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CORONAVIRUS: INTRODUCTION WITH ITS IMPACT ON WORLD ECONOMY AND EDUCATION.

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ABSTRACT

At the end of 2019 a novel virus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), causing severe acute respiratory syndrome expanded globally from Wuhan, China. Coronaviruses are a group of enveloped viruses with no segmented, single-stranded, and positive-sense RNA genomes. Apart from infecting a variety of economically important vertebrates (such as pigs and chickens), six coronaviruses have been known to infect human hosts and cause respiratory diseases. Among them, severe acute respiratory syndrome coronavirus (SARS-CoV) and Middle East respiratory syndrome coronavirus (MERS-CoV) are zoonotic and highly pathogenic coronaviruses that have resulted in regional and global outbreaks Coronaviruses possess a distinctive morphology, the name being derived from the outer fringe, or ―corona‖ of embedded envelope protein. In March 2020 the World Health Organization declared the SARS-Cov-2 virus a global pandemic. We performed a narrative review to describe existing literature with regard to Corona Virus Disease 2019 (COVID-19) epidemiology, pathophysiology, diagnosis, management and future perspective.

KEYWORDS: Corona, Respiratory, Viruses, Hcov, Host, Rna.

INTRODUCTION

On December 31, 2019, the China Health Authority alerted the World Health Organization (WHO) to several cases of pneumonia of unknown etiology in Wuhan City in Hubei Province in central China. The cases had been reported since December 8, 2019, and many patients worked at or lived around the local Huanan Seafood Wholesale Market although other early cases had no exposure to this market.[1] [2] On January 7, a novel coronavirus, originally

abbreviated as 2019-nCoV by WHO, was identified from the throat swab sample of a patient.[3] This pathogen was later renamed as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the Coronavirus Study Group[4] and the disease was named coronavirus disease 2019 (COVID-19) by the WHO. On February 11th, 2020, the World Health Organization (WHO) Director-General, Dr. Tedros Adhanom Ghebreyesus, named the disease caused by the SARS-CoV-2 as "COVID-19",and by March 11th,2020 when the number of countries involved was 114,with more than 118,000 cases and over 4000 deaths, the WHO declared the pandemic status[5],[6] WHO has been deeply concerned by the alarming levels of spread and therefore, on11 Mar 2020 made the assessment that COVID-19 can be characterized as pandemic.

Coronaviruses are enveloped, single-strand RNA viruses that can infect a wide range of hosts including avian, wild, domestic mammalian species, and humans. Coronaviruses are well known for their ability to mutate rapidly, alter tissue tropism, cross the species barrier, and adapt to different epidemiological situations.[7] Corona Virus Disease 2019 (COVID-19) is an RNA virus, with a typical crown-like appearance under an electron microscope due to the presence of glycoprotein spikes on its envelope. Coronavirus is one of the major pathogens that primarily targets the human respiratory system. Previous outbreaks of coronaviruses (CoVs) include the severe acute respiratory syndrome (SARS)-CoV and the Middle East respiratory syndrome (MERS)-CoV which have been previously characterized as agents that are a great public health threat. In late December 2019, a cluster of patients was admitted to hospitals with an initial diagnosis of pneumonia of an unknown etiology[8, 9] this article, focuses on the epidemiology, pathophysiology, diagnosis, treatment and management of the 2019 novel coronavirus infection.[10]

EPIDEMIOLOGY

In last month of December 2019, many pneumonia cases that were collected in Wuhan, china's 7th most populous city, throughout china city were reported and searches for the source have shown Human S eafood Market as the origin. The first case of COVID-19 epidemic was discovered with unexplained pneumonia on December 31,2019.The first confirmed case of COVID-19 outside the china was observed on 13th January 2020 in Bangkok (Thiland).[11]

Etiologic investigations have been performed in Patients who applied to the hospital due to similar viral Patients who applied to the hospital due to similar viral histories of these patients has strengthened the likelihood of an infection transmitted from animals to humans. On January 22, 2020, novel CoV has been declared be originated from wild bats and belongs to Group 2 of beta – coronavirus that contains severe Acute Respiratory Syndrome Associated Coronavirus (SARS-CoV).[12] On the 2nd of March 2020, 67 territories outside mainland China had reported 8565 confirmed of COVID-19 with 132 deaths, as well as significant community transmission occurring in several countries worldwide, including Iran and Itly and it was declared global pandemic by the.

WHO on the 11th of March 2020.[13] It is problematic to quantify the exact size of this pandemic as it would essential to count all cases including not only severe and symptomatic cases but also mild ones.[14] After that the confirmed cases of COVID -19 is rapidly increased. Coronavirusesare important humans and animal pathogens. Although COVID-19 and SARS-CoV belong to the same beta corona virus sub group, similarity at genome level is only 70%, and the novel group has been found to show genetic differences from SARS-CoV.[15] unfortunately, to date, there is not a global and standard response to the pandemia and each country is facing the crisis based on their own possibilities, expertise and hypotheses. Thus, there are different criteria for testing, hospitalization and estimating of cases making it difficult to calculate the number of people affected by epidemic.[15]

Then on, 31st of March 2020, based on the WHO reports, we have globally 693,224 confirmed cases and 33,106 deaths, distributed as follows: Western Pacific Region 103,775 cases and 3649 deaths, European Region 392,757 cases and 29,962 deaths, South East Asia Region 4084 cases and 158 deaths, Eastern Mediterranean Region 46,329 cases and 2813 deaths, Region of the Americas 142,081 cases and 2457 deaths and in the Africa region 3486 cases and 60 deaths.[16] Corona viruses are large family of viruses that can infect humans or animals. There was a rapid increase in COVID-19 cases between January 10-22 in Wuhan. The estimated number of travelers during the 2020 spring festival has raised 1.7 folds when compared with the number traveled in 2003 and reached to 3.11 billion from 1.82 billion. This large- scale travel traffic has also created favorable conditions for the spread of this difficult-to-control disease.

PATHOPHYSIOLOGY

The severe symptoms of COVID-19 are associated with an increasing numbers and rate of fatalities especially in the epidemic region of China. On January 22, 2020, the China National Health Commission reported the details of the first 17 deaths and on January 25, 2020 the death cases increased to 56 deaths.[17] To address the pathogen etic mechanisms of SARS-CoV-2, its viral structure and genome must be considered. Coronaviruses are enveloped positive strand RNA viruses with the largest known RNA genomes—30–32 kb—with a 50 -cap structure and 30 -poly-A tail. Starting from the viral RNA, the synthesis of polyprotein 1a/1ab (pp1a/pp1ab) in the host is realized.[18] The transcription works through the replication-transcription complex (RCT) organized in double-membrane vesicles and via the synthesis of subgenomic RNAs (sgRNAs) sequences. Of note, transcription termination occurs at transcription regulatory sequences, located between the so-called open reading frames (ORFs) that work as templates for the production of subgenomic mRNAs.[19]

The percentage of death among the reported 2684 cases of COVID-19 was approximately 2.84% as of Jan 25, 2020 and the median age of the deaths was 75 (range 48–89) years.[17] Patients infected with COVID-19 showed higher leukocyte numbers, abnormal respiratory findings, and increased levels of plasma pro-inflammatory cytokines. One of the COVID-19 case reports showed a patient at 5 days of fever presented with a cough, coarse breathing sounds of both lungs, and a body temperature of 39.0 °C. The patient's sputum showed positive real-time polymerase chain reaction results that confirmed COVID-19 infection.[20] In the atypical CoV genome, at least six ORFs can be present. Among these, a frameshift between ORF1a and ORF1b guides the production of both pp1a and pp1ab polypeptides that are processed by virally encoded chymotrypsin-like protease (3CLpro) or main protease (Mpro), as well as one or two papain-like proteases for producing 16 non-structural proteins (nsps).[19] Apart from ORF1a and ORF1b, other ORFs encode for structural proteins, including spike, membrane, envelope, and nucleocapsid proteins and accessory proteic chains.[18, 19]

The laboratory studies showed leucopenia with leukocyte counts of 2.91 × 10^9 cells/L of which 70.0% were neutrophils. Additionally, a value of 16.16 mg/L of blood C-reactive protein was noted which is above the normal range (0–10 mg/L). High erythrocyte sedimentation rate and D-dimer were also observed.[20] The main pathogenesis of COVID-19 infection as a respiratory system targeting virus was severe pneumonia, RNAaemia,

combined with the incidence of ground-glass opacities, and acute cardiac injury.[21] Significantly high blood levels of cytokines and chemokines were noted in patients with COVID-19 infection that included IL1-ß, IL1RA, IL7, IL8, IL9, IL10, basic FGF2, GCSF, GMCSF, IFN., IP10, MCP1, MIP1a, MIP1ß, PDGFB, TNFa, and VEGFA. Some of the severe cases that were admitted to the intensive care unit showed high levels of pro-inflammatory cytokines including IL2, IL7, IL10, GCSF, IP10, MCP1, MIP1a, and TNFa that are reasoned to promote disease severity.[21] Different CoVs present special structural and accessory proteins translated by dedicated sgRNAs. Pathophysiology and virulence mechanisms of CoVs, and therefore also of SARS-CoV-2 have links to the function of the nsps and structural proteins. For instance, research has underlined that nsps are able to block the host innate immune response.[22] The data so far available seem to indicate that the viral infection is capable of producing an excessive immune reaction in the host. In some cases, a reaction takes place, which as a whole is labelled a "cytokine storm". The effect is extensive tissue damage. The protagonist of this storm is interleukin 6 (IL-6). IL-6 is produced by activated leukocytes and acts on a large number of cells and tissues.[23] It is able to promote the differentiation of B lymphocytes, promotes the growth of some categories of cells, and inhibits the growth of others. It also stimulates the production of acute phase proteins and plays an important role in thermoregulation, in bone maintenance and in the functionality of the central nervous system.[24] Although the main role played by IL-6 is pro-inflammatory, it can also have anti-inflammatory effects. In turn, IL-6 increases during inflammatory diseases, infections, autoimmune disorders, cardiovascular diseases and some types of cancer.[25] It is also implicated into the pathogenesis of the cytokine release syndrome (CRS) that is an acute systemic inflammatory syndrome characterized by fever and multiple organ dysfunction.[26] The clinical spectrum of COVID-19 varies from asymptomatic or paucisymptomatic forms to clinical conditions characterized by severe respiratory failure that necessitates mechanical ventilation and support in an intensive care unit (ICU), to multiorgan and systemic manifestations in terms of sepsis, septic shock, and multiple organ dysfunction syndromes (MODS).[27] Asymptomatic infections have also been described, but their frequency is unknown.

Pneumonia appears to be the most frequent serious manifestation of infection, characterized primarily by fever, cough, dyspnea, and bilateral infiltrates on chest imaging.[28] There are no specific clinical features that can yet reliably distinguish COVID-19 from other viral respiratory infections. Other, less common symptoms have included headaches, sore throat,

and rhinorrhea. In addition to respiratory symptoms, gastrointestinal symptoms (e.g. nausea and diarrhea) have also been reported, and in some patients they may be the presenting complaint. Respiratory droplet transmission is the main route and it can also be transmitted through person-to-person contacts by asymptomatic carriers.[27, 28] Chest CT in patients with COVID-19 most commonly demonstrates ground-glass opacification with or without consolidative abnormalities, consistent with viral pneumonia.[29] The WHO has reported an incubation period for COVID-19 between 2 and 10 days. However, some literature suggests that the incubation period can last longer than two weeks and it is possible that a very long incubation period could reflect double exposure.[30]

SYMPTOMS

Covid-19 affect different people in different ways.The sign and symptoms of coronavirus disease 2019(COVID-19) may appear 2 to 14 days after exposure. The symptoms of COVID-19 infection appears after an incubation period of approximately 2-5 days.[31]

The period from the onset of COVID-19 symptoms to death ranged from 6-41 days with a median of 14 days.[32] This period is dependent on the age of the patient and status of the patient's immune system. It was shorter among patients < less than 70 years old compared with those under the age of 70.[32] Cold or Flu like symptoms usually set in from 2-4 days after a Coronavirus infection and are typically mild. However, symptoms vary from person – to- person, and some forms of the viruses can be fatal.[11] Clinically features revealed by a chest CT scan presented as pneumonia, however, there were abnormal features such as RNA anemia, acute respiratory distress syndrome.[32]

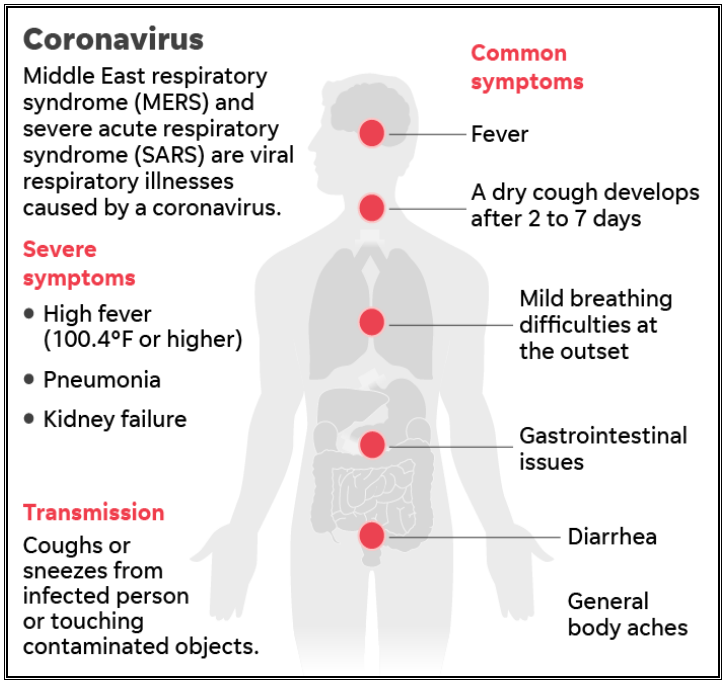


Fig 1: Symptoms of coronavirus.

The incubation period of COVID-19 infection is approximately 5.2 days. There are general similarities in the symptoms between COVID-19 and previous betacoronavirus. However, COVID-19 showed some unique clinical features that include the targeting of the lower airway as evident by upper respiratory tract symptoms like rhinorrhea, sneezing, and sore throat. Additionally, patients infected with COVID-19 developed intestinal symptoms like diarrhea only a low percentage of MERS-CoV or SARS-CoV patients exhibited diarrhea.[33] The main symptoms are reported in Table 1.

Table 1. Main COVID-19-associated symptoms.

Sr no	Symptoms of coronavirus
1	Fever
2	Cough
3	Dyspnea
4	Headache
5	Sore throat
6	-Rhinorrhea

PREVENTION

Prevention is, so far, the best practice in order to reduce the impact of COVID-19 considering the lack of effective treatment. At the moment, there is no vaccine available and the best prevention is to avoid exposure to the virus.[34] In order to achieve this goal, the main measures are the following.

(1) To use face masks;

(2) To cover coughs and sneezes with tissues;

(3) To wash hands regularly with soap or disinfection with hand sanitizer containing at least 60% alcohol;

(4) To avoid contact with infected people;

(5) To maintain an appropriate distance from people; and

(6) To refrain from touching eyes, nose, and mouth with unwashed hands[35] interestingly, the WHO issued detailed guidelines including:

(I) regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water;

(II) Avoid touching eyes, nose and mouth;

(III) Practice respiratory hygiene covering your mouth and nose with your bent elbow or tissue when you cough or sneeze;

(IV) If you have fever, cough and difficulty breathing, seek medical care early;

(V) Stay informed and follow advice given by your healthcare provider;

(VI) Maintain at least 1 m (3 feet) distance between yourself and anyone who is coughing or sneezing.[36] In particular, regarding the use of face mask, health care workers are recommended to use particulate respirators such as those certified N95 or Filtering Face Piece 2 (FFP2) when performing aerosol-generating procedures and to use medical masks while providing any care to suspected or confirmed cases.[37] Moreover, while an individual without respiratory symptoms is not required to wear a medical mask when in public, people with respiratory symptoms are advised to use medical masks both in health care and home care settings.[38]

DIAGNOSIS

A suspect case is defined as one with fever, sore throat and cough who has history of travel to China or other areas of persistent local transmission or contact with patients with similar travel history or those with confirmed COVID-19 infection. However cases may be asymptomatic or even without fever. A confirmed case is a suspect case with a positive molecular test.[37]

Specific diagnosis is by specific molecular tests on respiratory samples (throat swab/ nasopharyngeal swab/ sputum/ endotracheal aspirates and bronchoalveolar lavage). Virus may also be detected in the stool and in severe cases, the blood. It must be remembered that

the multiplex PCR panels currently available do not include the COVID-19. Commercial tests are also not available at present. In a suspect case in India, the appropriate sample has to be sent to designated reference labs in India or the National Institute of Virology in Pune. As the epidemic progresses, commercial tests will become available.[38]

The rapid diagnosis of SARS-CoV-2 infection is the cornerstone of disease control. It depends on Several criteria including case history, clinical symptoms, serology, molecular diagnosis, and computed tomography (CT) imaging. On 2 March 2020,WHOpublished interim guidance for laboratory testing of suspected human cases, with precautions for specimen collection, packing, shipment, and amplification of nucleic acid to detect viral genes (N, E, S, and RdRp).[39] SARS-CoV-2 uses the same cell entry receptor, hACE2, as SARS-CoV. Therefore, oral swabs, bronchoalveolar lavage fluid (BALF), blood, as well as anal swabs are the best samples used for virus diagnosis.[40] A proper diagnosis depends primarily on the factors described below.

1. Epidemiological History
2. Laboratory Diagnosis
3. Virus Detection
4. Radiological Diagnosis

1. Epidemiological History

The strict monitoring of case history in clinically suspicious patients is considered the first step in the early diagnosis of SARS-CoV-2 infection. Clinically suspicious patients are those who suffer from fever and lower respiratory tract infection symptoms and beside within or have traveled to endemic regions or had close contact with a confirmed or suspected case. Additionally, SARS-CoV-2 can be transmitted by symptomatic and asymptomatic patients especially to the high-risk group.[42, 43] The standard test for current infection with SARS-CoV-2 uses RNA testing of respiratory secretions collected using a nasopharyngeal swab, though it is possible to test other samples. This test uses real-time rRT-PCR which detects the presence of viral RNA fragments.

2. Laboratory Diagnosis

The blood profiles of patients suffering from SARS-CoV-2 infection revealed the following: (1) Increased C-reactive protein and erythrocytes, (2) increased myohemoglobin, liver enzymes, and muscle enzymes, with a high level of D-dimer in severe cases, and (3) normal

or decreased white blood cell counts and lymphocytes in the early stage of the disease, with advanced lymphocytopenia in severe cases.[42, 43]

3. Virus Detection

Electron microscope examination of SARS-CoV-2 revealed the typical coronavirus morphology. Further, SARS-CoV-2 was successfully isolated from human respiratory epithelial cells or BALF samples of infected patients using Huh7 cells and Vero E6 cells. The isolated strain was confirmed by immunofluorescent antibody techniques using the cross-reactive nucleoprotein (NP) antibody.

4. Radiological Diagnosis

Chest X-ray examination in the early stage of the disease shows interstitial changes and multiple small plaque shadows. Chest CT scans play an important role in the diagnosis of acute respiratory disease syndrome (ARDS) and pneumonia as well as in the early detection of lung parenchymal abnormalities in patients at risk and provide an impression of secondary infection. Characteristic imaging features on chest radiographs and computed tomography (CT) of people who are symptomatic include asymmetric peripheral ground-glass opacities without pleural effusions. The Italian Radiological Society is compiling an international online database of imaging findings for confirmed cases. Due to overlap with other infections such as adenovirus, imaging without confirmation by rRT-PCR is of limited specificity in identifying COVID-19.] A large study in China compared chest CT results to PCR and demonstrated that though imaging is less specific for the infection, it is faster and more sensitive.

MANAGEMENT

There is no specific antiviral treatment recommended for COVID-19, and no vaccine is currently available.[44,6] Management of such patients should focus on prevention of transmission to others and monitoring for clinical status with prompt hospitalization if needed. Outpatients with COVID-19 should stay at home and try to separate themselves from other people in the household. They should wear a face mask when in the same room (or vehicle) as other people and when presenting to health care settings. Disinfection of frequently touched surfaces is also important. The optimal duration of home isolation is uncertain, but in consideration of incubation time around 14 days without symptoms (fever, dyspnoea, others) are considered sufficient to end home isolation.[6]

1. Screening, Containment (or suppression), mitigation

Strategies in the control of an outbreak are screening, containment (or suppression) and mitigation. Screening is done with a device such as a thermometer to detect the elevated body temperature associated with fevers caused by the Coronavirus. Containment is undertaken in the early stages of the outbreak and aims to trace and isolate those infected as well as introduce other measures to stop the disease from spreading. When it is no longer possible to contain the disease, efforts then move to the mitigation stage: measures are taken to slow the spread and mitigate its effects on the healthcare system and on society. A combination of both containment and mitigation measures may be undertaken at the same time. Suppression requires more extreme measures so as to reverse the pandemic by reducing the basic reproduction number to less than 1.[45]

2. Contact Tracing

Contact tracing is an important method for health authorities to determine the source of infection and to prevent further transmission. The use of location data from mobile phones by governments for this purpose has prompted privacy concerns, with Amnesty International and more than a hundred other organisations issuing a statement calling for limits on this kind of surveillance.[45] Contact tracing is an effective public health measure for the control of COVID-19. The prompt identification and management of the contacts of COVID-19 cases makes it possible to rapidly identify secondary cases that may arise after transmission from the primary cases. This will enable the interruption of further onward transmission. Contact tracing, in conjunction with robust testing and surveillance systems, is central to control strategies during de-escalation. Contact tracing has been a key part of the response in several Asian countries that have successfully reduced case numbers.

It is possible to scale up contact tracing by adapting traditional contact tracing approaches to available local resources and by using a number of resource-saving measures. This document outlines a number of resource measures including the use of well-trained non-public-health staff and volunteers; repurposing existing resources such as call centres; reducing the intensity of contact follow-up and using new technologies such as contact management software and mobile apps.

3. Health Care

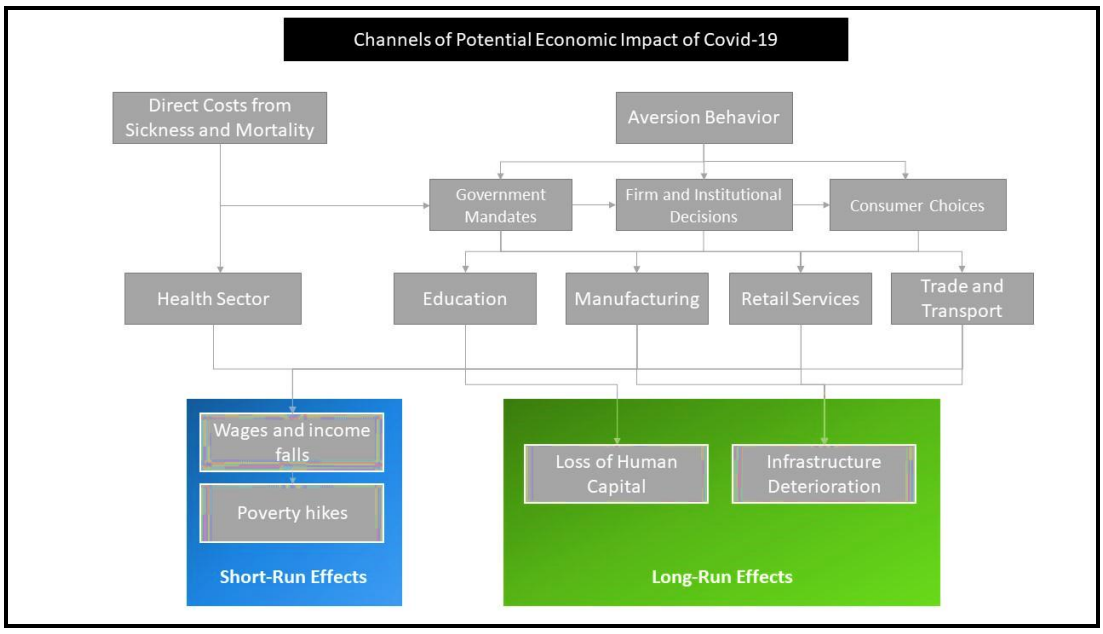
Increasing capacity and adapting healthcare for the needs of COVID-19 patients is described by the WHO as a fundamental outbreak response measure. The ECDC and the European

regional office of the WHO have issued guidelines for hospitals and primary healthcare services for shifting of resources at multiple levels, including focusing laboratory services towards COVID-19 testing, cancelling elective procedures whenever possible, separating and isolating COVID-19 positive patients, and increasing intensive care capabilities by training personnel and increasing the number of available ventilators and beds.[45]

EFFECT

1. Impact of covid 19 pandemic on education

The COVID19 Pandemic has affected educational systems worldwide, leading to the near-total closures of schools, universities and colleges. Most governments around the world have temporarily closed educational institutions in an attempt to contain the spread of COVID-19. According to UNICEF monitoring, 134 countries are currently implementing nationwide closures and 38 are implementing local closures, impacting about 98.5 percent of the world's student population. 39 countries' schools are currently open. School closures impact not only students, teachers, and families. but have far-reaching economic and societal consequences.[School closures in response to the pandemic have shed light of various social and economic issue, including student debt, digital learning,food insecurity and homelessness, as well as access to childcare, health care housing, internet, and disability services. The impact was more severe for disadvantaged children and their families, causing interrupted learning, compromised nutrition, childcare problems, and consequent economic cost to families who could not work.[46]



Even when school closures are temporary, it carries high social and economic costs. The disruptions they affect people communities but their impact is more severe for disadvantaged children and their families including interrupted learning, compromised nutrition, childcare problems and consequent economic cost to families who cannot work. According to Study Economic Dell'Ocse (OECD) studies, school performance hinges critically on maintaining close relationships with teacher. This is particularly true for students from disadvantaged backgrounds, who may not have the parental support needed to learn on their own Working parents are more likely to miss work when schools close in order to take care of their children, incurring wage loss in many instances and negatively impacting productivity. Localised school closures place burdens on schools as parents and officials redirect children to schools that are open.[47] There are some consequences of school closure.

1. Unintended strain on health care system
2. Distance learning
3. Childcare
4. Nutrition and food insecurity
5. Student learning outcomes
6. Inaccessibility to mitigation strategies
7. Special education services

Human Rights Watch reported that more than 1.5 billion students are out of school already. Widespread job and income loss along with economic insecurity among families is likely to also increase child labour, sexual exploitation, teen pregnancies among other woes. While the entire world is currently in lockdown because of the COVID-19 pandemic, businesses have adapted (with varying levels of success) to work-from-home (WFH) policy.[48]

The COVID-19 epidemic is hitting everyone hard. But schools, which have always been places for real-life, physical interaction, have been among the hardest hit. As hundreds of millions of students around the world struggle to study at home, it remains to be seen how educators and the sector on a whole will deal with the new learn-at-home reality. In India, technology solutions to the challenge seem limited at present to premier, urban-centric institutions. But if the lockdown and the education downturn continue, there's a real, pressing need for innovators to come up with technologies that can help Indians learn remotely, especially in the most remote and vulnerable parts of the country. Not much has changed in this sector for almost 2 centuries maybe this was just the wakeup call that was needed. This is

not time to wait and let the tide pass, but to rise and re-engineer the education sector to benefit the entire stake holder.[48]

***Impact of covid 19 pandemic on economy**

The outbreak of pandemic Covid-19 all over the world has disturbed the political, social, economic, religious and financial structures of the whole world. World's topmost economies such as the US, China, UK, Germany, France, Italy, Japan and many others are at the verge of collapse. Besides, Stock Markets around the world have been pounded and oil prices have fallen off a cliff. In just a week 3.3 million Americans applied for unemployment and a week later another 6.6 million people started searching for jobs. Also, many experts on economic and financial matters have warned about the worsening condition of global economic and financial structure. Such as Kristalina Georgieva, Managing Director of International Monitory Fund (IMF), explained that "a recession at least as bad as during the Global Financial Crisis or worse". Moreover, Covid-19 is harming the global economy because the world has been experiencing the most difficult economic situation since World War-II. When it comes to the human cost of the Coronavirus pandemic it is immeasurable therefore all countries need to work together with cooperation and coordination to protect the human beings as well as limit the economic damages. For instance, the lockdown has restricted various businesses such as travelling to contain the virus consequently this business is coming to an abrupt halt globally.

As Covid-19 has already become a reason for closing the multiple businesses and closure of supermarkets which seems empty nowadays. Therefore, many economists have fear and predicted that the pandemic could lead to inflation. For instance, Bloomberg Economics warns that "full-year GDP growth could fall to zero in a worst-case pandemic scenario". There are various sectors and economies that seem most vulnerable because of this pandemic, such as, both the demand and supply have been affected by the virus, as a result of depressed activity Foreign Direct Investment flows could fall between 5 to 15 percent.[49]

Coronavirus (COVID-19) and global growth

The IMF's estimate of the global economy growing at -3 per cent in 2020 is an outcome "far worse" than the 2009 global financial crises. Economies such as the US, Japan, the UK, Germany, France, Italy and Spain are expected to contract this year by 5.9, 5.2, 6.5, 7, 7.2, 9.1 and 8 per cent respectively. Advanced economies have been hit harder, and together they are expected to grow by -6 per cent in 2020. Emerging markets and developing economies

are expected to contract by -1 per cent. If China is excluded from this pool of countries, the growth rate for 2020 is expected to be -2.2 per cent.In Asia, countries including India, China, Indonesia, Japan, Singapore and South Korea account for about 85 per cent of all the Covid-19 cases on the continent.[50]

The economic impact of the 2020 coronavirus pandemic in India has been largely disruptive. India's growth in the fourth quarter of the fiscal year 2020 went down to 3.1% according to the Ministry of statistics The Chief Economic Adviser to the Government of India said that this drop is mainly due to the coronavirus pandemic effect on the Indian economy. Notably India had also been witnessing a pre-pandemic slowdown, and according to the World Bank the current pandemic has "magnified pre-existing risks to India's economic outlook".Major companies in India such as Larsen &Toubro, Bharat Forge, UltraTech Cement, Grasim Industries and Tata Motors have temporarily suspended or significantly reduced operations. Young startups have been impacted as funding has fallen Fast-moving consumer goods companies in the country have significantly reduced operations and are focusing on essentials. Stock markets India posted their worst loses in history on 23 March 2020. However, on 25 March, one day after a complete 21-day lockdown was announced by the Prime Minister, SENSEX and NIFTY posted their biggest gains in 11 years.[51]

Further, even as economic activity resumes gradually, the situation will take time to normalise, as consumer behaviours change as a result of continue social distancing and uncertainty about how the pandemic will evolve.For instance, in its *World Economic Outlook* report for 2020, the IMF mentions that firms may start hiring more people and expanding their payroll only slowly, as they may not be clear about the demand for their output.Therefore, along with clear and effective communication, broad monetary and fiscal stimuli will be required to be coordinated on an international scale for maximum impact, and, "would be most effective to boost spending in the recovery phase.".[50]

FUTURE PERSPECTIVE

The COVID-19 outbreak is proving to be an unprecedented disaster, especially in the most afflicted countries including China, Italy, Iran and USA in all aspects, especially health, social and economic. It is too early to forecast any realistic scenario, but it will have a strong impact worldwide. If high income countries, especially those already affected by the outbreak, seem to face a catastrophic perspective, in low-income countries there seem to be two possible scenarios. In particular, in the worst-case scenario, when the COVID-19

outbreaks, the majority of countries will be unprepared, with low resources allocated for affording the viral emergency and the consequences will be catastrophic. In the best case scenario, similarly to the global outbreak of the SARS-CoV in 2003, also the COVID-19 will not affect Africa or South America on a large scale suggesting that respiratory viruses spread more effectively in the winter and, therefore, the southern hemisphere will be affected later in the year, if at all.

CONCLUSION

There are hundreds of coronaviruses, most of which circulate in animals. Only seven of these viruses infect humans and four of them cause symptoms of the common cold. But, three times in the last 20 years, a coronavirus has jumped from animals to humans to cause severe disease. This review provides an insight into the COVID-19 current situation and represents a picture of the current state of the art in terms of public health impact, pathophysiology and clinical manifestations, diagnosis, case management, emergency response and preparedness Over the past 50 years the emergence of many different coronaviruses that cause a wide variety of human and veterinary diseases has occurred. It is likely that these viruses will continue to emerge and to evolve and cause both human and veterinary outbreaks owing to their ability to recombine, mutate, and infect multiple species and cell types.

There is a rapidly growing body of literature on this topic and hopefully it will help in finding an effective vaccine and the best practice for the management and treatment of symptomatic cases. Only once this pandemic ends, one will be able to assess the health, social and economic impact of this global disaster and we should be able to learn lessons especially in terms of public and global health for any future similar pandemics. Future research on coronaviruses will continue investigate many aspects of viral replication and pathogenesis. First, understanding the propensity of these viruses to jump between species, to establish infection in a new host, and to identify significant reservoirs of coronaviruses will dramatically aid in our ability to predict when and where potential epidemics may occur. As bats seem to be a significant reservoir for these viruses, it will be interesting to determine how they seem to avoid clinically evident disease and become persistently infected. Second, many of the non-structural and accessory proteins encoded by these viruses remain uncharacterized with no known function, and it will be important to identify mechanisms of action for these proteins as well as defining their role in viral replication and pathogenesis.

These studies should lead to a large increase in the number of suitable therapeutic targets to combat infections.

The novel coronavirus infections were at first associated with travel from Wuhan, but the virus has now established itself in 177 countries and territories around the world in a rapidly expanding pandemic. Health officials in the United States and around the world are working to contain the spread of the virus through public health measures such as social distancing, contact tracing, testing, quarantines and travel restrictions. Scientists are working to find medications to treat the disease and to develop a vaccine.

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