were hospitalized during the first and strongest COVID-19-related quarantine restrictions from 12 March 2020 to 22 May 2020 were examined. It was a clinical prospective single-center trial.

A total of 25 combatants were hospitalized during this period and examined. The authors carefully analyzed the history of their illnesses that caused their hospitalization and the association of these illnesses with other disorders. Clinical, psychopathological and psychodiagnostic examination of all patients to establish the characteristics of health disorders and their causes was conducted. There were no COVID-19 combatants, but some patients linked their disease to fear of pandemic and quarantine. From all patients, the authors identified 14 combatants who had negative experiences associated with COVID-19 and quarantine, confirmed by the fear of COVID-19 scale [19].

Using psychoanalysis, the authors investigated how the fear of COVID-19 affected the internal picture of the future in these patients and indirectly—the somatic state. The authors investigated which situations in the context of COVID-19 caused fear. The authors considered unpleasant situations only in the context of those cases when they were the cause of health problems in combatants. The authors also looked at the health effects of these situations. The authors also used the analysis of medical records. And qualitative data analysis and clinical, descriptive and mathematical statistics methods to analyze the array of received data the authors used. Data analysis. Analysis was done using STATISTICA® for Windows 6.0 (StatSoft Inc., No. AXXR712D833214FAN5).

## RESULTS AND DISCUSSION

We have identified the inducing situations that led to the COVID-19 pandemic and quarantine-related health disorders. These were: contact with a patient with COVID-19 (14.29%

combatants), military service in the area where contact with patients with COVID-19 (14.29% combatants) is possible, business trip to the area of increased risk of SARS-CoV-2 infection (7.14% combatant), induction of information about COVID-19 and quarantine from the media, the Internet, from other people, etc. (71.43% combatants), and psychological stress due to some quarantine measures (21.43% combatants).

Situations of contact or possible contact with patients with COVID-19 have been shown to be psycho-traumatic factors for some combatants. In these situations, the risk of infection was higher than average. Such situations included:

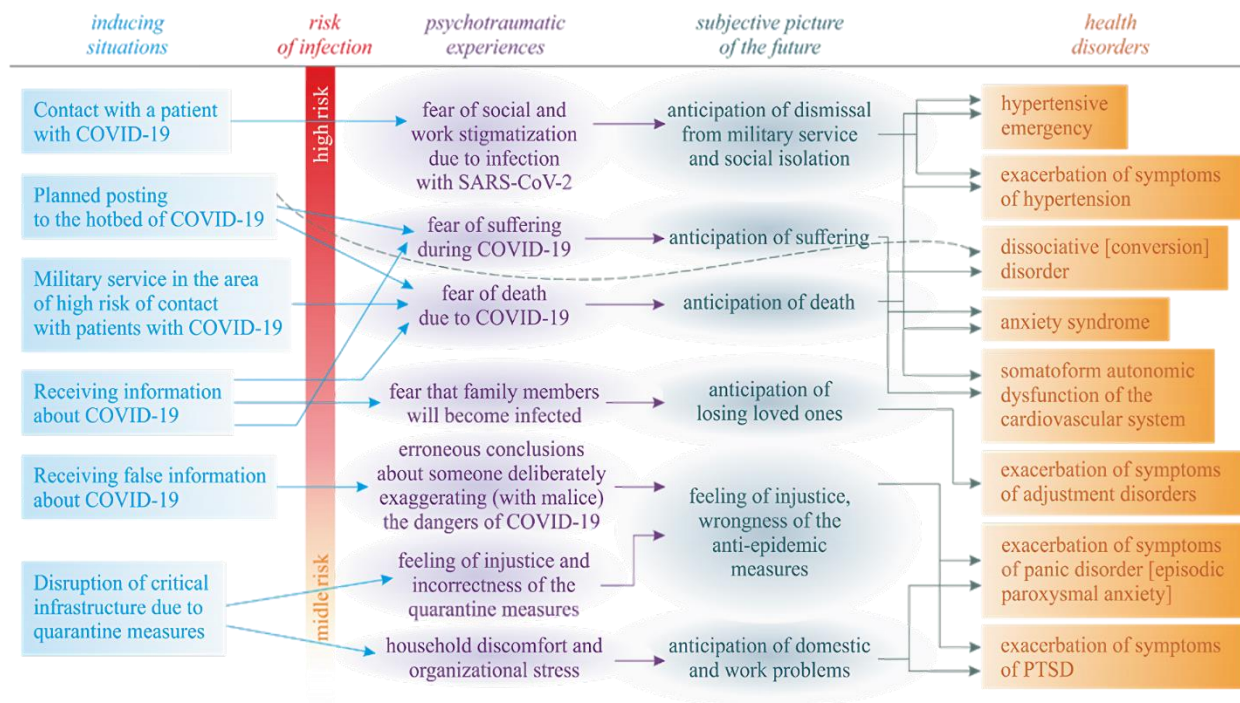
- situations in which combatants find out that they have recently been in contact with a COVID-19 patient,
- situations in which combatants are in the red zone of COVID-19 and did not know for sure, but thought that they could already come into contact with infected people or have a high risk of this in the future, and
- situations in which combatants had to go on a business trip to the red zone of COVID-19 and thought that they would definitely get infected there. In this case, the servicemen had a subconscious desire to avoid a business trip.

These situations caused three types of fear: fear of death or suffering during COVID-19 and fear of social and labor stigma due to infection. Also, all these situations have led to such health consequences as the development of anxiety syndrome, hypertensive emergency and exacerbation of symptoms of hypertension or the development of dissociative (conversion) disorder.

For these situations the authors found the following logical chains of development COVID-19 pandemic-associated deterioration of health (**Figure 1**):

- a) contact with a patient with COVID-19→high risk of infection→fear of social and work stigmatization due to infection with SARS-CoV-2→deterioration of health (hypertensive emergency, exacerbation of symptoms of hypertension),
- b) military service in the area of high risk of contact with patients with COVID-19→high risk of infection→fear of death due to COVID-19→deterioration of health (anxiety syndrome, hypertensive emergency, exacerbation of symptoms of hypertension), and
- c) planned to post to the hotbed of COVID-19→high risk of infection→the expectation for infection in case of the trip→fear of death due to COVID-19 or suffering during COVID-19→deterioration of health (dissociative [conversion] disorder).

The information factor was in the structure of all causes of COVID-19-associated health disorders in combatants, but in 10 servicemen it was the main cause, and, in these situations, the risk of actual SARS-CoV-2 infection was not higher than average. The daily large amount of information received about COVID-19 due to the purposeful search for information about COVID-19 in the media, the Internet, social networks were the main cause of information-dependent deterioration of the health of combatants. Of these, two combatants were induced by their wives, who feared COVID-19. Two combatants fell victim to exaggerated horrific information about COVID-19. And two combatants had a disturbed psychological state due to the influence of false information about COVID-19.



**Figure 1.** Logical chains of development deterioration of health of combatants associated with COVID-19 pandemic & quarantine (Source: Authors' own elaboration)

We traced the following logical chains of development of the COVID-19 pandemic associated deterioration due to obtaining COVID-19 associated information (Figure 1):

- receiving information about COVID-19→psychological assumption of the possibility of infection→fear of death due to COVID-19 or suffering during COVID-19→deterioration of health (anxiety syndrome, hypertensive emergency, somatoform autonomic dysfunction of the cardiovascular system, exacerbation of symptoms of hypertension),
- receiving information about COVID-19→fear that family members will become infected→deterioration of health (exacerbation of symptoms of adjustment disorders), and
- receiving false information about COVID-19→erroneous conclusions about (macro-state collusion) someone deliberately exaggerating (with malice) the dangers of COVID-19→feeling of injustice, wrongness of the anti-epidemic measures→deterioration of health (exacerbation of symptoms PTSD).

We also studied the structure of COVID-19-associated information encountered by combatants and concluded that destructive effect on the mental state and indirectly—on somatic health can terrible information about COVID-19, the effect of expecting a problem with the inability to prevent it or a significant daily amount of normal information about COVID-19, which increased the level of anxiety due to constant or frequent exposure to the recipient of the information. In this context, the effect of mutual induction by fear and anxiety of consumers of information had clinical significance, for example, when information about COVID-19 was constantly discussed in a family where all family members feared COVID-19. The military was also negatively affected by false

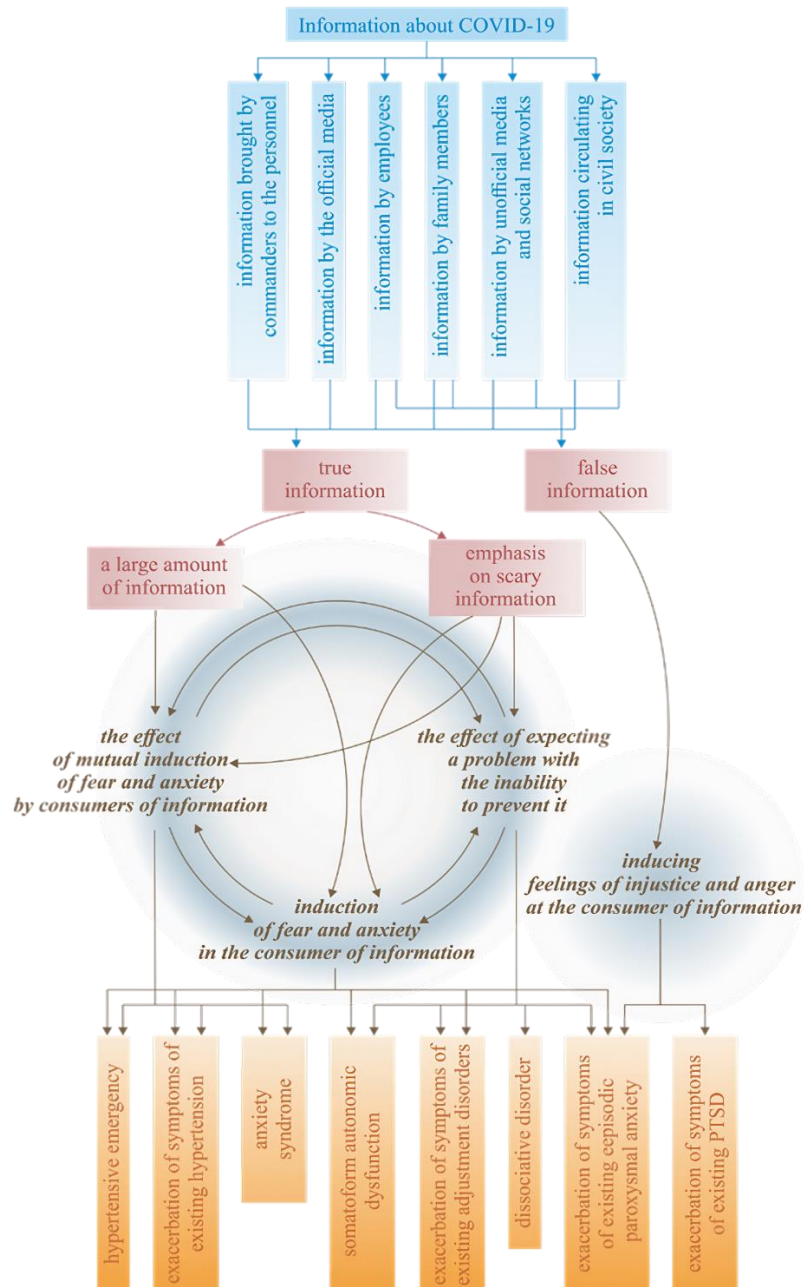
information about COVID-19 quarantine, which caused them feelings of injustice and anger.

Typically, these were servicemen with pre-existing mental disorders, such as panic disorder [episodic paroxysmal anxiety] and PTSD, whose symptoms were exacerbated by false information about COVID-19 (Figure 2).

Psycho-traumatic qualities acquired certain anti-epidemic measures and quarantine restrictions, which hopelessly burdened the lives of citizens and had no alternative. For example, the closure of a transport service was psycho-traumatic for combatants when no service vehicle was organized for them, and they did not have personal transport for the trip to work and home. It is because being late for military service is critical; the closure of kindergartens was psycho-traumatic for combatants with children when there was no one to look after the children at home; the closure of shops was psycho-traumatic for combatants in case of an urgent need for certain things that could not be purchased elsewhere. Ordinary anti-epidemic measures could also be psycho-traumatic for servicemen if the servicemen's opinion about these measures was wrong as a result of previously receiving false information about anti-epidemic measures.

The path of formation of health disorders due to quarantine-related disruption of critical infrastructure the authors have shown in the following series of sequences:

- Disruption of critical infrastructure due to quarantine measures→a feeling of injustice and incorrectness of the quarantine measures (most often due to receiving false information about COVID-19 and quarantine)→deterioration of health (exacerbation of symptoms of panic disorder [episodic paroxysmal anxiety] or PTSD).
- Disruption of critical infrastructure due to quarantine measures→household discomfort→deterioration of



**Figure 2.** Graphical representation of the impact of information about COVID-19 on the health of combatants (Source: Authors' own elaboration)

health (anxiety syndrome, exacerbation of symptoms of hypertension, panic disorder [episodic paroxysmal anxiety] or PTSD).

The following possible factors for the deterioration of mental health among civilians due to COVID-19 and quarantine are identified:

- The immediate threat of being infected and getting sick, and the possible infection of loved ones, as well as uncertainty about the future. This can provoke or exacerbate fear, anxiety and depression [20-22].
- Feelings of loneliness and deterioration of interpersonal relationships due to quarantine and related social distancing and self-isolation requirements. It can provoke depression and aggravate schizophrenia [23-26].

- If these factors are long-term, they can provoke more severe mental disorders, such as anxiety disorder, panic attack, obsessive-compulsive disorder, and PTSD [27-29].
- Expectations of stigmatization due to the incidence of COVID-19 [30-32].
- A large amount of uncontrolled news about COVID-19, including one that contains misinformation and frightens people and provokes emotional tension [33, 34].

COVID-19 quarantine-related inducing psycho-traumatic situations of deterioration of health in combatants partially coincide with such situations in civilians [35]. However, not all, for example, social distancing is a neutral situation for combatants and did not provoke deterioration of health. But

such a reason as the disruption of critical infrastructure due to quarantine measures can lead to the deterioration of the health of combatants if these measures put combatants in a hopeless situation from which there was no way out.

## CONCLUSIONS

This research helps to understand which links associated with COVID-19 and quarantine form a pathological chain in order to break it in order to prevent the development of a COVID-19 pandemic of associated health deterioration in combatants and to improve the effect of quarantine. Organizational measures and psychological work with personnel will help to do this. The authors believe that the group of persons in need of compulsory psycho-preventive measures includes the following categories of military personnel: combatants who are sent to an area of increased risk of infection with SARS-CoV-2, combatants who have been in contact with patients with COVID-19, and combatants who already have other mental disorders such as panic disorder (episodic paroxysmal anxiety) or PTSD.

Also, the army should develop measures to level to mitigate negative consequences due to disruption of critical infrastructure due to quarantine measures introduced in the country, for example, permanently working kindergartens for the children of military personnel should be organized and servicemen should be provided with a service vehicle. The authors also believe that COVID-19 information and quarantine information received by a combatant should be controlled among the military: there should be no excessive amount of information and no false information.

The authors have found that a number of traumatic situations related to COVID-19 and quarantine can lead to ill health of combatants. The chains of development of this deterioration in health were investigated. The authors have found that the fears that provoke these psycho-traumatic situations can disrupt the subjective picture of the future in combatants and this leads to the development of psychosomatic and mental health disorders. The authors emphasize that psychoprophylactic and organizational measures should be implemented for combatants who face the psycho-traumatic situations. The authors have mentioned in the context of COVID-19 and quarantine in order to prevent their health from occurring.

**Author contributions:** All authors have sufficiently contributed to the study and agreed with the results and conclusions.

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**Ethical statement:** The study was approved by the Medical Ethics Committee of Zaporizhzhia State Medical University (review document, No. 5/14-06-18). All patients gave informed consent to participate in the study.

**Declaration of interest:** No conflict of interest is declared by authors.

**Data sharing statement:** Data supporting the findings and conclusions are available upon request from the corresponding author.

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