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Role of Mathematics in COVID-19 Research

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Brief Report

COVID-19 is a highly infectious disease caused by virus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) (SARS-COV-2). After SARS-CoV in 2002 and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) in 2012, SARS-CoV-2 is considered the third zoonotic human coronavirus to emerge in the twenty-first century. The virus was originally discovered in December 2019 in Wuhan, Hubei Province, China. The sickness is spreading worldwide and has already claimed the lives of hundreds of individuals. As of July 24, 2020, there have been 15,257,287 confirmed cases and 628,240 fatalities reported over the world. The condition affects the lungs and produces respiratory sickness with symptoms such as a cold, cough, fever, and, in severe instances, breathing problems [1].

Understanding the infection's transmission pattern is crucial in the early stages of an infectious illness epidemic. Studying variations in transmission patterns over time can help researchers better understand the epidemiological situation, which is critical for preventing the spread of COVID-19 in new places by deploying countermeasures in a timely manner. Mathematical models have long been used to forecast disease epidemiology and so play an important role in preventing disease outbreaks. Mathematical models are important for understanding the behavior of an illness and determining whether it will be eradicated or not. Many researchers have developed many mathematical models to study SARS-COV-2 epidemiology and transmission dynamics thus far [2].

Researchers presented an article recently in which they employed a mathematical model to investigate the SARS-COV-2 pandemic pattern in China. They forecasted epidemic peaks and sizes using the Susceptible-Exposed-Infectious-Removed (SEIR) model using Artificial Intelligence. Researchers employed a susceptible infectious-recovered model to estimate COVID-19's transmissibility and severity in mainland China, as well as to evaluate the implications of loosening containment measures in the event of a second epidemic wave. Mathematicians created a mathematical model to investigate the dynamical behavior of COVID-19 infection, which included the isolation class, and concluded that human-to-human contact is a potential cause of SARS-COV-2 outbreak, and that isolating the infected person can reduce the risk of future COVID-19 spread [3-5].

All of these research addressed a wide variety of epidemiological parameters associated with COVID-19, enhanced our understanding of the SARS-COV-2 transmission mechanism, and demonstrated how mathematical modeling tools may be used to analyses COVID-19 transmission and dissemination. With the ongoing pandemic, experts throughout the world are working around the clock to produce a viable SARS-COV-2 vaccine, but there is still no clarity regarding the virus's ultimate appearance. Until then, mathematical models could be useful in regulating COVID-19 transmission.

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