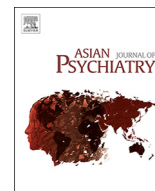




Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Short communication

Pandemics and psychiatry: Repositioning research in context of COVID-19

Matcheri S. Keshavan

Department of Psychiatry, Beth Israel Deaconess Medical Center and Harvard Medical School, Boston, MA, USA



ARTICLE INFO

Keywords:

Covid-19
Research
Psychiatry
Mental health
Pandemics

ABSTRACT

The current Covid-19 pandemic is posing an unprecedented threat to global well-being and its mental health consequences are just becoming understood. While the crisis has led to a temporary halt in a lot of ongoing or planned psychiatric research, this pandemic is a natural experiment that can help the field to repurpose research to better understand the causes, presentations and outcome trajectories as well as treatments in psychiatry. Inter-disciplinary collaborations between researchers are needed to rapidly develop and share the emerging new knowledge of the mental health implications of Covid-19. This will help mount an effective response to the current as well as future pandemics.

Beginning in November 2019 in the Wuhan province of China, the coronavirus epidemic (also called Covid-19) has swept across the globe. At the time of this writing, there have been approximately 4 million people affected worldwide with nearly 300,000 fatalities. The United States is 'leading' the world both in the overall numbers and in fatalities.

As all global disasters such as pandemics and wars do, Covid-19 has changed everything in our way of life from economics, travel and communication to health. The purpose of this commentary is to review the potential impact of this pandemic on how we think about psychiatric research. While on the one hand the crisis has led to a temporary halt in a lot of ongoing or planned psychiatric research, the unexpected Covid-19 crisis can be viewed as a natural experiment that can help us better understand the causes, presentations and outcome trajectories as well as treatments in psychiatry.

1. Challenges to ongoing psychiatric research

Over the last several weeks researchers have been caught off guard in several aspects of clinical research and are having to make tough decisions about ongoing clinical research, e.g. whether to continue, reschedule or cancel the research activities. For making such decisions, investigators need to determine the risk benefit ratios of the Research visits, seek local and national guidance, assess level of risk of the pandemic in their setting, optimize staffing issues, and minimize risk involved to each participant. Given that disruptions to the study are likely in most cases, investigators should inform the study sponsors and regulatory bodies in a timely manner. Protocol revisions to allow remote data collection using video interview apps such as zoom and Skype should be considered. Participant input should be considered as

well. If an in-person visit is decided upon, it is important to make sure that all precautions including protective care are fully implemented, and the participants' and researchers' safety carefully monitored. Interestingly, many participants appear to support continuation of medical research during epidemics (Padala et al., 2020).

2. Opportunities for new research

While the pandemic poses significant setbacks to several areas of ongoing research in psychiatry, there are also opportunities to pivot from already ongoing studies and consider asking important novel questions that stem from the disruptions caused by Covid-19. Fig. 1 outlines examples of several questions that may be framed in regard to studies of the etiology, epidemiology, manifestations, treatments and health services research.

2.1. Etiological and epidemiological research

Mental disorders emerge from a complex interplay between multiple psychosocial, and lifestyle factors. Environmental exposures such as green space, air pollution and housing conditions may all serve to increase risk for or protect against mental disorders (Attademo et al., 2017). Several questions are worth addressing in this context. What is the impact of medical comorbidity in psychiatric disorders on risk for Covid-19 infection? Does intimate partner violence increase in the context of restriction of social mobility outside of home? Are psychiatric disorders likely to worsen because of this? Is the decreasing air pollution across the globe as a result of the Covid-19 crisis (Dutheil et al., 2020) likely to be protective for mental illness? Which co-morbid illnesses are likely to enhance risk of exposure to Covid-19 and of severe

E-mail address: makeshava@bidmc.harvard.edu.

<https://doi.org/10.1016/j.ajp.2020.102159>

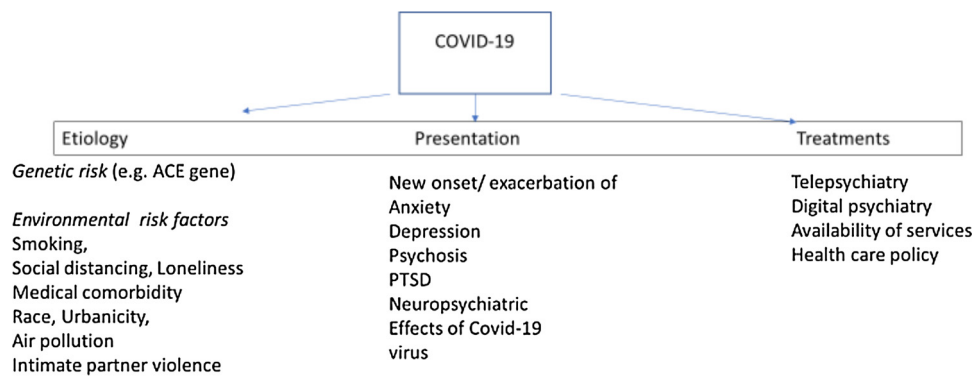


Fig. 1. Aspects of psychiatry likely to be impacted by the COVID-19 pandemic which can be framed as questions for psychiatric research.

illness and mortality? Do medical and substance abuse comorbidity increase likelihood of psychiatric disorders in relation to Covid-19? Is social distancing likely to increase loneliness and psychiatric symptoms as a consequence (Narita et al., 2020)? There is evidence that anxiety and distress are positively associated with interpersonal distance in schizophrenia patients. The shelter in place regulations as a result of the current pandemic are forcing people to stay at home with the effect of decreasing interpersonal distance in the home setting. The impact of such social changes on the trajectory of serious mental illness is worth investigating.

There is some evidence that genetic factors such as the angiotensin converting enzyme (ACE2) gene may influence risk for Covid-19 infection (Delanghe et al., 2020). Given the fact that a large number of genes are involved in risk for psychiatric disorders, it would be fruitful to ask whether genes that confer risk for psychiatric disorders might also affect likelihood of being affected by the Covid-19 infection.

There is some evidence that intrauterine exposure to viral infections may increase risk for later psychotic disorders in the offspring, though this literature is controversial (Selten and Termorshuizen, 2017). Prospective investigation of pregnant women exposed to Covid-19 would be valuable to clarify this issue.

2.2. Investigation of neuropsychiatric sequelae

While several recent infectious diseases such as Ebola, Zika and HIV are well known to affect the brain, neuropsychiatric manifestations are just beginning to be described in relation to Covid-19. Emerging evidence already suggests that the COVID-19 virus may target the brain (Li et al., 2020), and cause neuropsychiatric symptoms in 36 % of hospitalized patients (Mao et al., 2020). Psychiatric sequelae may also result from trauma and grief, social isolation as well as the secondary consequences of the quarantine and its effects on lifestyle. Proactive collection of research oriented data about the neuropsychiatric dimensions of patients presenting in the context of the covert crisis across institutions would be critically important. Also important are the questions about how people with already existing mental illness are coping when faced with the direct or indirect effects of the COVID-19 crisis. It is also important to investigate reactions of the mentally ill persons to isolation, uncertainty, and lack of access to needed care, and about what therapeutic strategies are working.

2.3. Treatment and health services research

In the context of the COVID-19 crisis, health systems within the United States and world-wide are now beginning to provide care using tele-health while keeping patients in their homes. Governments are rapidly relaxing constraints for telemedicine such as licensing, data confidentiality, and reimbursement issues. Questions for the future include characterization of settings and populations where telemedicine is most appropriate, and identification of the factors that underlie

community level acceptance of these approaches to care, including the impact of sustained vs temporary regulatory changes in policy (Bashshur et al., 2020). Telemental Health allows use of technologies such as videoconferencing, to remotely deliver mental health services including assessment, and medication management (Whaibeh et al., 2020). Stress-relieving interventions such as Yoga can also be delivered remotely (Schulz-Heik et al., 2017). Digital health can also go a long way to deliver mental health services remotely in disasters; several effective and user-friendly digital platforms are emerging for improving mental health care via smartphones (Torous and Keshavan, 2020).

While individuals with mental health concerns may be less likely to seek or receive care during acute disasters, there is likely to be a surge in service need that may last years after the events (Lowe et al., 2019). It is therefore important for health service researchers to examine short and long term population-level responses (e.g. delay in treatment seeking) to the current pandemic; such data are likely to help mount effective and timely mobilization of resources when needed and be well prepared to anticipate such needs, as these large scale epidemics are almost certainly likely to recur.

In summary, we are witnessing an unprecedented threat to global well-being and its mental health consequences. Psychiatric research can be creatively repurposed using existing resources; this needs a rapid adaptation to new technology, both to enable continuation of ongoing research and also to understand mental health consequences of COVID-19; all this can happen in the context of our ongoing efforts to improve patient care. Given the almost universal nature of the pandemic, collaboration is needed across mental health researchers to rapidly develop and share large datasets on the emerging new knowledge of the mental health implications of Covid-19. Such knowledge will not only help mount an effective response to the current pandemic but will also enhance our ability to effectively address future similar disasters. It is encouraging that the National Institutes of Health and other funders are now beginning to facilitate administrative supplements to enable researchers in these endeavors. It would be a huge missed opportunity if we do not actively understand these rapidly unfolding events and learn the important lessons that the pandemic may teach us.

Acknowledgements

This work did not receive any funding support.

References

- Attademo, L., Bernardini, F., Garinella, R., Compton, M.T., 2017. Environmental pollution and risk of psychotic disorders: a review of the science to date. *Schizophr. Res.* 181, 55–59.
- Bashshur, R., Doarn, C.R., Frenk, J.M., Kvedar, J.C., Woolliscroft, J.O., 2020. Telemedicine and the COVID-19 pandemic, lessons for the future. *Telemed. J. E Health* 2020 (April). <https://doi.org/10.1089/tmj.29040.rb>. [Epub ahead of print] PubMed PMID: 32275485.
- Delanghe, J.R., Speeckaert, M.M., De Buyzere, M.L., 2020. The host's angiotensin-converting enzyme polymorphism may explain epidemiological findings in COVID-19

- infections. *Clin. Chim. Acta* 505, 192–193.
- Dutheil, F., Baker, J.S., Navel, V., 2020. COVID-19 as a factor influencing air pollution? *Environ. Pollut.* 263 (Pt A), 114466. <https://doi.org/10.1016/j.envpol.2020.114466>. [Epub ahead of print] PubMed PMID: 32283458.
- Li, Z., Huang, Y., Guo, X., 2020. The brain, another potential target organ, needs early protection from SARS-CoV-2 neuroinvasion. *Sci. China Life Sci.* <https://doi.org/10.1007/s11427-020-1690-y>. [Epub ahead of print] PubMed PMID: 32246403.
- Lowe, S.R., McGrath, J.A., Young, M.N., Kwok, R.K., Engel, L.S., Galea, S., Sandler, D.P., 2019. Cumulative disaster exposure and mental and physical health symptoms among a large sample of gulf coast residents. *J. Trauma. Stress* 32 (2), 196–205.
- Mao, L., Jin, H., Wang, M., Hu, Y., Chen, S., He, Q., Chang, J., Hong, C., Zhou, Y., Wang, D., Miao, X., Li, Y., Hu, B., 2020. Neurologic manifestations of hospitalized patients with coronavirus disease 2019 in Wuhan, China. *JAMA Neurol.* <https://doi.org/10.1001/jamaneurol.2020.1127>. [Epub ahead of print] PubMed PMID: 32275288; PubMed Central PMCID: PMC7149362.
- Narita, Z., Stickley, A., DeVyllder, J., 2020. Loneliness and psychotic experiences in a general population sample. *Schizophr. Res.* <https://doi.org/10.1016/j.schres.2020.01.018>. pii: S0920-9964(20)30034-7. [Epub ahead of print] PubMed PMID: 32014362.
- Padala, P.R., Jendro, A.M., Padala, K.P., 2020. Conducting clinical research during the COVID-19 pandemic: investigator and participant perspectives. *JMIR Publ. Health Surveill.* 6 (2), e18887. <https://doi.org/10.2196/18887>. PubMed PMID: 32250281.
- Schulz-Heik, R.J., Meyer, H., Mahoney, L., Stanton, M.V., Cho, R.H., Moore-Downing, D.P., Avery, T.J., Lazzaroni, L.C., Varni, J.M., Coltery, L.M., Bayley, P.J., 2017. Results from a clinical yoga program for veterans: yoga via telehealth provides comparable satisfaction and health improvements to in-person yoga. *BMC Complement. Altern. Med.* 17 (1), 198.
- Selten, J.P., Termorshuizen, F., 2017. The serological evidence for maternal influenza as risk factor for psychosis in offspring is insufficient: critical review and meta-analysis. *Schizophr. Res.* 183 (May), 2–9.
- Torous, J., Keshavan, M.S., 2020. COVID-19, mobile health and serious mental illness. *Schizophr. Res.* (April). <https://doi.org/10.1016/j.schres.2020.04.013>. [Epub ahead of print].
- Whaibeh, E., Mahmoud, H., Naal, H., 2020. Telemental health in the context of a pandemic: the COVID-19 experience. *Curr. Treat. Opt. Psychiatry* (April), 1–5. <https://doi.org/10.1007/s40501-020-00210-2>. [Epub ahead of print] Review. PubMed PMID: 32292687; PubMed Central PMCID: PMC7114953.