The COVID-19 Pandemic: Data Analysis, Impacts, and Future Considerations

Pooya Parvizi1, Milad Jalilian2*, Hana Parvizi3, Sara Amiri4, Hamidreza Mohammad Doust5

1. School of Engineering, University of Birmingham, Birmingham, United Kingdom
2. Department of Physics, Faculty of Science, Razi University, Kermanshah, Iran
3. Science Department, University of British Columbia, Vancouver, Canada
4. Medical School, Kermanshah University of Medical Sciences, Kermanshah, Iran
5. Department of Physical Education, Tarbiat Modares University, Tehran, Iran

ABSTRACT

The 2019 novel coronavirus is another type of known coronaviruses; SARS-CoV-1 and MERS-CoV. The World Health Organization (WHO) has named the virus SARS-CoV-2 and its disease as coronavirus disease 2019 (abbreviated COVID-19). The first case of COVID-19 was reported in December 2019 in Wuhan, China. The epidemiological studies have shown that the disease is transmitted from animal to human, and the spread of the disease from person to person is rapidly expanding. Currently, the most important factor in preventing and controlling the spread of the disease is proper recognition, healthcare, and control measures. Given the importance of early detection and timely treatment of the disease, the use of nanoscale materials for the production of sensors and drug delivery systems can be of great assistance to the researchers. In this context, we aimed to explain the effects of the prevalence of the disease worldwide and consider the different aspects of SARS-CoV-2.

Keywords: COVID-19|rapidly expanding|epidemiological studies|control measures|nanoscale materials

Introduction

Coronaviruses are a large family of viruses that contain four known types of alpha, beta, gamma, and delta coronaviruses that exist in animals such as camels, bats, etc. They have the ability to infect humans (1-3). SARS-CoV-1 spread in 2002 in 29 countries caused illness in 8096 cases among whom 774 cases died (4). A few years after the advent of SARS-CoV-1, the MERS-CoV, first appeared in Saudi Arabia in 2012 in a 60-year-old man with severe lung inflammation and spread to 27 countries in the Middle East, North Africa, Europe, Eastern Asia, and the United States. It infected 2519 and killed 866 people (5). Recently, a new type of coronavirus in humans that has led to COVID-19 spread first in Wuhan, China, and after a few weeks to various countries all around the world, and it is still distributing. This type of coronavirus along with SARS-CoV-1 and MERS-CoV is a beta type of coronaviruses (6, 7). The researchers initially estimated bats as the host of the virus by sampling seven patients and bats, with 96.2% of the
shared genome sequence, moreover, the subsequent research confirmed the pangolin-genome similarity to the SARS-CoV-2 to potentially make this animal as virus host [8, 9].

Expanding COVID-19 in the World

According to the WHO report No.163 on July 1, 2020, COVID-19 has a worldwide population of 10357662, of which 508055 have died. Figure 1 shows the confirmed cases and deaths of COVID-19 in the countries of China, Iran, the Republic of Korea, Italy, Spain, France, the United Kingdom, Germany, the United States of America, and Japan from the date of the first WHO report to July 1, 2020. The first confirmed cases were reported in China in December, Japan on January 15, the Republic of Korea on January 20, Italy on February 5, Iran on February 19, the United States of America on January 23, Spain on February 1, France on January 25, the United Kingdom on February 1, and Germany on January 28 [10]. As can be seen on the figure, the highest deaths and confirmed cases were reported in the United States of America. Japan and the Republic of Korea were the first to report COVID-19 in the mid-January; they had the lowest incidence compared to the other countries. The outbreak in China has been stable since late February, and the country has been able to control the disease. The results showed that China, Japan, and Korea have been able to properly identify, diagnose, and treat patients. They have also well implemented community control measures. In fact, this proper performance can be due to the lessons they learned from SARS-CoV-1 and the pandemic flu [11, 12].

Figure 1. Total confirmed cases and total deaths of COVID-19 in China, the Republic of Korea, Italy, Iran, Japan, the United States of America, Spain, the United Kingdom, France, and Germany by July 1, 2020. Notes: According to the WHO report No.28, since February 17, 2020, cases with clinical diagnosis have been added along with laboratory tests to provide the reports. (Data source: World Health Organization)

Figure 2 shows the case fatality rate (CFR) curve in different countries from March 9 to July 1, 2020. The CFR globally as of July 1, 2020, was 4.90%. The CFRs in France, Italy, the United Kingdom, Spain, China, Japan, and the United States of America were 18.93%, 14.45%, 13.98%, 11.37%, 5.45%, 5.20%, 4.91%, respectively, which were higher than the global rate while CFRs in Iran, Germany, and the Republic of Korea were 4.75%, 4.61%, and, 2.19%, respectively, which were lower than the global rate. It should be noted that the difference in CFRs between different countries may be affected by testing programs, population age, and underlying diseases [13, 14]. Of course, the policy of countries in expressing the statistics, how to perform the control measures, medical facility, people’s awareness, and observance of the health principles may have profound effects on the CFRs.

The confirmed cases and deaths of COVID-19 in different regions of the world by July 1, 2020 are shown in Figure 3. The Americas and the African regions have the highest and the lowest confirmed cases and deaths, respectively. The Eastern Mediterranean region has the lowest CFR (2.31%) and the European region has the highest CFR (7.25%) in the world. Region of the Americas accounts for 50.38% of total confirmed cases and 38.94% of total deaths due to COVID-19 as per global statistics [10].
Figure 2. CFRs (%) of COVID-19 in France, Italy, the United Kingdom, Spain, Iran, China, the United States of America, the Republic of Korea, Germany, Japan and Globally from March 9 to July 1, 2020. (Data source: World Health Organization).

Figure 3. Total confirmed COVID-19. a) cases and b) deaths per million people by July 1, 2020 (15).

Viral diseases have always been a major threat to the world and endangered human health (16). Table 1 shows the statistics on several types of viral diseases: The CFRs were 77.8% for Marburg disease (highest CFR), 41.46% Ebola, 57% Hendra, 9.6% SARS-CoV-1, 0.07% H1N1 Flu, 34.4% MERS-CoV, and 4.90% COVID-19 as of July 1. An important point about the types of viral diseases that the world has gone through or is involved in, is that it can raise the level of readiness of countries and preparation to fight against infectious diseases in the future (17).

Table 1. Comparison between different viruses.

| Virus       | Year identified | Cases     | Deaths    | Case fatality rate (%) | Number of countries | Ref. |
|-------------|-----------------|-----------|-----------|------------------------|---------------------|------|
| Marburg     | 1967-2014       | 587       | 457       | 77.8%                  | 9                   | (18) |
| Ebola       | 1967-2018       | 31095     | 12950     | 41.64%                 | 15                  | (19) |
| Hendra      | 1994-2013       | 7         | 4         | 57%                    | 1                   | (20) |
| SARS-CoV-1  | 2002-2003       | 8096      | 774       | 9.6%                   | 29                  | (4)  |
| H1N1 Flu    | 2009-2018       | 100.5 M   | 75000     | 0.07%                  | 1                   | (21) |
| MERS-CoV    | 2012-2020       | 2519      | 866       | 34.4%                  | 27                  | (5)  |
| COVID-19    | December 2019-  | 10357662  | 508055    | 4.90%                  | 213                 | (10) |
|             | July 1, 2020    |           |           |                        |                     |      |

Research results on 44627 confirmed cases of COVID-19 in China in different age groups showed that the highest CFR for COVID-19 (14.8%) was over 80 years old (Figure 4). There were also no reports of deaths between the ages of 0 and 9 years. The CFR was 2.8% for males and 1.7% for females. The results showed that in addition to the elderly,
those with underlying medical conditions such as hypertension, cancer, cardiovascular disease, diabetes, pulmonary infections, and other chronic diseases are at higher risk of death (22, 23). Also, the CFRs in Italy between the ages of 60-69, 70-79, and 80+ years were reported to be 3.5%, 12.8%, and 20.2%, respectively (13).

In SARS-CoV-1 disease that spread in China in 2002, the CFRs were 1%, 6%, 15%, and 50% in the age groups 0-24, 25-44, 45-64 and over 64 years, respectively (24) and also the highest CFR for MERS-CoV was in over 50 years of age (5). Some similarities and differences between COVID-19 and SARS-CoV-1 and MERS-CoV are presented in Table 2.

### Table 2. Comparison between COVID-19, SARS, and MERS (10, 25-28).

|                      | SARS-CoV-1                  | MERS-CoV          | COVID-19              |
|----------------------|----------------------------|-------------------|-----------------------|
| First case           | 16 November 2002 in China  | September 2012 in Saudi Arabia | December 2019 in China |
| Pathogen             | SARS-CoV-1                 | MERS-CoV          | SARS-CoV-2            |
| Host                 | Rhinolophus sinicus        | Camel             | Rhinolophus affinis, Pangolin |
| Virus type           | RNA virus                  | RNA virus         | RNA virus             |
| Species pathogen     | beta coronavirus           | beta coronavirus  | beta coronavirus      |
| Incubation           | 1-4 Days                   | 4-7 Days          | 3-7 Days              |
| Male–female patient  | 1:1.25                     | 2.2:1             | 2.7:1                 |
| Clinical symptoms    | Fever, cough, myalgia, dyspnea, and diarrhea | Fever, cough, dyspnea | Fever, cough, dyspnea, Fatigue |

### Symptoms of COVID-19

Primary symptoms that are more prevalent among COVID-19 patients include dry cough, fever, fatigue, and dyspnea and some clinical observations include symptoms such as sneezing, sore throat, diarrhea, and myalgia (28). People normally may confuse the symptoms of COVID-19 with other diseases such as influenza, colds, and seasonal allergies that make them go to the hospitals. At this time, the experienced and skilled physicians can make the right diagnosis and choose proper next steps for the treatment using the patient’s symptoms. Table 3 shows the clinical symptoms in males and females of different age groups who got infected with SARS-CoV-2.
Prevention and Treatment of the Disease

Experimental results have shown that the virus persists in aerosols for an average of two and a half hours, on surfaces such as plastic and stainless steel for more than three days, on copper for more than four hours, and on cardboard for one day. This causes the virus to spread rapidly and infect more people (35). Among measures to prevent the infection with this new type of coronavirus include: 1) Frequent hand washing with soap and water or alcohol-based solutions especially after contact with contaminated devices, 2) Cover mouth and nose when sneezing and coughing and avoid touching eyes, 3) No contact with animals, 4) Fully cooking of foods, 5) Use of face mask, 6) Keep distance with persons, and 7) Avoid public and overcrowded places. Identifying and isolating patients, and providing inter-individual health education reduces the incidence of the disease (36-38). Due to the rapid spread of the disease in society and its infectious rate, it has created psychological pressure among the general public and patients. The immune system, which plays a key role in counteracting the new coronavirus, would be weakened by the effects of this stress. The stress can reduce natural killer cell activity, lymphocyte proliferation and populations, and antibody production, and reactivates latent viral infections (39, 40). It should be noted that proper management of stress using psychological techniques and nutrition programs can have a significant effect on the fight against COVID-19. Using vitamins A, B, C, D, E, and folic acid, as well as trace elements zinc, selenium, iron, and copper are among the ways to boost the immune system to defense against viral infections (41-43). N-acetylcyesteine, as an antioxidant supplement, plays an important role in enhancing immune function in preventing and treating viral infections (44, 45). Medicinal plants are of great importance in the fight against viruses because of their antiviral properties (46). The beneficial effects of using Isatis indigotica (47) and Torreya nucifera (48) against SARS-CoV-1 have been reported before. At present, the treatment and reduction of COVID-19 infection using antiviral drugs such as nucleoside analogues (e.g., Favipiravir, also known as T-705 and ribavirin) and HIV protease inhibitors are currently being studied (49, 50). The beneficial effects of chloroquine and hydroxychloroquine in the treatment of patients have also been reported (51, 52). Recent research has shown that the Angiotensin-converting enzyme 2 (ACE2) receptor inhibition by adding a genetically modified variant of ACE2, called human recombinant soluble ACE2 (hrsACE2) might be used in treating patients with COVID-19 at the early stages of the disease (53). It should be noted that the prescription of these drugs is based on the physician diagnosis and should be used under their medical supervision. One of the factors that can influence the transmission of the virus is the climatic conditions. Research on this subject is being carried out and the current results showed that the effects of high temperature and
humidity can reduce the transmission of the coronavirus (54, 55).

The Phases of the Pandemic

Over the past years, zoonotic viral diseases have always been a major threat to human health, and coronaviruses are one of the most important ones (56). COVID-19 is rapidly expanding globally, as announced by the WHO on March 11, 2020, it has become a global pandemic (57). In fact, the announcement of this situation causes countries to enter a new phase of health care to tackle this disease and to raise awareness of the communities and measures needed to rapidly develop vaccine. Programs and resources to cope with COVID-19 expressed by the Centers for Disease Control and Prevention (CDC) and the WHO are similar to those of pandemic influenza. The chains of the global influenza pandemic phases include the research phase (detection of new disease), diagnosis phase (identification of cases worldwide, virus characteristics showing the potential of rapid human-to-human transmission and control measures for the reported cases), initiation phase (worldwide onset of disease wave, the continuous implementation of case-control measures and routine protective measures such as hand washing, enhanced monitoring to detect added cases to determine the time of action and reducing social gatherings), acceleration phase (acceleration of the epidemic wave, the immediate onset of social gatherings reduction measures such as school closures, cancelling social events, self-isolation and quarantine), the deceleration phase (reducing the epidemic wave by reducing the incidence, and planning to suspend or reduce control measures in the community), and the preparation phase (preparations for the next wave of epidemics, infrastructure improvements, protocols for detecting subsequent waves, and evaluation of the response to the first wave) (58-60).

The effects of Coronavirus on the Economy

Infectious diseases have always had a negative impact on the world economy. For example, the estimates showed the impact of SARS-CoV-1 on the gross domestic product (GDP) in Hong Kong, Canada and Singapore at $3.7, $3.2-6.4, and $4.9 billion, respectively (61). Estimates of the influenza epidemic effect in Belgium, France, the Netherlands, and the United Kingdom showed an average drop of 2.5% in their GDP (62). The $2.2 billion GDP loss in Guinea, Liberia, and Sierra Leone in 2015 was due to Ebola (63). COVID-19 is currently expanding globally and is affecting the economies of countries and the factors such as the period of development, infected cases and, CFRs can surely pose a significant threat to the health and economy of the countries (64).

Nanotechnology and Coronaviruses

The importance of nanoscale materials in medical sciences in the diagnosis and treatment has always been of interest to researchers (65). Viruses are one of the types of microbes that are nanometer-sized and their rapid detection can prompt the onset of disease treatment. Therefore, nanoscale materials such as metallic nanoparticles, quantum dots, and carbon nanostructures can play an important role in the timely detection of viruses. Gold and silver nanoparticles have always been of interest to researchers in the field of disease diagnosis and treatment due to their unique optical, physical, and chemical properties (66). Gold nanoparticles were used to detect and diagnosis of patients with SARS-CoV-1 by colorimetric and electrochemical methods in 5 and 120 minutes (67, 68). In the discussion of nanoparticle-based treatments, research work on MERS-CoV suggests that PIH-AuNRs, a gold nanorod complex, can induce disease treatment (69). Nanomedicine research shows the importance and association between nanoparticles and chloroquine for the treatment of COVID-19 (70).

Conclusions

Due to the rapid spread of COVID-19 worldwide and the increase in the number of cases, the WHO declared it as a global pandemic on March 11, 2020. The transmission rate of COVID-19 from human to human is higher than MERS-CoV and SARS-CoV-1, but it has a lower CFR. Some of the most important factors in preventing SARS-CoV-2 outbreak are community control measures and people’s health care. In the face of the high prevalence of pandemic diseases, due to the constant availability of health facilities in countries, it should be noted that if the peak of disease prevalence is higher than the level of health facilities, patients care may become problematic in that country. During this time, preventive and control measures such as social distancing and government restrictions on community gatherings and closing centers unrelated to the basic needs can help to flatten the curve, reduce the disease waves, and reduce the pressure on the health care system. It is important to note that the executive programs of countries that have been able to control the disease and countries at the peak of the disease can have important lessons for countries that are in the initial stages of the disease. In fact, researchers in the affected countries can prevent catastrophic events in other countries by publishing their findings in the field of treatments and control measures. In the field of treatments, while research is quickly undergoing to develop the vaccine, some antiviral drugs, and dietary supplements are currently being used to treat COVID-19. Use of dietary supplements has two aspects: 1) Strengthening the body to speed up the disease
treatment for the individuals who have already been diagnosed with the infection, and 2) Strengthening the immune system of healthy individuals so that their risk of catching the disease will be decreased. One way that can be of great help to the diagnosis and treatment of coronaviruses is to use nanoscale materials that are used in the drug delivery systems and the production of sensors. SARS-CoV-2 has spread to all regions of the world and has led to challenges.

Production and introduction of the vaccine, as well as climate change, are two scenarios that have been put forward along with other measures to reduce and control the COVID-19 incidence.

**Conflict of Interest**

The authors declared no conflicts of interest related to this work.
پاندمی ۱۹-۲۰: آنالیز داده‌ها، اثرات و ملاحظات آینده

بیو پروپوزی، میلاد جلیلیان ۱،۲، هانا پروپوزی، سارا امیری، جمیضراف محمددوست

چکیده

کروناویروس جدید COVID-19 نوع دوم از گروه کروناویروس ای است که ابتدا در ووهان چین و پس از چند هفته به کشورهای دنیا گسترش یافت. این نوع کروناویروس که مانند SARS-CoV-1 و SARS-CoV-2 به طور مشخص نمایندگی مصرف، انتقال، نقل و انتقال بیماری را در میان انسان‌ها دارد و تاکنون بحران‌های جهانی جهانی ایجاد کرده است. COVID-19 در سال ۲۰۲۰ در سراسر جهان گسترش یافت که مطالعات و مصاحبه با بیماران بهبود بیماری را نشان داده است.

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نویسنده مسئول: میلاد جلیلیان داریوش گرینک راشدی، دانشکده علوم پایه، دانشگاه رازی، کرمانشاه، ایران
ایمیل: jalilirmm70@gmail.com

مقدمه

کروناویروسی که برای اولین بار در ووهان چین در سال ۲۰۱۹ انتشار یافت و با نام COVID-19 شناخته شد، دومین نوع این گروه کروناویروس است که سپس به سرعت در سراسر جهان گسترش یافته است. این پدیده به صورت حاد و مزمن بیماری‌ها را مانند میکرو النی، پنیتی، خونریزی و فوت می‌کند.

کپی/للی وارها: ۱۹۹۹، گرینک سریع، مطالعات اپیدمیولوژیک، آزمایشات کنترلی، مواد نانومقیاس

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شروع و گسترش COVID-19 در دنیا

طبق گزارش شماره ۱۳۹۸ WHO در تاریخ ۱ زویه سال ۲۰۲۰، آمار ابتلا به COVID-19 در سراسر جهان ۱۳۵۶۶۶۲ نفر بوده است که از این تعداد ۴۰۴۵۵ نفری که ۶۹ درصد از ابتلا به این بیماری در گروه بالای ۶۰ سال اجتماعی بوده است. در مقابل به گزارش‌های کمترین میزان شروع بیماری را داشتن، شروع بیماری در چین از اواخر فوریه در وضعیت پایدار است و این کشور نواحی ابتلای را کنترل کرده که خصوصاً در دهانه کین، زایر و جمهوری کوه توانسته است بیماری را به درستی تشخیص و آنها را درمان کند. این کشورهای اقدامات کنترلی را در جامعه به خوبی اجرای کرده‌اند. در حقیقت، این اجرای عملکرد مناسب و پایدار SARS-CoV-2 در اولین ناشران شده است. (۱۱).

۱۱.۶٪ نرخ مرگ و راهی اصول بهداشتی می‌تواند در ابتلا به COVID-19 در مناطق COVID-19 کمتر باشد. میزان نرخ مرگ در مناطق COVID-19 کمتر از COVID-19 می‌باشد. میزان نرخ مرگ در مناطق COVID-19 کمتر از COVID-19 می‌باشد.

در یک مرحله مربوط به بیماری COVID-19 از ۱۸ بهمن ۱۳۹۸/۱۴۳۸، میزان آمار ابتلا به COVID-1۱۹ در مناطق COVID-1۱۹ کمتر از COVID-1۱۹ می‌باشد. در یک مرحله مربوط به بیماری COVID-1۱۹ از ۱۸ بهمن ۱۳۹۸/۱۴۳۸، میزان آمار ابتلا به COVID-1۱۹ در مناطق COVID-1۱۹ کمتر از COVID-1۱۹ می‌باشد.

۱۱.۶٪ نرخ مرگ و راهی اصول بهداشتی می‌تواند در ابتلا به COVID-1۱۹ در مناطق COVID-1۱۹ کمتر باشد. میزان نرخ مرگ در مناطق COVID-1۱۹ کمتر از COVID-1۱۹ می‌باشد. در یک مرحله مربوط به بیماری COVID-1۱۹ از ۱۸ بهمن ۱۳۹۸/۱۴۳۸، میزان آمار ابتلا به COVID-1۱۹ در مناطق COVID-1۱۹ کمتر از COVID-1۱۹ می‌باشد.
پویا پرویزی و همکاران | پاندمی COVID-19: آنالیز داده‌ها، اثرات و ملاحظات آینده

شکل 2. میزان تلفات (%) COVID-19 از تاریخ 9 مارس تا 1ژوئیه 2020 در فرانسه، ایتالیا، انگلستان، ایران، چین، ایالات متحده آمریکا، جمهوری کره، آلمان، راین و چهار به نسبت داده‌های سازمان بهداشت جهانی.

شکل 3. a) مجموع موارد 19 میلیون نفر تا 1ژوئیه سال 2020. b) COVID-19 COVID-19 از 12 دسامبر 2019 تا 1ژوئیه 2020. میزان تلفات (بیماری/تعداد کشورها) COVID-19 از 12 دسامبر 2019 تا 1ژوئیه 2020.

جدول 1 مقایسه بین ویروس‌های مختلف

| بیماری | سال شناسایی | موارد | میزان تلفات (%) | مراجع |
|---|---|---|---|---|
| Marburg | 2014-1967 | 8096 | 774 | 4 |
| Ebola | 2003-2002 | 75000 | 07/0 | 21 |
| SARS-CoV-1 | 2018-2009 | 75000 | 100/5M | 4 |
| H1N1 Flu | 2009/ | 100/5 | 200/ |
| MERS-CoV | 2019 | 2019 | 2019 | 10 |
با توجه به شکل ۴، نتایج بررسی‌ها در مورد قطعی COVID-19 در چین و در رده‌های سنی مختلف نشان می‌دهد که بالاترین علائم تلفات COVID-19 در سنین بالای ۸۰ سال با ۸/۱۴٪ است. همچنین، هیچ موردی از مرگ بین سنین ۰ تا ۹ سال گزارش نشده است. میزان تلفات برای مردان ۸/۲٪ و برای زنان ۷/۱٪ بوده است. نتایج حاکی از این است که علاوه بر افراد سالمند، ریسک خطر مرگ در افرادی که بیماری‌های زیمنه‌ای مانند فشار خون بالا، سرطان، بیماری‌های قلیبی عروقی، دیابت، عفونت‌های ریوی و سایر بیماری‌های مزمن دارند، بالاترین میزان تلفات در سنین بالای ۸۰ سال به‌ترتیب ۱۶/۵/۶، ۸/۷/۱ و ۸/۰/۸٪ می‌باشد. سال به ترتیب ۳/۷/۵، ۸/۷/۱ و ۸/۰/۲/۳/۷/۱ گزارش شده است (۱۳).

در سنین بالای ۵۰ سال گزارش شده است (۵). برخی از شایع‌ترین علائم COVID-19 میزان تلفات در COVID-19 و MERS-CoV و SARS-CoV-1 در چین در سال ۲۰۲۰ و در چین گسترش یافته، میزان تلفات در COVID-19، SARS-CoV-1 و MERS-CoV در پاتوژن SARS-CoV-1 بر پایه گونه‌ای از خفاش‌ها و یا مورچه‌ای از خفاش‌ها در بیماری‌های SARS-CoV-2، MERS-CoV و SARS-CoV-1 که در سال ۲۰۰۲ در چین و در سال ۲۰۰۹ در عربستان سعودی به‌وجود آمده است (۲۴) و همچنین بالاترین علائم و سایر علل در MERS-CoV و SARS-CoV-۱ در میان تلفات برای برخی از شایع‌ترین علائم COVID-19 و MERS-CoV و SARS-CoV-1 در چین در سال ۲۰۲۰ و در چین می‌باشد. SARS-CoV-2

### جدول ۳. مقایسه بین ۱۹ COVID-19 و SARS-CoV-1, MERS-CoV (۱۰)

|            | COVID-19 | MERS-CoV | SARS-CoV-1 |
|------------|----------|----------|------------|
| اوولین مورد | اکتبر ۲۰۱۹ در چین | ۲۰ نوامبر ۲۰۰۲ در چین | ۱۶ نوامبر ۲۰۱۲ در چین |
| پاتوژن | مورbus | MERS-CoV | SARS-CoV-1 |
| نوع بیماری | تنفسی | تنفسی | تنفسی |
| نوع ویروس | بی‌روش RNA | بی‌روش RNA | بی‌روش RNA |
| بنا بر کپنگورمس | تنقائق بی‌روش | تنقائق بی‌روش | تنقائق بی‌روش |
| دوره کمون | ۳-۴ روز | ۳-۴ روز | ۳-۴ روز |
| نسبت بیماری مرد به زن | ۲/۳ | ۲/۳ | ۲/۳ |
| علائم بالینی | تب، سرفه، درد عضلانی، تنگی نفس و اسهال | تب، سرفه، درد عضلانی، تنگی نفس و اسهال | تب، سرفه، درد عضلانی، تنگی نفس و اسهال |
نشانه‌های اولیهای که در بین متیل‌تان COVID-19 شایع‌تر است شامل سرخ شک، تب، خستگی و تنگی نفس می‌باشد. همچنین در برخی از مراحل اولیه این فیروس مانند علت‌های گلو، اسهال و درد عضلانی نیز ترس گزارش شده است. (۸۲) از انجاک‌های سیاست‌گذاری از افراد ممکن است علائم COVID-19 را با بیماری‌هایی مانند آلرژی، آنفلوانزای سرماخوردگی و آلرژی‌های فصلی می‌تواند باشد.

جدول ۳. مشخصات بالینی بیماران منبت به COVID-19

| جنس | مراجع | نابالغین سنی | تیپ | شنتی | مشکلات تنفسی | درعضاوی | سردرد | گرفته‌مان | کم اشتهایی | خلط | اسهال | سرگریجه | ناهنجاری‌های تنفسی | آبزیش بینی | گلودرد
|------|--------|-------------|------|------|---------------|-------|------|--------|-----------|------|--------|--------|-----------------|--------|-------|
| ۳۲ Male- 37 Female | ۷۱ Male- 69 Female | ۷۵ Male- 63 Female | ۳۰ Male- 11 Female | ۶۷ Male- 32 Female | ۱۹ Male- 32 Female | ۴۵۹ Male- ۶۴۰ Female | | | | | | | | |
| ۴۲/۴۲- (۳۸-۶۲) |-| ۵۷/۵۷ (۲۵-۸۷) | ۶۶/۶۶ (۴۲-۶۸) | ۴۹/۴۹ (۴۱-۵۸) | ۵۵/۵۵ (۲۱-۸۲) | ۴۵/۴۵ (۳۴-۵۱) | ۴۷/۴۷ (۳۵-۵۸) | | | | | | | | |
| ۶۰ (۷۸%) | ۱۱۰/۱۲۰ (۹۱.۷٪) | ۱۳۶ (۹۸.۶٪) | ۴۰ (۹۸٪) | ۸۲/۸۲ (۸۳٪) | ۴۳/۴۳ (۸۴.۳٪) | ۹۶۶ (۸۷.۹٪) | | | | | | | | | |
| ۳۸ (۵۵٪) | ۹۰/۱۲۰ (۷۵٪) | ۵۵ (۵۹.۴٪) | ۶۷ (۶۶٪) | ۸۱/۸۱ (۸۲٪) | ۷۴/۷۴ (۷۵٪) | ۷۴ (۶۷.۷٪) | | | | | | | | | |
| ۲۹/۴۲٪ | ۹۰/۱۲۰ (۷۵٪) | ۹۶ (۶۹.۶٪) | ۱۸ (۴۴٪) | NA | ۲۲ (۴۳٪) | ۴۱۹ (۳۸.۱٪) | | | | | | | | | |
| ۲۰/۲۹٪ | ۴۴/۱۲۰ (۳۶.۷٪) | ۴۳ (۳۱.۲٪) | ۲۲/۴۰ (۵۵٪) | ۳۱ (۳۱٪) | ۱۱ (۲۱.۶٪) | ۲۰۴ (۱۸.۶٪) | | | | | | | | | |
| ۲۱ (۳۰٪) | NA | ۴۸ (۳۸.۴٪) | ۱۸ (۴۴٪) | ۱۱ (۱۱٪) | ۶ (۱۱.۸٪) | ۴۶۳ (۴۷.۵٪) | | | | | | | | | |
| ۱۰/۱۴٪ | NA | ۹ (۶.۵٪) | ۳/۸ (۸٪) | ۸ (۸٪) | ۵ (۹.۸٪) | ۱۵۰ (۱۳.۶٪) | | | | | | | | | |
| ۷/۱۰٪ | ۱۷/۱۳۹ (۱۲.۲٪) | ۵۵ (۳۹.۹٪) | NA | NA | NA | ۳۶۷ (۳۳.۴٪) | | | | | | | | | |
| NA | NA | ۳۷ (۲۶.۸٪) | ۱۱/۳۹ (۲۸٪) | NA | NA | ۳۶۷ (۳۳.۴٪) | | | | | | | | | |
| ۱۰/۱۴٪ | ۱۸/۱۳۹ (۱۲.۹٪) | ۱۴ (۱۰.۱٪) | ۱/۳۸ (۳%) | ۲ (۲٪) | ۴ (۷.۸٪) | ۴۱ (۳.۷٪) | | | | | | | | | |
| NA | NA | ۱۳ (۹.۴٪) | NA | ۹ (۹٪) | ۷ (۱۳.۷٪) | NA | | | | | | | | | |
| NA | ۲۴/۱۳۹ (۱۷.۳٪) | ۵ (۳.۶٪) | NA | ۱ (۱٪) | ۳ (۵.۹٪) | ۵۵ (۵٪) | | | | | | | | | |
| NA | NA | NA | ۴ (۴٪) | ۴ (۴٪) | ۳ (۵.۹٪) | NA | | | | | | | | | |
| NA | NA | ۲۴ (۱۷.۴٪) | NA | ۵ (۵٪) | NA | ۱۵۳ (۱۳.۹٪) | | | | | | | | |
این نکته ضروری است که مدل‌های صحیح استرس با استفاده از تکنیک‌های روشن‌پژوهشی و برنامه‌های مقابله می‌توانند تأثیر مستقیم در رابطه با COVID-19 داشته باشند. مصرف E D .C .B .A . در ابتلا به ویروس همه تعدادی کمکی و سنتینل یا ماهیان از راه‌های تقویت سیستم ایمنی بدن در مقایسه با ویروس‌های نوین COVID-19 است. (۶۴) - (۶۵) است. سیستم‌های ساختاری بی‌کیفیت معلم آنلاین نقض ویژه و مهمی در افزایش منگرکن و نجات‌کردن بدن به پیشگیری و درمان آنفلوانزا و ویروس‌های ویروسی ایفا می‌کند. (۶۴) گیاهانی دارویی به دلیل خاصیت خوراکی و ویروسی که در مبارزه با ویروس‌های اهداف (۴۷) Zaidi در (۴۶) اثرات مثبت استفاده از SARS-CoV-1 (۴۸) Torreya nucifera و COVID-گزارش شده است. در حال حاضر درمان و کاهش عفونت COVID- با استفاده از داروهای ویروسی و بیماری و فراملیت کردن. مرحله کاهش سرعت (کاهش ابتکاری) برای کاهش اقدامات کنترلی در جامعه و مرحله کاهش همراه با اقدامات انتقالی مسیره اپیدمی (اماده‌سازی برای موج‌های بعدی بیماری، ارزیابی پاسخ به موج اول) است. (۶۸)–(۶۱)

تشخیص و درمان هیپرکربون در بیماری کروناویروس

احمیت کاربرد مواد نانوپویزی در علوم پزشکی برای
تشخیص و درمان هیپرکربون مورد توجه محکم‌بندان بوده است. (۶۱)
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