Journal of Contemporary Issues in Business and Government Vol. 26, No. 2, 2020
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2020.26.02.178

Covid 19 And Its Implications on Climatic Change - A Review

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Abstract: COVID 19 is due to SARS-CoV2 and has a vital role as a causative agent of a potentially fatal disease which targets the human respiratory system. Generalized additive models are used to explore the effect of diurnal temperature, humidity on COVID 19. COVID 19 has played a crucial role in revitalizing the Earth causing enticed changes worldwide. Efforts have been made to prioritize investments for adopting a shift to cleaner energy alternatives, thereby sustaining human lives. COVID 19 has a positive impact on the global climatic conditions making it favorable for the inhabitants. There is a significant reduction in the level of greenhouse gas emissions, the use of fossil fuels, coal, non-renewable resources, relative humidity, air pollution. The global calamity has led to a serious threat to human lives. To control the pandemic, special attention and efforts are taken to protect the person-to-person transmission. Social distancing must be maintained to prevent the spread of the disease. The only treatment option available is using broad-spectrum antiviral drugs such as nucleoside analogs and also HIV-protease inhibitors that can alter the viral infection until the special antiviral agents are invented. The study aims to explore the associated climatic changes due to COVID-19.

Keywords: COVID-19; pandemic; SARS-COV2; meteorological parameters; absolute temperature; relative humidity.

INTRODUCTION

Coronavirus disease (COVID-19) is caused because of SARS-COV2 and creates a vital role as the causative agent of a potentially fatal disease that is of greater public health concern. Coronavirus is one of the major pathogens that mainly targets the human respiratory system. The first set of cases were reported in December 2019. As of January 30, 2020, 7734 cases has been reported in China and 90 other cases have also been reported from several countries that include such as Taiwan, Thailand, Vietnam, Malaysia, Nepal, Sri Lanka, Cambodia, Japan, Singapore, Republic of Korea, United Arab Emirates, United States, The Philippines, India, Australia, Canada, Finland, France, and Germany (Zhu *et al*., 2020),(Bhadra *et al.*, 2015).

The symptoms of COVID-19 infection appear after an incubation period of about 5.2 days. The period from the onset of COVID-19 symptoms to a death varies from 6 to 41 days with a median of 14 days. This period is dependent on the age of the patient as well as the status of the patient's immune system. It is shorter among patients >70-years old compared with those people under the age of 70 (Chan *et al.*, 2015). The most common symptoms at the onset of COVID-19 illness include fever, cough, fatigue, while other symptoms include sputum production, headache, hemoptysis, diarrhea, dyspnoea, and lymphopenia (Wilder-Smith and Freedman, 2020),(Wang *et al*., 2020).

Several studies have suggested that person-to-person transmission is the most likely route for spreading COVID-19 infection. Person-to-person transmission occurs primarily through direct contact or mainly through droplets spread by coughing or sneezing from an infected individual. The person-to-person transmission of COVID-19 has led to the isolation of patients that are considered as part of the treatment (Yao *et al*., 2020). Presently, there are no specific antiviral drugs or vaccines against COVID19 infection for the potential therapy of humans (Sheahan *et al.*, 2017). The only option available is by using broad-spectrum antiviral drugs like Nucleoside analogs and also HIV-protease inhibitors that can attenuate the virus infection until the specific antiviral gets invented (Greener, 2020). Both ambient temperature and humidity play a vital role in the survival and transmission of the virus (Lu, 2020). Generalized additive models are used to explore the effect of temperature, humidity, and diurnal temperature on COVID-19 (Bremer, Schneider and Glavovic, 2019; Lu,

2020). Recent advances have shown that stem cells obtained from adipose tissues, skin, bone marrow, etc are used widely for regenerative therapies (Timothy, Samyuktha and Brundha, 2019). Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Deogade, Gupta and Ariga, 2018; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; Jeevanandan and Govindaraju, 2018; J *et al.*, 2018; Menon *et al.*, 2018; Prabakar *et al.*, 2018; Rajeshkumar *et al.*, 2018, 2019; Vishnu Prasad *et al.*, 2018; Wahab *et al.*, 2018; Dua *et al.*, 2019; Duraisamy *et al.*, 2019; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Gheena and Ezhilarasan, 2019; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Panchal, Jeevanandan and Subramanian, 2019; Rajendran *et al.*, 2019; Ramakrishnan, Dhanalakshmi and Subramanian, 2019; Sharma *et al.*, 2019; Varghese, Ramesh and Veeraiyan, 2019; Gomathi *et al.*, 2020; Samuel, Acharya and Rao, 2020)
This study aims to explore the associated climatic changes due to COVID -19.

Covid 19 Pandemic
COVID 19 has been confirmed to have human to human transmissibility. The variations in relative temperature and humidity have linked to death from various respiratory disorders (Zhao *et al.*, no date). The various respiratory disorders associated with the COVID-19 are Rhinoohoea, Sneezing, Sore Throat, Pneumonia, Ground Glass Opacities, Anaemia, Acute Respiratory Distress Syndrome. Patients infected with COVID -19 showed a higher amount of leukocyte numbers, abnormal respiratory findings increased level of plasma pro-inflammatory cytokines (Lei *et al.*, 2020),(Lee *et al.*, 2003).
WHO classified the COVID-19 as a Beta CoV of group 2B (Hui *et al.*, 2020). According to the phylogenetic analysis, ten genome sequences of COVID-19 obtained from a total of nine patients exhibited about 99.98% sequence identity (Lu *et al.*, 2020; Nishiura *et al.*, 2020). The weather conditions including the relative humidity, absolute temperatures play a vital role in contributing to the mortality of COVID 19. Although the COVID 19 are affected by multiple factors, the meteorological parameters are the main reason using a generalized additive model (GAM) (Phan *et al.*, 2020). In addition to it, temperature and DTR has been linked to the death from respiratory diseases.

Pandemic: Influence on Climate
COVID 19 brings about a positive influence on the climatic conditions. There is a large amount of reduction seen in the emission level which causes a systematic change in the environment. According to the studies conducted in 2018, air pollution kills about 200,000 people each year, but because of the rise of the pandemic, the air quality of the world has improved causing a dramatic improvement in public health. The carbon monoxide emission mostly coming from the vehicles fell by 50% (Barreca, 2012).
According to the research done at Harvard TH Chan School of Public Health by comprising the death of COVID 19 deaths in about 3,000 countries has shown that air pollution is associated with the mortality rates of the COVID-19. A small increase in the long time exposure of the pollutants leads to significant death rates (Fallah Ghalhari and Mayvaneh, 2016). Various studies state the presence of the significant positive effect of DTR on the daily mortality of COVID-19, and a significant negative association between COVID-19 mortality and ambient temperature as well as absolute humidity thereby indicating that the effects of DTR and humidity should also be paid attention when estimating the death associated with COVID-19.

Climatic Variations
The concentrations of the emissions of carbon dioxide into the atmosphere have tremendously decreased. This has resulted in a significant downfall on the rates of global warming across the world. The associated lockdown due to the rise of the pandemic has led to a significant change in the path of future global emissions (Barreca, 2012; Barreca and Shimshack, 2012).
It is noted that the cold exposure and immune function associated with the lower temperature can alter the immune system. Breathing the cold air can cause bronchoconstriction, which may be susceptible to pulmonary infection. Normally the SARS-CoV-2 is sensitive to factors like heat, and high temperature makes it leads to factors for virus transmissions like indoor crowding and poor ventilation in cold days. Variability of temperature has influenced various human factors-mortality and morbidity. Abrupt changes in climatic conditions have caused various modulations in cardiac and respiratory functioning. In addition to that, high levels of DTR is a stable measure of temperature which may be a source of environmental stress and can be harmful to live beings (Sharafkhani *et al.*, 2019). According to the studies, COVID-19 has resulted in a drop in carbon emissions by 5% in the year 2020 (Oliveiros *et al.*, no date). Such reductions in the emissions can be achieved by the deployment of cleaner techniques and alternative technologies for the usage of sustainable energy.

Climate Stabilization
COVID-19 which is a serious threat to human lives plays a distinct role in the stabilization of climatic change favorable conditions for the inhabitants on Earth. Lesser consumption of fossil fuels and other non-renewable

sources has to lead to an increase in the air quality thereby reducing the humidity. Variations in temperatures along with the positive air pollutant data are associated with the rise of COVID-19. The nitrogen dioxide emissions fell by 40% since the last quarter of 2019. The nitrogen dioxide emissions fell by 25% at the start of the year 2020. The climatic change is seen to intensify over time as the COVID-19 disrupts the global population(Zhang *et al*., 2017),(Zeng *et al*., 2016). Consistent with various findings, it can be indicated that the risk of dying from COVID-19 decreases when there is absolute humidity increasing. Breathing dry air will cause epithelial damage and lead to a reduction of mucociliary clearance, and thereby rendering the host to be more susceptible to respiratory virus infection.

Control the Spread of Coronavirus

To control the outbreak, special attention and efforts are taken to protect the rate of person-to-person transmission (Park *et al.*, 2020). The public services and facilitates must be disinfected well. The awareness about washing hands regularly from time to time has to be given to the population. Social distancing must be maintained as it stops or slows down the spread of a contagious disease. Ideally, about 6 feet or more must be maintained to avoid the spreading of the virus (Jaimes *et al.*, 2020),(Belouzard *et al.*, 2012). There must be an adequate use of the face masks and gloves for prevention of coronavirus.

Recent advances have reported the cases of hysterectomy have been reported lately in reproducible age. It involves the removal of the cervix, fallopian tubes, and its surrounding structures (Kalaiselvi and Brundha, 2016). In addition to it, there has been a significant increase in the level of awareness of various health conditions like Breast Cancer and PCOS among the dental surgeons and young females of the age groups 18-30 respectively (Balaji, Brundha and Path, 2016; Shenoy and Brundha, 2016). However it was noted that repeated palliative radiation therapy can cause a significant effect on the RBC count (Brundha, Pathmashri and Sundari, 2019). There are various other scientific studies on the emergence of the awareness of the nocturia and the incidence of style respectively (Kumar, Ashok Kumar and Brundha, 2016; Brundha, Pathmashri and Sundari, 2019),(Ferdioz J, 2016).

Newer and advanced techniques have been brought about in the histopathological leaning for better ease of understanding relevant facts (Mp, Brundha and Nallaswamy, 2019). In addition to that, certain reports have focused on the use of the Popplet Notes rather than the conventional notes for facilitating effective learning and an increase in academic performance (Prashaanthi and Brundha, 2018). There is a rapid increase within the need for the level of awareness of Diabetes Mellitus among the age group of 15-70 years due to the associated unhealthy lifestyles (Preethikaa and Brundha, 2018). Various other advanced researches include the alteration in the hemoglobin values correlating with the age and sex of various dental practices (Shreya and Brundha, 2017). Moreover, there is an increase in the prevalence of dental anomalies for men and women reported in a given population (Harsha and Brundha, 2017). Promising results have been observed using paraffin as a hydrant rather than the conventional wet fixed smear for better results of appropriate nuclear details (Hannah *et al.*, 2019). Recent reports are discussing the histological features of the skin and nerve tissue sections in Hansen's Disease (Brundha, 2015). The latest researches involve the equal importance of promoting sufficient awareness for the hospitals on the importance of personal protective equipment (Ravichandran and Brundha, 2016).Our institution is passionate about high quality evidence based research and has excelled in various fields ((Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; Vijayashree Priyadharsini, Smiline Girija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramadurai *et al.*, 2019; Sridharan *et al.*, 2019; Vijayashree Priyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

CONCLUSION

WHO defines COVID-19 as a family of viruses that is caused by SARS-CoV2 and plays a crucial role in damaging the human respiratory system thereby leading to death. COVID-19 has been classified as a Beta CoV of a group of 2B. In the regions across the world, there is a significant drop in the overall consumption of fossil fuels, coals, non-renewable resources. This in turn has prevented environmental degradation by improving the quality of air, reducing pollution, lesser emission of greenhouse gases thereby contributing to reduction in global warming. All these have resulted in a positive impact on the overall climatic conditions making it favorable for the inhabitants.COVID-19 has led to an important phase of revitalizing the Earth. The rise of the pandemic has led to the shift to cleaner energy alternatives and prioritize investments for a sustainable environment. The global calamity has become a serious threat and it is necessary to provide awareness on the rising pandemic to sustain human lives.

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