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Comparison between the 2020 Coronavirus-19 and the 1665 Great Plague of London

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Abstract

We are currently encountering one of the most disruptive pandemics in modern history. The outbreak of COVID-19 was first reported in the Chinese province of Hubei, which has now spread throughout the world resulting in about 81.5 million Covid-19 cases and 1.8 million deaths across 217 countries. Where we stand today, it is yet as dubious whether the number of cases will continue to rise and cause destruction or will it come to a halt. But it is certain that this is a crucial moment and that we are enduring a historic event that will reconstruct our societies both fundamentally and irreversibly. As we wade into this new age of pandemic, it is critical to rethink the history of pandemics and acknowledge the effective measures to combat these pandemics. With a conviction that the past helps us to comprehend the present and that the present should help us to rethink the past, we turn to one of the most destructive pandemics in history, the great plague of London in 1965, which is comparable to the COVID-19 in many aspects. This paper will describe the havoc caused by COVID-19 in all arrays of life, the impact of the pandemic in the United States, specifically in New York City, the similarity between the enduring effect of COVID-19 pandemic and the great plague of London in 1965, Sir Isaac Newton's way of enforcing his time in quarantine during the Great Plague and the probable outlook of the world after the COVID-19 pandemic.

Coronavirus-19

Globalization and ecological disruption associated with newly emerging infectious diseases, and with reemerging infections previously thought to be under control can lead to the surge of an unexpected pandemic, which is evident throughout the world with the appearance of the COVID-19 pandemic. The newly emerged havoc-inducing disease COVID-19 is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The major escalation of the disease is conventionally trailed back to January of 2020 in the Chinese province of Hubei, the wet markets of the principal city of Wuhan which is presumed to be the specific inventive location of the sudden eruption of the infection [2]. Authorities in 217 countries and territories have reported about 81.5 million Covid-19 cases and 1.8 million deaths since China reported its first cases to the World Health Organization (WHO) in December 2019 [3]. COVID-19 is a member of the Coronaviridae (CoV) subfamily of the Coronavirinae family, which belongs to the order Nidovirales. The subfamily consists of 40 varieties of single-stranded RNA-viruses existing in bats and wild birds, which can develop to infect humans and non-human mammals and birds. Due to their capability to recombine, mutate, and infect multiple species and cell types, coronaviruses keep appearing and evolving, causing human and veterinary outbreaks [4]. According to the CDC [5], SARS-CoV-2 spreads predominantly when an affected person is in close contact with a non-affected person because small droplets and aerosols containing the virus can easily spread from an infected person's nose and mouth when they breathe, cough or sneeze. Studies show that 101 out of every 10,000 cases develop symptoms after 14 days of active monitoring or quarantine [6].

SARS-CoV-2 infection can stimulate innate and adaptive immune responses. But the uncontrolled inflammatory innate responses and impaired adaptive immune responses may result in harmful tissue damage, both locally and

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systemically. In patients with severe COVID-19, there is a reduced percentage of monocytes, eosinophils, and basophils which is responsible for the elevating level of infections [7]. SARS-CoV-2 is also responsible for the decreasing the number of CD4+ T cells, CD8+ T cells, B cells and natural killer (NK) cells among the affected population, which can lead to the inflammatory responses and the production of a cytokine storm and worsen damaged tissue [8]. Elevated levels of pro-inflammatory cytokines can result in shock and tissue damage in the heart, liver, and kidney, as well as respiratory failure or multiple organ failure. They also mediate extensive pulmonary pathology, leading to massive infiltration of neutrophils and macrophages, diffuse alveolar damage with the formation of hyaline membranes and diffuse thickening of the alveolar wall. Spleen deterioration and lymph node necrosis can also be seen, indicative of immune-mediated damage in deceased patients [9]. As Covid-19 creates several complications in the organs and blood fluid of the patients, the virus can be considered contagious, especially for the elderly population and patients with underlying chronic non-communicable diseases. Successfully standardized treatment protocols for severe cases must be adapted globally to fight the COVID-19 pandemic. The combined use of anti-inflammatory and antiviral drugs may be more effective than the individual use of drugs. Based on *in vitro* evidence for inhibiting SARS-CoV-2 replication and blocking SARS-CoV-2 infection-induced pro-inflammatory cytokine production [10].

Coronavirus-19 in New York City

The unexpected emergence of the Covid-19 pandemic gave rise to several complications in the fields of medicine, economics, politics, and education throughout the world, especially in the United States with NYC being one of the hotspots of the pandemic. Community transmission of COVID-19 was first identified in the United States in February 2020. By mid-March, all 50 states, the District of Columbia (DC), New York City (NYC), and four U.S. territories had reported cases of COVID-19. About 165,000 cases and 13,000 deaths were reported in the city with considerable variability across the city's ZIP codes within the boroughs by the end of April 2020 [11]. Based on preliminary U.S. data, the population with underlying health conditions such as diabetes mellitus, chronic lung disease, and cardiovascular disease, presumably were at higher risk for severe COVID-19-associated disease than people without these conditions [12]. The infection rate and mortality in New York City varied depending on the zip code location. For the Individuals living in wealthier ZIP codes, it might have been easier to circumnavigate the restrictive initial testing guidelines on eligibility for a COVID-19 diagnostic test, resulting in a lower proportion receiving the test being COVID-19 positive. Reversibly individuals living in less wealthy ZIP codes may have been less able to receive tests unless clinically sick due to a lower proportion having a primary care physician and therefore reliant on emergency care for clinical consultation. Due to the low availability of COVID-19 testing in the poorer neighborhoods, it caused difficulties for the dwellers to detect and confirm the infection. Moreover, data show that the actual prevalence of COVID-19 is higher among Black individuals and those of lower socioeconomic status [13]. The NYC and New York State public health laboratories began testing hospitalized patients at the end of February and early March. DOHMH (New York City Department of Health and Mental Hygiene) reinforced patients with mild symptoms to stay at home rather than seek health care in the hospital because of shortages of personal protective equipment and laboratory tests at hospitals and clinics. The increased case fatality rate among hospitalized patients during the pinnacle of reported cases suggests that health care system ability constraints might have resulted in patient outcomes. Thus, the medical system and socioeconomic status have played a significant role in the health outcome of COVID-19 patients.

The COVID-19 pandemic has severely affected the economy of NYC as the unemployment level reached its peak. For example, the longer small businesses will have to remain shut-down, the less likely will they ever reopen [14]. According to New York Times, New York's unemployment rate for July was at 15.9%, which ranks second among states and the District of Columbia, and its July mortgage delinquency rate was 8.38%, which ranks 11th, according to Bankrate. The high unemployment and bankruptcy rate suggest that NYC's economy had been significantly affected by the pandemic. New York City (NYC), at one time the most significant hotspot of COVID-19 in the world, toward the end of June and into early July also noticed the largest political distress of any significant city in the U.S. with participants in demonstrations and another political fallout scarcely consenting to social distancing and face masking rules [14]. Surveys and studies have detected differences by political parties in the acceptance of and adherence to COVID-19 prevention measures such as social distancing or wearing face masks, as well as comfort in resuming daily activities as the nation opens. Due to the political leader of The United States not acknowledging the importance of wearing face masks and social distancing to prevent the COVID-19 infection, there has been a huge misconception among the mass population. As a result of which some people refuse to follow the CDC approved guidelines for COVID-19 prevention, causing a rapid increase in the infection level. Therefore, it is indisputable that the sudden emergence of the COVID-19 has created political unrest in NYC, which led to an elevated level of COVID-19 infection rate in NYC.

The education system in NYC had faced many complications because of the COVID-19 pandemic. What started as a 2-week vacation for school and college students turned out to be the closure of in-person classes and the development of virtual classes. The overnight transition to online classes created unprecedented problems for both the students and the instructors, especially for aged instructors and as well as students of low socio-economic backgrounds [15]. The proper transition process from in-person education to virtual education requires induction and familiarization for both students and the instructors. But due to the COVID-19 pandemic, there was not an adequate period for training for a smooth transition to happen. Worth noting, in 2019, the poverty rate in NY State was at 13%, making it difficult for most college students in New York State to even afford a room where they can live or study by themselves efficiently.

Thus, the NYC education system suffered due to the COVID-19 pandemic. New York City not only faced the highest mortality rates during the initial stage of COVID-19 pandemic but also suffered the most economical, political, medical, and educational damage throughout the United States.

The Great Plague of London

Like the Covid-19 pandemic in 2020, the great plague of London, which was the epidemic of plague-ravaged London, England, from 1665 to 1666. The Bubonic plague was a prominent feature of the sixteenth and early seventeenth-century England, particularly in cities like London and Westminster. Outbreaks of such havoc occurred every 10 to 15 years [16]. Data shows that about 68,596 people died during the epidemic, though the actual number of deaths is assumed to have exceeded 100,000 out of a total population estimated at 460,000 [17]. Even though the plague was frequently occurring in England, medical science not being as developed as today led to the cause of the plague being undiscovered. Modern Science discovered Yersinia pestis, a bacterium, as the causative agent of plague. Infected fleas transmit the disease to black rats, an intermediary for illness. Healthy fleas would then feed on the blood of infected rats, internalizing the bacteria, which forms a digestion-blocking biofilm in the flea's foregut. When the flea vector leaves the rat and attempts to feed on humans, it is unable to ingest its blood and vomit the blood along with saliva and bacteria-containing bio-film fragments back into the inoculum. The biofilm inhibits flea digestion, leading to starvation. To repel this, fleas attempt to feed more often, often biting a single victim multiple times. As the high bacterial load gets transferred, it results in infection [18]. With the help, modern science and technology scientists discovered the cure for the plague with a 50% fatality rate if untreated, but during the seventeenth century, the available treatment for plague would often worsen the condition of the patients. The first symptom of plague was usually a painfully swollen lymph node called a bubo, which would appear near the place of the flea bite. Infected individuals also suffered from fever, a characteristic spotty rash, and severe headache. The Swollen lymph would then turn a dark purple or black color, making the identification of the bubonic plague [19].

Incubation took about four to six days and when the plague appeared in a household, the house was sealed, denouncing the death of the whole family. The great plague of London was quite different from the black death in the sense that the Great Plague was a localized outbreak, within Great Britain, and focusing on London, while black death had multiple outbreaks throughout the world. The government-implemented quarantine and isolation in London and Westminster integrated two key characteristics: The shutting up of houses and the pesthouse. But since most families did not have enough space for a single person to quarantine, it made sense for the entire family to quarantine. Traditionally, quarantine lasted for 40 days (about 1 and a half months), but this time was extended if a household resident died during confinement. The key aspect of plague control was the construction of parish pesthouses for isolating individuals.

Parishes in London and Westminster had distinct pesthouses that served as hospitals for the sick. A master or a mistress oversaw them and employed nurses and watchmen. People would often recover from the plague and get released from the parish pest houses. But the wealthy population could afford to bribe searchers and watchmen as well as hide infected persons without attracting public attention. Even back then many people who had the disease tried to escape the quarantine, increasing the risk for the non-affected population to get infected.

The Quarantine Experience from the Plague with Isaac Newton Can Inspire Scientists today during This Period of Coronavirus (COVID-19)

Sir Isaac Newton, the infamous physicist, and mathematician developed the principles of modern physics, including the laws of motion and is credited as one of the great minds of the 17th-century. When the great plague of London was demolishing the British city at the beginning of 1665 and started to move towards Cambridge, Sir Isaac Newton had just completed his bachelors at Trinity College, Cambridge. As the great plague was wiping out a great population in Britain, Sir Isaac Newton thought it would be in his best interest to leave the mainstream area and move to his isolated family farm of Woolsthorpe Manor, which was about 60 miles northwest of Cambridge. Woolsthorpe provided a serene environment enabling a scholar like Newton to continue his journey, uninterrupted, to the farthest reaches of the imagination. Newton regarded the years 1665-1666 during the plague as his marvelous years of discovery, also known as annus mirabilis. One day when he was sitting under a tree in Woolsthorpe manor an apple fell on his head, which intrigued the idea that the moon is subject to the same gravitational force as the apple. He also argued that any two bodies in the universe are mutually attracted to one another by a force that is the proportional product of their masses and inversely proportional to the square of the distance between them [20]. Ensconced at an isolated location, he developed his universal theories of gravity as it relates to mass and distance, and also used prisms to identify principles of light refraction. Even though Newton did not make all his cathartic discoveries during his quarantine in Woolsthorpe Manor, his stay over there enabled him to continually concentrate on his projects to get it initiated, which played a significant role in his revolutionary inventions later in his life, making his name immortal in the history of science [21]. The great discoveries of Sir Isaac Newton, while quarantining during a plague, show that with determination and resilience it's possible to bring something good out of a catastrophe. Similarly, the COVID-19 pandemic has largely impacted the education system, as the traditional classes came to an end and virtual learning took place overnight. Isolated and independent, with their futures full of possibility, these students are now quarantining in their homes, which can seem wholly unfair and depressing. But the story of another college student, Sir Isaac Newton during the great plague of London, in a similar predicament to the COVID-19 pandemic, might provide

some hope and inspiration. Virtual education in 2020 has provided great flexibility for the students, enabling them to attend classes whenever they like. As science has advanced greatly compared to the 17th century, it has opened many doors for students and scientists today, to learn and discover things they are passionate about. Even though there is much to despair about due to the sudden shutdown of all regular activities, this could also be a time for reflection and discovery. The unexpected alternation to the rhythm of one's daily life and the associated isolation could unleash one's imaginations and inventiveness in ways that might have been impossible under ordinary circumstances. The scientist/students today during the Covid-19 pandemic can take inspiration from the quarantine experience of Sir Isaac Newton during the 17th century to reach the peak of their creativity and production.

How Isaac Newton Impacted the World Today, What Did Isaac Newton Discover? Why is Isaac Newton Important to History? How Did Isaac Newton Influence the Field of Science?

Sir Isaac Newton's quarantine in Woolsthorpe Manor, played a significant role in his revolutionary discoveries that have greatly impacted the field of science. In his time, he played a vital role in the Scientific Revolution, helping to advance the fields of physics, astronomy, mathematics, and the natural sciences. Due to his great establishment of a legacy, he was able to dominate the sciences for the next three centuries. In 1666, Newton began contributing to the field of optics, first by observing that color was a property of light by measuring it through a prism. Moreover, the term "Newtonian" came to be used by subsequent generations to describe bodies of knowledge that owed their existence to his theories. From 1670 to 1672, while Newton was a lecturer at the University of Cambridge, he also started his optics research investigating the refraction of light, demonstrating that the multicolored spectrum produced by a prism could be recomposed into white light by a lens and a second prism. He also observed that individual color remained the same while passing through another prism [22]. In the beginning, when telescopes with glass lenses acted like prisms, Newton eliminated this problem by inventing the reflecting telescope. He later made a larger telescope in 1668 to present it to London's Royal Society [23]. Newton's magnum opus - Philosophiae Naturalis Principia Mathematica ("Mathematical Principles of Natural Philosophy"), which was first published in 1687 - laid the foundations for classical mechanics and it is considered to be the greatest scientific work ever written. In it, he formulated his Three Laws of Motion, which were derived from Johann Kepler's Laws of Planetary Motion and his mathematical description of gravity [24]. He also formulated his Universal law of gravity, which states that every point mass attracts every single other point mass by a force pointing along the line intersecting both points [25]. He also initiated the theory that the force of gravity causes the moon to fall continually around the earth [22]. He also shares credit with Gottfried Leibniz for the development of calculus [26]. Moreover, he formulated an empirical law of cooling, studied the speed of sound, and introduced the notion of a Newtonian fluid. This term is used to describe any fluid where the viscous stress arising from its flow, at every point, is linearly proportional to the rate of change of its deformation over time.

Newton is such a significant figure in the history of the world due to his contributions to the fields of physics, mathematics, astronomy and chemistry. Based on the principles of Newton's "Principia" the flight path of the Saturn 5 rocket was invented which first took Americans to the moon in 1969 [22]. Newton's development of the three laws of motion forms the basic principles of modern physics. His co-discovery of calculus provided a potent mathematical tool, aiding the precise analytical treatment of the physical world. Newton's law of Inertia helped scientists understand that an object at rest or in motion will remain at rest or in motion unless it is acted upon by an external force. His second law of motion which states that force equals mass times acceleration also explained why larger or heavier objects require more force to move or alter them. Newton's third law of motion, for every action, there is an equal and opposite reaction creates a simple symmetry to the understanding of the world around us. Newton's theory of gravity helped prove that all objects, as small as an apple and as large as a planet, are subject to gravity. Newton's invention of calculus has proved invaluable to centuries of mathematicians, engineers, and scientists. Newton's discoveries in the seventeenth century have been the basis of all the advancement in science and technology today. Without Newton's discovery, it would have been impossible to get where science has reached today. Therefore, Sir Isaac Newton's contribution to the development of science and technology, modern physics and mathematics is undeniable.

The Pandemic of COVID-19 is affecting the Medical Field

The COVID-19 pandemic had the worst impact on the medical field and healthcare system. The health care workers were at high risk of infection due to shortage of PPE (personal protection supply). At the beginning of March 2020, when the cases of Covid-19 began to rise, the CDC (Centers for Disease Control and Prevention) [5] started encouraging social distancing to lower the spread of the infection and avoiding a surge of demand on the health care system. Even though people started following the social distancing, hospitals were already reporting a shortage of equipment required for treating critical patients, including ventilators and personal protective equipment (PPE) for medical staff. As the COVID-19 infection started to increase rapidly, the hospitals in the United States required several hundred thousand to as many as a million ventilators to treat the patients who were infected. But there was not only a shortage in the supplied number of ventilators, but also there wasn't an adequate number of testing available to the general population. Mechanical ventilators are essential for treating both influenza and COVID-19 patients with severe acute respiratory failure [27]. Despite improvements in COVID-19 survival between March and August 2020, surges in hospital COVID-19 caseload

remained detrimental to survival and potentially eroded benefits gained from emerging treatments [28]. Studies have shown that intensive care units (ICUs) didn't have sufficient resources to treat all patients requiring ventilator support during a massive pandemic for which many patients were not able to get the treatment required [29]. As a result of the lack of ventilator supply, the mortality rate reached its peak in the United States, especially in New York City. According to the CDC, the crude fatality rate among confirmed cases was 9.2% overall and 32.1% among hospitalized patients.

The equipment that is essential for the healthcare workers to serve the COVID positive patients is PPE, including respirators, gloves, face shields, gowns, and hand sanitizer. But the early epicenter of the COVID-19 pandemic, New York City, heavily lacked to supply the adequate amount of PPE to the hospitals. They have used plastic bags as gowns and plastic water bottle cutouts for eye protection. As the healthcare workers were continually being exposed to the infected patients, they were at high risk for the transmission of the infection and not having proper safety equipment put them in even more critical conditions. And recent surveys show that the respirators and surgical masks available to the health care workers in the United States are far less than the required amount [30]. There was a scarcity for not only the PPE and ventilators but also the supply of face masks for the general mass. The Centers for Disease Control and Prevention (CDC) recommends that as the pandemic had created a crisis, N95 respirator masks should only be used during aerosol-generating procedures, which puts health care workers at even more risk for using less protective surgical masks around patients with confirmed or suspected Covid-19 infection. Additional guidelines from the CDC include reusing masks and respirators intended for one-time use and, even use scarves or bandanas as alternatives, which has no evidence of protecting one from the COVID-19 virus. The shortage of vital health care equipment is responsible for the inability to provide proper care to the patients, leading to high mortality in the United States. This situation has also deeply scarred the healthcare workers as they experienced their patients die at a high rate. A study from Singapore showed that healthcare workers caring for patients with COVID-19 reported anxiety, depression and stress. Increasing work demands on healthcare professionals' conflict with their duties to family and friends, which causes psychological stress [31]. Therefore, it is evident that the medical field faced the worst outcome of the COVID-19 pandemic. But the effect could have been reduced with increasing PPE and ventilator supplies in the heavily impacted areas, donating PPE to the health care workers rather than hoarding it and the government taking important steps to increase the production of PPE and ventilators [32].

This Period of Coronavirus (COVID-19) Will Influence and affect the STEM (Science, Technology, Engineering, and Mathematics) Fields

As the Covid-19 made its first appearance in the United States in late January or early February 2020 and started growing rapidly, the government decided to shut down the educational institutions, research centers and all other organizations related to stem to reduce the spread of infection [12]. Overnight the traditional method of stem learning or research turned into a remote-only form. With this prompt transformation of learning, educating or even performing research, all fields have faced substantial complications, with the STEM fields being the most affected. Out of all other fields of education, STEM fields require the most in-depth research and dedication. But the health hazard and the anonymity created by the COVID-19 pandemic made it almost impossible for the scientists or researchers who had previously been researching a traditional setting, to complete their projects. While many educational institutions and research centers made immediate accommodation for their researchers, and the US government has allowed temporary flexibility in grant conditions, many of the STEM research institutions or workplaces were not able to make this transition into immediate effect. For which, the progression of much STEM research had been halted.

A study conducted on the US- and Europe-based scientists across a wide range of institutions, career stages and demographic backgrounds to find out the impact on the STEM field showed that the average working hour dropping from 61 hours per week pre-pandemic to 54 h at the time of the survey [33]. The decline in the work hours due to the lack of necessary pieces of equipment to perform research and unavailability of space in a virtual setting is responsible for hindering the workflow and progression in the STEM field. Scientists in the STEM field are responsible for many different types of work, such as research (for example, planning experiments, collecting or analyzing data, writing), fundraising (for example, writing grant proposals) and teaching, as well as other tasks (for example, administrative, editorial or clinical duties). Studies show the total working hours decreased by 11% on average, time devoted to research declined by 24% [34]. The decrease in the devoted time for work might not have been the case for all scientists, but it's evident for the majority of the people in the STEM field.

The COVID-19 pandemic impacted the scientists working in different disciplines of the STEM field unevenly. Scientists working in fields that tend to rely on physical laboratories and time-sensitive experiment bench sciences such as biochemistry, biological sciences, chemistry and chemical engineering had reported the largest declines in research time, in the range of 30-40% below pre-pandemic levels. Conversely, fields those are less equipment-intensive such as mathematics, statistics, computer science and economics had reported the lowest declines in research time [33]. The pandemic not only created complications for the researchers, instructors already working in the STEM field, but also for the new grad or undergrad STEM students. Due to the pandemic, the college students studying stem found their internships cancelled and their academic pursuits severely disrupted. The graduates, who were seeking or had secured internships and summer jobs in STEM fields, had their programs cancelled. This sort of sudden disruption led to the development of many psychological problems among the people working in the STEM field. Studies show that the prevalence of major

depressive disorder and generalized anxiety disorder is higher among undergraduate and graduate STEM students who did not adapt well to remote instruction [34].

The effect of the COVID-19 pandemic varied depending on the gender of the STEM field professionals. Studies show that female scientists and female scientists with young dependents reported that their ability to devote time to their research has been substantially affected; the female scientists with young dependents had been affected the most as nurturing their dependents took up a large amount of their time [35]. The female scientists reported a 5% larger decline in research time and the female scientists with at least one child 5-years-old or younger experienced a 17% larger decline in research time [33]. Therefore, it can be concluded that the STEM field had been severely impacted by the COVID-19 pandemic, with the additional complications depending on the type of field, education level, gender, research stage the students, instructors and researchers were engaged in.

The Similitudes and the Differences between the Quarantine from the Plague (Great Plague of London, 1665) Versus the Coronavirus (COVID-19, 2020)

The COVID-19 pandemic of 2020, which is also sometimes regarded as "The Modern Plague" is comparable with the Great Plague of London, 1665, in many aspects. Both of these diseases were caused by viruses that had originated from East Asia and resulted in a global pandemic [36]. Even though London was experiencing frequent outbreaks of the Plague, there was no previous knowledge about the COVID-19 virus before the outbreak. Regardless of the prior knowledge, both diseases have had high mortality rates, no cure or treatment hadn't been considered primarily supportive and emphasis was placed on prevention and reducing transmission [37]. Both the Plague and the COVID-19 pandemic caused huge destruction to the economy of the country where the disease had been spreading. History shows that both pandemics caused a massive strain on the health care workers' lives as they often got infected while treating their patients and lacked knowledge regarding the treatment of the disease [38].

Both pandemics required quarantine and social distancing to reduce the spread. The quarantine from the plague is quite similar to the quarantine during the COVID-19 pandemic in the sense that those of a lower socio-economic group were more likely to live in crowded conditions, suffer from ill health and malnutrition and were unable to leave London or work in isolation, which is also evident in 2020 whereas low-income families don't have the opportunity to quarantine or even leave their job [38]. The forceful application of quarantine during the great plague of London also led to a public perception of it being a punishment for which people often tried to escape the quarantine, which is also evident in 2020 with the COVID-19 pandemic where many people refuse to quarantine, social distance or even wear masks [39]. But there are many aspects in which quarantining during the 17th century during the great plague of London might differ from the quarantine experience during the COVID-19 pandemic in 2020. During the great plague of London, there were strict policies against individuals who would not follow the quarantine law, whereas there isn't any law or charges for that for the COVID-19 pandemic. Also during the 17th century, the technology hadn't been advanced enough for individuals to work, study or research virtually but in the 21st century the technology has become so advanced that one can now earn a living virtually or even order food/groceries without leaving their house. Again in the 17th century, it would take days to receive news about the severity of the pandemic or even learn about vital steps to follow to halt the spread, while with the advance technology, people are getting every single update about the disease within seconds. Therefore, even though quarantining during the 17th century and in the 21st century might have been similar depending on the socio-economic status, it's much different due to the development of advanced technology.

Conclusion: How the World Will Look Like after the Quarantine Period of the Coronavirus (COVID-19, 2020) is Over?

Since [6] the World Health Organization declared the COVID-19 as a global pandemic, till today there have been over 81.5 million cases of COVID-19 all over the world. This pandemic has affected all spheres of life, including, economics, medicine, science, technology and politics. Due to the COVID-19 pandemic unemployment rate reached its peak throughout the world, especially in the United States [40]. People of different occupations suffered from great devastation and depression due to the untimely death of their loved ones, losing jobs, quarantining in a small place or even due to the uncertainty created because of the pandemic [41]. The initial step to suppress the virus was to quarantine and social distancing [42], but recently the United States has discovered the vaccine for SARS-CoV-2 which was found to be 95% effective, 28 days after the first dose [43]. The pandemic caused by the novel SARS-CoV-2 will have a long-time effect around the world. Even after the pandemic resumes, there will always be concern regarding social distancing in countries where the pandemic caused the most havoc. The pandemic's course in the next year will depend greatly on the effectiveness of the vaccine, and on how long the immune system stays protected after vaccination or recovery from infection. Due to devastation done by the pandemic on the Medical field, there would be more emphasis put on the safety of the health care workers and the proper supply of relevant medical equipment. There is one thing that every country, city and community touched by the pandemic has in common which is the fact that there is still a lot of information that hasn't been unraveled about the virus yet which will continue to cause uncertainty among the mass population just like the Great Plague did in London in the 17th century [32].

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Competing Interests

The authors confirm that this article content has no

conflict of interest.

Ethical Approval

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