



Psychiatric Aspects of Coronavirus (2019-nCoV) Infection

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International outbreak of the novel coronavirus (2019-nCoV) raised intense attention of specialists worldwide (1), including psychiatrists. They have learned a lot lesson from this disaster (2). People's confrontation with standard guidelines is not usually rational (2). The five stages of shock-denial, anger, bargaining, depression, and acceptance defined by Elisabeth Kübler-Ross (3) is also applied here and is experienced by many people. These stages explain coping of not only patients, but also healthy people with the illness (4). In such a disaster, the first stage, i.e. "shock and denial", can be very dangerous. This dangerous situation involves both the people and the politicians/policy makers. People's denial of this highly contagious disease leads to its rapid and expanding spread. As well, lack of timely decision making by policymakers may lead to an irreversible catastrophe. "Aggressive attitude" of some patients against medical personnel (2) and/or some healthy people against policymakers may be problematic. As well are the "bargaining" and "depression" stages. These may lead to failure to comply with treatment regimen and prescribed quarantine and separation of persons, including patients, people who are suspected of disease and communities who are exposed to this infection. Contrariwise, the next stage, "acceptance" is beneficial, both from the people and from the policymakers. The sooner we reach this stage, the sooner the disease is controlled. Managing health care organizations and teams is a challenging situation in a complex and critical environment.

Rapid person to person transmission of a novel fateful fatal virus (5, 6) with an unknown origin (6, 7) and high reproduction property (8) that causes signs and symptoms similar to a common cold (5) as well as unpredictability of the situation, lack of gloves and masks for avoiding infection and lack of faith in the healthcare system (6, 9, 10) and stagnated businesses have led to many psychological complications.

A major psychological burden such as anxiety (11), including generalized anxiety disorder and panic attaches

that may aggravate shortness of breath; aggressive behavior that result to patient's noncompliance and medical personnel's anxiety, obsessive behavior that may lead to the people's, including medical personnel's dysfunction, depression and sleep disturbance (12) are common psychological reactions. Coronaphobia, a novel term in psychiatry literature refers to excessive fear of being infected by coronavirus (2019-nCoV). Infected by influenza, having a near relative or friend with this fatal virus, and intense fear of being infected has been reported as important predictors of the posttraumatic stress (13, 14).

Inflammatory responses due to influenza may cause encephalopathy and psychiatric symptoms (15). Some individual differences such as the intolerance of uncertainty, perceived vulnerability to disease, and anxiety proneness have been considered as psychological vulnerableness (16). Popular media foci and misinformation, often lead to exaggerated coronaphobia (17). Emergency rooms are overflow with these vulnerable anxious people who believe that their benign symptoms are related to coronavirus (2019-nCoV).

People with low immune systems are more vulnerable to this infection. As well are patients who have respiratory problems, such as nicotine dependent people. Upregulation of angiotensin-converting enzyme-2 receptor (the known receptor for both coronavirus and acute respiratory syndrome) by smoking may be responsible for this phenomenon (18). Immune function of illicit substance abusers may be altered too. Another issue that may be problematic is the interruption of maintenance treatment of some quarantined patients who should receive their methadone or buprenorphine regularly. It is suggested that they receive their unobserved dosing privileges (take homes) and adequate doses at longer intervals and stock-up on supplies (19).

The current pandemic serves as a need for research in different areas of psychiatry, including psychosocial and pharmacological interventions to find evidence-based

ways of treatment. The fact that it has been predicted that other epidemics/pandemics are inevitable in future (16) emphasizes this need.

Although some authors believe that psychoanalysis may be useful to characterize the barriers of awareness of the severe issues we must deal with in coronavirus disease (COVID-19), and this approach can be useful in explanation of the victims', survivors' and health care personnel's defense mechanisms that mask their anxiety coming from the realization of an immediate danger (20), classic psychoanalytical psychotherapies are not practical due to the high number of patients and the small number of therapists.

Psychiatric/psychological crisis intervention is necessary. A self-help manual was applied in Sichuan province, China successfully. Several self-help interventions were imported for different suffered populations, followed by several permanently available counselling hotlines (21).

Intimate and effective communication with colleagues and other staff helps reduce stress and manage crisis. Treatment of choice approach for psychological complications of both infected patients and healthy worried people remains to be learned (6). Long time quarantined people, especially who live alone and whose quarantine is involuntary, as well as frustrated medical personnel need to be considered too. Emphasis on altruistic aspects of quarantine, continuous and effective communication and social connections with them, and providing the equipment the quarantined people need, are essential interventions (22, 23). Although individual psychotherapy, especially with supportive approach may be helpful for many disturbed people, but the large volume of patients does not allow this. Supportive group psychotherapy may be more useful. Brief group psychotherapy for bereaved people seems to be more practical. However, the effect of this kind of intervention is controversial (24, 25). Balint groups help medical personnel to view the patients from multiple perspectives (clinician, patient, relatives) (26).

Psychiatric drugs side effects and interactions with antiviral agents used for COVID-19, and pharmacokinetic and pharmacodynamics properties of these drugs, as well as side effects of antiretroviral drugs should be carefully considered. So the risks and benefits, and alternatives of these agents should be mentioned. For example, benzodiazepines commonly used for anxious patients should be prescribed with caution, because of the potential of respiratory depression (27). Short term prescription of short acting benzodiazepines may be logical for highly anxious patients who have no severe respiratory problem. Concerning the cytochrome P450 enzyme system, many commonly prescribed antiretroviral agents have high drug-drug interactions (28). However, co administration of antiretroviral and psychotropic drugs may range from no known interaction (such as hydroxychloroquine with

SSRIs, benzodiazepines, anticholinergics, mood stabilizers, and ADHD drugs), to slight change of plasma concentrations (such as chloroquine with lithium, atomoxetine, trazodone, amitriptyline and nortriptyline) to life-threatening cardiac arrhythmias due to long QT syndrome (such as chloroquine and atazanavir with pimozide) (29). Oseltamivir (Tamiflu), an antiviral medication widely used to treat and prevent influenza has been reported to induce delusions, hallucinations, abnormal behavior, disturbed sleep, mood disorders, suicide commitment, confusion and delirium (30-33).

Any psychiatric/psychological intervention may be applied as in-patient/in-person or out-patient/out-person or tele therapy manner. Integrated psychiatrists, psychologists, general practitioners, crisis intervention specialists and social workers into teletherapy of patients, their caregivers/families and medical staff have been recommended (34, 35). Review of the published researches has shown that tele psychiatry is an efficient intervention in emergency setting (36). However, barriers such as employment of Internet and adequate collaboration should be overcome (36). Besides, owing competent teams in many areas is not achievable (37). In a situation such as the current corona virus pandemic that gathering of people is forbidden, this is a very important issue. The outcome of which should be studied too.

Psychiatric hospitals and long term care centers for chronic mental patients that are usually closed and loaded, and not arranged for isolation against contagious infections are at greater risk. Close communication between patients that most of them have no insight and no cooperation with isolation and protection are important risk factors. Unfortunately, a practical clinical direction has not yet been declared for preventing coronavirus (2019-nCoV) infection in such isolated centers. But prolonging prescription time for stable outpatient patients and establishment of tele-monitoring for unstable outpatients are recommended (38).

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References

1. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet*. 2020;395(10223):470-3. doi: 10.1016/S0140-6736(20)30185-9. [PubMed: 31986257].

2. Yoo JH. The Fight against the 2019-nCoV outbreak: An arduous march has just begun. *J Korean Med Sci.* 2020;**35**(4). e56. doi: [10.3346/jkms.2020.35.e56](https://doi.org/10.3346/jkms.2020.35.e56). [PubMed: [31997618](https://pubmed.ncbi.nlm.nih.gov/31997618/)]. [PubMed Central: [PMC6995816](https://pubmed.ncbi.nlm.nih.gov/PMC6995816/)].
3. Stroebe M, Schut H, Boerner K. Cautioning health-care professionals. *Omega (Westport).* 2017;**74**(4):455-73. doi: [10.1177/0030222817691870](https://doi.org/10.1177/0030222817691870). [PubMed: [28355991](https://pubmed.ncbi.nlm.nih.gov/28355991/)]. [PubMed Central: [PMC5375020](https://pubmed.ncbi.nlm.nih.gov/PMC5375020/)].
4. Doka KJ. *Grief is a journey: Finding your path through loss.* New York, NY: Atria Books; 2016. 6 p.
5. 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**(10223):497-506. doi: [10.1016/S0140-6736\(20\)30183-5](https://doi.org/10.1016/S0140-6736(20)30183-5). [PubMed: [31986264](https://pubmed.ncbi.nlm.nih.gov/31986264/)].
6. Asmundson GJG, Taylor S. Coronaphobia: Fear and the 2019-nCoV outbreak. *J Anxiety Disord.* 2020;**70**:102196. doi: [10.1016/j.janxdis.2020.102196](https://doi.org/10.1016/j.janxdis.2020.102196). [PubMed: [32078967](https://pubmed.ncbi.nlm.nih.gov/32078967/)].
7. Fisher D, Heymann D. Q&A: The novel coronavirus outbreak causing COVID-19. *BMC Med.* 2020;**18**(1):57. doi: [10.1186/s12916-020-01533-w](https://doi.org/10.1186/s12916-020-01533-w). [PubMed: [32106852](https://pubmed.ncbi.nlm.nih.gov/32106852/)]. [PubMed Central: [PMC7047369](https://pubmed.ncbi.nlm.nih.gov/PMC7047369/)].
8. Wu JT, Leung K, Leung GM. Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: A modelling study. *The Lancet.* 2020;**395**(10225):689-97. doi: [10.1016/S0140-6736\(20\)30260-9](https://doi.org/10.1016/S0140-6736(20)30260-9).
9. National Public Radio. *Poll: Most Americans say U.S. "doing enough" to prevent coronavirus spread.* [cited 6 February 2020]. Available from: <https://www.npr.org/sections/healthshots/2020/02/04/802387025/poll-most-americans-say-u-s-doing-enough-to-prevent-coronavirus-spread>.
10. *Morning consult, national tracking poll #200164.* [cited 6 February 2020]. Available from: https://morningconsult.com/wp-content/uploads/2020/01/200164_crosstabs_coronavirus_Adults_v1.pdf.
11. Angus Reid Institute. *Half of Canadians taking extra precautions as coronavirus continues to spread around the globe.* [cited 6 February 2020]. Available from: http://angusreid.org/Wp-content/uploads/2020/02/2020.02.04_Coronavirus.pdf.
12. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 epidemic in China: A web-based cross-sectional survey. *MedRxiv Preprint.* 2020. doi: [10.1101/2020.02.19.20025395](https://doi.org/10.1101/2020.02.19.20025395).
13. Sun L, Sun Z, Wu L, Zhu Z, Zhang F, Shang Z, et al. Prevalence and risk factors of acute posttraumatic stress symptoms during the COVID-19 outbreak in Wuhan, China. *MedRxiv Preprint.* 2020. doi: [10.1101/2020.03.06.20032425](https://doi.org/10.1101/2020.03.06.20032425).
14. Xu J, Zheng Y, Wang M, Zhao J, Zhan Q, Fu M, et al. Predictors of symptoms of posttraumatic stress in Chinese university students during the 2009 H1N1 influenza pandemic. *Med Sci Monit.* 2011;**17**(7):PH60-4. doi: [10.12659/msm.881836](https://doi.org/10.12659/msm.881836). [PubMed: [21709644](https://pubmed.ncbi.nlm.nih.gov/21709644/)]. [PubMed Central: [PMC3539574](https://pubmed.ncbi.nlm.nih.gov/PMC3539574/)].
15. Toovey S, Prinssen EP, Rayner CR, Thakrar BT, Dutkowski R, Koerner A, et al. Post-marketing assessment of neuropsychiatric adverse events in influenza patients treated with oseltamivir: An updated review. *Adv Ther.* 2012;**29**(10):826-48. doi: [10.1007/s12325-012-0050-8](https://doi.org/10.1007/s12325-012-0050-8). [PubMed: [23054689](https://pubmed.ncbi.nlm.nih.gov/23054689/)].
16. Taylor S. *The psychology of pandemics: Preparing for the next global outbreak of infectious disease.* Newcastle upon Tyne: Cambridge Scholars Publishing; 2019.
17. Taylor S, Asmundson GJG. *Treating health anxiety: A cognitive-behavioral approach.* Guilford Press; 2004.
18. Brake SJ, Barnsley K, Lu W, McAlinden KD, Eapen MS, Sohal SS. Smoking upregulates angiotensin-converting enzyme-2 receptor: A potential adhesion site for novel Coronavirus SARS-CoV-2 (Covid-19). *J Clin Med.* 2020;**9**(3):841. doi: [10.3390/jcm9030841](https://doi.org/10.3390/jcm9030841).
19. Correa G. *Coronavirus should not hinder your recovery from addiction.* [cited 5 March 2020]. Available from: <https://www.addictioncenter.com/community/coronavirus-should-not-hinder-your-recovery-from-addiction/>.
20. Schinaia C, Press J. Psychanalyse et crise environnementale. In: Magrenat L, editor. *La crise environnementale sur le divan.* Paris; 2019. p. 261-70. French.
21. Zhou X. Psychological crisis interventions in Sichuan province during the 2019 novel coronavirus outbreak. *Psychiatry Res.* 2020;**286**:112895. doi: [10.1016/j.psychres.2020.112895](https://doi.org/10.1016/j.psychres.2020.112895). [PubMed: [32120170](https://pubmed.ncbi.nlm.nih.gov/32120170/)].
22. 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. *The Lancet.* 2020;**395**(10227):912-20. doi: [10.1016/S0140-6736\(20\)30460-8](https://doi.org/10.1016/S0140-6736(20)30460-8).
23. Roy-Byrne P. *Psychological effects of quarantine: A qualitative "rapid review".* NEJM J Watch Psychiatry; [cited 23 March 2020]. Available from: <https://www.jwatch.org/na51030/2020/03/12/psychological-effects-quarantine-qualitative-rapid-review>.
24. Lothstein LM. The science and art of brief inpatient group therapy in the 21st century: Commentary on Cook et al. and Ellis et al. *Int J Group Psychother.* 2014;**64**(2):228-44. doi: [10.1521/ijgp.2014.64.2.228](https://doi.org/10.1521/ijgp.2014.64.2.228). [PubMed: [24611703](https://pubmed.ncbi.nlm.nih.gov/24611703/)].
25. Lieberman MA, Yalom I. Brief group psychotherapy for the spousally bereaved: A controlled study. *Int J Group Psychother.* 1992;**42**(1):117-32. doi: [10.1080/00207284.1992.11732583](https://doi.org/10.1080/00207284.1992.11732583). [PubMed: [1563900](https://pubmed.ncbi.nlm.nih.gov/1563900/)].
26. Roberts M. Balint groups: A tool for personal and professional resilience. *Can Fam Physician.* 2012;**58**(3):245-7. [PubMed: [22423015](https://pubmed.ncbi.nlm.nih.gov/22423015/)]. [PubMed Central: [PMC3303639](https://pubmed.ncbi.nlm.nih.gov/PMC3303639/)].
27. Afzal A, Kiyatkin EA. Interactions of benzodiazepines with heroin: Respiratory depression, temperature effects, and behavior. *Neuropharmacology.* 2019;**158**:107677. doi: [10.1016/j.neuropharm.2019.107677](https://doi.org/10.1016/j.neuropharm.2019.107677). [PubMed: [31228487](https://pubmed.ncbi.nlm.nih.gov/31228487/)]. [PubMed Central: [PMC6745248](https://pubmed.ncbi.nlm.nih.gov/PMC6745248/)].
28. Kumar S, Rao PS, Earla R, Kumar A. Drug-drug interactions between anti-retroviral therapies and drugs of abuse in HIV systems. *Expert Opin Drug Metab Toxicol.* 2015;**11**(3):343-55. doi: [10.1517/17425255.2015.996546](https://doi.org/10.1517/17425255.2015.996546). [PubMed: [25539046](https://pubmed.ncbi.nlm.nih.gov/25539046/)]. [PubMed Central: [PMC4428551](https://pubmed.ncbi.nlm.nih.gov/PMC4428551/)].
29. Goodlet KJ, Zmarlicka MT, Peckham AM. Drug-drug interactions and clinical considerations with co-administration of antiretrovirals and psychotropic drugs. *CNS Spectr.* 2019;**24**(3):287-312. doi: [10.1017/S109285291800113X](https://doi.org/10.1017/S109285291800113X). [PubMed: [30295215](https://pubmed.ncbi.nlm.nih.gov/30295215/)].
30. Chen R, Fang Z, Huang Y. Neuropsychiatric events in an adult patient with influenza a (H3N2) treated with oseltamivir (Tamiflu): A case report. *BMC Infect Dis.* 2019;**19**(1):224. doi: [10.1186/s12879-019-3827-4](https://doi.org/10.1186/s12879-019-3827-4). [PubMed: [30832611](https://pubmed.ncbi.nlm.nih.gov/30832611/)]. [PubMed Central: [PMC6399966](https://pubmed.ncbi.nlm.nih.gov/PMC6399966/)].
31. Huh K, Kang M, Shin DH, Hong J, Jung J. Oseltamivir and the risk of neuropsychiatric adverse events: A national, population-based study. *Clin Infect Dis.* 2020. doi: [10.1093/cid/ciaa055](https://doi.org/10.1093/cid/ciaa055).
32. Kang HR, Lee EK, Kim WJ, Shin JY. Risk of neuropsychiatric adverse events associated with the use of oseltamivir: A nationwide population-based case-crossover study. *J Antimicrob Chemother.* 2019;**74**(2):453-61. doi: [10.1093/jac/dky445](https://doi.org/10.1093/jac/dky445). [PubMed: [30418537](https://pubmed.ncbi.nlm.nih.gov/30418537/)].
33. Hama R. Fatal neuropsychiatric adverse reactions to oseltamivir: Case series and overview of causal relationships. *Int J Risk Safe Med.* 2008;**20**(1-2):5-36. doi: [10.3233/jrs-2008-0431](https://doi.org/10.3233/jrs-2008-0431).
34. Zhang W, Zhao X, Wu W, Zhang J. Recommended psychological crisis intervention response to the 2019 novel coronavirus pneumonia outbreak in China: A model of West China Hospital. *Precis Clin Med.* 2020. doi: [10.1093/pcmedi/pbaa006](https://doi.org/10.1093/pcmedi/pbaa006).
35. Javadi SMH, Arian M, Qorbani-Vanajemi M. The need for psychosocial interventions to manage the coronavirus crisis. *Iran J Psychiatry Behav Sci.* 2020;**14**(1). doi: [10.5812/ijpbs.102546](https://doi.org/10.5812/ijpbs.102546).
36. Hilty DM, Ferrer DC, Parish MB, Johnston B, Callahan EJ, Yellowlees PM. The effectiveness of telemental health: A 2013 review. *Telemed J E Health.* 2013;**19**(6):444-54. doi: [10.1089/tmj.2013.0075](https://doi.org/10.1089/tmj.2013.0075). [PubMed: [23697504](https://pubmed.ncbi.nlm.nih.gov/23697504/)]. [PubMed Central: [PMC3662387](https://pubmed.ncbi.nlm.nih.gov/PMC3662387/)].
37. Duan L, Zhu G. Psychological interventions for people affected by the COVID-19 epidemic. *Lancet Psychiatry.* 2020;**7**(4):300-2. doi: [10.1016/S2215-0366\(20\)30073-0](https://doi.org/10.1016/S2215-0366(20)30073-0). [PubMed: [32085840](https://pubmed.ncbi.nlm.nih.gov/32085840/)].
38. Zhu Y, Chen L, Ji H, Xi M, Fang Y, Li Y. The risk and prevention of novel Coronavirus pneumonia infections among inpatients in psychiatric hospitals. *Neurosci Bull.* 2020;**36**(3):299-302. doi: [10.1007/s12264-020-00476-9](https://doi.org/10.1007/s12264-020-00476-9). [PubMed: [32096116](https://pubmed.ncbi.nlm.nih.gov/32096116/)]. [PubMed Central: [PMC7056754](https://pubmed.ncbi.nlm.nih.gov/PMC7056754/)].