

Review Article

NCOVID-19 Could Determine your Death Date, the Associated Mental Health Crisis in an Uncertain World. A Narrative Review

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Abstract

Novel Corona-virus are large families and groups of viruses causing major illnesses among individuals. The infection originated in the Middle East in China's Wuhan City, later spreading to multiple countries across the continent. The acute respiratory disease has resulted in the death of about 500 Chinese, with it threatening given the majority of infections recorded across the globe. This paper hence introduced Novel Corona-virus, explored the methodology of diseases, the results, genetics, and biochemical characteristics, later providing a clinical analysis and conclusion on the virus.

Keywords: Corona virus; Corona virus outbreak

Introduction and Background

At the end of 2019 Dec 31, Cluster of pneumonia cases of unknown cause surfaced in Wuhan province, China that were

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later identified as severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) [1-3]. The pathogen has been identified as a novel enveloped RNA betaCorona virus which is phylogenetically similar to SARS-CoV [3,4]. The human-to-human transmission of the novel Corona virus (SARS-CoV-2) has been shown in multiple reports, including data from 425 patients in Wuhan, China [5]. Globally, about 3.4% of reported COVID-19 cases have died. In contrast, seasonal flu generally kills far smaller number than infected about 1% [6]. Due to extensive global transmission of Covid-19, the World Health Organization declared Covid-19 to be a pandemic on March 11, 2020 [7].

Patients with the illness, called Corona virus disease 2019 (Covid-19), frequently present with fever, cough, and shortness of breath within 2 to 14 days after contact [8]. WHO reported an incubation period of COVID-19 between 2 and 10 days [9]. In a study published on February 9 showed incubation period to be as long as 24 days [10]. And in another study presented that the median number of days from displaying of first symptom to death time ranged (6-41) days and average 14 days, and it tended to be shorter in people of old age ;70 years or more ranged (6-19) days and average of 11.5 days than those aged less than 70 years ranged (10-41) days and average of 20 days [11].

A study published in Washington showed that the mean onset of symptoms prior to presenting to the hospital was 3.5 days, and (81%) were admitted to the ICU less than 24 hours after hospital admission. An abnormal chest radiograph was observed in (95%) at admission. The most common findings on initial radiograph were bilateral reticular nodular opacities [52%] and ground-glass opacities [48%] [12]. And another study published in China, displayed that on admission, the degree of severity of Covid-19 was categorized as nonsevere and severe. Moreover, the presence of any coexisting illness was more common among patients with severe disease than among those with nonsevere disease (38.7% vs. 21.0%). However, the exposure history between the two groups of disease severity was similar [10].

NCOVID-19 & The Mental Health Crises

“A national survey from the American Psychiatric Association (APA) shows COVID-19 is seriously affecting Americans’ mental health, with half of US adults reporting high levels of anxiety” [13]. Surveys conducted show that most of the stressful triggers were fear of dying from contacted COVID-19, financial concerns due to loss or reduced source of income and loved ones falling sick due to COVID19. “Research has demonstrated that social connectedness and engagement with other people are important to promote successful aging; but that’s being directly challenged by physical distancing policies” [14] says Dr. Brent Forester, co-president of the American Association for Geriatric Psychiatry. Due to social distancing, many individuals are contained inside their residences. This prolonged isolation can potentially lead to devastating effects on the mental health of the general population. “For many, there is no work, no

spending time with people we care about, no going to movies or shows, no doing discretionary shopping, no going to school. Parents with children at home report frustration about balancing working from home with completing home-schooling packets” [15]. The effects in deteriorating of one’s mental health are not limited to the general public; in fact many frontline workers are greatly affected by this ordeal as well. “Therapists who spend hours each day soothing the fears of others say they are not immune to the anxiety all around them” [16]. Additionally, “Physicians on the front lines of this unprecedented time report not having the proper protective equipment and worrying about the possibility of exposing their families to SARS-CoV-2” [3].

Aside from the general public and healthcare workers, individuals previously diagnosed with a mental illness are also at risk of a decline in their mental health. Individuals “...who have pre-existing mental conditions related to mood, anxiety, stress, or obsessive tendencies. They are probably going to have an increase in their symptoms, and as such, a corresponding need for adjusting treatment” [15]. However, Dr. Jeffrey A. Lieberman, chairman of the Department of Psychiatry at Columbia University, has noted that “Interestingly, people with serious mental illnesses, such as schizophrenia and non affective and affective psychoses, seem to be less vulnerable to the stress-inducing effects of catastrophe” [17].

To counteract this surge in mental health and help distressed individuals, many healthcare workers such as, “licensed psychologists, psychotherapists, and social workers have signed up to offer free therapy sessions to healthcare professionals who find themselves psychologically overwhelmed by the pandemic’s economic, social, and financial fallout” [18]. This movement was initiated in Toronto, Canada, by Karen Dougherty who is a psychotherapist and was followed later by the state of New York. Governor Cuomo of New York, encouraged this movement and removed the limitations of accessibility to only healthcare professionals on March 21, 2020. “If there ever were a time when we can use all the emotional support possible, then it would be during a global pandemic” [18], said Amin Azzam MD, professor of psychiatry, University of California, San Francisco and UC Berkeley. As social distancing remains the crucial to combat COVID-19 crisis, one cannot deny the long lasting effects it may lead to mental health and what the future unfolds.

Preventing the Spread of Severe Acute Respiratory Syndrome Corona virus 2 (SARS-COV-2)

Understanding the method of transmission is a key aspect in combating the spread of severe acute respiratory syndrome Corona virus 2 (Covid-19). Person-to-person spread of the virus is thought to occur mainly via respiratory droplets, resembling the spread of the popular “flu” influenza. With droplet transmission, virus released in the respiratory secretions when a person with infection coughs, sneezes, or talks can infect another person if it makes direct contact with the mucous membranes; infection can also occur if a person touches an infected surface and then touches his or her eyes, nose, or mouth. Droplets typically do not travel more than six feet (about two meters) and do not linger in the air [1].

Whether Corona virus can be transmitted through the airborne route is unknown, however the spread of severe acute respiratory syndrome Corona virus 2 (SARS-CoV-2) can be prevented by:

1. Social distancing by staying at home- The most common means of contacting the virus is through by person-person contact as stated earlier. Staying away from crowds and also people can help reduce the spread of the virus, as most people are asymptomatic during the first 2weeks of exposure.
2. Infection control- Interventions to reduce transmission of COVID-19 include universal source control (e.g covering the nose and mouth), the use of appropriate personal protective equipment (PPE) when caring for patients with the virus, and environmental disinfection.
3. Use of face masks in and outside the home- This can prevent droplet transmission of 6 ft distance as stated earlier. Fabric mask can prevent infection spread to an extent but more studies need to be conducted. Proper laundry of fabric mask should be done if used 3 or more times while the surgical mask must be disposed after each use.
4. Hand hygiene- This includes diligent hand washing, use of hand sanitizers. This should also be performed immediately before and after any contact with the face covering, including cloth coverings.

NCOVID-19: The Healthcare System around the World was not ready for a Pandemic

Since the last major pandemic in 1918, the Spanish flu that killed millions, to the latest novel corona virus 2019 - or COVID-19 - it is evident that the world has faced challenges in containing a global outbreak. As a consequence of the rapidly increasing number of COVID-19 cases, a large amount of pressure has been placed on the healthcare system. Necessary steps and strategic measures need to be enforced immediately to help alleviate the strain and help manage the global outbreak. The following discussion highlights the various aspects of the healthcare system that are impacted by the COVID-19 pandemic and how healthcare systems around the world are struggling to cope.

In order to combat any disease, a critical tool is to ensure adequate testing and surveillance methods for mass population, which is crucial especially for a rapidly spreading infectious disease like COVID-19. Without adequate amount of testing, it will be difficult to understand and assess the severity of the outbreak, and as a result enact necessary containment protocols. The surging number of COVID-19 cases and unprecedented infection rate has led to a global shortage of COVID-19 testing kits [19]. Under these circumstances, to make the most of the limited number of testing kits, various nations have implemented certain criteria that must be met in order to be eligible for testing [19]. In the United States for example, the Center for Disease Control and Prevention (CDC) implemented criteria wherein the patient display symptoms of COVID-19, have a recent travel history to areas of an outbreak, and come in direct contact with a person who is infected with COVID-19 [20]. This limits the amount of people that can be tested and excludes asymptomatic carriers of COVID-19. As a result of this and the inadequacy of testing, increasing number of individuals can be at risk while asymptomatic carriers further the spread of infection.

Another major aspect that has been causing adversities during the outbreak is the absence of a vaccine to prevent further spread. Doctors instead have been trialing and giving a variety of different treatments based on symptoms and the antiviral and anti-inflammatory properties of drugs. For example, several countries around the world have been using various therapies such as chloroquine, hydroxychloroquine,

and azithromycin among others [21]. However, on the basis of age, symptoms, co-morbidities and other factors like the severity of the disease at the time of administration of these drugs, individuals are responding differently making it difficult to establish a cure as well. Without an effective vaccine and cure, it is difficult to contain the spread of COVID-19.

As COVID-19 spreads, the limited hospital capacity and the challenge to accommodate the increasing number of patients is another challenge faced. Due to this, only a small number of patients can receive healthcare at any given time – far less than the number of cases there are worldwide. In the United States, estimates have indicated that even in the absence of a public health emergency, 65% of hospital beds and ICU beds are routinely occupied [22]. With the exponential growth rate of COVID-19 patients, the demand for the remaining available hospital and ICU beds would far exceed the hospital capacity. In Italy, due to the influx of COVID-19 patients, elective and semi-elective procedures have been postponed, operating theatres converted into makeshift ICUs, while corridors and administrative areas are lined up with patients with no beds [23]. Various other countries as well have been scrambling to establish makeshift hospitals in an attempt to accommodate the large surge in patients. China, for example, has converted 13 public places into makeshift hospitals for patients with COVID-19 [24]. Even with these new establishments underway, there are limitations to be mindful of, such as the time needed to build or to convert a place into a makeshift hospital. Despite these efforts, due to the limited capacity and strained resources, hospitals are still unable to provide timely care as needed. In South Korea, for example, in the face of hospital bed shortages, multiple patients died at home while awaiting admission [24].

As critical cases continue to grow, so does the need for medical equipment. Most critical patients with COVID-19 have been found to be in need for respiratory support, thereby highlighting the need for equipment such as ventilators. An audit of patients from England, Wales and Northern Ireland has found that two thirds of COVID-19 patients who required critical care in the UK, had mechanical ventilation within 24 hours of admission [25]. Currently in the United States, there's an estimate of around 160,000 ventilators with up to another 20,000 in the Strategic National Stockpile [25]. However, as the number of cases continues to grow, the number of ventilators currently available will not be sufficient to meet the demands of the increasing number of COVID-19 patients. Various countries around the world are putting in effort to manufacture ventilators to help decrease some of the pressure faced by the healthcare communities. For example, the National Health Service of the UK has a goal to manufacture 20,000 ventilators [26]. Several manufacturing companies including Dyson, Ford, General Motors, Toyota and Tesla have also been tasked to produce ventilators [27]. An aspect to consider in this case, however, is that as more ventilators are being manufactured, there will also be a need for more trained professionals to be able to operate the ventilators.

The rapid depletion of Personal Protective Equipment (PPE) which includes, gloves, masks, gowns, face shields, and respirators (i.e. N95) is yet another challenge faced during this pandemic. With the surge of COVID-19, there is a shortage of the current global stockpile of PPE, partly due to panic buying and hoarding of medical supplies by the general population, and partly due to disruptions in the global supply chain [28]. Before this pandemic for instance, China was one of the

world's largest producers of facemasks, but as the infection became widespread in China, they halted exports [29]. The inappropriate use of PPE, manufacturing and logistical limitations will continue to give further rise to shortages. This poses a threat to frontline healthcare workers resulting in an increased risk of infection. In several countries like Italy and China, numerous healthcare providers have experienced high rates of infection and death [30]. The loss of healthcare workers to the infection will further strain an already struggling healthcare system.

In conclusion, Scientists have established close relations between human contact and the spread of the virus, with significant hosts, including bats, and camel product consumption. Individuals across the world are required to remain active in preventing themselves from the infection, with those infected taking emergency medical treatments to reduce its spread and effects across populations.

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