



NOVEL CORONAVIRUS DISEASE (SARS-COV-2): AN OVERVIEW

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AUTHORS' CONTRIBUTIONS

This work was carried out in collaboration among all authors. Author DP wrote the first draft of manuscript. Author TI framed and edited the manuscript. Author MAM edited the manuscript. All the authors read and approved the final manuscript.

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ABSTRACT

The COVID-19 pandemic has brought about school terminations and removing necessities that have upset both work and day to day life for some. Concerns exist that these disturbances brought about by the pandemic might not have impacted people scientists similarly. The virus originated in bats and was transmitted to humans through yet unknown intermediary animals in Wuhan, Hubei province, China in December 2019. The symptoms are usually fever, cough, sore throat, breathlessness, fatigue, malaise among others. Treatment is essentially supportive; role of antiviral agents is yet to be established. Prevention entails home isolation of suspected cases and those with mild illnesses and strict infection control measures at hospitals that include contact and droplet precautions. The virus spreads faster than its two ancestors the SARS-CoV and Middle East respiratory syndrome coronavirus (MERS-CoV), but has lower fatality. The global impact of this new epidemic is yet uncertain.

Keywords: Coronavirus; pandemic; transmission; symptoms.

1. INTRODUCTION

Coronavirus disease (COVID-19) is a worldwide pandemic and affecting 219 countries and territories around the world. As of January 20, 2021, contaminated patients were available in 185 nations and there were > 96,742,480 cases detailed around the world, with an active cases of 25,240,390 among them currently infected patients are 25,128,213 (99.6%) in Mild Condition, 112,177 (0.4%) in serious or critical with in excess of 2,068,745 fatalities. While there are 69,433,345 cured/recovered patients [1]. The flare-up started in China, yet the quantity of cases outside of China surpassed those in China by March 15, 2020, and increased at an outstanding rate. The

quantity of fatalities in a few nations presently surpasses the complete in China. Coronavirus cooperates with the cardiovascular framework on different levels, expanding dismalness in patients with hidden cardiovascular conditions and inciting myocardial injury and brokenness. Coronavirus is brought about by the extreme intense respiratory disorder Coronavirus (SARSCoV-2) [2]. It is accepted that SARS-CoV2 transmitted from bats to a transitional host (perhaps a Malayan pangolin, which shares 91% nucleotide personality) and afterward to humans [3].

Around 5% of patients influenced by the novel 2019 Covid illness (COVID-19) require emergency unit

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confirmation because of intense respiratory misery condition (ARDS), with a case-casualty rate running somewhere in the range of 30 and 60% [4-6]. Intrusive mechanical ventilation is needed in the vast majority of the patients to treat gas trade variations from the norm and speaks to the pillar of strong treatment [7,8,9]. In this setting, mechanical ventilation is pointed toward reestablishing satisfactory gas trade while restricting ventilator-initiated lung injury (VILI) [10]. During ARDS, appropriate ventilatory administration diminishes the danger of VILI and is among the conceivably modifiable elements equipped for improving endurance [11].

Patients with COVID-19 related pneumonia show various anomalous coagulation boundaries, as indicated by various reports [12-14], and coagulation anomalies have been related with a higher mortality rate [14-16].

2. MECHANISM TO FACILITATE INFECTION

SARS-CoV-2 contamination is brought about by authoritative of the viral surface spike protein to the human angiotensin-changing over compound (ACE2) receptor after enactment of the spike protein by transmembrane protease serine. ACE2 is communicated in the lung (primarily type II alveolar cells) [17]. ACE2 is exceptionally communicated in the heart too, balancing the impacts of angiotensin II in states with over the top initiation of the renin-angiotensin framework, for example, hypertension, congestive cardiovascular breakdown, and atherosclerosis. Notwithstanding the heart and lung, ACE2 is communicated in the intestinal epithelium, vascular endothelium, and kidneys, giving a component to the multiorgan brokenness that can be seen with SARS-CoV-2 infection [18,19]. There is expanding proof connecting COVID-19 with expanded grimness and mortality from cardiovascular sickness (CVD). In this survey, we sum up the quickly developing information in this field.

3. TRANSMISSION AND SYMPTOMS OF CORONAVIRUS (COVID-19)

Transmission may happen from indicative or asymptomatic patients, with auxiliary disease rates going from 0.5% to 5% [20,21]. SARSCoV2 has been exhibited to stay stable for as long as 3 hours in the aerosolized structure, as long as 24 hours on cardboard, and up to 3 days on plastic or impeccable steel.¹² The middle hatching time is 4 to 5 days and 97.5% of patients will encounter manifestations inside [22]. 5 long periods of exposure [23,24]. Early reports

recommend the most well-known side effects are fever (88%) and dry hack (67.7%), which is imparted to numerous other viral conditions. Prominently, rhinorrhea (4.8%) and gastrointestinal manifestations (loose bowels 4% to 14%, sickness or emesis 5%) have all the earmarks of being rare in COVID-19 [21]. Reports from China exhibit that a critical larger part of patients (81%) had gentle side effects (no pneumonia or mellow pneumonia) from COVID-19. Among patients with more considerable side effects, 14% experienced serious indications (dyspnea, respiratory rate ≥ 30 /min, blood oxygen immersion $\leq 93\%$, incomplete pressing factor of blood vessel oxygen to part of enlivened oxygen proportion < 300 , or lung invades $> 50\%$ inside 24 to 48 hours) and 5% were basically sick (respiratory syndromes and septic of various organ cause to their failure) [19]. The total and daily deaths due to COVID-19 till January 20, 2021 are shown in Figs. 1 & 2.

4. PLATFORMS FOR VACCINE DEVELOPMENT

It is felicitating that vaccine development efforts have moved very vigorously, and several major vaccine platforms are taking front toward clinical evaluation. These include traditional recombinant protein, replicating and non-replicating viral vectors, and nucleic acid DNA and mRNA approaches. Each of these vaccine platforms has advantages and limitations. Important characteristics include speed and flexibility of manufacture, safety and reactogenicity, the profile of humoral and cellular immunogenicity, durability of immunity, scale and cost of manufacturing, vaccine stability, and cold chain requirements. No single vaccine or vaccine platform alone is likely to meet the global need, and so a strategic approach to the multi-pronged endeavor is absolutely critical. Several companies are developing nucleic acid-based vaccines, including Moderna, BioNTech/Pfizer, CureVac (mRNA-based), and Inovio (DNA-based). DNA- and mRNA-based vaccines can be generated quickly on the basis of viral sequence, which allows a rapid pathway to the clinic [25,26]. Currently, optimal immunogenicity of DNA requires an electroporation or an injector delivery device to facilitate DNA entry into cells. mRNA vaccines use lipid nanoparticles to protect and deliver the mRNA and effectively adjuvant the immunogen. The scalability of these lipid nanoparticles and their temperature stability are issues that need to be addressed. Although there is a wide body of early-phase clinical experience with nucleic acid vaccines, none are licensed for widespread usage. As such, the path forward is filled with optimism, but some uncertainty remains, requiring rapid assessment of these products' immunogenicity and safety while

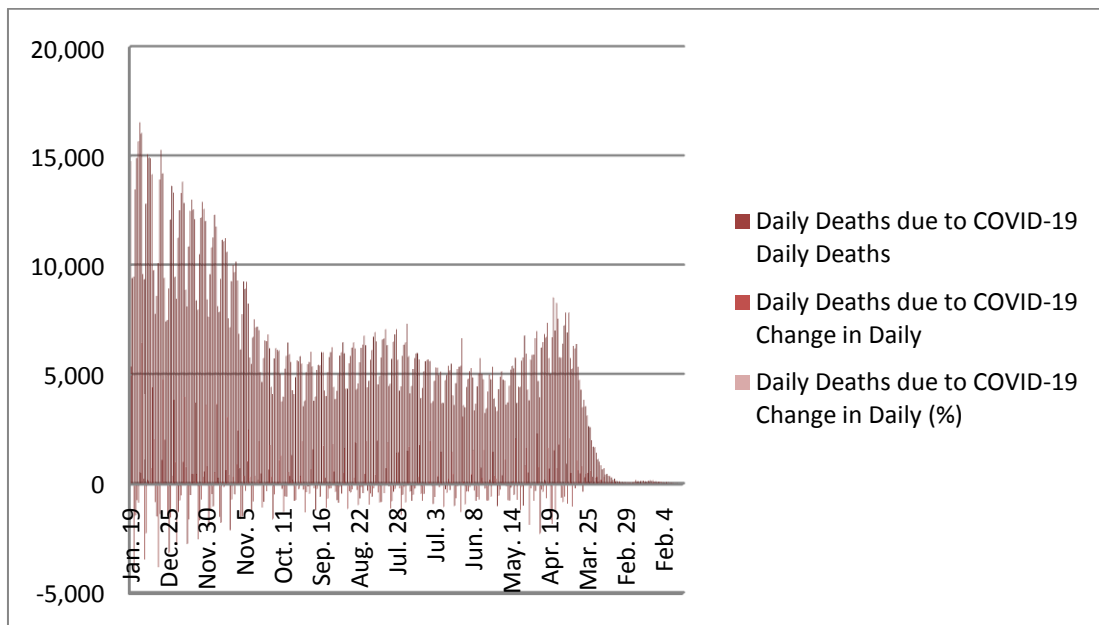


Fig. 1. Total death cases due to COVID-19

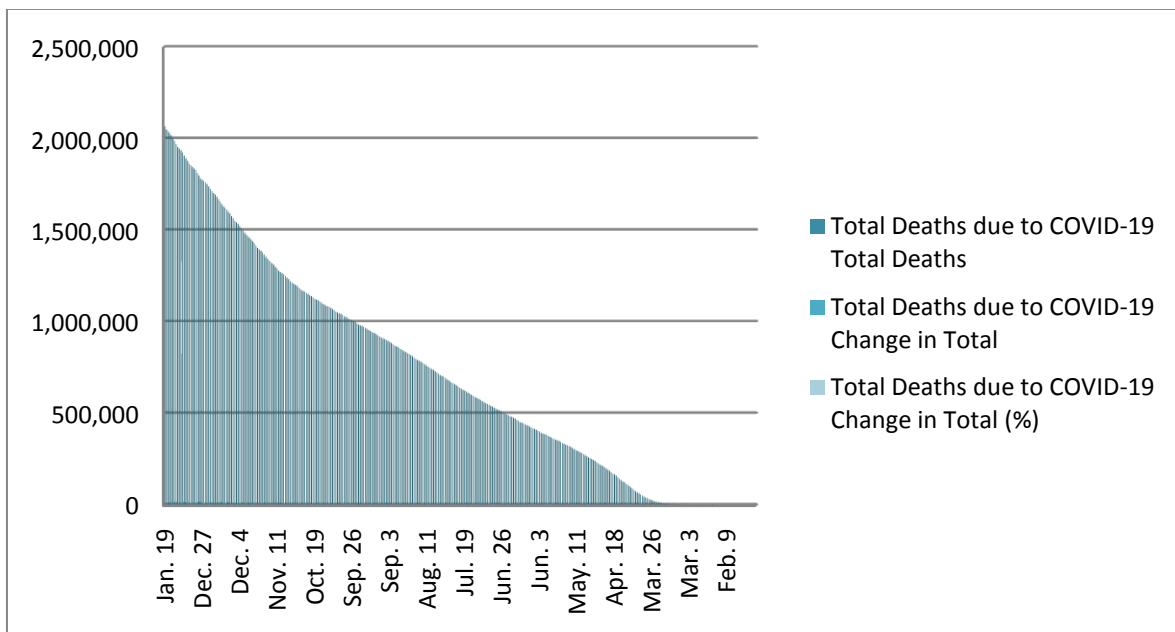


Fig. 2. Daily death cases due to COVID-19

addressing the lack of commercial experience with them.

5. CONCLUSION

As the COVID-19 pandemic keeps on spreading around the world, we need to design and set ourselves up proactively. A multi-disciplinary group approach ought to be embraced in dealing with these patients as it permits to adequately share the mastery just as duty,

and treat our patients with nobility and empathy. In medical clinics, the transmission of the infection among medical care experts is not kidding concerns. Improving medical care administration by supporting, awareness and preparing medical services faculty in contamination control and self-security should be organized. Consequently, complete information on all pregnancies influenced by COVID-19 ought to be gathered and made freely accessible. To return to the previous normality, the development of SARS-CoV-2

vaccines is an absolute necessity. To achieve this goal, all the resources in the public, private, and philanthropic sectors need to participate in a strategic manner.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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