DEPRESSION AND POST-TRAUMATIC STRESS DISORDER IN PATIENTS WITH ALCOHOLISM AFTER THE COVID-19 PANDEMIC

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Abstract. *In order to better solve the emergency psychosocial problems of various populations during the period after the Covid-19 pandemic, special attention should be paid to vulnerable groups such as quarantine individuals, health workers, the elderly and others, in addition to medical treatment of depression, post-traumatic stress disorder and anxiety in patients with alcoholism. Thus, within the framework of endemials and pandemics of viral infections, attention should be paid to various components of the mental health of the general population, the sick and those who have contact with them, medical personnel and other categories of citizens.*

Keywords: *Covid-19 pandemic, alcoholism, depression, post-traumatic stress disorder, anxiety, mental health.*

Introduction. The new coronavirus infection pandemic (coronavirus disease 2019 (COVID-19)) is a global threat to human health and is the largest outbreak of SARS since the severe acute respiratory syndrome (severe acute respiratory syndrome (SARS)) epidemic in 2003. [1]. A few weeks after the initial outbreak, the total number of SARS cases exceeded the number of acute respiratory viral infections [2].

Viral infections are common and, in some cases, can affect the central nervous system, causing a variety of neuropsychiatric disorders, including Cognitive, Affective, Behavioral, and other disorders [3]. During the COVID-19 pandemic, more emphasis is placed on general medical complications and less research focuses on the direct effects of SARS-CoV-2 on mental health. The indirect effects of the pandemic on overall mental health should also be considered, especially with the SARS-CoV-1 outbreak (2002-2003) associated with mental complications.

Interest in the potential link between common respiratory viral infections and mood disorders has been observed since the late 19th century. For Example, D. H. Tuke reported 18 cases of post-flu mania and depression in patients admitted to Betlem hospital in London in 1892, R. M. Harrison, on the other hand, described 37 cases of post-influenza depression in Kent, England in 1958 [4].

Several subtypes have been identified that affect humans, most of which cause mild upper respiratory tract infections (specifically, strains HCoV-229e, HCoV-OC43, HCoV-NL63, and HCoV-HKU1) [5]. According to various studies, coronaviruses have been found in both the brain

and cerebrospinal fluid in people with coronavirus infection who have developed epileptic seizures, encephalitis and encephalomyelitis [6].

New strains of coronavirus have caused the SARS outbreak, which began in 2002, and the Middle East Respiratory Syndrome (Middle East respiratory syndrome) outbreak, which began in 2012 [7]. On 31 December 2019, the World Health Organization revealed several cases of SARS in Wuhan, China, which were later identified as the cause of the new coronavirus (SARS-CoV-2) [8].

With the spread of what is now known as COVID-19, data on neuropsychiatric manifestations began to increase [9].

In patients with COVID-19, cases of self – harm and suicide were reported in 49.06%, anxiety in 56.60%, sleep disorders in 67.92% and 24.53% [12]. Psychiatric symptoms, including post-traumatic stress disorder (PTSD), anxiety, and depression, were reported in patients with SARS-CoV-1 during SARS outbreaks, as well as 1 month, 1 year, 30 months or more after the disease [10].

In addition, symptoms of post-traumatic stress disorder, depression and anxiety are described in health workers during a certain epidemic, 2 months later and 2 and 3 years after the SARS epidemic, and among the general population during and after the epidemic [11].

It is not yet clear whether the viruses themselves or the immune response to them are the main cause of potential mental disorders. Interestingly, interleukin-1 (il-1), il-6, and tumor necrosis factor a (TNF–a) (cytokines involved in the immune response to influenza) promote activation of the hypothalamus–pituitary-adrenal axis [12].

Interferon-a is also involved in the immune response, a well-known side effect of cytokine that causes depressive disorder [13].

Cytokines have also been reported to cause decreased tryptophan, a precursor to serotonin. They stimulate indolamine-2,3-dioxygenase, which converts tryptophan to quinurenine, and make it unavailable for serotonin synthesis [14]. There is evidence that tryptophan and ultimately decreased serotonin levels play a role in the pathogenesis of depressive disorders [15]. When studying the possibility of viruses directly affecting the brain with the development of emotional disorders, it should be taken into account that both influenza viruses and coronaviruses are potentially neurotrophic and isolated from the central nervous system [6].

In May 2020, the results of 43 studies on mental health assessment during the covid-19 pandemic were published [7]. This meta-analysis cited 2 studies that evaluated data from patients with confirmed COVID-19 infection and 41 studies that evaluated the indirect effects of the pandemic (2 – in patients with previously existing mental disorders, 20 – in medical staff and 19 – in a wide range of individuals). 2 studies involving patients with COVID-19 found high rates of post-traumatic stress disorder symptoms (96.2%) and significantly higher rates of depression ($p = 0,016$). Psychiatric symptoms have been reported to worsen in patients with pre-existing mental disorders [8].

Research among health professionals has found increased symptoms of depression, anxiety, psychological stress, and sleep quality disorders. Population-based studies have reported lower levels of psychological well-being and higher rates of anxiety and depression compared to cases prior to the covid-19 pandemic, but there was no difference between these symptoms in the early stages of the disease and 4 weeks after its debut. Many factors are related to the risk of

psychiatric symptoms and/or low levels of psychological well-being, including female gender, poor health, and the presence of relatives infected with covid-19 [9].

Information on psychiatric symptoms among COVID-19 patients is listed in 2 studies [10]. In one of them, post-traumatic stress disorder was observed in 96,2% of 714 stable patients hospitalized.

In another study, the prevalence of depression in 57 patients who recently recovered from COVID-19 increased (29,2%) compared to quarantine (9,8%) ($p = 0,016$), while finding no difference in anxiety levels ($p = 0,154$).

A few days after China's first cases, quarantine was imposed in Wuhan and distributed to other provinces and cities, affecting a total of more than 50 million people. Many are isolated by staying at home to prevent infection [11].

From January 31 to February 2, 2020, C. Wang et al. demographic data, physical symptoms of the last 14 days, history of contact with COVID-19, knowledge and concerns about covid-19, conducted an online survey that collected data on COVID-19 precautions. The study involved 1,210 respondents from 194 cities in China [12].

In total, 53,8% of respondents assessed the psychological impact of the epidemic COVID-19 reported moderate to severe, 16,5% moderate to severe depressive symptoms, 28,8% moderate to severe anxiety symptoms, and 8,1% moderate to severe stress. The majority of respondents spent 20-24 hours (84,7%) a day at home, worried that their family members were infected with COVID-19 (75,2%), and were satisfied with the amount of medical data available (75,1%) [13].
Female gender, student status, specific physical symptoms (e.g. myalgia, dizziness, runny nose), and self-poor assessment health conditions were mainly associated with the strong psychological effects of the COVID-19 epidemic and high levels of stress, anxiety, and depression ($p <0,05$). Having accurate, up-to-date and accurate information about the state of health (e.g. treatment, local status of the epidemic) and taking specific precautions (e.g. hand hygiene, wearing a mask) were associated with low psychological impact of the epidemic and low stress, anxiety and depression ($p < 0,05$) [14].

Another Internet Cross-survey collected 7,236 volunteer data containing data on demographic data, COVID-19-related knowledge, with the aim of identifying general anxiety disorder (Gad), depressive symptoms, and sleep disorders. The total prevalence of Gad, depressive symptoms and sleep disorders in the population was 35.1; 20.1 and 18,2% respectively. Young people have reported that the prevalence of Gad and depressive symptoms is much higher than in older people. Medical personnel were more aware of poor sleep quality than other professional groups.

Using multidimensional logistic regression, it was found that age (<35 years old) and time spent learning about COVID-19 (≥3 hours/day) were associated with Gad and that healthcare workers were at high risk of low sleep quality [15]. The same findings were also cited in a previous study conducted during the SARS epidemic in Taiwan.

A comparative study was conducted between individuals with mental illness ($n = 76$) and non-persons ($n = 109$) at the peak of the covid-19 epidemic in Chongqing, China [16]. Patients with mental disorders had higher averages of depression, stress, and anxiety than healthy people ($p < 0,001$). Serious physical health concerns and suicidal thoughts are much more common in psychiatric patients than in healthy people ($p < 0,05$). More than 1/3 of the patients met the

diagnostic criteria for post-traumatic stress disorder, more than 1/4 suffered from moderate to severe insomnia.

A cross-survey was conducted in Gansu (China) from 1 to 29 February 2020, with the participation of 79 doctors and 86 first-class nurses using a survey of the Anxiety Scale and depression scale [17]. The prevalence of symptoms of anxiety and depression among doctors was 11.4 and 45.6%, respectively. Having anamnestic information about depression or anxiety served as a risk factor for detecting anxiety in doctors, and men were less vulnerable to developing depression.

The prevalence of anxiety and depression symptoms among nurses was 27.9 and 43,0%, respectively. The history of depression or anxiety has been a common risk factor for developing anxiety and depression in nurses. Another study found a higher level of obsessive-compulsive disorder symptoms among medical personnel compared to non-medical personnel [18].

The psychological impact of the COVID-19 epidemic on young children and adolescents is a very important but overlooked problem [19].

Monotony, frustration, lack of direct contact with classmates, friends, and teachers, lack of adequate personal space in the home, and financial loss of the family can lead to unpleasant and even long-term negative mental consequences in children. In older people and people with serious illnesses, the feeling of fear can be more pronounced. Also, psychological manifestations can include anxiety, irritability, and excessive stress [19].

As for the risk factors for developing depression and anxiety during the Covid-19 pandemic, most of them are well known – the female sex, the presence of chronic diseases and, as a result, poor health [20]. However, a pandemic adds such an aspect as isolation, which is also a designated risk factor with psychological effects [21]. This applies, for example, to concerns of family, friends and acquaintances with possible infections.

Alcohol consumption disorder (RSUA) is a chronic and recurrent disease [15]. People with RSUA are at risk of developing acute lung damage and acute respiratory distress syndrome [22]. They are also at risk of developing severe COVID-19 and superinfections. When alcohol is metabolized, nitric oxide (NO) is produced and its excessive accumulation can impair endothelial function, as well as cause desensitization of epithelial cilia, which can affect pathogen clearance. In the alveolar space, glutathione homeostasis changes, which leads to increased oxidative stress in the pulmonary microenvironment as a result of chronic alcohol consumption [23]. In addition, alcohol can disrupt innate and adaptive immunity [24], worsening the phagocytosis capacity of alveolar macrophages [25].

The complexity of treating alcoholic patients during the COVID-19 pandemic with problems that may arise when managing patients with RSUA during a pandemic is due to poor compliance, the development of relapse, and the effects of removal [26].

A study conducted in India found that isolation and closure of licensed liquor stores contributed to alcohol abuse at home. This type of alcohol can cause serious health problems, including death [27]. In connection with Lock Down rules, alcoholics did not make up time to engage in activities that were not related to alcohol use, such as actual communication in society and sports that could contribute to the relapse of alcohol behavior [28]. Another problem with MSUA is related to the difficulty of patients in visiting an outpatient doctor regularly due to the closure of polyclinics, lack of public transport or fear of infection [29]. In addition, high loads in

the remaining open hospitals, lack of telemedicine/online medical services, or inability of patients to use these services can also have negative consequences in providing medical care [30].

In addition to the intensively analyzed trends and motives of alcohol consumption by adults, there are several meaningful questions that can lead to long-term consequences that deserve the same attention [31]. One of these themes concerns how parental alcoholism affects subsequent generations. During isolation, children were more likely to see their parents drinking alcohol because they spent time together at home. The parent model of alcohol-related behavior may play an important role in the intergenerational transmission of excessive drinking-related habits [32]. In a study of 1,054 Canadian teenagers (average age 16.7±0.8 years) who conducted an online survey, respondents reported the frequency of alcohol consumption, heavy drinking, cannabis use, and smoking for 3 weeks before and after the lockdown. The results showed a decrease in alcohol consumption and vaping, but more than 93% of those surveyed said that they used alcohol at home with their parents, which is considered acceptable behavior for them [33].

Another little-discussed topic is the effect of alcohol on the body during intrauterine development, which is considered the main cause of fetal alcohol syndrome (fas), which is characterized by disorders in the development of the nervous system, learning difficulties and behavioral problems, which can lead to mental health pathologies, reading problems, substance abuse and social integration disorders. Given the data on the level of alcohol consumption of women during the pandemic, the duration of the lockdown and the risk of an unplanned pregnancy, there is a high probability of an increase in the frequency of fas in the future [34].

"Although we can soon enter the postcovid-19 era, FAS cases will persist for decades and pose a constant threat to the life and health of the population. Unfortunately, while FAS is predictable and largely preventable, it is always overlooked" [35].

Finally, the most important thing is the reverse analysis — that is, how alcohol consumption disorders can affect the methods of combating the pandemic from the point of view of personal safety. The results of a survey in Romania between 115 male patients and 57 control groups showed that patients with severe mental disorders (tpz) and RSUA have a higher risk of contracting COVID-19, one of the reasons being the lack of knowledge about preventive measures against COVID-19 and the inability to distinguish incorrect information. facts [36].

The main method of diagnosing depression is still clinical (psychopathological). According to the 10th revised International Classification of diseases (ICD-10), a diagnosis of "depression" requires a number of symptoms, with a duration of at least 2 weeks. The main symptoms of ICD-10 depression (there must be at least 2 symptoms to diagnose) are:

- a depressed mood that does not depend on the situation;
- anhedonia (loss of interests, desire to enjoy);
- violation, high fatigue.

Additional symptoms of depression

Under ICD-10 (there must be at least 3 symptoms to be diagnosed (+2 Basic)) are as follows:

- pessimism;
- feelings of guilt, uselessness, anxiety and (or) fear;
- low self-esteem;
- inability to concentrate and make decisions;
- thoughts about death and (or) suicide;

- unstable appetite, decreased or increased body weight;

- impaired sleep, insomnia or the presence of excessive sleep.

post-traumatic stress disorder is a disease that develops after exposure to an extremely threatening or terrible event or a series of events and is characterized by three main manifestations:

- reliving a traumatic event in the form of vivid obsessive memories that come with fear or horror, flashbacks or nightmares in the present;

- avoiding thoughts and memories of an event(s)or avoiding activities or situations similar to an event(s);

- a state of subjective feeling of an ongoing threat in the form of a hyper alert or an increase in fear reactions. Symptoms should last at least a few weeks and lead to a significant deterioration in performance. Any antidepressants are considered suitable for treating depression [37].

One modern drug that may be recommended for use in general medical practice is Sertraline, a class of selective serotonin reuptake inhibitors (SSRIs). This drug was developed by Pfizer and registered in the Russian Federation under the brand name Zoloft [38].

Sertraline is an antidepressant, a potent specific inhibitor of serotonin reuptake in neurons. This has a very weak effect on norepinephrine and dopamine reuptake. In therapeutic doses, sertraline blocks the intake of serotonin in human platelets. It does not have a stimulating, calming or anticholinergic effect. Due to selective inhibition of serotonin uptake, sertraline does not increase adrenergic activity. Sertraline is not close to muscarinic (cholinergic), serotonergic, dopaminergic, adrenergic, histaminergic receptors, GABA receptors (GABA-g – aminobutyric acid), or benzodiazepine receptors [39].

Recently, there has been evidence that anti-inflammatory cytokines can be modulated by some antidepressants [40]. R.J. Tynan et al. in lipopolysaccharide-stimulated microglia, sertraline was found to inhibit the production of anti-inflammatory TNF-a [41]. In the Study, M. Sitges et al. antidepressant sertraline has been shown to be able to reduce basal expression of anti-inflammatory IL-1B and TNF-a cytokines in the hippocampus [42]. This indicates the anti-inflammatory effect of sertraline on the brain. Since the advent of sertraline in 1990, there have been many studies comparing this drug with other antidepressants.

Sertraline (Zoloft) has a high efficiency comparable to tricyclic antidepressants, but it has a significantly better tolerance and high safety profile [43]. Compared with each other, the drugs of the SSRI group were found to have comparable efficacy, while sertraline was distinguished by the best tolerance. The psychosocial effects of COVID-19 on different segments of society and measures predicted compared to other drugs in the SSRI group [44]. The side effect profile also varies significantly between different drugs in the SSRI group. The use of SSRIs is accompanied by significantly less antimuscarinic effects, while gastrointestinal and psych stimulating effects are more frequent [45].

The drug sertraline (Zoloft) was developed for use in psychiatric practice. Instructions for its use indicate depression, obsessive-compulsive disorder in adults and children 6-17 years old, panic disorder, post-traumatic stress disorder and social phobia [46].

The effectiveness of sertraline for these disorders has been confirmed by the results of many studies [47]. Sertraline (Zoloft) efficacy in treating post-traumatic stress disorder has been found in several placebo-based studies [48].

Conclusion. In order to better address the emergency psychosocial problems of different populations during the Covid-19 pandemic, special attention should be paid to vulnerable groups

such as quarantine individuals, health workers, children, the elderly, among others, in addition to medical treatment of depression, post-traumatic stress disorder and anxiety.

Thus, within the framework of endemias and pandemics of viral infections, attention should be paid to various components of the mental health of the general population, the sick and those who have contact with them, medical personnel and other categories of citizens. To more effectively solve psychosocial problems of different layers of society and relieve psychological stress, non-pharmacological tactics can be used, drugs can be used.

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