

STRESS, STRESS DISORDERS, PSYCHOLOGICAL REACTIONS AND MENTAL DISORDERS DURING THE COVID-19 PANDEMIC

M. Kolpakova* and A. S. Granitsa

Kazan Federal University, Kazan, 420008 Russia.

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*Corresponding author: Dr. M. Kolpakova

Kazan Federal University, Kazan, 420008 Russia.

ANNOTATION

The new CORonaVirus Disease infection, which emerged in 2019, has reached the scale of a pandemic of international concern. The current pandemic caused by the SARS-CoV-2 coronavirus continues to pose global epidemiological threats as of early 2021. The particular social situation associated with the pandemic represents a specific social background and field for many psychological and mental problems, both among patients and among medical personnel who are at the forefront of this crisis. The purpose of this review is to synthesize and analyze the factors causing the predominance of psychological reactions, stress, and mental disorders in the context of the spread of the current pandemic. The identification of risk factors and the ability to manage their manifestation and continuation in the long term can reduce the social level of stress disorders in their special role of mental health.

KEYWORDS: COVID-19, SARS-CoV2, pandemic, stress, social isolation, psychological response, mental disorders, mental health, psychosocial consequences.

DATA ACQUISITION METHODS

Review and analysis of theoretical sources, scientific and practical research results taken from various databases, including PubMed, Google Scholar, Scopus, as well as news publications on social networks. Scientific articles from previous COVID-19 2020 epidemics have been added in line with the context of the review topic. We do not include somatic disorders in this review of the article, since these disorders do not necessarily have psychological and psychiatric manifestations, especially since we could not find real evidence of this connection. The empirical basis of the study was also made up of statistics from the World Health Organization. The results obtained can be used in the implementation of social policy by state and local authorities, in the activities of the mass media. The main results of the study may be useful for further investigation of the problems caused by pandemic stressors.

INTRODUCTION

The outbreak of the new coronavirus 2019-nCoV has become a major topic around the world. The virus began to spread rapidly. First in Wuhan (Hubei province), then throughout China.^[1] and further to other countries,

including the Russian Federation (RF). This triggered a global health emergency. Medicine began to face many of the uncertainties surrounding the new virus.

Public opinion polls were conducted from late January to early February 2020. These included Morning Consult, US National Public Radio; Angus Reid Institute, Canada;^[2] National Medical Research Center for Psychiatry and Narcology. V.P. Serbsky, Russia,^[3] as well as scientific research online.

Overall, the results were like those of previous epidemics and pandemics: concerns about the spread and infection of the coronavirus; disbelief in the health care system about the consequences of infection; anxious experiences of respondents.^[2-4]

A literature search revealed that data on COVID-19 is still insufficient. The scientific literature mainly presents data on inpatients with ARVI and MERS-CoV. Most of the information is contained in social media news. Therefore, the possibility of generalizing any data on COVID-19 is excluded. This review focuses on the literature on the viral impact of the COVID-19 pandemic on the prevalence of psychological stress, stressors and psychiatric consequences.

The information below is drawn from various sources about the COVID-19 virus and its impact on the mental health of the population. It is important that in the literature, the authors paid attention to the fact that physiological and psychological reactions increase depending on the duration of exposure to the stimulus during a pandemic.

Our comments below are drawn from a variety of sources showing that the COVID-19 virus has a psychological effect on a factor that increases stress in the population. People, in a state of danger and with their own insecurity, are filled with stressful tension. This leads to great vulnerability to the coronavirus.

It is important to note that attention has begun to be paid to the fact that during a pandemic, physiological and psychological responses increase depending on the duration of exposure to a particular stimulus. This is often ignored in clinical practice. Therefore, first, attention was focused on the serious problem of increased levels of psychological and psychotic stress during a pandemic. This required the study of both clinical and psychological problems.

As part of the review, we were primarily interested in articles with clinical trials in the context of the 2020 COVID-19 virus pandemic and epidemics of previous years. The use of non-peer-reviewed articles was limited.

INFORMATION

Certain viral infections are known to infect the central nervous system, causing syndromes that address the cognitive, affective, behavioral, and perceptual domains. In the setting of a serious illness (regardless of etiology), it may be associated with subsequent mental illness. Also, some of them may be from the psychological impact of trauma.

Lotsch F. et al. on the example of the Ebola virus epidemic 2013-2016. It has been shown that depression, insomnia, post-traumatic stress disorder and anxiety disorders result from the consequences of an epidemic.^[5] The experience of this epidemic has shown that psychological stress and anxiety can cause the spread of the disease.^[6] It has been shown that during a new pandemic, there are cases of an increase in anxiety and depressive disorders.^[7-11]

Wang et al. conducted an online survey of Chinese residents. The results showed that 53.8% of respondents rated the psychological impact of the outbreak as moderate to severe; 16.5% reported moderate to severe depression symptoms; 28.8% reported moderate to severe anxiety symptoms; 8.1% reported moderate to severe stress.^[12] Similar methods for evaluating an online survey were used to obtain indicators with a predominance of anxiety disorders among respondents in Russia.^[3]

It should be noted that public health uses few resources with psychological factors that influence responses associated with a pandemic (fear, anxiety, distress) and behavioral problems (non-compliance, avoidance, stigmatization of outside groups, etc.). It is hard to disagree that psychological factors are vital for many reasons. For example, using social distancing to contain the spread of infection. Or considering factors that play a vital role in understanding and eliminating destructive patterns of behavior, even in psychologically well-off people, that can arise because of widespread infection.

Based on this, we focus on the analysis of materials on psychological stress and factors of stress disorders in their special role of mental health in the context of the epidemic.

1. Factors of unpredictability, uncertainty, and the desire to prevent danger the rapid spread of the virus.

Stress disorders, psychological and psychiatric problems are associated with such important factors as unpredictability and uncertainty. The importance of highlighting these two factors is that they cause general anxiety, confusion and massive panic in people based on constant situational awareness. The ability to critically assess what is happening in people begins to shut down. Many people believe everything thanks to the constant flow of information available and the increase in the number of messages through online services.

Unpredictability is supported by beliefs, rumors, misinformation, causing fear and lowering the level of immunity. Uncertainty is supported by a situation in which information about probable future events is completely or partially absent, thereby maintaining mental stress.

Experience from previous pandemics shows that these factors can move in waves,^[13] causing high levels of stress.^[14] The consequence of this is the rapid spread of COVID-19, leading to a change in the stereotype of the population's behavior. This is especially true in countries where the prevalence of viral infection is high, causing a wide range of psychological problems. In the long term of uncertainty, these problems can be highly dangerous for the rapid transmission of coronavirus infection.^[13]

Scientists, aware of the danger, are looking for the development of effective methods to prevent the spread of the virus. Thus, one of the studies considers the possibility of combating the outbreak of the epidemic. The goal is to eliminate the epidemic within three months, regardless of the size of the outbreak or the number of weekly cases.^[14]

Another experiment was conducted based on a mathematical model. Trials were conducted using case isolation and contact tracking to control infectious disease outbreaks and treat the COVID-19 coronavirus

disease. It was assumed that a high proportion of the disease should be self-isolated and successfully traced with a greater probability of achieving control over the transmission of the second severe acute respiratory syndrome coronavirus.^[15]

Of course, such research takes time. But it is not known how effective control strategies will be, for example, in cases where forced isolation or tracking of information about the arrival of imported COVID-19 cases is required.

To date, Russia has offered global vaccination thanks to the development of the Gam-Covid-Vac vaccine at the Gamaley National Research Center for Epidemiology and Microbiology. Almost half of the states have already started using the vaccine in the hope of stopping the pandemic. Despite this prospect, Melita Vuzhinovich, the representative of the World Health Organization (WHO) in Russia, warned the public from the office that the vaccine is not a medicine, but a warning.

2. Stressors, factors in the prevalence of stress disorders

The COVID-19 pandemic, caused by the emergence of a new coronavirus-the severe acute respiratory syndrome SARS-Cov-2, has become not only a serious challenge for the economic and medical system of the world, but also to some extent an objective factor in increasing psychological stress for some part of the population.

It has also been shown that most people in these conditions are resistant to stress. Observations during the current pandemic show that people have become more concerned about their health and family than about recreation and friends. It's kind of an emotional reboot. Moderate levels of fear or anxiety can motivate people to tackle a health threat. But intense suffering can be debilitating.^[2]

Stress reactions can range from fear, coronaphobia to indifference and fatalism. Some people may completely ignore or deny the risks. Others react with intense anxiety or fear.^[2,29] Results showed that negative emotions (eg, anxiety, depression, and resentment) increased, while positive emotions (eg, Oxford happiness and life satisfaction) decreased.^[16]

Research conducted by Sorokin **M. Yu.** et al., showed that attempts to adapt to new living conditions during the spread of COVID-19 have a multi-level process.^[3] It includes links between: (a) general measures to prevent coronavirus infection, (b) frequent searches for information about the epidemic, and (c) increased psychological factors in study participants in response to the pandemic.^[3]

Facebook Instagram and Twitter are the main sources of the psychological impact of the pandemic on social

networks, such as YouTube, WhatsApp, Facebook, and Twitter. The goal is to capitalize on the overall popularity.^[17] They cause tremendous psychological stress in the form of alarms, phobias, panic attacks, depression, obsession, irritability, delusional symptoms such as COVID-19 and other paranoid ideas.^[2,3,8]

Speaking at the UN General Assembly, WHO head Tedros Ghebreyesus, the current pandemic is accompanied by the spread of infodemic, which is becoming no less harmful than the virus itself in the form of a dangerous new disease [<https://www.interfax.ru/world/755786>]. As an information epidemic, it leads to the problem of the frequency and prevalence of stress disorders, creating conditions for their occurrence.^[13] creating conditions for their occurrence.^[13] This position is presented in many scientific and practical materials.^[3,6,9,13,18-19] They provide evidence on the impact of infodemia on stress disorders that cause concerns about:

1. uncertainty about the duration of the pandemic.
2. restrictions on movement and isolation.
3. conflicting information background.
4. uncertainty of the scale of the economic impact.
5. reports of limited medical care.
6. the unprecedented scale of events in recent decades.

Wei Zheng, in his article on the example of the situation with the spread of COVID-19 in China, notes the increase in the level of psychological stress, because of the rapid increase in the number of deaths associated with COVID-19. This led the population to feelings of helplessness, social isolation, anxiety, depression, sleep disturbance, aggression, and suicidal behavior among confirmed patients and suspected individuals.^[10]

It is proved that during the pandemic there are some changes in behavioral patterns - an increase in the number of stories about COVID-19 fears, an increase in the level of concomitant psychological stress, as well as stigmatization of people with respiratory symptoms.^[4] The authors reported in their study that the increase in the prevalence of psychological distress was significantly associated with female gender and younger age.^[21]

The large impact of increased stress disorder on health care workers in direct contact with confirmed and suspected cases of coronavirus was confirmed using the Event Impact Scale (JES) developed by Horowitz in 1979. Vulnerability in the form of threatening psychological trauma caused by unexpected events of high risk of infection has been proven. This led to adverse psychological consequences in the form of burnout, anxiety, fear of transmission, feelings of incompatibility, increased dependence on psychoactive substances, and post-traumatic stress disorder.^[10,22,23]

The influence of stressors on the increase in the prevalence of depression, distress, anxiety, insomnia, and

post-traumatic stress disorder (PTSD) among all medical professionals has been confirmed.^[9,19] In addition to the usual stressors, there were also specific stressors that can affect the increase in mental disorders in medical professionals.^[6, 8-10,19-20,25,35]:

1. the risk of infecting yourself and others, especially family members.
2. care for family members and children left alone at home, for example, because of school closures.
3. the stigma experienced by people working with Covid-19 patients.
4. strict safety measures, such as wearing protective clothing, the constant need for concentration and alertness, and strictly regulated procedural instructions that limit spontaneity and autonomy, as well as reducing physical contact.
5. high professional workload (longer working hours, more patients, higher training pressure);
6. reduced self-service due to lack of time and energy.

It has been reported that general practitioners treating patients with ARVI are especially prone to stigma.^[22] This is supported by the history of the SARS outbreak in 2003, where stigma was shown to heighten risks, preventing people from returning to normal daily life even after a few years.^[24,26] The stigma issue is that there may be an obstacle to prompt access to health care with COVID-19.

In some cases, the psychological consequences can be severe and persistent, and the patterns of some of the factors in the pandemic are complex.^[2]

Post-traumatic stress disorder prevalence is expected to continue after the end of the pandemic in the face of economic downturn. At the same time, gender differences were found - in women 60% of this disease is higher than in men 40% with a diagnosis. Moreover, this is typical not only for adults, but also for children. The age of onset has been shown to be the same for different disorders. Therefore, it can become a serious problem for the entire population.^[26]

1. Isolation and quarantine - salvation or increased mental health risk.

Isolation and quarantine are a rescue or an increased risk to mental health. COVID-19 has required many countries to introduce quarantine measures as the main means of controlling the disease. Unfortunately, there is extraordinarily little research on this factor.

The analysis of the events showed that the introduction of self-isolation and mass quarantine for a long period causes: a) long-term consequences of mental and psychological health disorders and unpredictable social consequences;^[27] b) an increased risk of mortality by 29%; c) a multiplication of mental health consequences long after the quarantine is lifted (the likelihood of disorders related to fears, sleep disorders, loss of control or post-traumatic stress).^[16]

The inclusion of quarantine measures suggested a longer duration, generating fear of infection, frustration, boredom, lack of supplies, inadequate information, financial loss, and stigmatization. It was also observed that the forced restriction of movement and social activity under quarantine significantly contributed to the growth of intrapersonal and interpersonal problems, such as domestic violence, family dysfunction, and poor health outcomes (including suicide).^[21]

The authors, analyzing the introduction of isolation and quarantine, concluded that the quarantine period should be short, and its duration should not be changed, except in extreme circumstances. Voluntary quarantine is associated with less suffering and fewer long-term complications.^[28]

An analysis of some events has shown that the introduction of self-isolation and mass quarantine for a long time, in addition to the most important advantages, can cause: long-term effects of mental and psychological health disorders and unpredictable social effects.^[24] an increased risk of mortality; a multiple increase in the consequences for mental health after the quarantine is lifted (the probability of disorders associated with fears, sleep disorders, loss of control or post-traumatic stress).^[16]

Those who were quarantined were generally reported to have a high prevalence of symptoms of psychological stress and distress: emotional distress, depression, stress, bad mood, irritability, insomnia, symptoms of post-traumatic stress, anger, and emotional exhaustion.^[28,29]

In addition, studies have shown a dangerous source for the development of increased risk for mental health - "infodemia". Constant reports of fear-provoking issues, outbreaks of racism, stigmatization, and xenophobia against certain communities, and the like, have a dangerous impact.

Considering the multifaceted stress factors associated with isolation, the results showed a 54.8% decrease in the number of calls for emergency psychiatric care during the first four weeks of the COVID-19 pandemic. Obviously, this was facilitated by the fear of infection in emergency departments.^[30]

It is important to note that there is evidence that after traumatic events, most people (about 70%) began to show resilience, about 30% had post-traumatic stress disorder and related adaptation problems.^[27] People have had opportunities to use remote communication - information from the news, participation in games, watching movies, information through media channels, etc.

It follows that the emerging problems with isolation and

quarantine require further discussion, given that for many they are not so dramatic.

2. Mental disorders as a result of coronavirus infection - or coronavirus infection without mental illness

To date, there is insufficient data on mental health problems in patients with COVID-19. During the current pandemic, there are reports of a direct or indirect effect of coronavirus infection on mental disorders]. There are several reasons why the COVID-19 virus has a negative impact on the mental health of patients who have no previous history of mental disorders. This is a susceptibility to certain events, such as widespread anxiety, social isolation, stress for medical and other key workers, unemployment, and financial difficulties.^[30]

Scientists note a change in the mental health of the population compared to the period before the outbreak.^[18] There is evidence that these changes are often accompanied by a violation of social functioning - the destabilization of personal relationships, separation from family, society, distortion of the usual forms of activity, communication.^[18, 32-33, 35-36]

Rogers et al. possible mental disorders caused by coronavirus infection were described.^[30] There is evidence that 0.9-4% of infected people develop psychotic disorders.^[30] But Brown et al. It is believed that the development of psychotic symptoms in patients is not only associated with the virus itself, causing vulnerability, but also with exposure to corticosteroids (used for treatment), and with psychosocial stress.^[31]

Mental disorders are commonly associated with stress disorders, including mood disorders, anxiety disorders, and post-traumatic stress disorder (PTSD). To date, the literature is mainly devoted to post-traumatic stress, and other stress disorders are limited. Sorokin et al. noted that people with mood disorders have two main types of pandemic-related fears: the "risk of isolation" that worries those with mood disorders, and the "possible lack of medication for daily use." In people with anxiety disorders, the most stressful disorder is "anxiety for your life".^[3]

Studies also show that mental symptoms and disorders are more likely to occur in medical personnel who come into direct contact with patients (relatively high risk of influence) than in physicians who have little or no contact with patients (low risk of influence).

The analysis of thirteen studies showed: in 12 studies, the prevalence of anxiety was 23.2%; in 10 studies, depression was 22.8%; in 5 studies, the highest indicator was the prevalence of insomnia - 38.9%. The analysis also revealed gender and professional differences: female medical workers and nurses show higher rates of affective symptoms compared to men and medical personnel, respectively.^[19]

The study, published in May 2020, has findings on the syndromes (SARS) and SARS-CoV-2. It is shown that in the acute stage, delirium (confusion) or agitation can be caused in a significant part of patients. And at discharge, every third patient with severe COVID-19 may be diagnosed with dysregulatory syndrome, including communication problems, cognitive and behavioral deficits, and changes in sleep patterns.^[33]

Some studies of lancet psychiatry show several immediate effects of COVID-19 on mental health. Most people with severe coronavirus infections (such as SARS, MERS, and COVID-19) recover without experiencing mental illness.

The authors explain the unusual behavior by saying that the psychological consequences of isolation can be delayed, which indicates that psychiatric services should be prepared for a secondary increase in the number of emergency cases. While we are getting unexpected results of the immediate effects of COVID-19, we agree with the authors that explaining the unpredictable results requires an emphasis considering account the long-term effects.

The danger is that some mental reactions may manifest decades after the event in those who have once experienced a pandemic. Also, a study published in the International Journal of Medicine^[7] suggests that the consequences for mental health, including the risk of suicidal thoughts, will remain for a long time even after the end of the pandemic.^[22]

This was observed during the 2014-2015 Ebola outbreaks in Africa and the United States.^[4] although the risk of contracting this infection was low. Or the outbreak of the disease during the Great Flu pandemic, which gave rise to panic fears, which ended in Great Britain in April 1919.^[5]

Of course, such cases still do not have a sufficient degree of study, but the observation of the ambiguity of the consequences of intense stress for the course of psychological and mental disorders may be of practical and scientific interest for a more detailed study of the problem.

RESULTS

The review of studies highlights the most significant risk factors that lead to the problem of the frequency and prevalence of stress disorders, psychological reactions, and psychiatric disorders in the context of the COVID-19 pandemic. An increased level of psychological stress is associated with the observance of self-isolation, the need for social distancing, the use of antiseptics, as well as information overload related to the pandemic. Psychological reactions were associated with adaptive behavior, which raised the level of anxiety, forming protective behavior (hygiene, masks), and causing psychological disorders. Among

those with mood disorders, two main types of pandemic-related fears prevailed: "risk of isolation", and "possible lack of medication for daily use".

The main risk factors are: Mass Infodemia (information epidemic); Unpredictability and Uncertainty-causing general anxiety, confusion, and mass panic; Forced Quarantine in the long term and Prolonged isolation-leading to increased anxiety, insomnia, PTSD, and depression. One of the most common factors of increasing the level of anxiety was the fear for the life and health of loved ones, causing defensive psychological responses: anger, anxiety, boredom, confusion, fear, depression, emotional exhaustion, irritability, and stress.

The danger of developing psychological reactions during a pandemic manifest itself in distress, in functional disorders based on vulnerability factors, the trace of which may become larger than the medical one. Mental disorders can be associated with stressful factors. Most often, mental disorders are manifested in medical workers due to the transferred virus: anxiety, depression, insomnia

Mental disorders can be associated with stressful factors. More often, mental disorders are manifested in medical professionals because of the transferred virus: anxiety, depression, insomnia. Mental symptoms do not necessarily progress to the level of a mental disorder in a pandemic setting. Most patients recover without experiencing mental illness.

The only danger is that some mental reactions may appear decades after the event in those who have once experienced a pandemic. To do this, clinicians need to be aware of the potential for depression, anxiety, fatigue, post-traumatic stress disorder, and rarer neuropsychiatric syndromes in the long term. One of the most important ways to solve the problem of stopping the infection with the COVID-19 virus, in 2021, was to conduct a global vaccination of Gam-Covid-Vak (Russia) on a global scale.

CONCLUSION

The COVID-19 pandemic has clearly shown us how the "virus" can negatively affect our lives. The described impacts of the COVID-19 pandemic on mental health require close attention to the provision of psychological and psychiatric care. To avoid mass stress, stress and confusion, to avoid mass misinformation, you need to be very aware of the misinformation constantly passing through social networks. For the general population, there is an urgent need to create special groups in real time to monitor the levels of stress relief, anxiety, and confusion, to control the amount of information about misinformation constantly passing through social networks, to avoid mass panic.

Many authors predict possible delayed consequences

after the end of the pandemic, which may occur both in today's 21st century and in the long term. Special patronage is required by representatives of certain social groups: people with mental disorders, children, medical workers, people with low material well-being and social capital. This requires additional support measures and organizational interventions in psychological and mental health.

The effective use of Internet services, technologies and social networks to contain both pandemics and infodemics should be encouraged. Of course, psychosocial training is necessary through the creation of psychosocial organizations specifically designed for future pandemics. Psychosocial preparedness through the creation of mental organizations specific to future pandemics is certainly necessary.

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