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The impact of COVID-19 on global health and other aspects of human life

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Abstract

COVID-19 has emerged as a serious public health problem in recent times. It is an infectious disease caused by a novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The place of origin of this virus is Wuhan city, China in late December 2019, has spread throughout the world rapidly. There are two important classes of the Coronavirus affecting human beings: Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS). Coronavirus is a positive-sense, single-stranded RNA (+ssRNA) virus. Diagnosis of the COVID-19 is done by taking a nasal swab, tracheal aspirate or bronchoalveolar samples and RT-PCR. COVID-19 treatment generally depends on the severity and/or the health status of the infected patient. The treatment strategy, so far, includes the use of antiviral drugs. Clinical trials of vaccines were started in early 2020 by different companies and some are released that are in use. Preventive measures are social/physical distancing, masking and isolation of infected individuals. Although educational systems have used various learning management systems there are concerns about the online teaching system in comparison to the traditional classroom teaching system. In this review, we have tried to analyze the impact of COVID-19 on the health systems worldwide and other aspects of human life

Keywords: COVID-19, educational systems, global health, real-time PCR, vaccine

1. Introduction

Coronaviruses are enveloped, positive sense, single stranded RNA viruses that are responsible for infectious diseases affecting the respiratory system. It is a common virus affecting members of the animal kingdom, including humans, birds and other mammals. Recently, the serovar of coronavirus i.e., (SARS-CoV-2) (Fig. 1) was discovered in Wuhan city, (Huanan Seafood Wholesale Market of Wuhan, through animal-to-human transmission), Hubei Province, China (1-3). There are many assumptions about the theory of natural host of this virus, which means is still unknown and is believed to have an animal origin e.g., pangolins, bats, etc. It is assumed human acquired infection from these animals, but research is still going on. The first case of COVID-19 was reported at the end of 2019.Since then, the occurrence and distribution of coronavirus, it has spread all over the world causing a pandemic situation and thus a healthcare emergency (4-5).

It may differ from country to country or content to other, but it is very clear that, most affected countries are USA, India, Brazil, Russia, Italy, China, Iran, Egypt, Israel, all gulf countries and other. It shows that the infection and outbreak of (SARS-CoV-2) are distributed throughout the world. In India, the first case of (SARS-CoV-2) was reported in Kerala. Most numbers of the positive case reported states till date in India are Maharashtra, Kerala, Uttar Pradesh and also spread almost of all states in India. The total confirmed Coronavirus Cases is 282 by 20th January 2020. It has been reported from four countries including China (278 cases), Thailand (2 cases), Japan (1 case) and the Republic of Korea (1 case). COVID-19 has resulted in a 'once-in-a-century pandemic' with about 198,910,438 Coronavirus cases, deaths 4,238,581, Recovered179,527,290 globally by First-August 2021 (6-12).

The Taxonomy, classification of a novel Coronavirus (SARS-CoV-2) showed as, Coronavirus Phylum is (Incertaesedis), Order (Nidovirales), Family (Coronaviridae), Subfamily (Orthocoronavirinae), and Genus (Betacoronavirus). The coronavirus subfamily is further classified into four genera: alpha, beta, gamma, and delta coronaviruses. (1) Alpha-coronavirus (alphaCoV), (2) Beta-coronavirus (betaCoV), (3) Delta-coronavirus (delta IV) and (4) Gamma-coronavirus (gammaCoV). Out of these the Alpha and Beta coronaviruses cause human infections. The Severe Acute Respiratory Syndrome Virus (SARS-CoV) virus, (SARS-CoV-2) virus and the Middle East Respiratory Syndrome (MERS-CoV) virus belong to the Beta coronavirus (betaCoV) genera. The Morphological characteristics of a novel coronavirus (SARS-CoV-2) demonstrated that, "Coronavirus" name is derived from the Latin word corona, meaning "crown" or "wreath" (13-15).

It has large fringe, bulbous surface projections and viral spike peplomers, which are proteins on the external of the virus. The outer viral envelope comprises of a lipid bilayer

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where the membrane, envelope and spike structural proteins are attached (7).

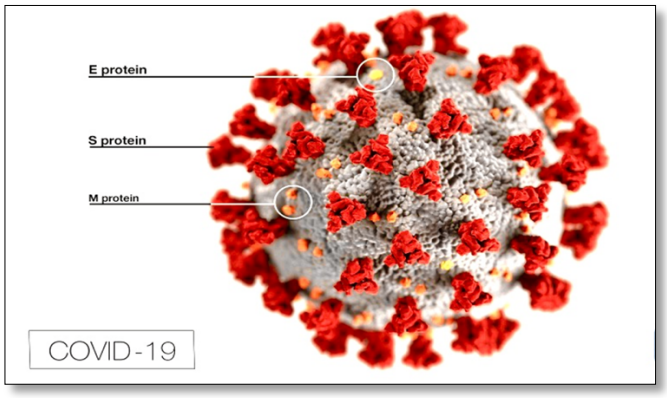

Fig. 1. Corona virus structure [7]

Problem of the research

This study focused on analyze and evaluate about the influence / impact of covid-19 on global health, education, economy, security, management and other aspects of human life. These aspects are the backbone of human being life. It is required best methods to minimize the negative impact on them by controlling the pandemic (taking care of/protecting methods). Clinical studies should continue in a bigger scale, to increase the availability of antiviral drugs and evaluate the level of toxicity of these medications (14). And also accelerate the study of vaccinations. All these processes will lead to a normal life before COVID-19 discovered.

Significance of the research

COVID-19 has disrupted many aspects of life and the lives of individuals around the world. The current investigation is basically aimed to understand most of the aspects of COVID-19 from day one till date. There are many aims and objectives which evaluated, for the examples history of pandemics, SARS-CoV2, Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Virus (MERS), Evolutionary origin, Transmission of the virus, Pathophysiology, Clinical presentation, Testing, Treatment and Implications for research (16-19).

The study might have an impact on treatment COVID-19. This study focused and analyze about influence of covid-19 on health, education, economy, security, management and other aspects of human life, which is required to concentrate on minimizing the negative effects of this a pandemic by protecting our self from the virus by social distancing, masking and isolation of infected individuals as well as taking care of our immune system. Scientists should do more clinical studies, to increase the availability of antiviral drugs and evaluate the level of toxicity of these medications. This study tried to analyze the influence of COVID-19 on the health systems worldwide and other aspects of human life.

Scope of the research

Research scope of Infectious disease (SARS-CoV2) spread primarily from person-to-person. It has spread between people most often when they are physically close. It transmits very easily and sustainably through the air, primarily via droplets containing small particles of a disease, such as aerosols, produced after an infected person breathes, coughs, sneezes, talks or sings.

The current investigation is basically aimed to understand the effects of the COVID-19 on global health, education, economy, security, management and other aspects of human life by focus, analyze and evaluate minimize the negative impact on them by different methods or controlling the pandemic. Scientists should do more clinical studies, to increase the availability of antiviral drugs and evaluate the level of toxicity of these medications. And also accelerate the study of vaccinations and alto boost one's immune system along with preventive measures of social distancing, masking and isolation of infected individuals. All these processes will lead to a normal life before COVID-19 discovered.

Objectives of the research

This manuscript highlights potential areas like current health system challenges, education, security, management, global business, culture and other aspects of human life, which get influence/impact by COVID-19. The main objectives of this paper are to provide awareness and identify the research areas related to COVID-19 by identifying the best methods to minimize the negative impact on these aspects of controlling the pandemic COVID-19. (Taking care of/protecting methods). Clinical studies should continue in a bigger scale, to increase the availability of antiviral drugs and evaluate the level of toxicity of these medications. And also accelerate the study of vaccinations. It may help improve the understanding of this disease, which will have positive impacts of this pandemic scenario of change as the disease spreads. The study of the disease can also lead to the development of life-saving drugs or vaccines. Better health is central to human happiness and well-being.

Limitation of the research

The main drawback about the study of a pandemic of COVID-19 is zoonotic and originated in China. There are many theories about the originality of the virus means identifying the animal source of the infectious agent and have not determined whether a persistent animal reservoir of the infectious agent exists. If the disease is a seasonal disease that would have receded on its own. Scientists have not yet been able to answer some questions regarding COVID-19.

The other, the treatment, limited availability of antivirals at the beginning of the pandemic and no vaccine; a lot of medications were initially repurposed to treat COVID-19 but due to the acute side effects of these drugs treatment is unsuccessful story, that is why the entire world suffering. There are more clinical studies continue to be done to help for full control of this a pandemic.

Gaps in the knowledge of Coronavirus and its effects

It appears the Coronavirus is an infectious disease, zoonotic and originated in China. There are many theories about the

source of the infectious but not yet confirm the main. So many questions are still not answered by the Scientists. The answers to these questions would undoubtedly advance the world's ability to predict and prepare for a resurgence of COVID-19.

COVID-19 has had a huge impact on medical research, among other things. All organizations, including healthcare organizations, universities and research centers were influenced by COVID-19 and started bleeding cash. The SARS-CoV-2 virus has significantly affected the health, economy, and socio-economic fabric of the global society.

The study has been carried out the impact of covid-19 on global health and other aspects of human life. Coronavirus (COVID-19) pandemic is growing exponentially in the whole world (globally). It was first identified in December 2019 in Wuhan, Hubei, China, and has resulted in an ongoing pandemic. The total confirmed Coronavirus Cases is 282 by 20th January 2020. It has been reported from four countries including China (278 cases), Thailand (2 cases), Japan (1 case) and the Republic of Korea (1 case). COVID-19 has resulted in a 'once-in-a-century pandemic' with about 198,910,438 Coronavirus cases, deaths 4,238,581, Recovered179,527,290 globally by First-August 2021(20-25).

An overwhelming amount of literature started pouring out of countries, impacted the most at the onset of the pandemic. Almost every journal has provided free access to articles on COVID-19. Researchers, technologists, doctors and other health care workers are working day and night to bridge the gap from day one till today, for the development of vaccines and medicines (antiviral properties and immunomodulatory properties) with little known side effects can be used in the fight with COVID-19 (22).

Data collection

In order to achieve the goals of the study, it is very important to be extracted the information from best scientific resources on coronavirus-related research to complete the tasks of the research paper.

These are different classes of reliable sources for COVID-19,which implemented in this research paper such as research on COVID-19 , one of them, The World Health Organization, On the World Health Organization (WHO) website, experts provide a global perspective of the COVID-19 virus, while also sharing individual best practices on topics all information and updates about COVID-19, (Scientific / medical journals), best websites (Scientific / medical websites), such as the Clarivate Web of Science (WoS), Elsevier Scopus, and PMC-sourced materials drawn from CORD-19 (COVID-19 Open Research Dataset), Health and Medical News, Coronavirus and Higher Education like Search engines (e.g. Google), and Business and the Economy.

Comparative analysis

Any overlap between articles found across the different source materials were removed.

History of Pandemics

A pandemic has been historically described as "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people". There are several types of secondary data are applied in the research paper.

I. Spanish flu (H1N1-influenza virus) in 1918-1919 causing about 20-50 million victims. And also, the virus infected 500 million people worldwide.

II. Asian flu (H2N2-influenza virus) that originated in Guizhou, China, in 1957-1958 causing about 1-4 million victims.

III. Hong Kong flu (H3N2-influenza virus) in 1968 causing about 1-4 million victims. It is suspected that this virus evolved from the strain of influenza (99).

Current pandemics

WHO uses the term "global epidemic" / other authors called as "pandemic"

A. HIV (Human Immunodeficiency Virus) /**AIDS** (Acquired Immunodeficiency Syndrome) as described by some as pandemic and by WHO as a global epidemic, HIV is believed to have originated in Africa and started with the first case in the Democratic Republic of Congo in 1976 and in 2006, the HIV prevalence rate among pregnant women in South Africa was 29%. Education in African content plays a very important role in decreasing the percentage of infection rates, by teaching them about safer sexual practices and Bloodborne infection precautions training. Since then, has affected more than 37.9 million people with about 770,000 deaths in 2018 from HIV related illnesses.

B. Swine flu started in 2009 is a respiratory disease caused by influenza (H1N1 viruses) pandemic. It is a relatively new strain of an influenza virus that causes symptoms similar to the regular flu. Swine flu originated in pigs but is spread/ transmission primarily from person to person. It is confirmed at laboratory that 18,500 victims; but researchers estimate that about 200,000 respiratory deaths and about 80,000 cardiovascular deaths were related to this pandemic.

C. COVID-19 (coronavirus disease), which covered by this research paper (23).

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2)

On its discovery, the scholars named it '2019 novel coronavirus (2019-nCoV)'. However, the World Health Organization renamed the virus as 'Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)'. The disease caused by (SARS-CoV-2) is called 'Coronavirus Disease 2019 (COVID-19) (6)'. Molecular and Genome information of coronavirus studies shows that after the genome analysis study of nCoV-2019 revealed that two viruses may have been combined (24).

It is an RNA molecule contains a positive-sense, single-stranded RNA genome with a genome size range for 30 to 34 kilobases (largest among RNA viruses). It contains at least 15 genes, including the S gene, which codes for surface proteins. Molecular phylogenetic analysis showed nCoV is 88% similar to bat derived SAR- like coronavirus 79% close to SAR-Cov and 50% similar to MERS-Cov (Middle East Respiratory Syndrome Coronavirus). The following sign and symptoms report from the person who has received the (SARS-CoV-2) infection. A Transmission electron micrograph of (SARS-CoV-2) virus particles is represented in (Fig. 2).

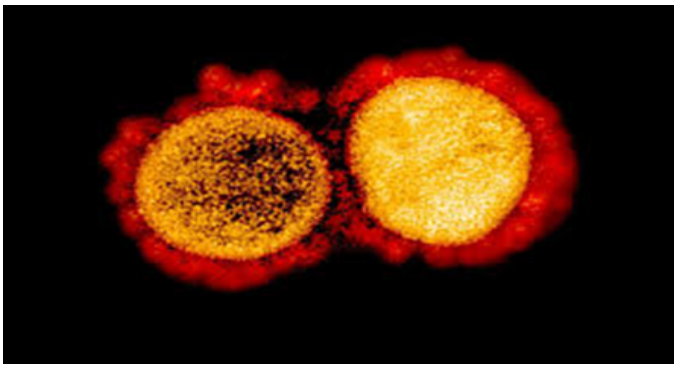

Fig. 2. Transmission electron micrograph of (SARS-CoV-2) virus particles, isolated from a patient (National Institutes of Allergy and Infectious Diseases) (7)

Severe Acute Respiratory Syndrome (SARS)

SARS (Severe Acute Respiratory Syndrome) is a viral respiratory disease of zoonotic origin caused by severe acute respiratory syndrome coronavirus (SARS-CoV or SARS-CoV-1). Coronaviruses commonly cause infections in both humans and animals. SARS originated in China in Nov 2002 with the outbreak rapidly spreading and resulting in about 8000 cases and an estimated 800 deaths.

Cases of SARS was reported in about 30 countries and the outbreak was controlled by epidemiological surveillance, identification, and isolation of patients, contact tracing and quarantining of contacts, thereby interrupting person-to-person transmission of the virus. Treatment involves supportive care. There are no specific antiviral treatments or vaccines available (24-26). There has been no known transmission of SARS anywhere in the world since 2004.

Testing /Diagnosis

The Laboratory Diagnosis, which detecting and testing of coronavirus (SARS-CoV-2) by different methods or techniques such as Polymerase chain reaction (PCR) tests, Rt polymerase chain reaction (RT-PCR), and Serological techniques. Real-time RT-PCR assays are recommended for diagnosis of COVID-19. The sampling is done by taking a nasopharyngeal swab from patients in order to detect (SARS-CoV-2) Positive results are indicated based on RT-PCR of above samples only. Few cases have reported a positive RT-PCR for nasopharyngeal swab, but a negative RT-PCR for urine and stool samples of patients. Since the respiratory system is affected in COVID-19, the results of nasopharyngeal swab are considered valid as against any other pathological samples. RT-PCR is an extremely sensitive technique and plays a very important role for a confirmed diagnosis of COVID-19 (7-9).

Middle Eastern Respiratory Virus

The Middle East Respiratory Syndrome (MERS) is another type of coronavirus. It enters its host cell by binding to the DPP4 receptor. Typically, the host of MERS coronavirus includes humans, bats, and camels. The first instance of this virus was recorded in Saudi Arabia in June 2012, when the patient died of pneumonia and renal failure. MERS was also responsible for a pandemic from spreading in over 27 countries. Statistically, WHO has estimated about 2500 cases with more than 800 deaths from MERS in 2020 (10-11).

Transmission of Coronavirus

The Mode of Transmission of coronavirus, it can be possible by these methods, like Human-to-human contact (personal contact), cough and sneeze through the air, and contaminated object.

Pathophysiology

Pathophysiology (consisting of the Greek origin words “pathos” = suffering; “physis” = nature, origin; and “logos” = “the study of”). The study of abnormal changes in body functions that are the causes, consequences, or concomitants of COVID-19 processes.

COVID-19 can affect the upper respiratory tract (sinuses, nose, and throat) and the lower respiratory tract (windpipe and lungs). SARS-CoV-2 enters host cells through interaction of its spike protein with the entry receptor the angiotensin-converting enzyme type 2 (ACE2) in the presence of Transmembrane protease, serine 2 (TMPRSS2). Proposed mechanisms for COVID-19 caused by infection with SARS-CoV-2 include (1) direct virus-mediated cell damage; (2) dysregulation of the renin–angiotensin–aldosterone system (RAAS) as a consequence of deregulation of ACE2 related to viral entry, which leads to decreased cleavage of angiotensin I and angiotensin II; (3) endothelial cell damage and thromboinflammation; And (4) dysregulation of the immune response and hyperinflammation caused by inhibition of interferon signaling by the virus, T cell lymphodepletion, and the production of proinflammatory cytokines, particularly IL-6 and TNFα (26).

Clinical Presentation

According to scientists, there are three classes of medical conditions when the virus infects the respiratory system. First is a mild, second moderate and lastly a severe condition is reported. Both first- and second-degree cases do not require special care since the immune system effectively helps in overcoming the symptoms of the disease. However, the third scenario requires special treatment, failing which full recovery of patients is not possible. The patients may require a respiratory support system, nursing support and heavy dose of

medicines (12-15). Table 1 represents the common symptoms associated with COVID-19.

Prevention

The coronavirus disease 2019 (COVID-19) global pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a major public health event. The government bodies and health officials in China have been working extremely hard to slow down the spread of COVID-19 (1-5). The purpose of 'social distancing' is to reduce the transmission of this disease. It is advised for people to maintain 2-meter distance from each other. This is considered as a safe distance by WHO. Other preventing ways, such as wash your hand regularly with Sanitizers or soap or 70% alcohol, Wear face mask and always cover your mouth while coughing or sneezing. The mortality rate is very low, i.e., 2% to 8% and the highest is observed in older persons. Other measures include curfews and lockdowns to discourage large gatherings. It is a very important step to minimize the spread of this disease.

Jordan was the first Arab country to implement these rules and regulations and excellent results of the above measures was observed. WHO classified the countries into Areawide basis on the severity of the diseases/ infection risks: (a) High-risk (so called "red zone" or level 1 risk zone; (b) mean risk (level 2 risk zone); (c) remaining area, which was considered at low risk (level 3 risk zone). In the subsequent phases, it makes the approaches for these areas easily by taken major protections and safety (27-36).

The Exponential Moving Average (EMA) has recommended that patients do not interrupt their treatment with Angiotensin Converting Enzyme (ACE) inhibitors or Angiotensin Receptor Blockers (ARBs). They further suggest that switching over to other medicines is not required in case of COVID-19 disease. According to the international scientists and epidemiologists, diseases like hypertension, heart failure or renal diseases could worsen the condition of patients suffering from COVID-19. This may occur due to decreased immunity. Hence it is recommended that in such cases patients continue to use prescribed medications. It is also supported by clinical evidence (26).

To ensure effective prevention and control should be implementing early of these processes (detection, reporting, diagnosis, isolation, and treatment) and also full supports of centralized responses for these processes such as (centralized coordination by experts, centralized allocation of resources, centralized placement of patients, and centralized provision of treatment) with all of these efforts which may leads to avoid the complication for (COVID-19) cases/patients. Incorporation of mobile technology, big data, and artificial intelligence into COVID-19 responding increased access to health services, reduced misinformation and minimize the impact of fake news. All of the previous steps, plays a very important rule to change the scenario of (COVID-19) by controlling outbreaks and contribution into the treatment of pandemic disease (37-43).

As a special population, children have special respiratory tract structure characteristics, immature immune system, and susceptibility to respiratory virus infections. Therefore, it is highly important for clinicians to treat the infected children cautiously despite most pediatric patients have milder symptoms and better prognosis compared with the adult patients. Very special care recommends for children during the process of prevention, diagnosis, and treatment of children with COVID-19 summarized epidemiology, clinical characteristics, diagnostic criteria, clinical classifications, differential diagnosis, and treatments (44-49).

The Sign and symptoms of coronavirus include Higher Fever, Dry Cough, Fatigue, Sore throat, Shortness of breath, and Sputum production. The incubation period for SARS-CoV-2 is normally 5 to 6 days but may range from 2 to 14 days. World Health Organization (WHO) declared coronavirus outbreak a pandemic and Public Health Emergency of International Concern (PHEIC).

Asymptomatic illness

When a patient is a carrier for a disease/ infection of (COVID-19) by having a positive test of molecular diagnostic (polymerase chain reaction) or antigen test for (SARS-CoV-2) but experiences no symptoms. There are reports of loss of sense of smell in people who otherwise have no symptoms, it considered under this case. The best method of treatment should have self-isolate at home. It does not require more testing or additional treatment and If they remain asymptomatic, they can discontinue isolation 10 days from the day of tested. It's important to follow physical distancing guidance to avoid spreading the virus since no indications having the virus. If the clinical condition deteriorates, they should check with doctors.

Mild illness

This group includes patients with various signs and symptoms of COVID 19 such as (fever, dry cough, tiredness, feeling slightly breathless, muscle pain, headache, sore throat, diarrhea). Patients with second level [pre-symptomatic (SARS-CoV-2) infection] should do self-isolate at home. No additional laboratory testing and no specific treatment.

Moderate illness

People who have evidence of lower respiratory disease by clinical assessment or Imaging or a saturation of oxygen (SpO_2) ≥94% on room air at sea level. Tend to have an increased heart rate, particularly if they're moving around and this is caused by inflammation further into the lungs, so symptoms like coughing and breathlessness may be worse. Patients should be monitored closely (hospital), isolation, limiting provider exposure; laboratory tests including complete blood counts, metabolic profile, renal and liver function studies; ECG, imaging. The treatment should refer to Antiviral Therapy, Immune-Based Therapy. otherwise, their condition may become worse.

Table 1. Comparison of common symptoms between common cold, hay fever and COVID-19 [1, 4-7,15]

Symptoms	Cold	Flu	Allergies	COVID-19
Fever	Rare	Common and high (above 100 degrees); lasts for 3 to 4 days.	No	Common, one of the first sign; start weak and become worse (above 100 degrees)
Headaches	Rare	Prominent	Common	Sometimes
Body Aches	Sometimes	Common and usually severe	Never	Sometimes
Fatigue	Very mild	Common, may last for 2 to 3 weeks	Common	Sometimes
Extra Exhaustion	No	Early Prominent	Unusual	Sometimes
Stuffy Nose	Common	Sometimes	Common	Sometimes
Sneezing	Unusual	Sometimes	Common	Rare
Sore throat	Common	Sometimes	Sometimes	Sometimes
Shortness of breath	No	No	No	Sometimes
Chest discomfort, cough	Mild to moderate, hacking cough	Common and can be severe	Sometimes	Usual, dry cough
Chills	Rarely	Common	No	Sometimes
Treatment	Pain relievers, cough syrup, decongestants	Annual vaccine, Antiviral drugs 1 to 2 days after symptoms start	Allergy Medications and controlling environment	No known vaccines or treatment

*This is not a complete list of symptoms and is only a guide, anyone who is concerned should contact a medical provider

Severe illness

Patients who have respiratory frequency >30 breaths per minute, SpO2 <94% on room People who have respiratory failure, septic shock, and/or multiple organ dysfunction. The difference between severe and critical illness is very small, only one a hospital healthcare professional will make. Both severity levels need to be in hospital urgently. Treatment of COVID-19 should apply Antiviral Therapy, Immune-Based Therapy.

Critical illness

People who have respiratory failure, septic shock, and/or multiple organ dysfunction. The difference between severe and critical illness is very small, only one a hospital healthcare professional will make. Both severity levels need to be in hospital urgently. Treatment of COVID-19 should apply Antiviral Therapy, Immune-Based Therapy.

Dedicated intensive care unit (ICU) plays a pivotal role in treatment COVID-19 especially for Severe illness and Critical illness. The ICU is divided into green, yellow, and red areas. Each ICU bed is equipped with a full monitoring of vital parameters and a mechanical ventilator. Each monitor is duplicated in the centralized control unit equipped with microphones and glasses to allow the communications between the staff. In the ICU, there is a laboratory section including two dedicated ultrasound machines, disposable fiberoptic bronchoscopes, video laryngoscope, point-of-care arterial blood gas and coagulation analyses, transport ventilator, and emergency cart with a defibrillator. Medical team (doctors and nurses) available 24 hours ×7 days for special COVID-19 patients. This is standard by WHO. Aerosol Box, An Operating Room Security Measure in COVID-19 Pandemic plays an effective role in preventing direct infections for medical staff by minimizing the risk and decreasing significantly the stress factor on them, which leads to Efficient job for treatment of COVID-19 patients (51-55).

Treatment For COVID-19

Immune-based therapy

This type of therapy describes as the treatment of disease by activating or suppressing the immune system. It's designed to elicit or amplify an immune response are called as activation immunotherapies whereas immunotherapies that reduce or suppress are called as suppression immunotherapies. These phenomena can be called as Immunotherapy or biological therapy.

This type used for treatment COVID-19. COVID-19 convalescent plasma or (SARS-CoV-2) immune globulins are obtained from individuals who have recovered from an infection and have generated an immune response against the infecting pathogen. Neutralizing antibodies are thought to be the main active component; other immune mediators may also contribute. It is strongly recommended to follow local/regional medical society guidelines for its use. National Institutes of Health (NIH) summarized that no complete data/research evidences are available to go with or against this type of treatment COVID-19.

Therapeutic options

In severe cases of COVID-19 infection, the virus can enter the bloodstream and infect endothelial and other target cells in the kidneys, esophagus, bladder, ileum, heart tissues, and central nervous system. And critically ill patients with COVID-19 infection often present signs of high oxidative stress and systemic inflammation the leading causes of mortality. Nuclear factor E2-related factor 2 (Nrf2) is a transcription factor that in humans is encoded by the NFE2L2 gene. (Nrf2) plays a very important role to reduce reactive oxygen species (ROS) together with glutathione biosynthesis precursors, e.g., N acetylcysteine. This treatment can be used to reduce damage to cells and tissues, to prevent respiratory failure, and acute respiratory distress syndrome (ARDS) for COVID-19 patients. (Nrf2) activity significantly decreases with age, elderly patients

due to susceptibility to oxidative stress-mediated diseases, which include type 2 diabetes, chronic inflammation, and viral infections (54).

Treatments of coronavirus are the main core of this epidemic/ problem, so far, no permanent treatment is available, however on a trial basis antiviral drugs have been used, such as Remdesivir, Chloroquine, Hydroxychloroquine, Favipiravir, Ritonavir/lopinavir. Moreover, various types of COVID-19. Vaccines are under development. However, suspected ADRs to these drugs, are being reported to Vigibase, the WHO global database of individual case safety reports (ICSRs) which is managed by the Uppsala Monitoring Centre in Sweden (18). A clinical trial of vaccine development has been started by different companies across the globe.

In the course of Coronavirus Disease 2019 (COVID- 19) - related acute hypoxemic respiratory failure (AHRF), which is severe arterial hypoxemia that is refractory to supplemental oxygen. Nasal high flow (NHF) represents a new method to support breathing. It is devices are able to produce a heated and humidified airflow applied by a large bore nasal prong [50]. The application of NHF as first-line ventilatory support during COVID-19-related AHRF may have obviated the need for intubation in up to a may have obviated the need for intubation in up to a third of cases. In this circumstance, the ROX index measured within the first 4h after NHF initiation could be an easy-to-use marker of early ventilatory response.

Drug–Drug Interactions and Side Effects

These medicines have, it is own limitations due to the toxicity of these drugs as well as is not particular or specific for (COVID-19). It may be playing a rule, but not very import one. In the USA, the treatment of COVID-19 patients, involved the use of drugs like chloroquine and hydroxychloroquine, which needs to be monitored carefully. This is due to the side effects associated with these medicines, indicated by the advisory of the USFDA. These drugs were used extensively either individually or in combination with other medicines (to improve their efficiency and minimize the harmful effects). The US Medical scholars monitored the general health of the COVID-19 patients during the treatment and evaluated the level of toxicity of these drugs. They reported toxic effects, in contrast to the expected benefits, with the use of these drugs [16]. The European Medicines Agency (EMA) has also stated a high risk associated with the use of chloroquine or hydroxychloroquine treatment of COVID-19. Further, they encourage close monitoring of patients. Moreover, Denmark had stopped trials immediately due to the negative impact of these drugs on COVID-19 patients (23-24).

A study reported the treatment of COVID-19 patients with Hydroxychloroquine, Azithromycin, Lopinavir/Ritonavir and Chloroquine. These patients were also receiving other drugs associated with QTc prolongation. The investigation, carried out in France, indicated the association of these drugs with cardiac Adverse Drug Reactions (ADRs). They showed the risk of cardiotoxicity can be avoided by analyzing the positive benefit to risk balance of any chosen drug (17). Another investigation further confirmed that a high-dose Chloroquine should not be recommended in patients with a severe COVID-19 condition since it leads to severe complications. These investigations, carried out by a randomized clinical trial. JAMA Network Open, further indicated that the light -doses should be monitored (33-34). Researchers from Ireland have also confirmed that the use of Hydroxychloroquine for treatment of COVID-19 patients may result in increasing the cardiotoxicity, which may be fatal (35). An investigation of benefit-risk assessment team (BRAT), for Remdesivir in COVID-19 (Mechanism of action, Pharmacokinetics uses, and Clinical toxicities), concluded that this drug is not effective at all for COVID-19 treatment (19).

The Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly available for the treatment of pain. In some countries they are also used for treatment of fever. The NSAID such as ibuprofen is available by prescription as well as over-the-counter. However, there has been awareness created through news reports (particularly of social media) mentioning that both WHO and BRAT have indicated worsening of COVID-19 symptoms with the use of NSAIDs (including ibuprofen) (20). A recent letter published in 'The Lancet' was reported by the USFDA. This study hypothesized an increase in the concentration of a specific enzyme (a molecule that aids the cellular biochemical reactions) with the use of NSAIDs.

The enzyme, in turn, may further aggravate the symptoms of COVID-19. A survey conducted by the 'French National Agency for Medicines and Health Products Safety (ANSM)' in May 2019, has also suggested the worsening of symptoms in the case of certain bacterial infections and chickenpox (varicella) with the use of NSAIDs like ibuprofen and ketoprofen (21-22). Despite the reports of harmful effects of NSAIDs in aggravating the symptoms of COVID-19, there has been no scientific evidence reported by US FDA and EMA to confirm the same (27-28). Hence, the patients should continue to use the NSAIDs as directed by their doctor or pharmacist, healthcare professional in accordance with labelling instructions (27-28).

Scientists in Italy indicated that the patients suffering from COVID-19 have an increased chance of acquiring the Guillain-Barré syndrome (GBS) (25). The findings of a prospective French study published in Circulation: Arrhythmia and Electrophysiology suggested the use of lopinavir/ritonavir (LPV/RTV; Kaletra) in elderly patients, with COVID-19 symptoms, may increase the risk of bradycardia (2)]. Similar studies have suggested that there are no implications of renin-angiotensin-aldosterone system medications with COVID-19 patients of all ages. Moreover, if any such implications are present, it may be non-significant (30-32).

Table 2. Development of various vaccines for the treatment of COVID-19 (37, 42, 50-53)

Name of the vaccine	Manufacturer	Properties	Clinical Trial stages
mRNA-1273	Moderna and NIAID	mRNA vaccine	Done & in use
BNT162	BioNTech and Pfizer	mRNA vaccine	Done & in use
INO-4800	Inovio Pharmaceuticals	DNA vaccine	Done & on hold from (U.S) FDA
AZD1222	University of Oxford and AstraZeneca	Adenovirus vaccine	Done & on hold from (U.S.) FDA
Ad5-nCoV	CanSino Biologics	Adenovirus vaccine	Phase-III
PiCoVacc	Sinovac	Inactivated virus, plus adjuvant	Phase-III done
NVX-CoV2373	Novavax	Protein subunit	Phase-III
mRNA-1273	Moderna	LNP-encapsulated mRNA vaccine encoding S protein	Done & in use
LV-SMENP-DC	Shenzhen Geno-Immune Medical Institute	DCs modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins; administered with antigen-specific CTLs	Phase-II
Pathogen-specific aAPC	Shenzhen Geno-Immune Medical Institute	aAPCs modified with lentiviral vector expressing synthetic minigene based on domains of selected viral proteins	Phase-I

Development of a vaccine(s) against COVID-19

A COVID-19 vaccine is a biotechnology product intended to provide acquired immunity against coronavirus disease 2019 (COVID-19). There were 321 vaccine candidates are in different stages of development or have been developed and in the clinical trial phase, a 2.5-fold increase since April. However, no candidate has completed clinical trials to prove its safety and efficacy yet (51). Some 42 vaccine candidates were in clinical research: namely 33 in Phase I–II trials and 9 in Phase II–III trials (51-54).

Impact Of COVID-19

Health Care System And Education

The COVID-19 pandemic has impacted the entire world. It has touched so many areas of individual lives, affecting the health of individuals and the scope of social activities. The capacity of health care systems is also challenged in the course of the current pandemic. It has also affected the education and working sectors (36).

According to the UNESCO (2020), nearly 90% of the world's student population had experienced disruption of their academic progress due to the precautions and policies implemented by the government to prevent the spread of COVID-19. This accounts for over 1.5 billion learners in 165 countries. The norms of an education system which includes face to face classroom experience has been replaced by online education systems (37).

This has been described as "largest simultaneous shock to all education systems in our lifetimes" by the Global Director of Education (38). The international health crisis faced due to COVID-19 has particularly affected the early childhood education systems. It has not only led to unprecedented and dramatic changes in the lives of children, but also their parents, teachers, tutors and other mentors involved in shaping the educational society. In addition, the fear of collapsing early childhood education system has called for policies like for COVID-19 financial packages to protect the same (39-40).

Hence COVID-19 has not only suspended the normal childhood activities including school attendance, family interactions and outdoor activities with friends, but also disrupted the social-emotional benefits that children derive from engaging in these experiences. Small children are increasingly affected by this experience because they are naturally vulnerable to the belief that the adults are capable of controlling the surrounding incidents. They are dependent on adults for their basic needs. Hence, a situation where the adults in the family cannot devise a coping mechanism to deal with the immediate and adaptive demand of the situation leaves a strong impact on the basic confidence and analysis potential of a toddler In this context, Xafis (2020) has noted that the individuals who have most commonly faced injustice created by the misdistribution of power, money and resources are the individuals most negatively affected. This is true, particularly for children who are living in poverty and experience insecurities related to food and shelter. Similarly, children residing in remote areas or sidelined by the mainstream society (e.g., indigenous people and migrant workers) are equally affected. In addition, these pandemics exacerbate the problems experienced by children who are chronically ill or have disabilities, and/or are suffering from neglect or abuse (41).

As concerning as these immediate and observable consequences of COVID-19 may seem, the truth is that the future holds several challenges in coping with the long-term effects of the pandemic. From a scholar's perspective, it can be said that we are now "participants in the biggest unplanned experiment that education has ever seen in our lifetimes" (42). On the positive side, a study has indicated improving hygiene practices among individuals during the COVID-19 pandemic. It has transformed the attitude of people towards viral infections and they are now more alert in taking preventive measures (43).

Global Economy

COVID-19 pandemic associated with illness and mortality are

lower than the indirect losses caused by the crisis. Many countries are experiencing a recession, even though COVID-19 has not had a serious effect on them in terms of health. In the present of COVID-19, the global economy changes to a sudden stop, causing shocks to supply and demand. Starting in January 2020, country after country suffered outbreaks of the new coronavirus, with each facing epidemiological shocks that led to economic and financial shocks as a consequence. The impact of coronavirus on the global economy will extend beyond 2020. According to forecasts from the International Monetary Fund and World Bank, GDP per capita at the end of 2021 is still expected to be lower than December 2019 in most countries (Fig. 3).

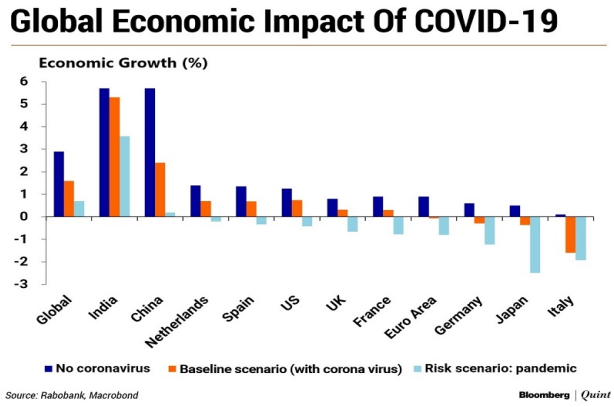

Fig. 3. Barograph representing the global impact of COVID-19 on economy [38]

The influence of the Corona pandemic on global financial markets / financial globalization, shows very clearly due to some factors, such as low oil prices, feelings of fear and panic which affected investors because of pandemic. Lack of control which significantly decreased global economy and also and what caused it to slow down the failure of the production machine, the best example of this scenario is China (38).

Artificial Intelligence Effects

The implementation of artificial intelligence has played a very important role during this pandemic, by helping scientists with information related to testing methods, machine learning and data mining tools. These tools have impacted the COVID-19 advance research in a way that it has led to an intellectually demanding society (36). COVID-19 pandemic has most intriguing challenged the theories and practices of infectious disease control and prediction.

Security

Interpol reported an increase in fake medical products to fight against COVID-19 pandemic, to get fast cash. The criminals are taking advantage of the high market demand for personal protection and hygiene products [44].

Management In Human Life

The alternative pricing models for COVID-19 treatment was released by the Institute for Clinical and Economic Review (ICER). According to ICER, the first course of normal treatment of COVID-19 treatment with Remdesivir was $US10 for a 10-day treatment course. The second model accounted for a threshold of $US50,000. This ICER-COVID model indicated mortality benefit of a 10-day treatment course from the ACCT. The approximate price of this treatment was suggested to be $4500. It is hence suggested by ICER that the clinical evidence, uncertainty and cost-effectiveness analysis should be viewed with caution. They further indicated that the policy makers should consider lower thresholds by weighing factors like uncertainty and affordability in order to promote immediate and broad use of such models (45). According to other studies, there exist six policy options for pricing of the novel COVID-19 vaccines and treatments. They offer different approaches depending on the role of government and the private market. American scientists have concluded that COVID-19 treatment is substantially higher than other common infectious diseases.

It has been observed that economically challenged groups are depending on older form of drugs for the treatment of COVID-19. However, several acute side effects of these drugs have been reported. Hence it is crucial to increase the access to safe and effective opioid agonist treatment (OAT) and prevent the consumption of harmful drugs during this pandemic. In this effect, Ireland opted for one of the best methods for overcoming the challenges of COVID-19 pandemic. They delivered telephonic and video consultation to save the time and energy of healthcare professionals as well as the patients (46).

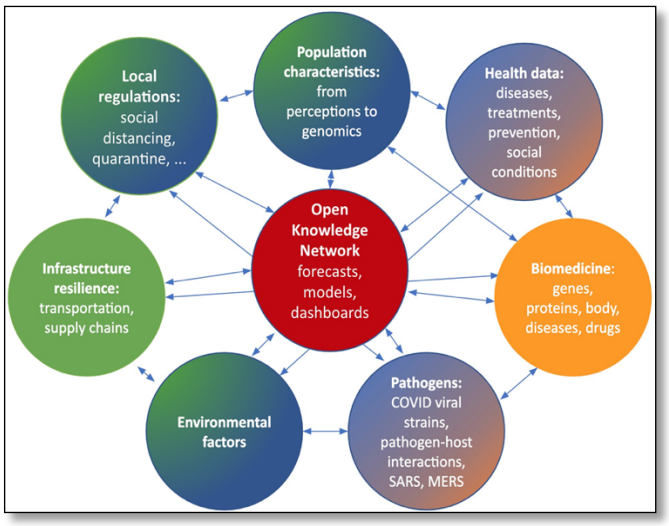

Fig. 4. Transmission and prevention of COVID-19 disease (53)

Implications On Research

COVID-19 is a serious health problem. Most patients of COVID-19 show positive results by RT-PCR assays. However, many patients show multiple negative tests of same assays. This may be because these patients are carriers of the virus, and the collected samples do not contain the required titre of these viruses that is necessary for detection. It is recommended to do the full medical checkup and know patient's exposure history, clinical manifestations, laboratory tests, and typical imaging findings like chest radiography and CT scan. These factors play a vital role in making preliminary diagnosis and guide early isolation and treatment. The RT-PCR is recommended for the

treatment for the patients and prevention of spreading of disease.

It can be summarized COVID-19 have an impact on current health system challenges, education, security, management, global business, culture and other aspects of human life. The main objectives of this paper are to provide awareness and identify the research areas related to COVID-19 by identifying the best methods to minimize the negative impact on these aspects of controlling the pandemic COVID-19. Clinical studies should continue for the antiviral drugs investigation and its limitations. And also accelerate the study of vaccinations.

2. Result and Disucssion

COVID-19 pandemic is a public health emergency of international concern. Our study emphasizes on global health, education system, economy, security, management and other aspects of human life which impact by COVID-19.

It is required to concentrate on minimizing the negative effects of this a pandemic by protecting our self from the virus by social distancing, masking and isolation of infected individuals as well as taking care of our immune system.

There are many aims and objectives which evaluated, for the examples history of pandemics, SARS-CoV2, Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Virus (MERS), Evolutionary origin, Transmission of the virus, Pathophysiology, Clinical presentation, Testing, Treatment and Implications for research. Also mentioned about the toxic effects of the commonly used drugs for the treatment of COVID-19 and the suggestive models for minimizing these effects and further studies.

It is also important to note that the treatment of COVID-19 greatly depends on immunity system of the patients for asymptomatic, mild, moderate, severe, and critical cases. The advanced cases, however, need personal attention and medical care.

Due to socio-economic ramifications on society and also affect all aspects of life, the future research will be multi-disciplinary and trans-national.

These are a new wave of research in the biological and the medical sciences, to increase the availability of antiviral drugs and evaluate the level of toxicity of these medications. This is for the well-being of the civilization.

Future Perspective

The EU leaders have agreed on its reconstructing after COVID-19 plane on 21 July 2020. In this regard, they have announced a highly anticipated plan, the 'Next Generation EU', to jointly borrow €750 billion to respond to the coronavirus pandemic.

New several approaches are being studied to improve the activity and reduce the undesirable side effects of antiviral drugs implemented for the treatment of COVID-19 patients since. Scientists are looking for therapeutic regimens with proven efficacy and approval of vaccines. They are also searching for new drugs, combinations of drugs, and newer delivery techniques.

One such technique includes a novel approach to targeting drugs more specific at the cellular level to maximize the antibody response through nanoparticles to produce effective treatment measures with minimum side effects.

Also, there are many areas of research needed regarding COVID-19, especially undertake extensive clinical research area which will be significant impacted on this pandemic, which leads to a normalized life of the human being.

Appealing to WHO and government institutions to create a health system to protect human beings from viral infection by transmission and put the suitable treatment for all human beings in entering the world without exception.

Conflict of interest

The authors declare that there are no conflicts of interest relevant to this article.

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