

Review Article

NCOVID-19, Key Questions for Impact Analysis: A Worldwide Pandemic

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Abstract

Novel Corona-virus is 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: Coronavirus; Coronavirus outbreak

Introduction

In 2019, the Novel Corona-virus (2019-nCoV) broke out in Wuhan, mainland China and it continues to spread very fast around the globe [1,2]. The reproductive number (Ro) of the virus has reached highs of 4.8 as per recent studies, surpassing the initial WHO estimates of between 1.4 and 2.5 [3]. There have been 20,704 cases of 2019-nCoV in 28 countries worldwide as of February 4, 2020 [4]. Notable Asian countries that have been hit by the 2019-nCoV include Singapore, Taiwan, Malaysia, Japan, Thailand, and South Korea [5]. There have also been 427 fatalities globally, with 425 being from China and the other two from the Philippines and Hong Kong [6]. The Center for Disease Control and Prevention (CDC) revealed that as of December 2019, there had been eleven 2019-nCoV infections in the United States [7]. These infections are in the states of Washington,

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Illinois, Arizona, Massachusetts, and California [7]. Efforts are underway by the CDC to prevent an outbreak of the same, with 82 cases pending more investigation in 36 states countrywide [8]. Apart from declaring it as a Public Health Emergency, the United States has issued 14-day quarantine for citizens arriving from mainland China [9]. Previous cases of Corona virus outbreaks, namely the SARS (Severe Acute Respiratory Syndrome) and MERS (Middle East Respiratory Syndrome) in 2002 and 2012 respectively, have been used for comparison purposes in the quest of finding a vaccine for the 2019-nCoV [10].

The emergence of COVID-19: How did we get here?

Findings show that 41 admitted patients were confirmed to have 2019-nCoV infection in Wuhan, China [5]. Men were 30 (73 percent), with the rest 11 being women [11]. Less than half had other diseases, including cardiovascular disease (15%), hypertension (15%), and diabetes (20%), among other underlying conditions (32%) [12]. 66% of the population (27 individuals) were exposed to the Huanan seafood market, with confirmation of a single-family cluster [13]. Onset symptoms among patients included fever, coughs, fatigue, and myalgia, with less known symptoms, including sputum production, hemoptysis, headaches, and diarrhea [14]. Twenty-six patients developed lymphopenia, 22 had dyspnea, and all of them had pneumonia with abnormal findings during a CT chest scan [2,9]. Thirteen patients were admitted to ICU with multiple complications, including RNAemia-6, acute cardiac injury-5, and secondary critical infections-4 [15]. Among them, 6 (15%) died. Results also showed that patients in ICU had higher levels of plasma [4].

NCOVID-19: The transmission dynamics of the virus

The 2019-nCoV cause was unknown when it broke out in the Huanan seafood market on December 31, 2019 [6]. There were 59 cases reported with symptoms such as fever and dry cough, leading to the shutting down of the market as of January 1, 2020 [16]. The suspected cases were isolated by medical experts and quarantined in Jin Yin-Tan hospital. Issuing of the N95 masks and several airborne precautions were put in place following the outbreak [17]. However, recent studies stated that there is no correlation between the continued exposure to the live animal market and the virus infection [18]. This is also supported by the fact that less than 15% of people with new diseases have visited the market over the past week [19]. Transmission is from one person to the other, and the asymptomatic nature of the infected can inhibit early diagnosis as it continues to spread around the globe [20]. More information is being gathered on whether infection occurs more from asymptomatic people or from individuals in the incubation period. This will be relevant in the ongoing control efforts by the World Health Organization (WHO), which declared the virus a Global Public Health Emergency on January 30, 2020 [1]. Currently, 18 million people have been isolated in China's cities of Wuhan and Huanggang in a bid to control the spread of the virus [21]. The nearby town of Ezhou has also closed off its transport links to the affected cities [9]. Other countries such as the USA have continued extracting

their citizens from mainland China, while others have initiated travel bans over the same [19].

NCOVID-19: The urgent need to control the virus spread

Very little is known about the biochemical composition of the virus and its ability to get and spread to people [1]. The structure of the virus, including biochemical changes on the primary and host cells after the infection. Biochemical indicators of the illness are its inflammatory effects on the body organs and systems [5]. The ability of the body to control the kidneys, heart, liver, lungs, and blood clotting is affected. Serum biochemical tests focus on liver functioning, lactate dehydrogenase, renal function, and electrolytes [22].

Genetics of the disease

During the research, a next-generation gene sequencing was established from bronchi-alveolar lavage fluid [23]. Partial and complete 2019nCoV genome sequences were obtained from patients. Sanger sequencing was used to get the full length of genomes until the end of cDNA amplification [13].

The emergence of NCOVID-19 & clinical questions needed for impact control

In China, over 70 percent of the infection cases are male with a median age of 45 years, according to recent studies [24,25]. Despite the fact the 2019-nCoV can infect people of all ages, senior people with underlying medical conditions such as diabetes or heart diseases are more susceptible to severe attacks from the virus [26]. It's important to note that symptoms may appear in as few as two days or even take up to 14 days due to the varying incubation periods [10]. During this time, the patient might be contagious to others without exhibiting any symptoms [27]. At the onset of infection, common symptoms noticed are fever, cough, and myalgia or fatigue [8]. Less common symptoms are the production of sputum, diarrhea, headache, and hemoptysis. All these symptoms were exhibited by a small group of patients admitted to a China hospital on January 2, 2020 [11]. Another small percentage developed dyspnoea and lymphopenia in the later stages of the virus infection [16]. In all the cases tested, all patients had pneumonia with abnormal results on their chest CT scans, where a majority were admitted to ICU [28]. These abnormalities included cases such as acute respiratory distress syndrome and severe cardiac injury, in which 15 percent of fatalities were recorded [14]. The clinical analysis of the 2019-nCoV thus concludes that it is involved with a high mortality rate and ICU admission [18]. Future studies of the clusters of the severe respiratory illness caused by the virus will help identify its origin and clinical spectrum [12].

Key questions for impact control and the global impact in world economy

With the sprout of the viral infection, scientists and scholars are racing to answer and determine multiple unanswered questions, including the contagiousness of the disease and its dangers [25,29]. Questions also reflect on how far the virus is spread across the world, measures to completely stop it, among others, to understand the real causes of the infection and ways to mitigate it from spreading in the future [3].

Conclusion

Conclusively, this research is useful in exploring the primary causes, symptoms, clinical evidence, biochemistry, genetic composition, and threats posed by the coronary virus, including strategies experts are integrating to guarantee its prevention and treatment [27]. Scientists have established close relations between human contact and the spread of the virus, with significant hosts, including bats, portly, and camel product consumption [3,30]. 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 [17].

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