



# Psychiatry in the time of the pandemic. Is COVID-19 changing the discipline? Psychiatria w dobie pandemii – czy COVID-19 zmienia psychiatrię?

Correspondence to/Adres do korespondencji:

Patrycja Pajor  
Institute of Psychiatry and Neurology  
9 Sobieskiego St.  
02-957 Warsaw, Poland  
e-mail: ppajor@ipin.edu.pl

Patrycja Pajor

Submitted/Otrzymano: 28.01.2021

Accepted/Przyjęto do druku: 17.05.2021

Institute of Psychiatry and Neurology, Warsaw, Poland

## Abstract

**Purpose:** COVID-19 is an infectious disease caused by the newly discovered coronavirus SARS-CoV-2. The research conducted to date has focused mainly on the somatic complications of the disease, while only a few studies look at the potential direct mental health effects of the virus and its neurotropic potential.

**Views:** The COVID-19 pandemic is also a psychologically significant stressor, affecting not only every aspect of an individual's life, but also economic and social sectors around the world. The deterioration of mental health can be caused not only by the fear of illness, death, or job loss, and uncertainty about the future, but also social isolation resulting from the loss of structured educational activities, professional activities and sanitary regime. We are slowly beginning to see the progressing effect of the current pandemic – not only the increasing symptoms of panic, anxiety and depression, but also somatization disorders, disadaptive syndromes, chronic fatigue syndrome, psychoactive substance abuse, and possibly also fixed post-pandemic personality disorders. Nosophobia, when it comes to the pandemic, takes the form of „coronaphobia”.

**Conclusions:** The protracted duration of the pandemic poses a threat to mental health. It causes a growing failure of psychological mechanisms for coping with the current situation. The study attempts to identify especially mentally vulnerable social groups, including the impact on health protection professionals from the perspective of a physician specializing in psychiatry. Disturbing social phenomena, highlighted by the pandemic, were identified, and practical aspects of the pandemic discussed – the new tasks that psychiatrists and psychologists face.

**Key words:** psychiatry, mental health, COVID-19, coronavirus, pandemic.

## Streszczenie

**Cel:** COVID-19 (*Coronavirus Disease 19*) to choroba zakaźna wywołana przez nowo odkrytego koronawirusa SARS-CoV-2. Dotychczas przeprowadzone badania naukowe skupiają się głównie na somatycznych powikłaniach choroby, podczas gdy tylko nieliczne badania dotyczą potencjalnego bezpośredniego wpływu wirusa na zdrowie psychiczne i jego potencjału neurotropowego.

**Poglądy:** Pandemia COVID-19 jest także istotnym psychologicznie stresorem, wpływającym nie tylko na każdy aspekt życia jednostki, ale również na sektory gospodarcze i społeczne na całym świecie. Do pogorszenia zdrowia psychicznego przyczyniają się nie tylko obawy przed zachorowaniem, śmiercią, utratą pracy, niepewnością co do przyszłości, ale także izolacja społeczna wynikająca z utraty ustrukturyzowanych zajęć edukacyjnych, zawodowych i reżimu sanitarnego. Powoli zaczynamy dostrzegać efekt obecnej pandemii – to nie tylko narastające objawy paniki, lęku i depresji. To także zaburzenia somatyzacyjne, zespoły dezadaptacyjne, zespoły przewlekłego zmęczenia, nadużywanie substancji psychoaktywnych, być może także popandemiczne utrwalone zaburzenia osobowości. Nozofobia na potrzeby pandemii przybiera kształt „koronafobii”.

**Wnioski:** Przedłużający się czas pandemii jest zagrożeniem dla zdrowia psychicznego. Powoduje narastającą niewydolność psychologicznych mechanizmów radzenia sobie z obecną sytuacją. W pracy podjęto próbę identyfikacji szczególnie podatnych psychicznie grup społecznych w czasie pandemii, w tym wpływ na pracowników ochrony zdrowia z pozycji lekarza specjalizującego się w dziedzinie psychiatrii. Wskazano niepokojące zjawiska społeczne, które uwydatniła pandemia, oraz omówiono praktyczne aspekty pandemii – nowe zadania, które stawia przed psychiatrą/psychologiem.

**Słowa kluczowe:** psychiatria, zdrowie psychiczne, COVID-19, koronawirus, pandemia.

## INTRODUCTION

The new coronavirus, SARS-CoV-2 causing COVID-19 (Coronavirus Disease 19), emerged as a public health threat in Wuhan City, Hubei Province, China in December 2019, when several local health care units reported numerous cases of patients with pneumonia of unknown etiology that were epidemiologically linked to the local seafood wholesale market [1]. This zoonotic pathogen is assumed to be the latest global biological threat to humans and is the third known coronavirus that is deadly to humans, joining SARS and MERS. The pandemic was declared by the World Health Organization in March 2020, the number of SARS-CoV-2 infections having exceeded 70 million worldwide by December 2020. So far, nearly 2 million people have died from COVID-19. The presence of the virus has been confirmed in 188 countries. Daily increases oscillate from about 600-900 thousand daily. COVID-19 is characterized by a varied clinical course, represented by a spectrum of symptoms which usually include fever, dry cough, dyspnoea, and fatigue [2]. In most cases, the course is asymptomatic or mildly symptomatic, but 8-15% of infections, depending on individual characteristics and geographic location, lead to a critical condition requiring specialist treatment in intensive care units [3]. The research conducted to date focuses mainly on the somatic complications of the disease, while only a few studies concern the potential direct effect of SARS-CoV-2 on mental health and its neurotrophic potential. SARS-CoV-2 is a virus that has an affinity not only for the lungs, heart, the endothelium of blood vessels, nephrons, or cells of the small intestine wall. More and more studies emphasize the strong affinity of the virus to the nervous system. In addition to anosmia/ageusia, COVID-19 is associated with meningitis. The target sites for SARS-CoV-2 in the central nervous system is the brainstem (solitary tract nucleus and ambiguous nucleus) and the thalamus. A significant consequence of viral neurotropism is the sequelae of brain stem involvement. According to Li *et al.*, the neurotrophic activity of the SARS-Cov-2 virus after reaching the structures of the brainstem may lead to respiratory failure of the central origin [4]. There is also an association between depression and cytokines such as IL-6, which are the major components of the cytokine storm syndrome in COVID-19. The role of the immune system is to fight a variety of infections, but the excessive and deregulated immune response seen in COVID-19 patients contributes to ARDS and multi-organ failure. In the course of COVID-19, high levels of various pro-inflammatory cytokines such as IL-6, IL-10 and other chemokines (CCL2, CCL-5) are observed. The same pro-inflammatory cytokines are elevated in patients with depression. This association has also been observed in chronic disease states with inflammatory components such as graft versus host disease, autoimmune diseases, inflammatory bowel disease, rheumatoid arthritis,

cancer and infections. This suggests that the use of drugs that reduce the activity of cytokines may alleviate symptoms of depression. The cytokine storm is a direct part of the infection process and its correlation with serotonin and dopamine is well understood. There have been numerous reports of patients who developed depression during or after infection [5]. This mechanism is distinct from other mechanisms that take into account psycho-socio-economic stressors. When the world will come to terms with today's reality, it is important to maintain a multidisciplinary approach to the psychological effects of the pandemics.

## IMPACT OF THE PANDEMIC ON MENTAL HEALTH

As mentioned above, the COVID-19 pandemic is a psychologically significant stressor, affecting not only every aspect of an individual's life, but also economic and social sectors around the world. Mental health deterioration is caused not only by fear of illness, death, loss of job, uncertainty about the future, but also social isolation resulting from the loss of structured educational and professional activities [6]. The outbreak of the epidemic was associated with the introduction of a quarantine aimed at separating and restricting the movement of people who were potentially exposed to an infectious disease in order to reduce the risk of virus transmission. The etiology of the word quarantine dates back to 1127; it was first used in Venice, Italy to refer to leprosy, and was used extensively in response to the "Black Death", although it wasn't until 300 years later that Britain actually began imposing quarantine in response to the plague epidemic [7]. This underlines the pejorative coloring of the word. Most of the studies analyzed in people quarantined during various epidemics over the last two decades reported negative psychological effects, including symptoms of post-traumatic stress disorder, confusion and anger. Stress factors included extended quarantine duration, fear of infection, frustration, boredom, inadequate supplies, insufficient information, financial loss, and stigma. Some researchers have suggested long-term effects [8].

We are slowly beginning to see the progressive effect of the current pandemic – not only the increasing symptoms of panic, anxiety and depression. We also see somatization disorders, disadaptive syndromes, chronic fatigue syndrome, psychoactive substance abuse, and possibly also fixed post-pandemic personality disorders, consisting in social withdrawal, a sense of constant threat, and an aggressive attitude towards the world. Nosophobia, for the purposes of the "new reality", takes the form of "coronaphobia". Information on new morbidity and mortality rates clearly correlates with an 11% increase in web searches for information on panic and anxiety. The introduction of sanitary restrictions, such as social

distancing, the order to cover the nose and mouth, and information about the increase in COVID-19 incidence resulted in an increase in internet searches for sites related to acute anxiety disorders by 52%. The above phenomenon is closely related to media reports; that is to say the more sensational titles there are, the greater the level of anxiety. The number of reports to suicide help-lines has also increased [9]. A general population-based study conducted in the United Arab Emirates found that measures of symptoms of depression (PHQ8) and anxiety (GAD7) were elevated above those typically obtained in pre-COVID-19 population studies. Various psychosocial factors correlated with depression and anxiety were also looked at. The main correlates of depression and anxiety were being young, female, a positive result of SARS-CoV-2 virus presence or having an infected relative, a prior history of mental health problems, and economic concerns [10]. In another study, in Spain [11], the data showed how depression symptomatology significantly increased over time, while anxiety and PTSD showed no statistically significant changes. Spiritual well-being and loneliness were the main predictors of psychological impact. A younger age was a significant predictor of depression and anxiety, while being female was associated with anxiety and PTSD. In a study of 3,092 quarantined Chinese students, using the Generalized Anxiety Questionnaire (GAD-7), the Perceived Stress Scale (PSS-10) and the Self-Rating Scale of Sleep (SRSS), the frequency of anxiety and sleep problems was 16.8%, 13.5%, 25.1% respectively. Of the participants, 43.7% had a higher level of perceived Factors associated with experiencing stress included symptoms of anxiety, trouble sleeping, a high frequency of reading the news daily, and the number of masks the respondents had at their disposal. The incidence of anxiety symptoms among students was 7.5% higher than before the epidemic [12]. International students have previously struggled with the stress of the acculturation requirements of studying abroad, and the epidemic has shown that stress worsens during a public health crisis. A study [13] conducted among international university students studying in the United Kingdom and the USA showed that those who stayed in the student accommodation experienced higher levels of stress related to concern for personal health, lack of social support and also more severe symptoms of insomnia than students who returned home. Another study [14] conducted among British university students and academic teachers working remotely at the beginning of the lockdown showed that students experienced greater psychological distress, correlated additionally with presenteeism, than academic workers. However, they had greater resistance (71.7%) to stress factors than university employees (33.8%). This suggests that the predictors of mental resilience may differ from mental stress per se. Therefore, interventions to improve resilience should not only deal with psychological stress,

but also address other factors. The protracted duration of a pandemic poses a mental health risk. It causes a growing failure of psychological mechanisms for coping with the current situation. However, significant international differences are likely to arise from different responses to the pandemic, from differences in healthcare systems to differing demographic and socio-cultural norms.

## SPECIAL RISK SOCIAL GROUPS

Healthcare workers are a special occupational group, who are at the forefront of the fight against the virus, and for whom the source of traumatization is not only regular exposure to the disease, but also the fear of infection of family, isolation or social stigma. At least 7,000 healthcare workers around the world have died from COVID-19, according to a report by Amnesty International, published in early September 2020, covering more than 80 countries [15]. In Poland, at the time of the writing of this article, the coronavirus was the cause of to the deaths of 88 health care workers, according to data from the Ministry of Health. The speed of spread of the virus has highlighted the inefficiency of the health care system, i.e. the insufficiency of protective equipment, the lack of standardized treatments, heavy workloads associated with staff shortages, an ineffective infection control system, and thus the problem of adaptation to rapidly changing and stressful work conditions. Often cited here a lack of skills, work duties inconsistent with an individual's qualifications, and the need to quickly acquire skills in the face of serious clinical situations [16-18]. The mass dying of patients and ineffectiveness of pharmacological treatment can be perceived as a limitation of medical control, reflecting a sense of personal helplessness and failure, degrading the sense of usefulness [17]. An additional aggravating factor is the highly probable inflation of criminal and civil proceedings relating to alleged mistakes made by healthcare professionals and policymakers during the pandemic. Therefore, healthcare workers are particularly exposed to an increased risk of anxiety, post-traumatic stress disorder, depression, exhaustion, occupational burnout, and addiction to psychoactive substances [18, 19]. There are, in addition, concerns about an increase in suicidal behavior among medical personnel [20], among whom the risk of committing suicide is already about 50% higher than the risk level in the general population, without taking into account the epidemiological factor [21].

Building on experience of the previous outbreaks of SARS-CoV-1 epidemic, a study of health care workers exposed to SARS-CoV-1 [22] showed that immediately following the nine days of quarantine it was found to be the most predictive factor for acute stress response symptoms. Staff reported exhaustion, distancing from others, restlessness at work, irritability, insomnia, decreased concentration, indecision, deterioration in work perfor-

mance and reluctance to work, and considering quitting the job. The quarantine effect was a predictor of the occurrence of post-traumatic stress disorder symptoms in medical staff even three years later [23]. A similar correlation was observed in the case of depressive disorders [24]. Avoidance tendencies were also observed, such as minimizing direct contact with patients and not reporting to the workplace [25]. Healthcare workers had more severe symptoms of post-traumatic stress disorder, felt more stigmatized and required more psychological help than the general public [26].

There are now similar concerns about the mental health of healthcare professionals treating COVID-19 patients. In a study carried out in China [27], that involved 1,257 respondents, 634 of them (50.4%) presented symptoms of depression, 560 (44.6%) anxiety, 427 (34%) insomnia and 899 (71.5%) of distress. Nurses, women, and frontline personnel in Wuhan, reported experiencing more severe symptoms than other healthcare professionals. The data presented raises concerns about the mental well-being of doctors and nurses involved in fighting the COVID-19 epidemic.

Patients who require psychiatric treatment are also in a particularly difficult situation. People with mental health conditions may be more susceptible to emotional responses triggered by the COVID-19 epidemic, which will increase the risk of relapse or exacerbation of an existing disease due to their high susceptibility to stress compared to the general population. A study [28] analyzed the risk of infection, hospitalization and mortality in patients diagnosed with ADHD, bipolar disorder, depression, and schizophrenia, taking into account age, sex, ethnicity and the frequency of comorbidities. Patients who have recently been diagnosed with a mental disorder (within the previous year) have been shown to have a higher risk of COVID-19 infection than patients without psychiatric disorders, and show worse outcomes, as evidenced by higher rates of hospitalization and deaths. The difference in mortality in COVID-19 patients with accompanying psychiatric disorders (48% higher) compared to the general population is similar in patients using psychoactive substances (45% more) [29]. Risk factors in psychiatric patients include worse assessment of health information and non-compliance with preventive recommendations, stays in large groups of people (hospitals, nursing homes, prisons), unfavorable economic situation, homelessness, unstable living conditions, stigmatization, and reluctance to seek help for fear of discrimination. Different disease entities may influence the risk of infection in different ways. In the case of patients diagnosed with ADHD, inattention may result in forgetting to follow a sanitary regime, while in people suffering from depression the determining factor may be a lack of motivation, leading to a failure to seek medical help and care for their own safety. In patients diagnosed with schizophrenia, delusional motives may lead

to non-compliance with the general rules. The last two groups of patients are most at risk of developing the disease. Smoking is more common in psychiatric patients, which contributes to the occurrence of comorbidities and lung pathologies, making them more susceptible to the severe course of COVID-19 [30]. During the pandemic, access to psychiatric care is difficult [31] due to the fact that clinics or day wards do not operate everywhere. It is worth remembering that this is a group of patients for whom tele-advice may not be the best way to provide services. On the other hand, direct contact requires the wearing of masks, which means that patients cannot see doctor's or psychologist's face and can only hear distorted voices, which is certainly a disadvantage.

## THE PANDEMIC AS A “SOCIAL PHENOMENON”

The epidemic has highlighted many disturbing social phenomena. The impression can be that aggressive behavior among people, both verbal and physical, has increased. People have been exposed to contradictory information, which caused frustration, feelings of being lost and in need to react. Another issue is that, in the absence of sufficient scientific knowledge about the epidemic, there has been a lot of space to spread various pseudo-scientific theories, as well as to combat people who disagree with them. The brutalization of the language and the radicalization of behaviors, especially those intended to manifest opinion on a given topic or to criticize the attitude of others, have become a common phenomenon. The Dunning-Kruger effect is noticeable, in this case where people who are unqualified in the field of medicine are under the illusion of having knowledge by obtaining information from vague Internet sources. They put themselves in the role of experts and tend to overestimate what they actually know while also loudly expressing their views and devaluing people who are an authority in their field. All this is facilitated by the anonymity afforded by the Internet.

A particularly destructive phenomenon is a growing “celebrity” of medicine, replacing medical knowledge and displacing the results of scientific research from public debate. Distinguishing delusions from overvalued beliefs is becoming a difficult challenge for psychiatrists.

## TELEMEDICINE

It is important to establish the safe delivery of services. In the last few months, many more psychiatrists, psychologists, and psychotherapists have started using teleconsultation, telephone or video-consultation. The uptake of tele psychiatry and online webinar learning has been very dynamic and the effects have not yet been assessed. Per-

haps this will be one of those changes made during the crisis that, in a long term, may not only lead to more flexible access to psychiatric care, but also to international education, while saving travel, accommodation and food costs [32]. Early analyses indicate that the costs associated with drop-off and no-show are lower for tele-advice compared to classic visits. Switching to telemedicine, as already mentioned, may be associated with greater availability. On the other hand, it may exacerbate pre-existing gaps in patient access to care [33]. Many patients with psychiatric disorders, especially those of low socioeconomic status, do not have access to computers with an Internet connection. However, by resigning from video-consultation in favor of a telephone meeting, we will lose the overall view of the patient. The long-term prospects of telemedicine in psychiatry will also depend on reimbursement levels, in particular whether payers return to providing minimal reimbursement for such care. Most psychiatric hospitals operate on tight financial margins and cannot continue telehealth services if the reimbursement is significantly lower than for conventional visits [33]. Early experience in the United States suggests that virtual care is working well and many researchers predict that this transition will continue [34]. According to Polish researchers [35], patients with a history of psychiatric treatment, previously hospitalized and treated long-term, will benefit the most. There are still doubts about first-time patients. In Poland, the most common causes of e-consultation are anxiety disorders, followed by mood disorders [36]. Moreover, it has been shown that e-interventions are beneficial for patients with schizophrenia, and that the therapeutic approach itself was positively assessed by them [37]. So far, the main obstacles in the practice of telepsychiatry have been identified as administrative difficulties, lack of appropriate legal regulations, technological limitations, lack of payments for e-services and security issues [38]. By changing the Parliamentary acts, in particular those relating to the professions of doctor and dentist, nurse and midwife, and the State Medical Rescue, the possibility of providing services via tele-information systems or communication systems (telemedicine) was introduced [39]. At the meeting on July 24, 2020, the Presidium of the Supreme Medical Council adopted a resolution on the adoption of guidelines for the provision of telemedicine services with the recommendation of their use by doctors and dentists as part of their professional activity [40]. On March 16, 2020, the Minister of Health amended the regulation on guaranteed benefits in the field of psychiatric care and addiction treatment [41]. The announcement of the President of the National Health Fund [42] for healthcare providers of March 15, 2020, allowed for the possibility of offering and accounting for tele-medical consultations under contracts for the provision of services such as psychiatric care and addiction treatment, and a pilot program using telemedicine took place, though

only for patients in continuing treatment. However, on 17 March 2020 [43], these rules were changed and telemedicine was extended to cover all patients, provided that the availability of staff required for their implementation at the place of the provision of services was ensured. Thanks to this tele-advice, during the pandemic the patient receives: treatment recommendations, e-leave, e-prescription, a suggestion of a direct visit to the facility or contact with a sanitary and epidemiological station, if necessary. It should be remembered that telemedicine has become an integral part of medicine. In each individual case, it is the doctor who decides about the provision of telemedicine services. When providing such services, it is more difficult to determine the clinical condition of the patient. It is necessary to be much more careful because it is much easier to make a mistake when making a decision.

## NEW CHALLENGES

The COVID-19 pandemic is associated with a number of challenges, primarily concerning the health of infected people and their relatives. This is mainly reflected in the occurrence of mental disorders that are directly associated with a viral infection, as well as the exacerbation of existing disorders. The challenges can be divided into the following: fear of getting sick, fears of relatives about one's an individual's condition; concerns about access to services and the efficiency of healthcare; the distinguishing of new symptoms (directly related to COVID-19 infection) from other symptoms, e.g. those present so far; the prospects of therapy, its effectiveness, the effects of the disease, complications, prevention; psychological care; and filtering media information. Yaha *et al.* [44] suggest the following challenges accompany the pandemic in the field of mental health: exacerbation of already existing mental disorders; the need to be ready to recognize mental health problems in order to intervene quickly and effectively; a significant mental crisis among mental health professionals, and the need to provide them with support and assistance; the use of modern technology and dissemination of evidence-based intervention methods by various entities. Attention should also be paid to the difficult situation of people close to the patient, ranging from concerns about the patient's health and the consequences of infection, and fear of getting infected, through to anxiety about the organization of the healthcare system, which may not be able to help the sick person. A separate problem is the fact that professionals dealing with COVID-19 patients may not be prepared for the accompanying mental and psychological aspects of the disease. There is a great danger that caring for infected people will focus on helping with symptoms and somatic complaints, while mental health aspects will not be sufficiently addressed. Hence, attention is drawn to the need for cooperation between professionals of various specialties, including the role of consultants in the field of

psychiatry. These professionals sometimes find it difficult to deal with mental health problems, which may also be associated with the fear of direct infection of themselves and their relatives. There is also the problem of stigmatization; for example, discrimination against certain social groups, such as students from China [44, 45]. When discussing the mental aspects of COVID-19 infection, groups of problems that the healthcare system must face are mentioned. First of all, this concerns the emergence of disorders that were not there before the epidemic. The most common neuropsychiatric consequences of COVID-19 include mild cognitive impairment, mood swings, insomnia, suicidal thoughts and psychotic episodes. It is estimated that from 0.9 to 4% of infected people may show symptoms of psychotic spectrum disorders [46]. Disorders that are a direct consequence of the infection factor and the fear of the consequences of the pandemic are also a serious clinical problem. This is related to the limitations in the functioning of the healthcare system, including, as we have seen, the dissemination of remote advice (tele-advice), which carries the risk of incomplete diagnosis and selection of wrong treatments, using both psychological and pharmacotherapy methods. Moreover, remote advice may be difficult to access for some groups of patients [47]. Regarding pharmacotherapy, psychotropic drugs are used in such situations, together with the treatment of a viral infection and its somatic complications. Taking into account their good tolerance and low risk of drug interactions, drugs from the group of benzodiazepines (oxazepam and lorazepam), antidepressants (citalopram and escitalopram), antipsychotics (olanzapine) and mood stabilizers (valproates) are mentioned [46]. Research into the influence of drugs (antidepressants, lithium, valproic acid, carbamazepine and lamotrigine) on the concentration of proinflammatory cytokines as immunomodulating adjuvants increasing vaccine efficacy is ongoing [48]. Adherence to clozapine treatment may be difficult due to the necessity of frequent blood sampling to assess the white blood cell picture, due to the limitations of the healthcare system [47]. The use of clozapine is associated with neutropenia, which may increase susceptibility to infections. Secondary antibody deficiency, which exposes these patients to immunodeficiency, has been observed in patients taking clozapine for a long time [49]. It should not be forgotten that the strategy of pharmacological treatment is influenced by factors such as weight gain, heavy smoking, diabetes and metabolic syndrome [47]. Some of these factors are closely related to the restrictions related to the epidemic, in the form of lockdown, loss of the possibility of close contact with other people, and economic constraints. Among the factors related to the psychological situation of patients and social functioning, one of the most important is the awareness of a serious and sometimes fatal disease. Awareness of isolation and social rejection are factors that aggravate the patient's difficult situation [45]. This was already experienced during the Ebola

virus epidemic [50]. People with severe mental illnesses, due to the high risk of SARS-CoV-2 infection and the morbidity and mortality associated with COVID-19, should obtain early access to vaccines [48]. One option would be to introduce vaccination programs in psychiatric hospitals or mental health clinics, which would require additional training for healthcare professionals on vaccination [51]. Future research should include people with mental disorders in assessing the safety and effectiveness of vaccines, as well as their interactions with psychotropic drugs, so that patients are adequately informed.

The world after the COVID-19 pandemic will look completely different. The number of people requiring psychiatric care is likely to increase. The role of psychiatrists/psychologists in the context of epidemic response is a particular challenge, although we are just beginning to understand and define this role as a medical community in a systemic perspective. There is a need for new and creative models of advocacy and care, greater involvement of psychiatry in supporting staff, and the identification of the most endangered groups in society, providing them with targeted psychological interventions. There is a need to intervene in the field of social education and the management of previously unforeseen potential global threats. The establishment of multidisciplinary mental health teams, because working as a community of clinicians and researchers we can strive to meet needs at the individual, institutional and social levels.

## CONCLUSIONS

Identifying particularly mentally vulnerable social groups is essential during a pandemic so as to provide psychological support and prepare for a third wave or future pandemic, as well as training in psychological issues of care and crisis management. There have been many transmissions of viruses from animals to humans throughout the history of medicine. Examples are the rabies virus, HIV, or partly the influenza virus when it mutates from pigs and birds. However, the transmission of SARS-CoV-2 virus from bats to humans is more dynamic than, for example, HIV from chimpanzees and we should prepare for more transmissions of this kind as a result of human interference in animal areas and the increasingly spatial proximity between species. The impact of the COVID-19 epidemic on mental health is unequivocal, as confirmed by observations from previous pandemics (in reverse order: Ebola, MERS, swine flu, SARS). The current pandemic, while it is of great concern and has the highest death rate in a 21<sup>st</sup> century pandemic, is not the worst to have happened in history. Humanity is constantly struggling with rapidly spreading diseases. Globalization and ease of travel favor virus migration and the development of pandemics. At the same time, the progress of scientific research and the technological advancement of modern

medicine, especially in recent decades, gives us better opportunities to study pathogens and to develop drugs and vaccines. Future research should also focus on the long-term psychological consequences of the epidemic and further explore potential risk- and protective factors, and then on developing appropriate prevention, treatment and rehabilitation strategies in the event of a global public health threat such as the one discussed here.

A global response should consider the impact of the epidemic on the mental health of the general population.

Information available on TV, Internet, and social media should be tightly controlled, and psychological interventions supporting the community should be promoted globally. The COVID-19 pandemic seems to be the beginning of the telepsychiatry era in Polish healthcare. An increased availability of e-services will also intensify the phenomenon of the deinstitutionalization of Polish psychiatry, facilitate patients' access to doctors, and perhaps also reduce the difficulties related to the limited number of hospital beds in psychiatric wards.

---

### Conflict of interest

Absent.

### Financial support

Absent.

### References

1. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, et al.; China Novel Coronavirus Investigating and Research Team. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020; 382: 727-733.
2. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020; 395: 497-506.
3. Pourbagheri-Sigaroodi A, Bashash D, Fateh F, Abolghasemi H. Laboratory findings in COVID-19 diagnosis and prognosis. *Clin Chim Acta* 2020; 510: 475-482.
4. Li YC, Bai WZ, Hashikawa T. The neuroinvasive potential of SARS-CoV2 may play a role in the respiratory failure of COVID-19 patients. *J Med Virol* 2020; 92: 552-555.
5. Alpert O, Begun L, Garren P, Solhkhah R. Cytokine storm induced new onset depression in patients with COVID-19. A new look into the association between depression and cytokines – two case reports. *Brain Behav Immun Health* 2020; 9: 100173.
6. Carvalho PMM, Moreira MM, de Oliveira MNA, Landim JMM, Neto MLR. The psychiatric impact of the novel coronavirus outbreak. *Psychiatry Res* 2020; 286: 112902.
7. Newman KL. Shutt up: bubonic plague and quarantine in early modern England. *J Soc Hist* 2012; 45: 809-834.
8. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020; 395: 912-920.
9. Ayers JW, Leas EC, Johnson DC, Poliak A, Althouse BM, Dredze M, et al. Internet searches for acute anxiety during the early stages of the COVID-19 pandemic. *JAMA Intern Med* 2020: e203305.
10. Thomas J, Barbato M, Verlinden M, Gaspar C, Moussa M, Ghorayeb J, et al. Psychosocial correlates of depression and anxiety in the United Arab Emirates during the COVID-19 pandemic. *Front Psychiatry* 2020; 11: 564172.
11. González-Sanguino C, Ausín B, Castellanos MÁ, Saiz J, López-Gómez A, Ugidos C, et al. Mental health consequences of the coronavirus 2020 pandemic (COVID-19) in Spain. A longitudinal study. *Front Psychiatry* 2020; 11: 565474.
12. Wang X, Chen H, Liu L, Liu Y, Zhang N, Sun Z, et al. Anxiety and sleep problems of college students during the outbreak of COVID-19. *Front Psychiatry* 2020. DOI: <https://doi.org/10.3389/fpsy.2020.588693>.
13. Lai AY, Lee L, Wang MP, Feng Y, Lai TT, Ho LM, et al. Mental health impacts of the COVID-19 pandemic on international university students, related stressors, and coping strategies. *Front Psychiatry* 2020; 11: 584240.
14. Van Der Feltz-Cornelis ChM, Varley D, Allgar VL, de Beurs E. Workplace stress, presenteeism, absenteeism, and resilience amongst university staff and students in the COVID-19 lockdown. *Front Psychiatry* 2020. DOI: <https://doi.org/10.3389/fpsy.2020.588803>.
15. <https://www.amnesty.org/en/latest/news/2020/09/mapping-covid19-health-worker-deaths/> (Accessed: 18.01.2021).
16. El-Hage W, Hingray C, Lemogne C, Yrondi A, Brunault P, Bienvenu T, et al. Health professionals facing the coronavirus disease 2019 (COVID-19) pandemic: What are the mental health risks?. *Encephale* 2020; 46 (3S): S73-S80 [Article in French].
17. Chahraoui K, Bioy A, Cras E, Gilles F, Laurent A, Valache B, et al. Psychological experience of health care professionals in intensive care unit: a qualitative and exploratory study. *Ann Fr Anesth Reanim* 2011; 30: 342-348 [Article in French].

18. Maunder RG, Lancee WJ, Balderson KE, Bennett JP, Borgundvaag B, Evans S, et al. Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak. *Emerg Infect Dis* 2006; 12: 1924-1932.
19. Wu P, Liu X, Fang Y, Fan B, Fuller CJ, Guan Z, et al. Alcohol abuse/dependence symptoms among hospital employees exposed to a SARS outbreak. *Alcohol Alcohol* 2008; 43: 706-712.
20. Reger MA, Stanley IH, Joiner TE. Suicide Mortality and Coronavirus Disease 2019-A Perfect Storm? *JAMA Psychiatry* 2020. DOI: 10.1001/jamapsychiatry.2020.1060 [Epub ahead of print].
21. Duthheil F, Aubert C, Pereira B, Dambrun M, Moustafa F, Mermillod M, et al. Suicide among physicians and health-care workers: A systematic review and meta-analysis. *PLoS One* 2019; 14: e0226361.
22. Bai Y, Lin CC, Lin CY, Chen JY, Chue CM, Chou P. Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatr Serv* 2004; 55: 1055-1057.
23. Wu P, Fang Y, Guan Z, Fan B, Kong J, Yao Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Can J Psychiatry* 2009; 54: 302-311.
24. Liu X, Kakade M, Fuller CJ, Fan B, Fang Y, Kong J, et al. Depression after exposure to stressful events: lessons learned from the severe acute respiratory syndrome epidemic. *Compr Psychiatry* 2012; 53: 15-23.
25. Marjanovic Z, Greenglass ER, Coffey S. The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: an online questionnaire survey. *Int J Nurs Stud* 2007; 44: 991-998.
26. Reynolds DL, Garay JR, Deamond SL, Moran MK, Gold W, Styra R. Understanding, compliance and psychological impact of the SARS quarantine experience. *Epidemiol Infect* 2008; 136: 997-1007.
27. Kang L, Ma S, Chen M, et al. Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: a cross-sectional study. *Brain Behav Immun* 2020; 87: 11-17.
28. Wang Q, Xu R, Volkow ND. Increased risk of COVID-19 infection and mortality in people with mental disorders: analysis from electronic health records in the United States. *World Psychiatry* 2020. 10.1002/wps.20806.
29. Wang QQ, Kaelber DC, Xu R, Volkow ND. COVID-19 risk and outcomes in patients with substance use disorders: analyses from electronic health records in the United States. *Mol Psychiatry* 2020. DOI: 10.1038/s41380-020-00880-7 [Epub ahead of print]. Erratum in: *Mol Psychiatry* 2020.
30. Shinn AK, Viron M. Perspectives on the COVID-19 Pandemic and Individuals With Serious Mental Illness. *J Clin Psychiatry* 2020; 81: 20com13412.
31. Chen S, She R, Qin P, Kershenbaum A, Fernandez-Egea E, Nelder JR, et al. The Medium-Term Impact of COVID-19 Lockdown on Referrals to Secondary Care Mental Health Services: A Controlled Interrupted Time Series Study. *Front Psychiatry* 2020; 11: 585915.
32. Waugh M, Voyles D, Thomas MR. Telepsychiatry: Benefits and costs in a changing health-care environment. *Int Rev Psychiatry* 2015; 27: 558-568.
33. Shore JH, Schneck CD, Mishkind MC. Telepsychiatry and the Coronavirus Disease 2019 Pandemic-Current and Future Outcomes of the Rapid Virtualization of Psychiatric Care. *JAMA Psychiatry* 2020.
34. Öngür D, Perlis R, Goff D. Psychiatry and COVID-19. *JAMA* 2020; 324: 1149-1150.
35. Zadka Ł, Olajosy M. COVID-19 Pandemic as the Beginning of a Golden Era for Telepsychiatry in Poland's Healthcare System. *Front Psychiatry* 2021; 11: 555559.
36. Krzystanek M, Krupka-Matuszczyk I. Telepsychiatry – psychiatric advice on the Internet. *Psychiatr Pol* 2003; 37: 1073-1082.
37. Krzystanek M, Borkowski M, Krysta K. Psychiatry as a leader of contemporary telemedicine in Poland. *Reumatologia* 2018; 56: 65-66.
38. Wojtuszek M, Kachnic J, Krysta K, Wutke J. Telepsychiatry in Polish patients' and doctors' opinion. *Psychiatr Danub* 2015; 27 Suppl 1: S379-S382.
39. Pursuant to Art. 7 sec. 4 of the Act of March 2, 2020 on special solutions related to the prevention, counteracting and combating COVID-19, other infectious diseases and emergencies caused by them. *Journal of Laws* 2020, 1842.
40. Resolution No. 89/20/P-VIII of the Presidium of the Supreme Medical Council of 24 July 2020 on the adoption of guidelines for the provision of telemedicine services.
41. Journal of Laws of 2020, item 456. In the Regulation of the Minister of Health of 19 June 2019 on guaranteed benefits in the field of psychiatric care and addiction treatment (Journal of Laws, items 1285 and 1640), § 3a was added as follows: "§ 3a. The services referred to in § 3 point 3 may be provided with the use of teleinformation systems, provided that the availability of the personnel required for their implementation at the place of providing services is ensured".
42. <https://www.nfz.gov.pl/aktualnosci/aktualnosci-centrali/komunikat-dla-swiadczeniodawcow-w-sprawie-zasad-udzielania-swiadczen-opieki-zdrowotnej,7646.html> (Accessed: 15.03.2020).
43. <https://www.nfz.gov.pl/aktualnosci/aktualnosci-centrali/komunikat-dotyczacy-wystawiania-potwierdzania-i-realizacji-zleceń-na-zaopatrzenie-w-wyroby-medyczne,7651.html> (Accessed: 17.03.2021).
44. Yahya AS, Khawaja S, Chukwuma J. The Impact of COVID-19 in Psychiatry. *Prim Care Companion CNS Disord* 2020; 22: 20102627.
45. Shalev D, Shapiro PA. Epidemic psychiatry: The opportunities and challenges of COVID-19. *Gen Hosp Psychiatry* 2020; 64: 68-71.



46. Dinakaran D, Manjunatha N, Naveen Kumar C, Suresh BM. Neuropsychiatric aspects of COVID-19 pandemic: A selective review. *Asian J Psychiatr* 2020; 53: 102188.
47. Galletly C. Psychiatry in the COVID-19 Era. *Aust N Z J Psychiatry* 2020; 54: 447-448.
48. Mazereel V, Van Assche K, Detraux J, De Hert M. COVID-19 vaccination for people with severe mental illness: why, what, and how? *Lancet Psychiatry* 2021: S2215-0366(20)30564-2.
49. Ponsford MJ, Pecoraro A, Jolles S. Clozapine-associated secondary antibody deficiency. *Curr Opin Allergy Clin Immunol* 2019; 19: 553-562.
50. Cénat JM, Balayulu-Makila O, Derivois D, Felix N, Mukunzi JN, Bukaka J, Birangui JP, et al. The mental health professional at the feet of the Ebola virus: individual treatment and global mental challenges. *Br J Psychiatry* 2019; 1-2.
51. Warren N, Kisely S, Siskind D. Maximizing the Uptake of a COVID-19 Vaccine in People With Severe Mental Illness: A Public Health Priority. *JAMA Psychiatry* 2020.