



## SARS coronavirus: A review of threat in global world

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### Abstract

The coronavirus the cause of an outbreak of respiratory illness in Wuhan, Hubei Province, China beginning in December 2019. This virus appears to be a new human pathogen to causes Severe Acute Respiratory Syndrome (SARS) and get quickly spread to all over world before it was controlled. Initially, the new virus was called 2019-nCoV. Subsequently, the task of experts of the International Committee on Taxonomy of Viruses (ICTV) termed it the SARS-CoV-2 virus. Human corona viruses most commonly spread from an infected person to others through respiratory droplets, close personal contact with an infected person or by touching an object or surface infected with the corona virus and then touching the same hand to mouth or eye. Till now, there is no approved antiviral drug or vaccine for the management of infection by coronavirus. However, from earlier experience, many therapeutic agents are being used in the treatment of SARS-CoV-2 virus. The World Health Organization announced that the outbreaks of the novel coronavirus have constituted a public health emergency of international concern. Infection control measures are necessary to prevent the virus from further spreading and to help control the epidemic situation. This article, based on available literature evidence, introduces coronavirus through its structure, pathogenesis, etiology, diagnosis, clinical features, and prevention and control and therapeutic options.

**Keywords:** SARS coronavirus, structure, pathogenesis, clinical features, diagnosis, therapeutic options

### 1. Introduction

In corona virus, the word corona represents crown-like spikes on the outer surface of the virus; thus it was named as a corona virus. These are minute in size ranging from 65-125 nm in diameter, and contain a single stranded RNA ranges in size 26-32kbs in length [1]. 36 corona viruses belongs to the family Coronaviridae within the order Nidovirales, which are responsible for causing respiratory infections or intestinal infections in the humans or animals. SAR-CoV belongs among these 36 corona viruses, responsible for severe respiratory infections [2].

There are mainly four types of genera of coronaviridae family which include Alfacoronavirus, Betacoronavirus, Deltacoronavirus and Gamacoronavirus as well as it include several subgenera and species. The variety of corona viruses are mainly found in humans and animals. There are different types of Human Coronaviruses (HCoVs) are present which include HCoV-229 and HCoV-NL63 which come under the genus alfacoronavirus, at the same time HCoV-OC43 and HCoV-HKU1 which are belongs to the subgenus Embecovirus of genus betacoronavirus. In 1960s, the human coronaviruses were firstly isolated in cell culture from person with upper respiratory infections. These were later designated as HCoV-229E and HCoV-OC43. Also in early 2000s, the HCoV-NL63 and HCoV-HKU1 were discovered from person suffering from bronchiolitis and pneumonia. Later in 2002, Severe Acute Respiratory Syndrome related coronavirus (SAR-CoV) (the name taken from severe respiratory disease) was originated from a betacoronavirus in lineage B (subgenus: Sarbecovirus) from bats and then spread through civets to human in the Guangdong province of southern china. In 2012 the name Middle East Respiratory Syndrome related coronavirus (MERS-CoV) which have similar clinical syndrome as like SARS which

spread from camel to human in Saudi Arabia [3]. The mammals are mainly affected by the alpha and betacoronavirus, while gamma and deltacoronavirus infect the birds but in some cases they found to infect the mammals. The respiratory illness in humans and gastroenteritis in animals usually cause due to alfa and betacoronaviruses. In humans, the severe respiratory syndrome cause due to highly pathogenic viruses i.e. SAR-CoV and MERS-CoV and the mild upper respiratory disease in immunocompete hosts cause due to other four human coronaviruses include CoV-NL63, HCoV-229E, HCoV-OC43 and HCov-HKU1; although some of them are also responsible for severe infections in infants, young children and elderly individual [4]. World Wide, the reason of increase in fatality rate and pulmonary failure is due to highly pathogenic viruses like SAR-CoV, H5N1 influenza A, H1N1 2009 and MERS-CoV which cause acute lung injury (ALI) and acute respiratory distress syndrome (ARDS) [1]. In China, at the end of 2019, the first fifty days were epidemic because within those days, Wuhan an emerging business hub of China experienced an outbreak of a novel coronavirus that killed more than eighteen hundred and infected over seventy thousand individuals. Initially, the researchers focused on spreadability and infectivity of virus and on that basis it was suggested that the patients suffering from coronavirus firstly induce pneumonia in China, may have visited to the seafood market where live animals were sold or may have used infected animals or birds as a source of food. However, further investigations revealed that some individuals also get infected even they were not visiting to seafood market. These observation indicated that virus have capability to spread from human to human, which was subsequently reported in more than 200 countries in the world. The activities like close contact with infected person

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