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AN OVERVIEW ON COVID-19 OUTBREAK: EPIDEMIC TO PANDEMIC

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ABSTRACT: COVID-19 is a disease caused by the novel coronavirus, which was initially called 2019-nCoV, consequently termed as SARS-CoV-2 by the experts of the International Committee on Taxonomy of Viruses (ICTV) as it is exceptionally alike to the virus that caused the SARS outbreak in 2002 to 2003. World Health Organization already had declared COVID-19 as an international emergency as the disease is spreading at alarming levels. COVID-19 has affected more than 1,016,372 people around the world and killed more than 53,238 people. And even where the virus hasn't yet spread, hospitals and clinics around the world have been preparing for a rush forward of coronavirus patients as a priority over everyday illnesses they treat. The label 'international emergency' has triggered governments of various countries to activate vigilance plans and probably take emergency measures to protect the public, such as more strong travel and trade restrictions. It is being observed that this is the first time this kind of virus, a coronavirus, has been labeled a pandemic, "but at the same time, it is being believed that it will be able to be contained or controlled if adopted proper measures. Since information about this virus is rapidly rising, it is the necessity of the time to remain updated. So in this article, we present on an overview of the presently obtainable information on the etiology, pathophysiology, epidemiology, clinical manifestations and diagnosis, therapeutic strategies, and management of this novel coronavirus. This review also aimed to present the concept of epidemic and pandemic phases according to WHO in a defined manner.

INTRODUCTION: COVID-19 is a disease caused by the novel coronavirus, which was initially called 2019-nCoV, consequently termed as SARS-CoV-2 by the experts of the International Committee on Taxonomy of Viruses (ICTV).

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This novel coronavirus was first identified in Wuhan, the largest urban area in China's Hubei province, and was first reported to the WHO Country Office in China, on December 31, 2019.

World Health Organization already had declared COVID-19 as an international emergency as the disease is spreading at alarming levels affecting 199 countries and territories across the world. COVID-19 has infected more than 1,016,372 people around the world and killed more than 58,238 people [1]. Even in India, more than 2567 cases have been reported to date from all over the

country and 72 deaths reported across the country [2]. In the last two decades, a number of viral epidemics have been confirmed. From 2002 to 2003, the severe acute respiratory syndrome coronavirus (SARS-CoV) rouse an epidemic started in China later spread to more than 24 countries across the world. Approximately 8000 cases and 800 deaths were reported. In 2009 H1N1 influenza was reported. Followed by Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012 was first detected in Saudi Arabia and caused about 2,500 disease cases and 800 fatalities. The mortality rate of severe acute respiratory syndrome coronavirus (SARS-CoV) was reported up to 10%.

The fatalities caused by Middle East respiratory syndrome coronavirus (MERS-CoV) was reported by about 35%.3 The noble coronavirus SARS-CoV-2 spreads faster than its former two preceding relatives, the severe acute respiratory syndrome coronavirus (SARS-CoV), which originated in China and Middle East respiratory syndrome coronavirus (MERS-CoV) which originated in Saudi Arabia, but has lower percent mortality. The global impact of this recent epidemic, which is continuously spreading at a super-fast rate to be declared as a pandemic is yet to be understood. The potential for this SARS-CoV-2 virus to grow to become a pandemic worldwide presents a serious public health hazard. With reference to COVID-19, the WHO raised the threat to the CoV epidemic to the "very high" level, on February 28, 2020.

World governments are at work to establish measures to halt possible shocking effects. Health organizations coordinate information flows and issues directives and guidelines to best diminish the bang of the threat. However, on March 8, 2020, Tedros Adhamon Ghebreyesus, director-general of WHO, declared that the intimidation of a pandemic is becoming a reality, and WHO decided to call the outbreak a pandemic, believed that it would be “the first pandemic that could be actually controlled” [4]. At the same time, scientists around the world work tirelessly and gathering information and scientific evidence about the etiology, pathophysiology, epidemiology, clinical manifestations and diagnosis, therapeutic strategies, and management of this novel coronavirus disease. Information relating to both the virus-host interaction and the evolution of the epidemic, with specific reference to the times when the epidemic will reach its peak, is still to be collected. At the instant, the major therapeutic strategies to face the condition of infection are only supportive, and prevention aimed at reducing transmission in the community is the best measure. Progressive reduction of cases was observed in China implementing determined isolation measures in the last few days [4].

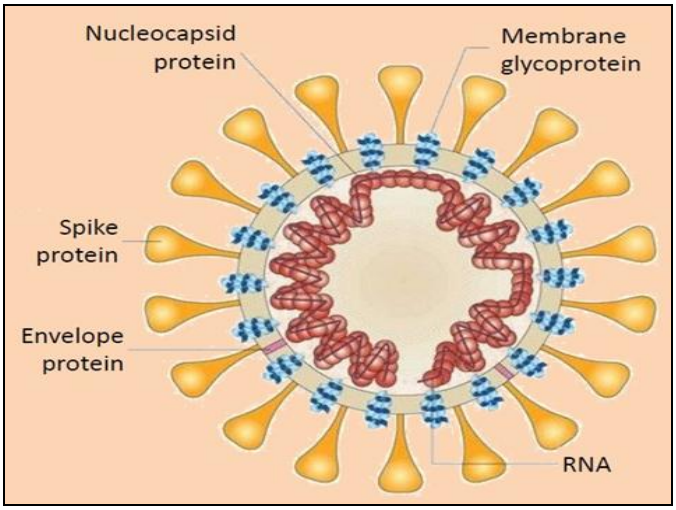


FIG. 1: SCHEMATIC DIAGRAM OF THE SARS CORONAVIRUS STRUCTURE

2.0 Etiology and Pathophysiology: Corona-viruses are positive single-stranded RNA viruses. When observed under an electron microscope, coronaviruses have a crown-like appearance owing to the presence of spike glycoproteins on their envelope that infects humans along with a wide range of animals. In 1966 by Tyrell and Bynoe presented a detail explanation of coronaviruses after cultivating viruses from patients suffering from common colds [5].

On the basis of their morphological observations as spherical virions with a core-shell and projections on the surface of enveloping that look like a solar corona, these viruses were called as coronavirus [6] **Fig. 1** (Latin: corona = crown). The Coronaviridae family (order Nidovirales) diverges further into subfamilies of which subfamily Orthocoronavirinae further classified into four genera of CoVs: Alphacorona-virus (alphaCoV), Betacoronavirus (betaCoV), Deltacoronavirus (deltaCoV) and Gammacorona-virus (gammaCoV) **Fig. 2**.

Furthermore, the betaCoV genus is divided into five sub-genera, also called lineages [7]. Studies of viral genomes had revealed that alphaCoVs and

betaCoVs were derived most likely from bats and rodents gene sources. While gene sources of deltaCoVs and gammaCoVs signifies resemblance to avian species.

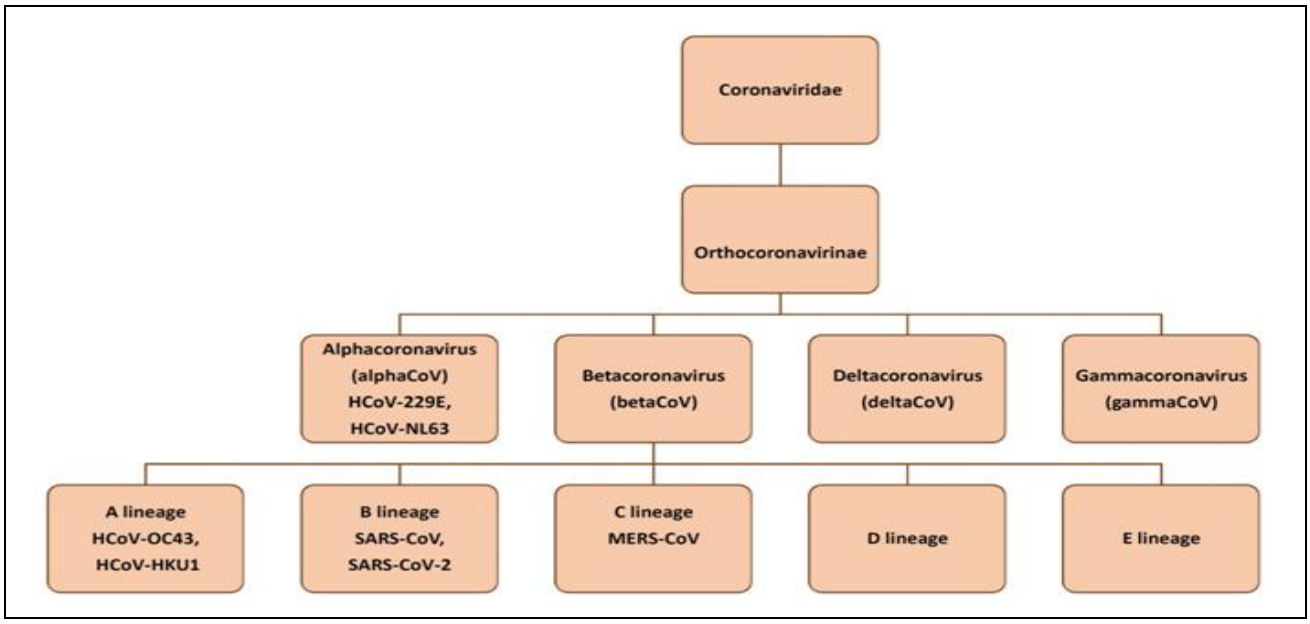


FIG. 2: CLASSIFICATION OF THE CORONAVIRIDAE FAMILY WITH REFERENCE TO SUBFAMILY

Members of this huge family of viruses are found responsible for causing respiratory, enteric, hepatic, and neurological ailments in various animal species and humans. There are seven human CoVs (HCoVs) having the capability of infecting humans has been recognized. Broadly, the estimate suggests that healthy carriers of a CoV constitute 2% of the total population [8]. Among these seven types of human coronaviruses that can communicate a disease to humans, the beta-coronaviruses are known to cause severe illness and epidemics. On the contrary, alpha-coronaviruses cause asymptomatic or slightly symptomatic illness. HCoV-OC43, HCoV-HKU1, HCoV-229E, and HCoV-NL63 are some common human CoVs that belongs to betaCoVs of a lineage. In immunocompetent individuals, their actions are restricted to common colds and self-limiting upper respiratory infections. In immune-compromised individuals and elderly people, there are chances of the occurrence of lower respiratory tract infections.

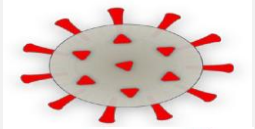
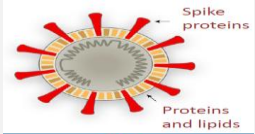
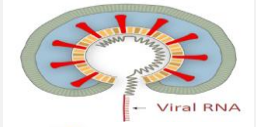
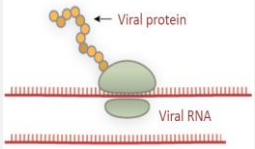
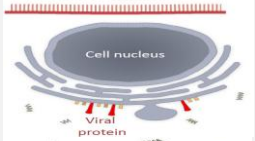
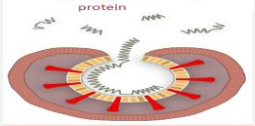
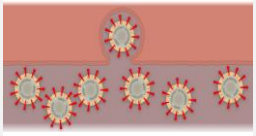
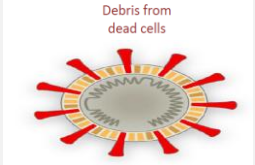
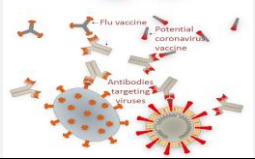
Mechanism of Coronavirus Control over Cell: The development of genetic multiplicity among coronaviruses and their consequential ability to cause ailment in human beings is mainly attained through infecting peridomestic animals **Table 1**. These animals pertains to live near human habitation can act as intermediate hosts encouraging recombination and mutation [9, 10].

SARS-CoV, SARS-CoV-2, and MERS-CoV are the human CoVs (HCoVs) that belongs to betaCoVs of B and C lineage and are capable of causing epidemics with unpredictable medical severity causing respiratory and extra respiratory symptoms. In the beginning, the respiratory and enteric epithelial cells serve as the site of replication for coronaviruses, which then further causes cytopathic changes because of which the host cell is not able to reproduce [11]. SARS-CoV reported to invade in upper respiratory tract ciliated epithelial cells of bronchi and type 2 pneumocytes through angiotensin-converting enzyme 2 (ACE 2) receptor. MERS-CoV infects unciliated bronchial epithelial cells and types 2 pneumocytes. MERS-CoV attacks through dipeptidyl peptidase (DPP4) receptor, which is a transmembrane glycoprotein [12-15]. Thus, SARS-CoV-2 comes under B lineage of betaCoVs genera. The diameter of SARS-CoV-2 is about 60–140 nm and is characterized by round, elliptical, and maybe with pleomorphic shape. Genetically, it has been proved that the genome of the SARS-CoV-2, isolated from a cluster-patient with atypical pneumonia after visiting Wuhan, had 89% nucleotide phylogenetically indistinguishable with bat SARS-like CoVZXC21 and 82% with that of human SARS-CoV [16-18]. Its positive single-stranded RNA genome is composed of 29891 nucleotides, encoding for 9860 amino acids.

Although, its genesis is not completely understood, but these genomic studies proposed that SARS-CoV-2 possibly originated from a strain identified in bats. It has also been assumed that the novel virus might use angiotensin-converting enzyme 2 (ACE 2) as a receptor-like SARS-CoV. In contrast to SARS-CoV or MERS-CoV, 2019-nCoV proliferates primarily in human respiratory epithelial cells in a better way than standard tissue culture cells [19].

Sensitivity to ultraviolet rays and heat among the members of the Coronaviridae family has been reported.

TABLE 1: MECHANISM OF CORONAVIRUS CONTROL OVER CELL

	**The SARS-CoV-2 Coronavirus:** The virus that causes COVID-19. At least six other types of coronavirus are known to infect humans, with some causing the common cold and two causing outbreaks: SARS and MERS.
	**Covered With Spikes:** The coronavirus is named after the crown-like spikes that protrude from its surface. The virus is enveloped in a bubble of oily lipid molecules, which falls apart on contact with soap.
	**Entering a Vulnerable Cell:** The virus enters the body through the nose, mouth or eyes, then attaches to cells in the airway that produce a protein called ACE2. The virus is believed to have originated in bats, where it may have attached to a similar protein.
	**Releasing Viral RNA:** The virus infects the cell by fusing its oily membrane with the membrane of the cell. Once inside, the coronavirus releases a snippet of genetic material called RNA.
	**Hijacking the Cell:** The virus's genome is less than 30,000 genetic "letters" long. (Ours is over 3 billion.) The infected cell reads the RNA and begins making proteins that will keep the immune system at bay and help assemble new copies of the virus.
	**Making Viral Proteins:** As the infection progresses, the machinery of the cell begins to churn out new spikes and other proteins that will form more copies of the coronavirus.
	**Assembling New Copies:** New copies of the virus are assembled and carried to the outer edges of the cell.
	**Spreading Infection:** Each infected cell can release millions of copies of the virus before the cell finally breaks down and dies. The viruses may infect nearby cells, or end up in droplets that escape the lungs.
	**Immune Response:** Most COVID-19 infections cause a fever as the immune system fights to clear the virus. In severe cases, the immune system can overreact and start attacking lung cells. The lungs become obstructed with fluid and dying cells, making it difficult to breathe. A small percentage of infections can lead to acute respiratory distress syndrome, and possibly death.
	**Leaving the Body:** Coughing and sneezing can expel virus-laden droplets onto nearby people and surfaces, where the virus can remain infectious for several hours to several days.
	**A Possible Vaccine:** A future vaccine could help the body produce antibodies that target the SARS-CoV-2 virus and prevent it from infecting human cells. The flu vaccine works in a similar way, but antibodies generated from a flu vaccine do not protect against coronavirus.

Sources: Dr. Matthew B. Frieman and Dr. Stuart Weston, Univ. of Maryland School of Medicine; Fields Virology; Fenner and White's Medical Virology; Nature; Science; The Lancet; New England Journal of Medicine; Centers for Disease Control and Prevention.https://www.nytimes.com/interactive/2020/03/11/science/how-coronavirus-hijacks-your-cells.html

The spike glycoprotein, which is also called S glycoprotein attaches the virion to the host cell membrane, is assumed to impart host range restriction feature coronaviruses [20]. In addition, these viruses can be efficiently inactivated when putting in contact with chlorine-containing disinfectant, lipid solvents including ether (75%), ethanol, peroxyacetic acid, and chloroform.

3.0 Epidemiology: On December 31, 2019, in China, the evolution of cases of patients with pneumonia whose cause was unknown was primarily reported by the Health Commission of Hubei province [21]. Although 27 patients were initially declared to be affected badly with this unexplainable disease, the number rose to 41 with seven critically ill patients. The first death was noted in the subsequent report on January 11, 2020.22 WHO was reported through Chinese authorities that few patients were related directly or indirectly to the Huanan seafood market, which was consequently reported to be the place where live and freshly slaughtered hunted animals were sold [23-24]. Several reports of clusters of cases among families and infection of 16 health care workers pointed to the human-to-human transmission of the virus [22, 25-26].

FIG. 3: GLOBAL DISTRIBUTION OF CORONAVIRUS COVID-19 CASES BY THE CENTER FOR SYSTEMS SCIENCE AND ENGINEERING (CSSE) AS ON MARCH 30, 2020

Regardless of identification of the outbreak within a few weeks by the Chinese used their efficient supervision system and laboratory infrastructure, measures to limit the spread of this new virus were not proved potentially effective, as of February 3, 2020, more than 17 496 cases with a death toll of 362 in more than 25 countries have been reported [27]. Being major transportation hubs of China, the city of Wuhan was proved an ideal breeding ground for the outbreak [28]. The global spread of the infection started in China, maybe because of frequent traveling occurred due to the Chinese New Year. As on March 30, 2020, 723,328, total confirmed cases with 33, 997 total deaths globally were recorded. **Fig. 3** In India, 1024 confirmed cases with 27 deaths have been recorded on March 30, 2020. Of note, the first COVID 19 positive case observed in India on January 29, 2020. However, based on these data, 21% recovery rates globally, and 9.3 % in India were observed [29].

As per the data obtained from the foremost cases in Wuhan and studies conducted by the Centers for Disease Control and Prevention China, the incubation time could usually be within 3 to 7 days and up to 14 days as the longest time from infection to symptoms was 12.5 days [30]. This data also revealed that this new epidemic doubled about every week, while the basic reproduction denoted as BCR or R0 ranges from 2 to 6.47 in various modeling studies [31]. More clearly, on average, every single patient can transmit the infection to further 2 to 6.47 individuals. Distinctively, assessment of the BCR of the SARS-CoV epidemic in 2002-2003 was approximately 3 and that of the H1N1 outbreak in 2009 in the United States in which over 60 million people were affected, 274, 304 hospitalizations and 12,469 deaths were recorded [32-34].

4.0 Outbreak Management: Transmission from human to human of COVID-19 is reported in the society [23]. For this reason, it is extremely significant to prevent any additional spread in the public and healthcare surroundings. Of note, the spread of coronaviruses from contaminated dry inanimate surfaces has also been reported. Even self-inoculation of mucous membranes of the nose, eyes, or mouth is also contagious [35-36]. It has been reported in a review analysis of the number of studies that human coronaviruses such as Severe Acute Respiratory Syndrome (SARS) coronavirus, Middle East Respiratory Syndrome (MERS) coronavirus and Severe Acute Respiratory Syndrome coronavirus 2 (SARS-CoV-2) can stay on non-living surfaces like plastic, glass or metal for as long as 9 days. Although these can be rendered inactivate by surface disinfection measures with 62 to 71% ethanol, 0.5% hydrogen

peroxide or 0.05 to 0.1% sodium hypochlorite, 0.2% benzalkonium chloride, or 0.02% chlorhexidine digluconate within 1 min. The WHO recommends "ensuring that environmental tidiness and disinfection procedures are followed constantly in a correct way. Carefully cleaning of environmental surfaces with the help of water and detergent and applying commonly used disinfectants such as sodium hypochlorite are effective and sufficient procedures" [37]. The use of bleach, which is 5% sodium hypochlorite at a dilution of 1:100 of resulting in a final concentration of 0.05% sodium hypochlorite, is suggested [38]. Since no exact therapies are available for SARS-CoV-2, early containment and prevention of further spread will be critical to limit the spread and to control COVID-19 [39].

Phases of a Pandemic: The actual differentiation of staging of an epidemic is based on the pathogenesis of disease and several other epidemiological factors. In 1999, the World Health Organization (WHO) released the very first influenza pandemic awareness plan in which it summarized the suitable response based on six clearly defined phases [40]. The objective of the plan is to manage the global response by providing countries an outline from which they could illustrate their own national strategies based on available resource [41]. The same fundamental model can be applied with few or more deviations to other epidemics, such as tuberculosis and malaria. The first three phases are intended to help public health officials to understand that it is time to build up the gear and action plans to respond to an approaching threat. Phases 4, 5, and 6 denotes the time when action plans are executed in synchronization with the WHO. The revision of the phases was done by the World Health Organization in 2009 to better make a distinction between attentiveness and action execution phase. The plan was exclusively proposed to deal with influenza pandemics given their high mutation rate and the ability of the virus to cause zoonotic diseases that pass from animal to human being [42].

Former WHO Stages of a Flu Pandemic: [43]

- **Phase 1:** The period during which no animal viruses are reported to cause infection in humans.
- **Phase 2:** The first level of threat wherein a virus is confirmed to have transmitted from an animal to humans.
- **Phase 3:** When sporadic, intermittent cases or small clusters of the disease are confirmed, but transmission from a human to another human has either not occurred or is not considered to continue to an outbreak.
- **Phase 4:** It is the point where either human to human transmission or a human to the animal virus has caused an outbreak widely among a community.
- **Phase 5:** It is when human to human transmission of the virus has caused the spread of disease to at least two countries.
- **Phase 6:** It is the point at which the disease has declared a pandemic that has spread to at least one other country.

The duration for each phase can vary considerably, ranging from months to decades. It is not necessary that all the outbreaks will move to phase 6, and some of the outbreaks may even revert if a virus spontaneously weakens.

On March 11, 2020, The World Health Organization (WHO) declared COVID-19 a pandemic. It's the first pandemic caused by a coronavirus [44]. There are basically two approaches for the control of the COVID-19 pandemic that can be considered [4].

- If the virus has slow transmission ability, containment is the preferred approach that allows the implementation of measures that restrict the spread of a pathogen within the well-defined location. For example, steps for identification and isolation of infected patients, contact tracing, and quarantine of small areas where cases have emerged are to be taken as a containment approach.
- If the virus begins to spread rapidly and there is a continuous local transmission, rendering it impossible to isolate all cases, mitigation measures should be implemented with the aim of limit down the spread of a pathogen within a country or a region. Mitigation measures

include steps like the closure of schools and the prohibition of mass events. The main aim of mitigation measures is to avoid overloading health systems with the rise of cases in need of intensive care. The existing lockdown in various countries to limit the rapid increase of COVID-19 cases has this particular goal.

In the meantime, during containment and mitigation measures, the evaluation of new therapeutic alternatives, and in the long run, the development of a vaccine are potentially studied.

5.0 Clinical Manifestations and Treatment: Signs of COVID-19 infection become visible in two to 14 days after exposure. The symptoms are similar to the flu and common cold and may include fever, cough, shortness of breath, and dyspnoea. In extreme cases, the virus can cause pneumonia, severe acute respiratory syndrome, multiple organ dysfunction or failure, and even death.

Chinese center for disease control released clinical and epidemiological data of approximately 72,314 total case records were published in the Journal of the American Medical Association (JAMA) (February 24, 2020), providing an important figure of the epidemiologic curve of the Chinese outbreak [45]. 62% of cases were confirmed, including 1% of asymptomatic cases that were tested positive in laboratory viral nucleic acid tests. Additionally, the overall percent fatality of confirmed cases was 2.3%. The study of data revealed that the fatal cases were mainly elderly patients more than 70 years old.

About 49.0% are seriously ill patients having pre-existing comorbidities such as cardiovascular disease, diabetes, chronic respiratory disease, and oncological diseases. Although 1% of patients 9 years old or younger. No fatalities were reported in this group.

The clinical manifestations of the disease were divided according to their severity by the authors of the CDC report released by Centre for disease control, China:

- **Mild Stage:** About 81% of cases are not suffering from pneumonia or with mild pneumonia
- **Severe Stage:** This stage was observed in 14% of cases. Major symptoms are eupnoea, which is characterized by shortness of breath and dyspnoea that is characterized by breathing difficulties.
- **Critical Stage:** About 5% of cases reached to this stage. Major symptoms are respiratory failure, septic shock, and/or multiple organ dysfunction or failure.45
- In most of the patients, the medical track of the disease seems to forecast a favorable trend. While in some of the patients, the clinical conditions complicated all of a sudden with rapid deterioration in respiratory efficiency and even multiple organ dysfunction or failure is observed after about a week. So the criteria of the severity of respiratory insufficiency and the criteria of sepsis and septic shock could be considered as a reference for presenting a more clear clinical image [46]. On the basis of these criteria, illness can be classified as
- **Uncomplicated or Mild Illness:** Which accompanies symptoms like mild fever, dry cough, sore throat, nasal congestion, malaise, headache, muscle pain.
- **Moderate Pneumonia:** Which accompanies symptoms like cough and tachypnea.
- **Severe Pneumonia:** Which accompanies symptoms like cough, severe dyspnoea, respiratory distress, tachypnea
- **Acute Respiratory Distress Syndrome (ARDS):** Which can be mild, moderate, or severe ARDS on the basis of the degree of hypoxia.
- **Sepsis:** By definition, according to the International Consensus Definitions is a life-threatening organ dysfunction that is caused by an unregulated host response to suspected or proven infection [47].
- **Septic Shock:** This is linked with increased mortality, circulatory, and cellular and metabolic abnormalities.

No recommended and satisfactory antiviral treatment available for covid-19 n till date. Vaccine for COVID-19 is still not available. The treatment is only supportive, and oxygen therapy is the major treatment involvement for patients with a severe respiratory infection. Mechanical ventilation may be necessary in cases of respiratory failure that are unmanageable to oxygen therapy, while hemodynamic support is essential for controlling septic shock. On January 28, 2020, the World Health Organization (WHO) released a documented briefing WHO guidelines and scientific evidence obtained from the treatment of coronavirus of earlier epidemics caused due to HCoVs [48]. Through these documents, it attempts to list outpatients' symptoms and make strategies to control it.

It is predicted through artificial intelligence that drugs-related with associated protein kinase 1 (AAK1) can be used in the therapy as disruption of these proteins can restrain the access of virus into the target cells [49]. Also, baricitinib, a drug used in the treatment of rheumatoid arthritis, is an AAK1 inhibitor and is recommended for controlling viral replication [49]. Remdesivir is an adenosine analog that is previously developed for the treatment of Ebola virus disease acts as a viral protein inhibitor, has improved the condition in one patient as reported in a clinical study [50-51].

It is also reported that chloroquine has the probability of blocking viral infection through increasing the endosomal pH [51], chloroquine was reported to affect the replication of HCoV-229E bt affecting the activation of p38 mitogen-activated protein kinase (MAPK), which have a significant role in viral replication [52]. Antiretroviral drugs lopinavir and ritonavir, when used in combination, notably improved the clinical condition of SARS-CoV patients [53,] and it can be further exploited in novel coronavirus infections. On January 10, 2020, An ongoing randomized controlled trial safety and efficacy of lopinavir, ritonavir, and interferon-α 2b in patients with COVID-19 were initiated [54].

Literature suggests many other possibilities that include leronlimab, a humanised monoclonal antibody (CCR5 antagonist), and galidesivir, a nucleoside RNA polymerase inhibitor [55]. Utilizing these available drugs for immediate use in treatment in SARS-CoV-2 infections could improve the currently available clinical management [56]. More than 220 studies of status including both 'recruiting' and 'not yet recruiting' have been presently registered at ClinicalTrials.gov website for the treatment of COVID-19, which is rising, rapidly spreading condition [57].

Nevertheless, isolation and other supportive measures such as oxygen therapy, fluid management, and administration of antimicrobials for management of secondary bacterial infections are currently recommended by WHO. These supportive measures can alleviate the symptoms and prevent further chances of multiple organ dysfunctions in suspected as well as confirmed cases necessitating hospitalization [58].

6.0 Prevention Strategies: Since, to date, there are no approved treatments available for this COVID-19 infection, prevention is essential. The infection even before the onset of symptoms in the incubation period, transmission from asymptomatic people, non-specific features of the disease, long incubation period, long-lasting period of the disease and transmission even after clinical improvement and sensitivity of transmission through mucosal surfaces such as the nose and the conjunctiva are few characteristics of novel coronavirus 2019 that render prevention difficult. Therefore, Isolation of confirmed or suspected cases with mild illness at home or at the hospital is the foremost preventive strategy. The house should be properly ventilated with sunlight access to allow for the destruction of the virus. Appropriate measures should be adopted throughout the diagnosis and during the clinical care of an infected patient. Droplet contact and airborne safety measures must be taken up during specimen collection, and sputum induction should be avoided. Healthcare workers attending for infected persons should take care of contact and airborne infection by utilizing Personal protective equipment, "PPE" such as N95 or FFP3 masks, eye protection, gowns, and gloves to minimize exposure to contamination and to prevent transmission of the pathogen [3].

The World Health Organization and other government organizations have released the following general recommendations:

- Close contact with patients suffering from acute respiratory infections must be avoided.
- Avoid contact with face, eyes, and mouth after contact with a probably contaminated environment.
- Wash your hands repeatedly every 15-20 min for at least 1 min, especially after contact with infected people or their environment.
- Avoid unguarded contact with farm or wild animals.
- People with symptoms of acute airway infection should keep the distance, cover coughs or sneezes with disposable tissues or clothes, and wash their hands.
- In emergency medicine departments, strict hygiene methods for the prevention and control of infection such as washing and sanitizing hands should be practiced.
- Individuals having low immunity should avoid public gatherings.

CONCLUSION: This novel coronavirus, which originated from a viral family Coronaviridae has led to a public health emergency of international concern, according to the World Health Organization.

The COVID-19 outbreak, which has now declared as 'Pandemic' by World Health Organization, has confronted the economic, medical, and public health infrastructure of many countries, including China, the United States of America, Italy, France, and many more all over the world.

In India, even after applying proper and timely containment and mitigation measures, COVID-19 newer cases are being detected daily. India is continuing to face this situation in a well-planned approach so far. The Indian government quarantined India from the rest of the world, but the forthcoming few weeks are extremely critical.

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