

Mental Health in The Context of The COVID 19 Pandemic

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Abstract

We explore the global evidence of major health crisis potential impacts and the factors influencing the mental health outcomes among the population during the outbreak of COVID-19. Preparation measures for a COVID-19 focus on rapid quarantine of social isolation and economic concerns have risen mental health considerations that become an integrated part of the pandemic outbreak. This outbreak of novel Coronavirus disease (COVID-19) pandemic is swayed an overall 213 countries, areas or territories, with over 2,921,439 confirmed cases and 203,289 confirmed deaths reported till 26 April 2020. This created a lot of strain and fear; fear of falling ill and dying of being infected leading to heightened levels of insurmountable psychological pressure. This scrutiny attempt to assess the widespread outbreaks of COVID-19 on mental health professionals, healthcare workers and general population in association with adverse mental health sequelae like generalized anxiety disorder (GAD), depressive symptoms, insomnia, panic attacks, post-traumatic stress disorder, OCD, suicidal behavior, delirium, psychosis, harmful alcohol consumption, and drug use. There is a need for more evocative exploration to intensify awareness to address the potential psychological and behavioral risks that will remain elevated as long as the COVID-19 pandemic continues in the community. In conclusion, incessant surveillance of the subsyndromal mental health problems for outbreaks should be part of galvanized global action during the quarantine.

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Introduction

The societal impact of pandemic recrudescence is more than a medical phenomenon, causing inevitable mental health effects on the general population, medical practitioners, as well as on the infected individuals. Individuals with mental illness and witnessed medical practitioners may be particularly highly vulnerable to perceived menace followed by anxiety-related behaviors and other major health concerns. The increased wield of masks as appropriate protective measure¹ but an incongruous shortage of protective paraphernalia cause exhaustion and fret in a densely populated country like India. The unavailability of basic protection measures like masks and sanitizers endangers worldwide health workers² especially with a robust healthcare infrastructure of India.

On 17th February 2020 Dr. Zhi-Ming Liu, the President of Wuhan Wuchang Hospital in Hubei province divulge the severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2) as a possible emergency, whereas the infection spread across the globe in a rapid pace, on the 30th January 2020, the COVID-19 declared as a global health emergency^{2,3}. According to Baud et al., 2020 the mortality statistics are underestimated⁴, however, the WHO report revealed the mortality rate to be between 3–4 %³. COVID-19 pandemic is an age-associated chronic condition, in support of this *Centers for Disease Control and Prevention*⁵ reported the severe outcomes among those 85 years plus and 80% of all United States COVID-19 deaths were among adults 65 years or older. Older adults are more vulnerable to this pandemic but mental health impacts can be particularly strenuous for patients with cognitive decline or dementia⁶. In 2003, approx. a 30% increase in suicide in those aged 65 years and older; 50% remained anxious after recovery; and 29% of health-care workers experienced emotional perturbation at the time of SARS epidemic^{7,8,9}.

The knowledge & attitudes with sufficient resources typically influence the degree of adherence to manage or attenuate pandemics' effects on the perceived state of health. *The* resilience training program for medical practitioners in the preparation of pandemic seen as a way of protecting strategies like timely addressing of fears and worries among the medical team¹⁰; education and preparation; ensuring

fairness and addressing ethical concerns; and ardent information on medical staff's redeployment to high-risk areas have incorporated at the outbreaks of the influenza pandemic and the exposed case of COVID-19. Despite this fact, the lack of sufficient resources to manage or attenuate pandemics has underlying effects on mental health conditions¹¹ regarding the older people and frontline female nurses reporting extremely frightening prodrome include PTSD, depression, and grief are of abiding concern.

This virus is also known to be transmitted by mildly ill or pre-symptomatic infected persons, which pose a challenge to control compared to the middle east respiratory syndrome (MERS) and SARS pandemics¹². The results are consistent with studies on the SARS outbreak which demonstrated that 18%-57% of medical providers experiencing bewilderment at the onset, during, and after the affliction¹³. As of 26th April 2020, a total of 2,921,571 cases has been reported from 210 countries and territories around the world; also, there are 203,299 confirmed deaths across the globe with 1,881,221 active cases, out of 97% (1,823,354) in mild condition and 3% (57,867) in critical condition. To date, Indian Govt. has registered over 26,496 confirmed cases and 824 deaths attributable to this disease. On March 15, 2020, *Psychiatric Times* accessed that the outbreak of the pandemic has collision on the existing illnesses and leads to an emergence of mental symptoms among the all age group¹⁴. The pandemic is possibly related to the interplay of both spread of the disease and the occurrence of mental disorders during and after the outbreak. An online survey reported approx. 80 % of candidates felt the need and 75 % agreed on the necessity for substantive advice from cognoscente and aficionado¹⁵. About 1/3rd participants having indecorous social behavior owing to the emotional and other psychological issues during this pandemic¹⁵.

To prevent the transmission of pestilential diseases among individuals and communities, effective quarantine, isolation, and preventive social distancing as a public health measure^{16,17}. The World Health Organization and Centers for Disease Control and Prevention recommend 14 days quarantine and social distancing, as, the COVID-19 pneumonia infection is believed to spread person to person primarily through droplets from the nose or mouth^{18,19}. (*WHO, 2020; Del Rio C & Malani PN, 2020*). As in the 14th century,

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quarantine was one of the fewest known measures during the plague epidemics⁵ but later on became as imperative components in addressing cholera and the current pandemic^{5,17,20}.

Mental health outcomes of quarantine and isolation reviews reported a high burden of mental health conditions among 33% of the participants²¹ among general population²² and healthcare providers^{21,23}. Although quarantine and isolation are adopted for protecting the physical health from infectious diseases, it is essential to consider the mental health implications for those individuals who experience such restrictions. People quarantined in earlier outbreaks of infectious diseases and increased social isolation following the pandemic outbreak have reported a perfect storm to harm people's mental health. Distress and initiating fear of falling sick or dying is expected to spark perpetual aggravating conditions in caregivers of affected individuals, which are expected to escalate day by day during this pandemic. Ultimately the outbreaks have the clinical outcome that can affect people with pre-existing mental illness and precipitating new psychiatric symptoms in those without mental illness.

Early identification and separation of suspected cases are the counteractive measures combating the pandemic²⁴ and have a large influence on the degree of adherence on the medical teams and the population at large²⁵. Due to the exaggerated rumors of the infection, there are perpetuations of the psychological trauma of bereaved families and victims are claimed longer than the general public avoided them, and were socially isolated even after being cured²⁶. A study done by *Deblina Roy et al., 2020* found about 72 % of participants reported aggravating mental health issue include intemperately worried being contaminated, approximately 40 % of the participants were paranoid and 12 % of the participants had sleeping difficulty concerned with the personal protective measures of themselves and their close ones during the ongoing pandemic¹⁵. People with less access to health care²⁷ and homelessness have chronic mental and physical conditions²⁸ along with high rates of substance abuse²⁹.

Framing Mental Health Risk Provoke by Novel Coronavirus

In support of this generalized fear and impede

behavior was common among the public during the early phase of the manifestation of SARS and 2014 Ebola outbreaks^{30,31}. Besides, lots of studies have documented several psychiatric co-morbidities with innumerable emotional distress during the outbreaks of SARS and Ebola³² such as posttraumatic stress disorder, anxiety-related symptoms caused by SARS³³; depression³⁴, psychomotor excitement, delirium, and psychotic symptoms³⁵, insomnia, and boredom cognate with quarantine following the infectious disease outbreaks and natural disasters like hurricanes, floods, and earthquakes^{36,37,38}. Further, 25% of the general population will be affected by the intensity and content of encompasses of mental disorders affected by considering mood disorders and anxiety during their lifetime³⁹.

The perpetual stigma can rise the pernicious stereotypes which may lead to cognitive distress and long term mental health disorders that prevent the worldwide population from seeking immediate healthcare measures by which symptoms frequently become serious and long-lasting. Symptoms like suicidality, anxiety, and stigmatization impacted the wellbeing^{22,40,41} that tend to be common in high-risk persons, especially survivors^{42,43}, affected individuals^{22,23,40}, frontline healthcare workers and professionals⁴⁴. Worthwhile the delayed effects presume the prolonged suffering is also manifested as post-traumatic stress, physically expressed anxiety, abuse of alcohol, and other addictive substances, perhaps it needs more time to determine and illicit the abuse. Compared with the general population the clinicians showed a higher intrusion sub-score and medical practitioners face burnout after the cessation of the incidence of such infections³² due to several reasons include long working hours, physical fatigue, risk of infection, and separation from families⁴⁵.

Anxiety

People without having pre-existing mental health conditions also anticipate a considerable increase in Agoraphobia (avoiding crowds)²³, helplessness symptoms, Similarly the swine flu pandemic evoked anxiety⁴⁶ following excessive worry about contracting Covid-19 among the public significantly. In due course identifying post-traumatic stress disorder and increased anxiety levels have been detrimental to pregnant

women, parents, and children. For instance, those who have asymptomatic transmission can trigger or potentiate additional fear, anxiety, and mental breakdown. Various psychological vulnerability factors motivate people to practice prophylactic diet of vinegar, kimchee, turnips and smoking cigarettes, additionally, today's digital technology can bridge social distance and at the same time the ever-spreading rumors via social media that escalate the adjusted odds ratio⁴⁷ of trepidation and prompt to adopt false cures to protect themselves during the Covid-19 public health emergency. The pooled standardized mean difference for anxiety was 1.45 (95% CI 0.56 to 2.34)⁴⁸ and found a significant percentage of psychiatric symptoms among healthcare workers with 29.8% stress^{49,50}, 24.1% anxiety and 13.5% depression respectively⁴⁹. In addition, study done by^[51,52] showed that women were more likely to have anxiety than men. In another literature review adverse maternal and neonatal outcomes with stress and anxiety concerning COVID-19⁵³. There is evidence of a high prevalence of anxiety^{21,22,23,40,41,48,54,55} whereas this specific mental health outcome was under-recognized in China⁵⁶.

Obsessive-Compulsive Symptoms

Additionally, populations include pregnant women, children, and patients with pre-existing illnesses deploy avoidant behavior, perceived dirtiness⁴¹, vigilant hand washing²³, and sterilizing compulsions to fortify themselves during pandemics. This drive of removing potential sources of contamination are driven by unwanted intrusive anxiety and fear of acquiring the highly contagious Covid-19. 75 % of patients with obsessive-compulsive symptoms have intense sensory experiences (pseudo-hallucinations) and perceptual experiences would amplify Contamination obsessions⁵⁷, undesirable intrusive worry and poorer insight⁵⁸ could worsen the viable inhalation injuries due to overuse of toxic cleaning supplies and atopic dermatitis^{59,60}. Warped information processing can easily be exacerbated the threat of infectious pandemics and tends to overestimate threats⁶¹ in association with increased negative behaviors in patients with obsessive-compulsive symptoms.

Depression

Depression has increased during and after quarantine, one study done in China reviewed 54% of

respondents rated the moderate or severe psychological impact of the Covid-19; 29% have anxiety symptoms; and 17% have depressive symptoms⁶². Several psychosocial conditions affected the mental health of the wellbeing and they perceive social exclusion or felt neglected^{40,41,54}, anger-hostility, fear, mood disorders^{41,63}, loneliness, boredom, low self-esteem⁵⁵ which can worsen by acknowledged privacy and freedom during isolation.

A 14-day self-quarantine may be the deterrent against an outbreak but if sequestration and social isolation occur for prolonged periods are associated with stress in adolescents and truncated sleep³⁸. Globally, pandemic planning to incorporate preparedness and capacity for conducting prospective patient-focused clinical research^{62,64,65} found an immediate psychological impact. Same reviewed by *Linda Barratt R and colleagues* about varying levels of stress found among the study participants who experienced quarantine⁴⁰; inadequate supplies, difficulty securing medical care and medications are specific stressors⁶³. It's a vulnerable interaction between biological and environmental stressors that subjectively affect decision-making. These stressors can be major precipitate and the helm of deterioration of clinical traits that impact on an already encumber health care system. As many health workers during the Ebola outbreak got infected without personal protective equipment and driven mainly by compassion⁶⁶.

Post-Traumatic Stress Disorder

Medical healthcare workers notably frontline female nurses reporting increased symptoms like distress, depression, emotion disturbance, and low sleep quality⁴⁵; which would lead to potential problems with treating people. In support of this^{23,63} reviewed that several mental health conditions like avoidance behavior posttraumatic stress-related symptoms, alcohol use, deterioration of work performance that will last even after three years of the quarantine period. Though mass home-confinement directives raise a concern about how people will react individually and collectively, reactions⁵ offer valuable advice for healthcare workers to abate secondary traumatic stress, including escalated cognizance of symptoms, recline from work, engaging in self-care, recline from media coverage. A study done by the *US Department of Veteran Affairs, 2008* noted

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the most prevalent mental health issue following a meta-analysis on disaster having high incidence rates of post-traumatic stress disorder^{67,68}, major depressive disorders being the second most common³⁷, and generalized anxiety disorders.

Norris and colleagues found incidents of acute stress disorder concerning the severity of crisis exposure instantaneous aftermath of a disaster³⁷. In another study done by National Governors Association Center, 2006 found 28.9% with PTSD and 31.2% with depression during a SARS outbreak in Toronto, Canada⁶⁹. Similarly in another study it revealed that 25% of the patients showed signs of PTSD and 15.6% with depression among the survivors of SARS³⁴. *Diagnostic and statistical manual of mental disorders, 2013* states that life-threatening viral infection does not meet the current criteria for a diagnosis of PTSD⁷⁰, however, other psychopathology, such as depressive and anxiety disorders, may ensue. Peril factors for mental health issues are high among children include poor mental health before a crisis³⁶ and stress with exhibit disruptive behaviors (aggression & outbursts of anger) and regressive behaviors may be more insidious among elementary children⁷¹, Whereas middle-aged adults, females, and those of lower socioeconomic status are more prone to PTSD^{67,68}.

While many people associate with PTSD but not all individuals are affected in the same manner, the medical practitioners developing brief/acute to PTSD⁷². As everyone witnessed or experienced a traumatic event differently, their intrusive memories and recurrent dreams are few of the deleterious symptoms⁷³. According to *Suedfeld*, aggravated stressful events create a desire to seek out the company of others, especially those who are undergo a homogeneous level of anxiety and trauma⁷⁴. Psychological and psychiatric needs should be conceded as a part of pandemic management and another study reviewed approx. 57% of the participants reported momentous distress anxiety, anger, confusion, and PTSD during the isolation and quarantine⁶³. On another side, study reviewed that people with entrenched neurosis have a lower life expectancy and poorer physical health outcomes⁷⁴.

Call for Action

The available literature has notably highlighted the emergence need for the predominant assistance

measure like psychological crisis intervention for tremendous psychological problems during COVID 19. In the acute phase of an outbreak, when health systems prioritize testing might also need intact psychological counseling and psychiatric screening plays a pivotal role in response to patient care. The essential measures are adopted differently from individual to individual based on the level of severity and diligent outcome of baseline mental health breakdown. A practical plan to provide enough essential services different subpopulations like medical practitioners, frontline nurses, health care workers, and public health agencies in the address to their psychological state to help them in strengthening personal resilience and professional performance.

The traumatized outbreak has a profound socioeconomic burden as financial loss or financial stress, loss, unemployment, homelessness^{76,77,78}, discrimination, and stigmatization^{23,79}. As not enough services are available for the medical practitioners dealing with infected patients to address their symptoms like anxiety, depression, suicidality⁸⁰ and post-traumatic stress disorder^{7,8}. The associated with psychological distress and symptoms of mental illness⁸¹ need a plethora of effective intervention programs to manage the needs of specific populations⁸² and precautionary measures⁸³.

Unfortunately, the pandemic has unique challenges in terms of the necessary preventive measures, specific treatment, and vaccines. This challenging pandemic outbreak exacerbates anxiety, psychosis-like symptoms, and non-specific mental issues that health education and awareness of causality & progression will be effective prevention of disease spread⁸⁴. With the above objective, we need to fill the lacunae in the existing literature to resolve a vigorous and multifaceted response.

Substantial evidence from the past studies regarding the pertinent need for strong social support systems in the periods before, during, and after the traumatic event⁸⁵ bolster the mental health following the courteous and rational communication. A study showed the urge for intense training of healthcare professionals to overcome their erudition and spurious believes during the Ebola outbreak in 2015⁸⁶. Following the H1N1 epidemic and Ebola virus outbreak in 2015, it was seen that the healthcare professionals and the general public have an intense urge for training and serious awareness

of pandemic^{84,86}. In review positive attitudes and better awareness among health professionals. One web-study done on the Chinese population found a high prevalence of GAD and poor sleep quality under no statistical significance difference between the prevalence of GAD with 35.1%, 20.1% depression, and 18.2% sleep respectively⁸⁷.

Though several online mental health services like telemedicine psychological counseling and awareness program have been constructed across different countries or areas, however, chaotic management and coordination could result in the inefficiency of the services. The adverse effect of the COVID-19 is overwhelming, could need multidisciplinary mental health science to priorities the social, psychological, and neuro-scientific aspects of this pandemic. Crucially, the psychotherapeutic treatments leveraged the functional capacity using cognitive and behavioral mechanisms to protect against the sustained feelings of self-harm, and emotional problems^{88,89}. Many of the anticipated consequences of quarantine⁶³ are strongly associated with experience low levels of anxiety⁹⁰, sustained feelings of loneliness and suicide attempts across the lifespan^{91,92} leads to exhaustion of resources during epidemics/pandemics. The limited knowledge with unconcerned attitudes has high-level coordination potential fallout of an economic downturn on mental health including alcohol and substance misuse, gambling, anxiety, and fear in the public^{44,81}. There should be a need for more enforcement on the awareness to mitigate distress and assess the exhibiting signs of the behavioral and emotional responses.

References

1. Feng S., Shen C., Xia N., Song W., Fan M., Cowling B.J. (2020) Rational use of face masks in the COVID-19 pandemic. *Lancet Respir. Med.* [Europe PMC free article] [Abstract] [Google Scholar]
2. WHO . (2020) Rolling Updates on Coronavirus Disease (COVID-19) URL <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen> (Accessed 3.31.20)
3. WHO . (2020) Coronavirus Disease 2019 (COVID-19) Situation Report – 46. URL https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200306-sitrep-46-covid-19.pdf?sfvrsn=96b04adf_2 (Accessed 3.31.20)
4. Baud D., Qi X., Nielsen-Saines K., Musso D., Pomar L., Favre G. (2020) Real estimates of mortality following COVID-19 infection. *Lancet Infect. Dis.* [PMC free article][PubMed] [Google Scholar]
5. Centers for Disease Control and Prevention (CDC). (2020) Morbidity and Mortality Weekly Report (*MMWR*), Section Navigation Severe Outcomes Among Patients with Coronavirus Disease 2019 (COVID-19) — United States, February 12–March 16, 2020 Weekly / March 27, 2020 / 69(12);343-346 On March 18, 2020, this report was posted online as an MMWR Early Release. <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm>
6. World Health Organization. (2020) Coronavirus disease (COVID-2019) situation reports. (2020). Accessed: March 27, 2020: <http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/mental-health-and-psychological-resilience-during-the-covid-19-pandemic>
7. Tsang HW, Scudds RJ, Chan EY. (2004) Psychosocial impact of SARS. *Emerg Infect Dis.*, 10: 1326-1327
8. Nickell LA, Crighton EJ, Tracy CS et al. (2004) Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. *CMAJ.*, 170: 793-798
9. Yip PS, Cheung YT, Chau PH, Law YW. (2010) The impact of epidemic outbreak: the case of severe acute respiratory syndrome (SARS) and suicide among older adults in Hong Kong. *Crisis.*, 31: 86-92
10. Aiello A, Khayeri MY, Raja S, et al. (2011) Resilience training for hospital workers in anticipation of an influenza pandemic. *J Contin Educ Health Prof.*, 31:15-20. 10.1002/chp.20096
11. Taylor S. (2019) *The Psychology of Pandemics: Preparing for the Next Global Outbreak of Infectious Disease*. Newcastle upon Tyne, Cambridge Scholars Publishing.
12. Gates B. (2020) Responding to covid-19 - a once-in-a-century pandemic?. *N Engl J Med.*, 10.1056/NEJMp2003762
13. Phua DH, Tang HK, Tham KY. (2005) Coping responses of emergency physicians and nurses to

- the 2003 severe acute respiratory syndrome outbreak. *Acad Emerg Med.*, 12:322-328. 10.1197/j.aem.2004.11.015
14. Psychiatrists beware! the impact of COVID-19 and pandemics on mental health. (2020). Accessed: March 15, 2020: <https://www.psychiatristimes.com/psychiatrists-beware-impact-coronavirus-pandemics-mental-health/>.
 15. Deblina Roy; Sarvodaya Tripathy, Sujita Kumar Kar,^{a,*}Nivedita Sharma,^a Sudhir Kumar Verma,^a and Vikas Kaushal. (2020) Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic" *Asian J Psychiatr.* Jun, 51: 102083.
 16. Centers for Disease Control and Prevention (CDC). (2017) Quarantine and Isolation [Internet]. [cited 2020 Mar 12]. Available from: <https://www.cdc.gov/quarantine/index.html>
 17. Tognotti E. (2013) Lessons from the history of quarantine, from plague to influenza A. Vol. 19, *Emerging Infectious Diseases*. Centers for Disease Control and Prevention (CDC), p. 254–9.
 18. Del Rio C, Malani PN. (2020) COVID-19 - new insights on a rapidly changing epidemic. *JAMA.*, 10.1001/jama.2020.3072
 19. World Health Organization. (2020) Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV) [https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-\(2005\)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-\(2019-ncov\)](https://www.who.int/news-room/detail/30-01-2020-statement-on-the-second-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-outbreak-of-novel-coronavirus-(2019-ncov)) (access Feb 17th, 2020) (2020).
 20. Bedford J, Enria D, Giesecke J, Heymann DL, Ihekweazu C, Kobinger G, et al. (2020) COVID-19: towards controlling of a pandemic. *Lancet.* pii: S0140-6736(20)30673-5. doi: [http://10.1016/S0140-6736\(20\)30673-5](http://10.1016/S0140-6736(20)30673-5). [Epub ahead of print]
 21. Sharma A, Pillai DR, Lu M, Doolan C, Leal J, Kim J, Hollis A. (2020) Impact of isolation precautions on quality of life: a meta-analysis. *J Hosp Infect* [Internet]. [cited 25 2020 Mar 12]; Available from: <https://linkinghub.elsevier.com/retrieve/pii/S0195670120300505>
 22. Gammon J, Hunt J, Musselwhite C. (2019)The stigmatisation of source isolation: a literature review. *J Res Nurs.*, 24(8):677–93.
 23. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Neil Greenberg Fm, James Rubin FrcpG, Wessely FMedSci S, Greenberg FRCPsych N, James Rubin G. (2020) The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *Lancet* [Internet]., 6736(20). Available from: <https://ssrn.com/abstract=3532534>
 24. Report of the WHO-China joint mission on coronavirus disease 2019 (COVID-19) . (2020). Accessed: March 15, 2020: <https://www.who.int/docs/default-source/coronaviruse/whochina-joint-mission-on-covid-19-final-report.pdf>.
 25. Rubin GJ, Wessely S. (2020) The psychological effects of quarantining a city. *BMJ.*, 368:313. 10.1136/bmj.m313
 26. Sim M. (2016) Psychological trauma of Middle East Respiratory Syndrome victims and bereaved families. *Epidemiol Health.*, 38:2016054. 10.4178/epih.e2016054
 27. Hwang SW, Ueng JJ, Chiu S, et al. (2010)Universal health insurance and health care access for homeless persons. *Am J Public Health*, 100: 1454–61.
 28. Tsai J, Gelberg L, Rosenheck RA. (2019) Changes in physical health after supported housing: Results from the Collaborative Initiative to End Chronic Homelessness. *J Gen Intern Med*, 34: 1703–08.
 29. Maremmani AG, Bacciardi S, Gehring ND, et al. (2017) Substance use among homeless individuals with schizophrenia and bipolar disorder. *J Nerv Ment Dis*, 205: 173–77.
 30. Person B, Sy F, Holton K, Govert B, Liang A, Garza B, et al. (2004) National Center for Infectious Diseases/SARS Community Outreach Team. Fear and stigma: the epidemic within the SARS outbreak. *Emerg Infect Dis.*, 10:358–63. DOI PubMed
 31. Shultz JM, Cooper JL, Baingana F, Oquendo MA, Espinel Z, Althouse BM, et al. (2020) The role of

- fear-related behaviors in the 2013–2016 West Africa Ebola virus disease outbreak. *Curr Psychiatry Rep.* 2016;18:104. DOI PubMed
32. Lee SM, Kang WS, Cho AR, Kim T, Park JK. (2018) Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. *Compr Psychiatry.*, 87: 123-127. 10.1016/j.comppsy.2018.10.003
 33. Su T.P., Lien T.C., Yang C.Y., Su Y.L., Wang J.H., Tsai S.L., Yin J.C. (2007) Prevalence of psychiatric morbidity and psychological adaptation of the nurses in a structured SARS caring unit during outbreak: a prospective and periodic assessment study in Taiwan. *J Psychiatr Res.*, 41:119–130. [PMC free article] [PubMed] [Google Scholar]
 34. Mak IW, Chu CM, Pan PC, Yiu MG, Chan VL. (2009) Long-term psychiatric morbidities among SARS survivors. *Gen Hosp Psychiatry.*, 31:318–26. DOI PubMed
 35. Xiang YT, Yang Y, Li W, Zhang L, Zhang Q, Cheung T, Ng CH. (2020) Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry.*, 7:228-229. 10.1016/S2215-0366(20)30046-8
 36. Lazarus, P.J., Jimerson, S.R., & Broch, S.E. (2003). Helping children after a natural disaster: Information for parents and teachers. In S. E. Brock, P.J. Lazarus, & S. R. Jimerson (Eds.), *Best practices in school crisis prevention and intervention* (pp. 435-450). Bethesda, MD: National Association of School Psychologists.
 37. Norris, F.H. (2005). Range, magnitude and duration of the effects of disasters on mental health: Review update. *Research Education Disaster Mental Health. Disaster Effects*, 1-23
 38. Solomon, S.D., & Green, B.L. (1992). Mental health effects of natural and human made disasters. *PTSD Research Quarterly*, 3, 1-8.
 39. Viana MC, Andrade LH. (2012) Lifetime prevalence, age and gender distribution and age-of-onset of psychiatric disorders in the São Paulo Metropolitan Area, Brazil: results from the São Paulo Megacity Mental Health Survey. *Braz J Psychiatry.*, 34:249-60.
 40. Linda Barratt R, Shaban R, Moyle W. (2011) Patient experience of source isolation: Lessons for clinical practice. *Contemp Nurse.*, 39(2):180–93.
 41. Gammon J, Hunt J. Source isolation and patient wellbeing in healthcare settings. *Br J Nurs.* 2018;27(2):88–91.
 42. Maunder, R. et al. (2003). The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *Canadian Medical Association Journal*, 168 (10), 1245-1251.
 43. Zheng, G. (2005). Exploratory study on psychosocial impact of the severe acute respiratory syndrome (SARS) outbreak on Chinese students living in Japan. *Asia-Pacific Journal of Public Health*, 17(2), 124-129.
 44. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. (2020) Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. *Psychiatry and Clinical Neurosciences*. In press.
 45. Kang L, Li Y, Hu S, Chen M, Yang C, Yang BX, et al. (2020) The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. *Lancet Psychiatry*. In press.
 46. Everts J. (2013) Announcing swine flu and the interpretation of pandemic anxiety. *Antipode.*, 45:809–825.[Google Scholar]
 47. Banerjee D. (2020) The COVID-19 outbreak: crucial role the psychiatrists can play. *Asian J. Psychiatry.*, 102014. [PubMed] [Google Scholar]
 48. Pursell E, Gould D, Chudleigh J. (2020) Impact of isolation on hospitalised patients who are infectious: systematic review with meta-analysis. *BMJ Open.*, 10(2):e030371.
 49. Zhu Y., Chen L., Ji H., Xi M., Fang Y., Li Y. (2020) The Risk and Prevention of Novel Coronavirus Pneumonia Infections among inpatients in Psychiatric Hospitals. *Neurosci. Bull.*, 36(3):299–302. doi: 10.1007/s12264-020-00476-9.[PMC free article] [PubMed] [CrossRef] [Google Scholar]
 50. Zhu Z., Xu S., Wang H., Liu Z., Wu J., Li G., Miao J., Zhang C., Yang Y., Sun W., Zhu S., Fan Y., Hu J., Liu J., Wang W. (2020) *Health Workers*. Cold Spring Harbor Laboratory Press; Yale: COVID-19 in Wuhan:

- Immediate Psychological Impact on 5062. medRxiv 2020.02.20. [CrossRef] [Google Scholar]
51. Guo X., Meng Z., Huang G., Fan J., Zhou W., Ling W., Jiang J., Long J., Su L. (2016) Meta-analysis of the prevalence of anxiety disorders in mainland China from 2000 to 2015. *Sci Rep.*, 6:28033. [PMC free article] [PubMed] [Google Scholar]
 52. Gao W., Ping S., Liu X. (2020) Gender differences in depression, anxiety, and stress among college students: a longitudinal study from China. *J Affect Disord.*, 263:292–300.[PubMed] [Google Scholar]
 53. Rashidi Fakari F., Simbar M. (2020) Coronavirus pandemic and worries during pregnancy; a letter to the editor. *Arch. Acad. Emerg. Med.* 8(1):e21. [PMC free article] [PubMed] [Google Scholar]
 54. Morgan DJ, Diekema DJ, Sepkowitz K, Perencevich EN. (2009) Adverse outcomes associated with contact precautions: A review of the literature. *Am J Infect Control [Internet].*, 37(2):85–93. Available from: <http://dx.doi.org/10.1016/j.ajic.2008.04.257>
 55. Abad C, Fearday A, Safdar N. (2010) Adverse effects of isolation in hospitalised patients: a systematic review. *J Hosp Infect.*, 76(2):97–102.
 56. Duan L, Zhu G. (2020) Psychological interventions for people affected by the COVID-19 epidemic. *Lancet Psychiatry*, 7: 300–2.
 57. Moritz S, Purdon C, Jelinek L, et al. (2018) If it is absurd, then why do you do it? The richer the obsessional experience, the more compelling the compulsion. *Clin Psychol Psychother.*, 25:210-216.
 58. Ferrao YA, Shavitt RG, Prado H, et al. (2012) Sensory phenomena associated with repetitive behaviors in obsessive-compulsive disorder: an exploratory study of 1001 patients. *Psychiatry Res.*, 197(3):253-258.
 59. Gupta MA, Gupta AK. (2019) Self-induced dermatoses: A great imitator. *Clin Dermatol.*, 37 (3):268-277.
 60. Gieler U, Consoli SG, Tomas-Aragones L, et al. (2013) Self-inflicted lesions in dermatology: terminology and classification--a position paper from the European Society for Dermatology and Psychiatry (ESDaP). *Acta Derm Venereol.*, 93(1): 4-12.
 61. Exner C, Zetsche U, Lincoln TM, Rief W. (2014) Imminent danger? Probabilistic classification learning of threat-related information in obsessive-compulsive disorder. *Behav Ther.*, 45 (2):157-167.
 62. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho CS, et al. (2020) Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*; 17:1729.
 63. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N. (2020) The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* (London, England): In press. [PMC free article] [PubMed]
 64. Lurie N, Manolio T, Patterson AP, et al. (2013) Research as a part of public health emergency response. *N Engl J Med.*, 368: 1251- 1255.
 65. World Health Organisation. (2016) *Guidance for Managing Ethical Issues in Infectious Disease Outbreaks*. Geneva, Switzerland: WHO; 2016. Douglas • Preparing for Pandemic Influenza and its Aftermath
 66. Senga M, Pringle K, Ramsay A, et al. (2016) Factors underlying ebola virus infection among health workers, Kenema, Sierra Leone, 2014-2015. *Clin Infect Dis.*, 63:454-459. 10.1093/cid/ciw327
 67. United States Department of Veteran Affairs. (2008) National center for posttraumatic stress disorder. Risk factors for adverse outcomes in natural and human caused Disasters. A review of the empirical literature. Retrieved July 1,2008 from: http://www.ncptsd.va.gov/ncmain/ncdocs/fact_shts/fs_riskfactors.html
 68. United States Department of Veteran Affairs. (2008) National center for posttraumatic stress disorder. Survivors of Natural Disasters and Mass Violence. Retrieved June 22, 2008 from http://www.ncptsd.va.gov/ncmain/ncdocs/fact_shts/fs_survivors_disaster.html
 69. National Governors Association Center for Best Practices. (2006) Preparing for a pandemic influenza: A primer for governors and senior state officials.

- Retrieved June 16, 2008 from <http://www.nga.org/portal/site/nga>
70. Trauma- and stressor-related disorders. In: Diagnostic and statistical manual of mental disorders. 5th ed. Arlington, VA: American Psychiatric Association, 2013:265-90.
 71. HealthLink Medical College of Wisconsin. (2008) Helping children and adolescents cope with violence and disaster. Retrieved August 1, 2008, from: <http://healthlink.mcw.edu/article/984000570.html>
 72. Severance EG, Dickerson FB, Viscidi RP, et al. (2011) Coronavirus immunoreactivity in individuals with a recent onset of psychotic symptoms. *Schizophr Bull.*, 37:101-107. 10.1093/schbul/sbp052
 73. Liberzon, I. et al. (1999). Brain activation in PTSD in response to trauma-related stimuli. *Biological Psychiatry*, 45 (7), 817-826.
 74. Suedfeld, P, (1974). Social isolation: A case for interdisciplinary research. *The Canadian Psychologist*, 15, 1-14.
 75. Rodgers M, Dalton J, Harden M, Street A, Parker G, Eastwood A. (2018) Integrated care to address the physical health needs of people with severe mental illness: a mapping review of the recent evidence on barriers, facilitators and evaluations. *Int J Integr Care*, 18:9.
 76. O'Connor RC, Nock MK. (2014) The psychology of suicidal behaviour. *Lancet Psychiatry.*, 1: 73-85
 77. John A, Glendenning AC, Marchant A et al. (2018) Self-harm, suicidal behaviours, and cyberbullying in children and young people: systematic review. *J Med Internet Res.*, 20: e129
 78. Turecki G, Brent DA, Gunnell D et al. (2019) Suicide and suicide risk. *Nat Rev Dis Primers.*, 5: 74
 79. Shigemura J, Ursano RJ, Morganstein JC, et al. (2020) Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. *Psychiatry Clin Neurosci.*, Epub ahead of print.
 80. Ford-Jones PC, Chaufan C (2017) A critical analysis of debates around mental health calls in the prehospital setting. *Inquiry.*, 54:46958017704608. 10.1177/0046958017704608
 81. Bao Y, Sun Y, Meng S, Shi J, Lu L. (2020) 2019-nCoV epidemic: address mental health care to empower society. *Lancet* (London, England). 22 (395), e37–e38. In press.
 82. Yang, Y., Li, W., Zhang, Q., Zhang, L., Cheung, T., Xiang, Y.-T. (2020) Mental health services for older adults in China during the COVID-19 outbreak. *Lancet Psychiatry* 7(4), e19.
 83. Liu, S., Yang, L., Zhang, C., Xiang, Y.T., Liu, Z., Hu, S., Zhang, B. (2020a) Online mental health services in China during the COVID-19 outbreak. *Lancet Psychiatry* 7 (4), e17–e18.
 84. Johnson E.J., Hariharan S. (2017) Public health awareness: knowledge, attitude and behaviour of the general public on health risks during the H1N1 influenza pandemic. *J. Public Health.*, 25: 333–337. [Google Scholar]
 85. Gibson, J.L., Ivancevich, J.M., Donnelly, J.H., & Konopaske, R. (2002). Organizations: Behavior, structure, processes. New York City: McGraw-Hill/Irwin Publications.
 86. Abebe T.B., Bhagavathula A.S., Tefera Y.G., Ahmad A., Khan M.U., Belachew S.A., Brown B., Abegaz T.M. (2016) Healthcare professionals' awareness, knowledge, attitudes, perceptions and beliefs about Ebola at Gondar University Hospital, Northwest Ethiopia: a cross-sectional study. *J. Public Health Afr.*, 7:570. [PMC free article] [PubMed] [Google Scholar]
 87. Yeen Huang and Ning Zhao. (2020) Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res.*, 112954. 10.1016/j.psychres.2020.112954 [Epub ahead of print]
 88. O'Connor RC, Kirtley OJ. (2018) The integrated motivational-volitional model of suicidal behaviour. *Philos Trans R Soc Lond B Biol Sci.*, 37320170268
 89. Stack S. (1988) Suicide: media impacts in war and peace, 1910–1920. *Suicide Life Threat Behav.*, 18: 342-357
 90. Mishra P., Bhadauria U.S., Dasar P.L., Kumar S., Lalani A., Sarkar P., Chauhan A., Godha S., Vyas S. (2016) Knowledge, attitude and anxiety towards

pandemic flu a potential bio weapon among health professionals in Indore City. *Przegl. Epidemiol.*, 70:125–127. 41–5. [PubMed] [Google Scholar]

91. Elovainio M, Hakulinen C, Pulkki-Råback L et al. (2017) Contribution of risk factors to excess mortality in isolated and lonely individuals: an analysis of data from the UK Biobank cohort study. *Lancet Public Health.*, 2: e260-e266
92. Matthews T, Danese A, Caspi A et al. (2019) Lonely young adults in modern Britain: findings from an epidemiological cohort study. *Psychol Med.*, 49: 268-277