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The COVID-19 World Tragedy, Its Repercussions, and Future Prospects

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ABSTRACT
Epidemic levels of coronavirus (COVID-19) illness have been documented. The COVID-19 pandemic is rapidly expanding its web of destruction across the globe, threatening to strike every country and every person. This outbreak has the potential to cause widespread human suffering, widespread terror, widespread economic disruption, and stress the progress of all of humanity. COVID-19 is a lethal illness with an expected mortality rate of 4%. Extreme forms of this disease include serious breathing problems like pneumonia, stomach problems, impaired immune systems, kidney failure, and even death. The COVID-19 infection has a pathophysiology quite similar to that of SARS and MERS coronavirus infections. Currently, no medicines or vaccinations exist for coronaviruses like COVID-19. The World Health Organization reports that, as of March 23, 2020, there will have been 4,21,792 confirmed cases of Corona virus illness (COVID-19) and 18,883 confirmed deaths. There are currently no cures or vaccinations for COVID-19. Even though there have been many clinical trials, research into remedies is still in its infancy.

Keywords: *covid 19, pneumonia, immune system, vaccinations, disease control*

I. INTRODUCTION

Emerging and constantly changing, the global population is being affected by COVID-19. In its most severe forms, the acute illness known as COVID-19 cause's extensive damage to the alveoli, followed by respiratory injury and ultimately death. On December 31, 2019, COVID-19, a strain of pneumonia caused by the Corona virus, was identified for the first time in Wuhan, China. On January 30, 2020, the World Health Organization classified this disease as a global public health emergency. This new coronavirus disease was given the designation COVID-19 by the World Health Organization on February 11th, 2020. On March 11, 2020, the World Health Organization officially recognised the first-ever Corona virus pandemic. COVID-19, which is caused by a virus of a common subtype, can infect both mammals and birds. Unfortunately, neither a vaccination nor a particular treatment exists for COVID-19; treatment consists primarily of managing symptoms and providing isolation, supportive care, and potentially other experimental treatments. Temperature, a sore throat, tiredness, coughing, and shortness of breath are typical manifestations. Most people infected with COVID-19 experience only mild to moderate respiratory problems and recover without any special treatment at all. However, the elderly and those with preexisting medical conditions like heart disease, diabetes, asthma, and cancer are more likely to experience severe complications. A person is considered to be at risk if they have travelled to a location with a group of persons experiencing transmission or have had close contact with an infected person within the past 14 days.

II. MEASUREMENTS IN EPIDEMIOLOGY

Being well-versed with the COVID-19 virus that causes the disease is the best way to slow down its progress and prevent its spread altogether. Quarantines, self-isolation at home, avoiding crowded locations, frequent hand-washing for at least 20 seconds or the use of an alcohol-based rub, and refraining from contacting one's eyes, nose, mouth, and face with unclean hands are all effective ways to prevent the spread of disease. Droplets of saliva or nasal discharge from an infected person's coughing or sneezing are the most common means by which the COVID-19 virus is communicated, so it's crucial that everyone get into the habit of covering their mouths and noses. The World Health Organization (WHO) declared COVID-19 a "very high" risk on February 28, 2020, meaning that it poses a significant hazard to public health all across the world. Presently, COVID-19 is likely a newly emerging, fast-expanding situation. On March 11, cases of COVID-19 quadrupled worldwide, reaching 118,000 cases in 114 countries with 4,000 deaths; this was mirrored by a 13-fold surge in China. Corona viruses are constantly circulating in the human population, resulting in life-threatening respiratory illnesses in people of all ages.

Table 1: Providing data on the global patient population: from Wikipedia (5 April 2020) global spread of the Corona virus

S. No	Epidemiological Rank	Country	Patients	Deaths	Persons Recovered	Ref. No.
1.	1.	United States	311,616	8489	14,943	36
2.	2.	Spain	126198	11,947	34,219	38
3.	3.	Italy	124,632	15,362	20,996	37
4.	4.	Germany	96,108	1446	23,192	40
5.	5.	France	89,953	7,560	14,008	41
6.	6.	China	81669	3,329	76,964	39
7.	7.	Iran	55,743	3,452	17,935	42
8.	8.	United Kingdom	41,903	4,313	-	43
9.	9.	Turkey	23,934	501	786	77
10.	10.	Switzerland	20,505	666	6,415	44
11	31.	India	3,374	77	267	45
12.	**Total Numbers**	World	1203459	64,772	274,294	78

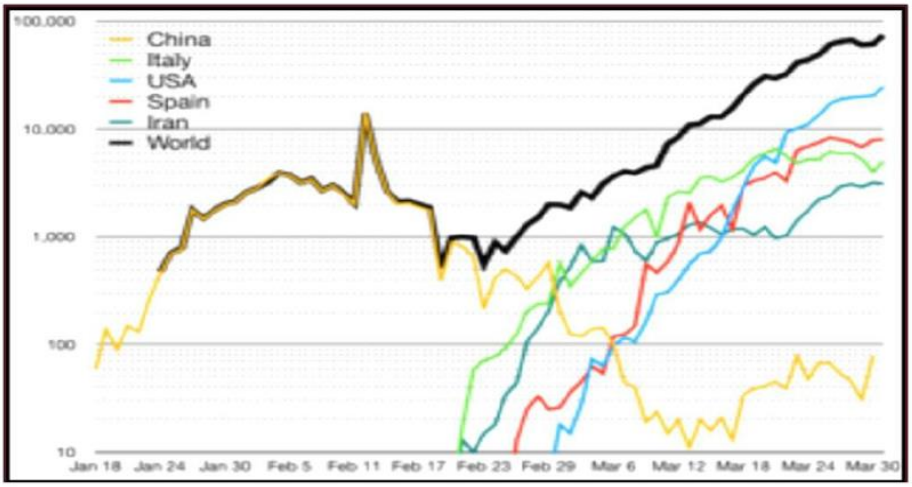

Figure 1: Deaths from COVID-19, on a semi-log scale, throughout the world and the top five nations, as of December 2018.

In addition to the WHO, other health organisations On March 2020, changed the phrase of "social distancing" with "physical distancing", that explains the objective to reduce physical contact and distance from social circles . Whole communities residing in impacted regions have been quarantined by their governments, or self-quarantine has been advocated. Many countries in the worst-hit regions of the pandemic have banned all domestic and international travel until the virus is eradicated. In order to prevent the spread of acute respiratory infections, the World Health Organization advises that close contact be avoided and that proper hygiene be maintained at all times. Those with impaired immune systems have been advised to limit their contact with the general population and stay away from large groups. Multiple nations have instituted mandatory quarantines and security measures to stop the global pandemic. India and many other countries launched a complete nation-wide lockdown in the areas hit by the new Corona virus, or COVID-19, to save millions of lives. After assessing the current condition of coronavirus cases, numerous nations have decided to put a halt to all international travel.

The COVID-19 virus, also known as the Corona virus, is characterised by a large, positive-sensed, single-stranded RNA (ssRNA) genome, a helical-symmetric capsid, and the fact that it is a member of the family Coronaviridae. Its genome is estimated to be between 27 and 34 kilobases in size. There are a total of 29,891 nucleotides in the viral RNA, which can be translated into 9,860 individual amino acids. The virus's major replication and transcription machinery, RNA-dependent RNA polymerase and exoribonuclease, allows it to divide and multiply endlessly. The RNA-dependent RNA polymerase is the primary replicase-transcriptase protein (RdRp). It plays a crucial role in the processes that produce new RNA molecules from preexisting RNA. The complex's other nonstructural proteins also play an important role in DNA replication and transcription. One example of a non-structural protein that contributes to replication fidelity is exoribonuclease, which performs a proofreading role that is lacking in RNA-dependent RNA polymerase (RdRp). RdRp plays a crucial role in the creation of antisense RNA from its positive-sense precursor. Later, the negative-sense genomic RNA is used to replicate positive-sense RNA. Polyprotein 1a/1b (pp1a/pp1b) and RNA with a 5′-cap and 3′-poly-A tail are both hallmarks of CoVs. The transcription happens through the replication-transcription complex (RCT), wrapped in double-membrane vesicles. Transcription regulatory sequences are located between each of the six open reading frames and are responsible for

terminating transcription (ORFs). Specifically, a frameshift between ORF1a and ORF1b results in the production of both pp1a and pp1ab. In order to process the virus, the primary protease, which is similar to chymotrypsin, is activated. There are 16 different non-structural proteins made from just one or two papain-like proteases. The membrane, envelope, spike, and nucleocapsid proteins that are encoded by other ORFs are all examples of structural proteins. As a virulence mechanism, these nsp inhibit the host's innate immune response. Envelope structural proteins play a crucial role in pathogenicity by facilitating viral assembly and release. Glycoproteins, of which there are two that make up the spike (S1 and S2). Homotrimers require the assistance of these S proteins in order to link with host receptors. Transmembrane helical regions in ORF1ab, which encode for nsp2 and nsp3, were compared between Sars-Cov-2 and Sars-CoV gene sequences. Additionally, the presence of serine at position 723 in place of glycine residues was noted, as was the substitution of proline for isoleucine at position 1010.

Initial findings of human coronaviruses date back to the 1960s. There are seven different strains of the Corona virus found in humans, but only four of them cause noticeable symptoms. Human coronavirus OC43 (HCoV-OC43), HKU1, NL63 (HCoV-NL63, New Haven coronavirus), and 229E (HCoV-229E) are some of them.

Other three show much more severe symptoms; these are Middle East respiratory syndrome-related coronavirus (MERS-CoV) (novel coronavirus 2012), severe acute respiratory syndrome coronavirus (SARS-CoV or SARS-classic), and severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), also known as 2019-nCoV or "novel coronavirus 2019."

More than eight thousand people contracted the severe acute respiratory syndrome coronavirus (SARS-CoV) in 2003, and ten percent of those reported dead had the classic form of SARS. Middle East respiratory syndrome (the novel coronavirus of 2012) emerged in September 2012 and was responsible for the deaths of about 252 people.

The novel corona virus (COVID-19, formerly known as 2019-nCoV) emerged in December 2019 and has since spread to various nations around the world after first being identified in Wuhan, China. The 2019 coronavirus disease pandemic (COVID-19) is brought about by the second strain of the coronavirus that causes severe acute respiratory syndrome (SARS-CoV-2). The Wuhan strain is a newly discovered betacoronavirus strain from group 2B that shares a genetic makeup with the SARS-CoV that is roughly 70% identical. A new coronavirus, previously known as 2019-nCoV or 2019-nCoV, has been given a new name: Covid-19 virus, as of March 13, 2020. This virus is thought to have originated in bats due to its high degree of similarity (96%) to a coronavirus found in bats. From what we can tell, the COVID-19 (HCoV) genome found in Wuhan patients with atypical pneumonia shares 89% of its nucleotide characteristics with bat SARS viruses like CoVZXC21 and 82% with the genome of human SARS-CoV. These results suggest that the bat strain may have contributed to the evolution of SARS-CoV-2. Its backstory, though, remains a mystery.

III. DISCUSSION

More study is required to determine the precise properties of COVID-19 and its pathogenic mechanism. Pneumonia and immune system suppression are confirmed by pathogenic mechanism data. Droplets expelled during coughing and sneezing play a major role in their transmission from person to person. Viruses can live in the air for three hours, but they can live for up to three days on plastic and stainless steel. Although some infected people show no symptoms, many others get influenza-like illness, such as a cough, fever, and difficulty breathing. Problems breathing, persistent chest pain or tightness, lightheadedness, and a bluish colour to the face or lips are all emergency warning signs. We need to get this person to a doctor right away. Sneezing, a runny nose, or a sore throat are less common but nonetheless possible signs of an upper respiratory infection. Multiple studies have found that patients have gastrointestinal distress, with prevalence rates ranging from 3 to 31 percent for symptoms such as nausea, vomiting, and diarrhoea. As a result of the pandemic, many governments have instituted nationwide lockdowns and travel bans. As of April 5, 2020, the verified mortality toll from the Corona virus pneumonia pandemic is 64,700, with over 1.2 million cases and more than 247,000 recoveries.

Exhaustive pneumonia and numerous critical illnesses, including respiratory failure, septic shock, and/or multiple organ dysfunction (MOD) or failure (MOF), occurred in 5% of patients. This illness is notable for the incubation period—the time it takes for symptoms to appear after exposure to the virus. However, the incubation period for COVID-19 might be anywhere from two to fourteen days. Those patients who had lung lobectomies for adenocarcinoma may have contracted an infection after surgery, according to histopathological evidence. Other individuals showed signs of vascular congestion, inflammatory fibrinoid disease, and pneumocyte hyperplasia. Having a life-threatening organ dysfunction is what sepsis is, as defined by the International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3) (74). Patients with sepsis in the COVID-19 study exhibit significant signs of multi-organ failure, including respiratory difficulties such as severe dyspnea and hypoxemia, renal abnormalities, tachycardia, hyperbilirubinemia, acidosis, coagulopathy, and thrombocytopenia. ICU mortality from multi-organ failure might be calculated from the clinical data by using the Sequential Organ Failure Assessment (SOFA) score. There is confirmation in these numbers among kids as well.

Recommendations from the World Health Organization Guidelines for the diagnosis and management of severe acute respiratory disease (ARDS) in patients infected with the COVID-19 virus are due out on January 28, 2020. These guidelines will cover topics like how to spot ARDS in patients, how to treat them, how to prevent complications, and how to handle emergencies like respiratory failure and septic shock. There was a sudden and rapid worsening of clinical symptoms in a percentage of cases after a week involving respiratory failure and MOD/MOF. As a reference, the criteria of the severity of respiratory insufficiency and the diagnostic criteria of sepsis and septic shock can be employed.

Breath or blood samples are taken as part of the diagnostic process. In most cases, reports can be expected within a few hours to a few days. There are currently no human-safe and effective therapies for COVID-19. There are, however, numerous treatment-focused clinical trials now recruiting participants. The World Health Organization (WHO) regularly releases new data and clinical results, leading some to conclude that reducing how often people mingle can help reduce the spread of disease. A number of research groups are working to provide a humane vaccine against COVID-19. WHO Anticipating a vaccine against SARS-CoV-2 in fewer than 18 months was advised against in February 2020.

Effective vaccines against the coronavirus family, including those against severe acute respiratory syndrome (SARS), were previously attempted (MERS). Till date Vaccines against SARS and MERS have been tried in animals exclusively. There is no human-tested treatment or vaccination for SARS until at least 2020. Remdesivir, one of the investigational compounds, is already in use in the United States, while two of the approved medications, chloroquine and hydroxychloroquine, are being examined in hundreds of clinical trials. Typically taken orally, chloroquine is most well-known for its use in combating malaria and other parasitic infections, although it also has anti-inflammatory properties. Rheumatoid arthritis and systemic lupus erythematosus are two of the diseases that hydroxychloroquine is used to treat. In vitro studies have shown that both medications are effective against SARS-CoV, SARS-CoV-2, and other Corona viruses. Clinical investigations have shown that the presence of SARS-CoV-2 RNA in the upper respiratory tract can be reduced by treatment with hydroxychloroquine alone or in combination with azithromycin. In vitro, remdesivir suppresses SARS-CoV-2 replication, while in vivo, it inhibits the replication of betacoronaviruses. Remdesivir is an injectable medication with broad-spectrum antiviral action. Remdesivir (GS-5734), an antiviral medicine that has been shown to be effective against MERS-CoV infection in a rhesus macaque, acts as an inhibitor of RNA polymerase against numerous types of RNA viruses and may be useful for the prevention and treatment of HCoV infections. In China, researchers are still testing lopinavir and ritonavir in human subjects. Lopinavir was the most potent inhibitor of cronovirus proteinase, while Saquinavir was the least potent inhibitor. Patients with a Corona virus infection may benefit from treatment with the anti-HIV medication combination Lopinavir and Ritonavir. This medicine combination is safe for elderly individuals, per the Indian Council of Medical Research (ICMR).

In 2003, a severe acute respiratory syndrome coronavirus (SARS-CoV) presented a worldwide threat with high mortality rates. Among the known human CoV (HCoV), these viruses include HCoV-229E, -OC43, -NL63, and -HKU1. The World Health Organization (WHO) officially recognised a sixth very lethal HCoV infection in 2012, called the Middle East respiratory syndrome coronavirus (MERS-CoV). Reverse transcription polymerase chain reaction (rRT-PCR) of contaminated secretions or CT imaging can diagnose and confirm World Corona virus infection. Efforts to produce vaccinations, antiviral drugs, and antibody treatments are being coordinated by the World Health Organization (WHO), the Food and Drug Administration (FDA) of the United States, and the Chinese government and drug administration. To combat HCoV-22E9, the triterpene glycosides saikosaponins (A, B2, C, and D) can be found in the Chinese medicinal herbs Bupleurum spp., Heteromorpha species, and Scrophularia scorodonia. As part of a massive screening investigation, extracts from Lycoris radiata, Artemisia annua, Pyrrosia lingua, and Lindera aggregata were all found to have an effect against SARS-CoV. The presence of nsP13 helicase and 3CL protease, myricetin, scutellarein, and phenolic compounds in Isatis indigotica and Torreya nucifera contribute to their antiviral effectiveness against SARS-CoV enzymes. Houttuynia cordata water extract is another anti-CoV natural medication that has been reported to demonstrate many antiviral mechanisms against SARS-CoV. These mechanisms include stopping the viral RNA-dependent RNA polymerase activity and inhibiting the viral 3CL protease. According to data compiled by Johns Hopkins University, the death-to-case ratio on April 2, 2020, was 5.0% (47,256/937,567).

IV. CONCLUSION

Currently, there are no effective therapies for CoV infection, and research into preventative vaccinations continues. In light of this, it is clear that we urgently need new antiviral drugs for the prevention and treatment of infections with CoV. Health recommendations, guidelines, and formal temporary recommendations should be made available to the public all around the world.

The World Health Organization has formed an emergency committee to oversee the situation worldwide in terms of investigations, the breadth of the disease's medical spectrum, the availability of healthcare facilities for prevention and control, and the extent to which human-to-human transmission is occurring. Corona virus genome sequencing, transmission, diagnostics, and the rapid development of possible vaccines, medications, and other therapies that are affordable for low- and middle-income nations should be prioritised. Social, emotional, physical, psychological, and economic aspects of life are all affected by the COVID-19 pandemic. There is still important to expand the assistance to health workers, manufacturing competence and strengthening critical medical supplies.

For the best results, it's important to keep the public updated and informed on a regular basis and to do so through the medium of respected professionals.

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