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EMERGING PUBLIC HEALTH PARADIGMS IN RELATION TO COVID-19: A REVIEW

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Abstract: This paper provided a clear cut definition of pandemic as a disease that are widespread, spanning through borders of the world, affecting large populations. The new coronavirus is a pandemic that emerged in Wuhan, China as case of unidentified etiology. Global pandemics in the time past saw the emergence of debilitating diseases such as Bubonic Plague, Small Pox, Spanish flu, Hong Kong flu, H7N9, SARS, Zika virus, Ebola virus, H1N1 influenza virus and most recently COVID-19. The incidence, the spread, conspiracy theories and management/eradication of COVID-19 influenced the global politics on COVID-19. The paradigmatic approach to the novel coronavirus underscore the inadequacies, challenges and indifferences of government to health care sector pre- COVID-19 era. Strict adherence to guidelines by WHO and CDC is a major public health intervention to tackle COVID-19. Some of the public health approach to diminish COVID-19 are effective response measures, upscale testing, improved quarantine system and public enlightenment. Effort should made by agencies in the front line of vaccine production to speed up development of safe and effective vaccines and work with Government to ensure fair and equitable allocation of these vaccines to the populace. Plant based therapy for the treatment and management of COVID-19 should be investigated and promoted. If we must win the war against COVID-19, all countries under the United Nations should bridge the gap in knowledge sharing with regards to research into vaccine and drugs to combat the deadly coronavirus.

Keywords: COVID-19, Public health, Wuhan, WHO, Vaccine

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1. Introduction

The word pandemic is a term used to describe disease condition or epidemic with wide geographic area affecting large populations of the word (Last, 2001). Pandemic is also defined as an epidemic which may be widespread, spanning through borders of the world, affecting large population of people at a time (Doshi, 2011). Pandemic can occur at any giving time depending on the immunity of the population, the disease causing agent and the transmissibility of the disease using human as vector for transmission. Epidemic on the other hand is the sudden surge in disease cases above normal in a given population (CDC, 2003). Epidemic occur when there is increased virulence agent, introduction of disease in an area not previously documented, enhanced mode of transmission giving rise to vulnerable individuals, change in host susceptibility in relation to individual response to disease agent and introduction of new entry portals by surge in host exposure (Kelsey et al., 1986). Pandemic account for disease spread across boundaries of countries/nations whereas epidemic is the incidence of outbreak of a disease in a community within a geographic sphere.

In the time past, several diseases have been categorized as pandemic based on the definitions outlined above. The diseases reported by World Health Organization (WHO) as pandemic include Hong Kong flu, Spanish flu, H7N9, SARS, Zika virus, Ebola (Rewar et al., 2015) , H1N1 influenza virus (Morens et al., 2009a) and most recently COVID-19 (WHO, 2019) . The concept of pandemic have been opined on seven major characteristics (Qiu et al., 2017) which are; wide geographic cover (Taubenberger and Morens, 2009; Barrelet et al., 2013), movement of the disease (Morens et al., 2009b), novelty (Morens et al., 2009c), severity (WHO, 2013; Su, 2015), degree of attack/explosiveness (Donaldson et al., 2009), low population immunity (Taubenberger and Morens, 2009;

Wildoner, 2016) and infectiousness/contagiousness (Morens et al., 2009a; Morens et al., 2009c).

COVID-19 is a code name for a novel corona virus disease that causes pneumonia and acute respiratory disorder. The disease became popular in Wuhan, Hubei Province, China on 12th December, as case of unidentified etiology (Pan et al., 2019). Corona virus was reported to have originated from Huanan South China seafood market, Wuhan, were the disease was confirmed novel Corona Virus Disease, 2019 (COVID-19) (Al Hasan et al., 2020). The outbreak of COVID-19 was first reported by World Health Organization (WHO, 2020). By late 2019 when majority of Chinese return home for vacation/holiday for the festivity of Chinese new year; COVID-19 was ravaging the city of Wuhan and other nearby provinces in China. Little or no attention was given to this outbreak as it was mistaken to be mare epidemic associated with few populations of China. Earlier data reported that the disease was susceptible to all age groups; but recent findings showed that COVID-19 affects elderly particularly those with underlining diseases (Guan et al., 2020) such as high blood pressure, diabetes and other terminal ailments (Chen et al., 2020). WHO declared COVID-19 a Public Health Emergency of International Concern (PHEIC) (WHO, 2005) because of the suspicion that the disease may spread to countries of debilitated health care facilities. Several approaches were approved by Chinese government to contain the rapid spread of the deadly corona virus to other neighboring Chinese cities. The strategies adopted was total shutdown of none essential companies in Hubei Province of China, intervention strategy by implementing quarantine to prevent City to City spread (Pan et al., 2019). Despite all of these efforts, daily confirmed cases of COVID-19 increased. By early 2020, corona virus cases spread to about 180 countries of the world recording exponential rise in confirmed cases and appreciable number of deaths. Countries badly hit by the spread of COVID-19 include China, Italy, Malaysia, Germany, South Korea, France, Spain, India, Singapore, Thailand, United Kingdom, Philippines and the United State etc. Giving the number of cases all over the world, Europe has become the epicenter of COVID-19 spread. The outbreak of corona virus has impacted negatively on the social, political, religious and economic structures of the world. Stock market plummeted and dwindling oil price led to recession for developed and developing nations of the world. The template approach to reduce the spread of the virus as adopted in China resulted in strict restriction to non-essential businesses, partial or total lockdown, closure of borders and entry points to major cities and prohibition of travels to COVID-19 prone countries led to the collapse of economy of most countries. Covid-19 outbreak altered the global economic projection growth specified by the International Monitoring Fund (IMF) (Ozili and Arun, 2020). The flow of goods and services through global supply chain from one country to another was affected by the stay-at-home order/policies of countries hitherto led to global recession in the world (Financial Times, 2020). The incidence of COVID-19 affected health sectors of many countries particularly the developing countries. The inadequacy and limited facilities such as personal protective equipment (PPE), ventilators, hospital beds and testing kits were limited even for supper countries like the US, UK, Italy, Spain and some European countries. Many medical practitioners lost their life to corona virus pandemic owing to shortage of facilities to manage the outbreak of the virus.

Global effort in eradicating the deadly corona virus were made through WHO and Center for Disease and Control (CDC) of countries by proving funding for developing countries, supplying testing kits, encouraging rapid testing, prevent COVID-19 through social distancing policy, contact tracing and management of infected person using supportive therapy. Several options available to treat COVID-19 disease include development of vaccines, drugs, monoclonal antibodies, oligonucleotide-based therapies require months to years to develop (Holshue et al., 2020; Wang et al., 2020; Lu, 2020; Zhang et al., 2020).

2. History of Global Pandemics

There has been a number of recorded pandemics through history, notable amongst them are the Antoine Plague of 165 – 180 (BC), Japanese Small Pox epidemic, Justinian Plague (735 – 737), the Black Death (1347 – 1351), Small Pox outbreak (1520), Great London Plague of (1655) Cholera pandemics (1817), Yellow fever in the late 1800s (Whiting, 2020).

2.1. Bubonic Plague (Black Death)

According to Wikipedia the Black Death also called the pestilence or plague was the most devastating pandemic in human existence with over 75 – 200 million fatalities at that time (Prentice et al., 2007). It spread from North Africa through Europe between 1347 and 1351. The Black Death was linked to the bacterium *Yersinia pestis*, which caused the bubonic plague (Prentice et al., 2007). The Black Death was assumed to have originated in Asia and was carried by rodents and fleas on merchant ships, also person to person contact led to very fast inland spread at the time. It killed large number of people in Europe, and Asia. The Black Death plague actually brought about temporary cessation of wars, increased standard of living as a result of shortfall in population of workers due to death from the plague.

The Justinian plague was a recurring event for about two centuries killing estimated 25-100 million people between the 6th, 7th and 8th century. It ravaged the earth between 547AD and 750AD. The reign of Justinian, the then emperor of Byzantine Empire was hampered resulting in weakening of the Justinian rule and greatly reduced trades leading to significant loss of territories by the Byzantine Empire. The Justinian plague marked the beginning of the end of Roman Empire. The plague lead to high cost of food as the ravaging effect of the plague at the country side did not allow for farming. So in essence

the plagues led to serious economic crisis at that time.

2.2. Small Pox

Small pox is believed to be dated back to the 3rd century as evidences of Egyptian mummies suggests. Small pox ravaged the earth between the 6th and 18th century spreading with expanding international trades and civilizations (CDC, 2003). The disease which is caused by Variola virus killed about 30% of those it infected. The 18th century outbreak of small pox lead to the development of "variolation" a process whereby materials from small pox sores (Pustules) were scratched into the arm or inhaled causing individuals to acquire resistance to the disease, if they had gotten the disease naturally (CDC, 2003). This phenomenon gave rise to the basis for development of vaccination. This scientific feat was credited to Dr. Edward Jenner and subsequently a vaccine against small pox was developed which helped to reducing the impact of the disease. The Europeans exploited the gains of having acquired immunity against small pox to their advantage in conquering the Americas. They colonized the areas vacated by the Native Americans as a result of the disease and subsequently altered the history and culture of that area.

2.3. Spanish Flu

Spanish flu of 1918 – 1920 caused by H1N1 influenza virus was regarded as a notable pandemic of 20th Century (Viboudet al., 2012). It affected more than 500 million persons worldwide, killing about 50 – 100 million people. This cut across all the regions of the world killing healthy individuals as opposed to disease trends which usually see diseases killing the "immune- vulnerable" in society. The Spanish flu virus was thought to originate from birds and pigs.

The Spanish flu is regarded as the deadliest pandemic in the 20th century. It ran its course from 1918 to 1920. The exact origin of the influenza virus H1N1 that caused the Spanish flu was unknown and still remains so but the flu was initially detected in some European countries, America and some parts of Asia before it was reported in other parts of the world. The Spanish flu was highly contagious with the victims dying within hours of developing symptoms (Viboudet al., 2012). The symptoms of the disease include the lungs filling with fluid thereby causing suffocation. Other symptoms include the skin turning blue. It is often re-counted that more soldiers were killed by the flu than were slain in the war front during World War 1. The spread of the infection around the world suggest that the disease was carried around by international travels and contact with carrier's most likely international travelers who were mostly soldiers moving around at the time of the war.

During the Spanish flu era, little was known about viruses and antibiotics have not been developed, this resulted to the use of non-pharmaceutical interventions which in present day are replicated as regular hand washing, social distancing, coughing into tissue papers and disposing them properly, coughing into elbows and staying home when sick. The high mortality rate of the Spanish flu and its undefined global spreads is likely attributed to the war at the time, lack of antiviral drugs and little was known about viruses, in fact viruses were discovered some ten year later (Whiting, 2020). There were no effective health systems compared to what we have now. The major approach to containment of the disease was "crowding control" what is known today as social distancing and it worked effectively in limiting the spread of the disease (Madhav et al., 2017).

Other reported pandemics in the 20th and 21st century include; Asian flu influenza pandemic of 1957 which caused 700000 – 1500000 deaths and infected over 10000000 persons (Viboudet al., 2012). Hong Kong flu in 1968 which resulted to over 1,000,000 deaths. HIV/AIDS from 1981 till date with estimated 70 million infections and 36.7 million fatalities worldwide (WHO, 2020). Severe Acute Respiratory Syndrome (SARS) in 2003 with 8,098 cases 744 deaths, affecting 4 continents and 36 countries. Swine flu influenza in 2009 caused 15575000 deaths (Dawood et al., 2012). Middle East Respiratory Syndrome (MERS) Epidemic affecting 22 countries with over 1879 cases and 659 deaths (Arabi et al., 2017). Ebola Virus Disease (EVD) in 2013 affecting 10 countries with 28,646 cases, and 11,323 deaths (WHO, 2006).

3. Development of Public Health Approaches in Solving Problem of Pandemics

COVID-19 pandemic is a foremost challenge bedeviling human race at this time. Virtually all nations of the world had their fair share of this pandemic. It is rather unfortunate to say that our health systems were unprepared for a public health challenge of this magnitude. Presently, the challenge of coronavirus (COVID-19) calls for redirection of public health goals to reflect response of this challenge.

Charles Edward Winslow, defined "Public Health as the Science and the art of averting disease, extending life and supporting physical health by way of systematized public efforts for the hygiene of the environment, control of community infections, education of individuals in ethics of personal hygiene and the organization of medical and nursing services for the early identification and preventive handling of disease, assuring conditions under which people can be healthy" (Charles-Edwards, 2013; Ashcroft, 2014). Planned communal efforts targeted at the prevention of diseases and advancement of health objectives and attitudes aimed at advancement of societal wellbeing is termed public health.

As regard COVID-19, public health measures are influenced by the public perception, political pressure and scientific evidence as it is known that COVID-19 is a highly contagious infection. Pandemics are both ongoing and recurring health crisis. At one time or the other humans are faced with an outbreak of disease either at local, regional or global level i.e. endemic, epidemic and

pandemic scale of disease outbreak. To this end there has always been need for proactive and preventive measures to tackle disease outbreak which unfortunately are inevitable. The plagues of the early centuries were reoccurring because there were no global measures and institutions at that time to collectively tackle public health issues, the most notable strategies put in place were non-pharmaceutical measures especially the ideas of quarantining ships for 40 days.

In the course of history in response to the Small Pox outbreak, variolation which later evolved into vaccination was developed in the 18th century (CDC, 2003). The first international health cooperation began in 1851 when government representatives gathered in Paris for the International Sanitation Conference to address the spread of cholera. This has since lead to collaborative international partnerships with a view to strengthening healthcare systems, access to healthcare and surveillance of infectious diseases. The International Sanitation Conference after series of conferences both successful and effective gave rise to the Pan-American Sanitary Bureau in 1902 and office of International *d'Hygiene Publique* in (1907). The World Health Organization is an agency of the United Nations with the mandate to ensure the "realization by all people the highest levels of health" it was charged with the maintenance of international public health (WHO, 2011). Since inception, the WHO has played a substantial part in the suppression and containment of disease outbreaks through international collaborations between member states and increased surveillance. It is worthy of note to state that W.H.O has worked assiduously to eradicate numerous diseases including Small Pox, Yellow fever and Bubonic plague, Poliomyelitis and Cholera

4. Economic, Ecological and Health Effects of Pandemics

Pandemics have been recurrent through human history and have always left a work of devastation following their emergence. In addition to their fatal consequences, they leave a trail of negative socio-economic and political consequences (Davies et al., 2013; Qiu et al., 2017). The health effects of pandemics are always overwhelming. There is always wide spread of illness resulting to high rate of fatalities running through thousands and even millions as reported during the Black Death and Spanish flu pandemics.

Disease disasters including pandemics account for more than 25% of global mortalities (Verikios et al., 2015). The disease outbreaks of the 21st century both the epidemics, near pandemics and pandemic scale diseases have threatened public health infrastructures, overwhelmed health care systems and caused fatalities up to 40% of infected persons. In some cases, pandemics equally affect a number of health care personnel in the course of their duty thereby making some of them loose their lives in the line of duty. The economic effects of pandemics cannot be over emphasized, however pandemics affect the population as well as the economy. During previous pandemics, there have been reported serious economic losses in virtually all affected countries of the world. The economic costs of dealing with a disease are both direct and indirect. Direct cost of containing disease outbreak can be very high (Goslin and Friedman, 2015). It is reported that the Ebola virus disease of 2015 cost $6 billion in direct expenditures (Hospital, personnel, treatment). The countries which reported the outbreak had economic losses that ran into billions of dollars. An average infectious disease outbreak costs about 60 billion US Dollars in immediate expenditures (Maurice, 2016). All through history, reported pandemics have always led to reduction in trade and travels. In a bid to enforce non pharmaceutical interventions (Social distancing), businesses, schools and all other public activities are usually shutdown to reduce the spread of the diseases and this resulted to serious decline in GDP and in most cases total collapse of the economy. The Justinian Plague led to the collapse of the Byzantine Empire, subsequent loss of man power and scarcity of food. Almost all pandemics have nearly the same economic effect as the huge fatalities usually results to loss of man power and decline in economic activities thereby negatively affecting the gross domestic product (GDP) of the affected countries. Pandemics have a vast array of negative impacts which can seriously threaten the health of the population, economic stability and pose security threat. Whenever pandemic arises, global security is threatened as a result of loss of livelihood and economic stability (Qiu et al., 2017).

5. COVID-19 Pandemic

Precisely on the 12th of January, 2020, the world woke up to the news of a new strain of coronavirus announced by W.H.O. At about late November and early December, 2019, isolated cases of an unusual pneumonia were reported in Wuhan, China. Further investigation showed that this disease was initiated by a newly recognized β-coronavirus. W.H.O. named the 2019 new "coronavirus" COVID-19, on 12th January, 2020 the disease was officially named (Guo et al., 2020). According to Zhu et al. (2020) COVID-19 virus SARS-COV-2 is a β-coronavirus, encased, non-segmented positive sense RNA virus (Subgenus *Sarbecovirus* Ortho Coronavirinae Subfamily). One distinctive feature of the β-COVID-19 is the capability to infect mammals.

COVID-19 belongs to the SARS infection. It spread through direct contact, respiratory droplets and respiratory secretions. Epidemiological evidence suggested that the incubation period of the disease is 1-14 days with the 3-7 days being most infectious. It is also reported that the virus is contagious during the latency period (Pan et al., 2019). It has showed high transmissibility from human to human. The general symptoms of the disease include fever, cough, headache, fatigue, sputum production, shortness of breath, sore

throat, in rare cases loss of taste and smell, gastrointestinal infections with diarrhea and vomiting. More severe symptoms can present as acute respiratory distress syndrome, coagulation dysfunction, septic shock, metabolic acidosis and organ failure (Guan et al., 2020; Guo et al., 2020). By May 22nd 2020, 5,111,000 confirmed cases of COVID 19 with one million nine hundred and fifty thousand recoveries (1950000) and three hundred and thirty-eight thousand (338000) deaths were recorded (WHO, 2020).

A lot of pandemics recorded through history had devastating effects on the world both on health and on socio-economic front but the major reason why COVID-19 differs from most other pandemics is that at this time and age there are a lot of improvement in medicine and technology, increased surveillance in terms of disease monitoring, improved diagnostic capabilities, treatment and information sharing. Also COVID-19 is more easily transmitted than some other pandemics like HIV in a matter of weeks SARS-COV-2 has spread to all continents around the world. Although COVID-19 and Influenza virus have similar disease presentations in that they both cause respiratory illness, severe cases cause death and are both transmitted through contact and droplets.

Influenza virus responsible for the Spanish Flu and other influenza virus that reached pandemic level have been reported to have shorter incubation periods than COVID-19. Also influenza virus has been reported to have shorter serial intervals than COVID-19 (WHO, 2020). Another factor that differentiates the COVID-19 from other pandemics notably is the flu pandemics which has higher probability of pre-symptomatic infection (WHO, 2020). Studies have showed that for influenza, pre-symptomatic transmission can take place between 3 – 5 days of the illness while COVID-19 carriers can shed the virus within 24 – 48 hours to onset of symptoms. COVID-19 is believed to be more contagious than other flu pandemics and has a reproduction number of 2.0 – 2.5 in contrast to 1.4 to 1.6 in the case of influenza. Infectious period, transmissibility clinical severity and extent of community spread are the difference that separate COVID-19 from SARS infection (Anjorin, 2020).

5.1. The Politics of COVID-19

The advent of COVID-19 has reshaped global politics by creating big golf between industrialized nation's leading to accusations and counter accusation between China and the United State on the cause and origin of corona virus. In the beginning the former President of the United State, Mr. D. J. Trump made public statement suggesting he has seen evidence of corona virus originated from a laboratory in Wuhan Institute of Virology, China. At this point, attention was focused on pointing accusing fingers on China rather than concentrating energy to curtail the spread of COVID-19 in the United State of America. This lead to upsurge of cases of infected person in the US.

The COVID-19 pandemic has impacted greatly on world politics. Handling of the pandemic by W.H.O has been greatly criticized by the former president of the United State (Donald Trump Administration) who insists that the Chinese government tried to down play the seriousness of the disease when it started in a bid to shield their economy. Campbell and Doshi (2020) posited that the coronavirus pandemic has exposed the weakness of the big global powers and the failure of America to take the lead role in fighting the pandemic. Donald Trump asserted that this has created a vacuum and China despite being accused of concealing relevant information and being economically hit has tried to fill the leadership vacuum by sending medical supplies, diagnostic and protective equipment to countries in need of supplies. China has sent medical personnel to help out in combating the disease in countries such as Italy and Nigeria.

According to Dauba-Pantanacce (2020) the much anticipated pandemic has exposed the decadence of public health care systems, and shown the fragile divides in global politics. Global politics on COVID-19 contributed to the infractions between world leaders and contributed to the fragmentation along geo-political divides and even the weakening of global institutions saddled with the responsibility of coordinating response to this pandemic. This sharp friction in global politics has even led to the U.S.A. stoppage of funding for the W.H.O. and most recently pulling out of the W.H.O. Analysts have picked a loophole in the response of the west to the initial outbreak of the coronavirus because it was assumed, the disease was restricted to Asia at the onset but with globalization and increased international travels it wasn't unlikely that such an outbreak will spread rapidly around the globe. It is therefore assumed that if proper lockdown measures were put in place before it was done in so many countries there would have been a drastic reduction in the rate of spread of the disease. The E.U. had some crisis on border closures and movement restrictions as they had to deal with issues bothering on national response and co-ordination unilaterally. Prior to the pandemic the BREXIT was what the EU/UK was dealing with and the BREXIT negotiations remain stalled as a result of the pandemic.

In African the pandemic led to major shut down of economies, prior to this time there has been calls for the urgent necessity to upgrade the healthcare structure to be able to absorb surges in case of outbreaks but little attention has been paid to the health sector. The COVID-19 pandemic saw the construction of making shift isolation centers. In Nigeria for instance, makeshift isolation centers were built at the National and State levels to be able to cater for the surge in the number of cases.

5.2. Incidence of COVID-19

COVID-19 became a global emergence when it was first reported in China as pneumonia with unidentified etiology (Huang et al., 2020; Lu, 2020). The incidence of the virus was traced to Wuhan Meat Market in China, where animals such as bats, frogs, birds, snakes, rabbits and several sea foods are sold (Wang et al., 2020). On 1st

January 2020, Chinese government closed the Wuhan Meat Market as suggested by findings from researchers that the virus emanated from the market leading to surveillance and epidemiological investigation on the etiology. Out of the first 41 confirmed `cases of new corona virus (nCoV) reported in Wuhan, China, one death occurred in a patients with serious underlying medical condition (WHO, 2020). Scientist traced the origin of corona virus SARSCoV2 to bat and hopped that pangolin could be another possible source of the virus (Ali et al., 2020). It was reported in 2020 that corona virus disease spread between person-to-person without any form of animal intermediate (Bryner, 2020). Bats and birds are potential carriers of diseases with pandemic potentials (Figure 1). The feces of bat dropped on fruit eaten by civet can become a carrier of the novel corona virus (Ali et al., 2020). Since the virus is not reported to be circulated in human population, therefore the immunity of the deadly corona virus is absent in humans (Woodward, 2020). On 12 January 2020, China announced the genetic sequence of the new corona virus which gave rise to the development of RT-PCR-based testing kits all over the world (WHO, 2020).

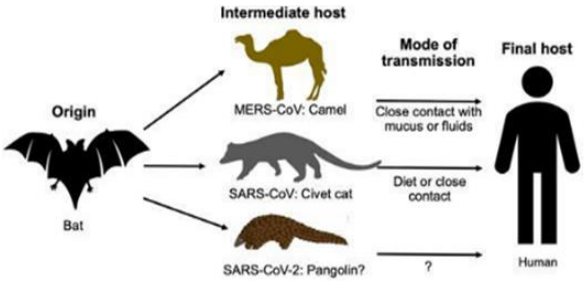

Figure 1. Transmission pattern of nCoV from animals to humans (Ali et al., 2020).

5.3. Spread of COVID-19

Earlier cases of the virus were believed to have emanated from zoonotic sources; persons who visited the Wuhan wholesale sea food market. The outbreak was concentrated to human-to-human transmission which gradually snowballed into community transmission in Hubei Province before the implementation of control measures adopted by WHO and Chinese government. The reported cases of the virus and the death recorded in China from 1st January to 20th February, 2020 have been presented (Figure 2). The report revealed high % CFR for cases and death in Wuhan compared to China as a country. This made Wuhan epicenter for the spread of new corona virus in the period overview. Shortly after the emergence of the novel corona virus in China, the virus started spreading from country to country. The speed of spread of the virus was enabled by global trade routes from the City of Wuhan, China to other parts of the globe.

The statistics of travelers from Wuhan, Hubei Province (Figure 3) from January 1st to January 29th showed clearly that the non-Hubei case of the novel corona virus emanated from the City of Wuhan and spread through other routes to different countries of the world.

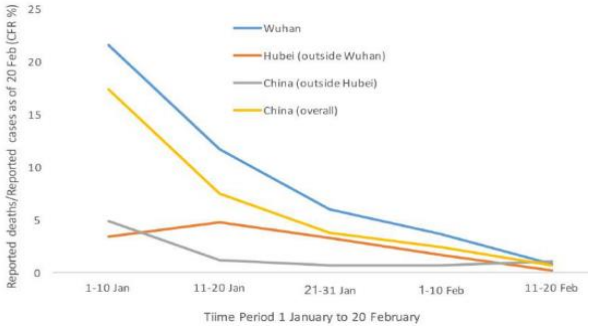

Figure 2. The level of fatality of COVID-19 in China by location, as at 20 February, 2020 (WHO, 2020).

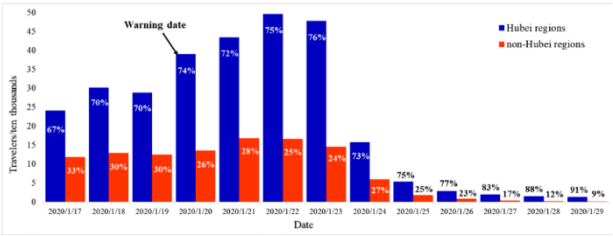

Figure 3. Proportion of travelers who visited the Hubei province (Wuhan) and non-Hubei province when the novel coronavirus was declared a pandemic (Zheming et al., 2020).

The timeline on how the new corona virus spread from Wuhan, China to other part of the world as reported by Aljazeera News (2020) stated thus; December 31st 2019 to January 5th 2020, China alerted the WHO of a possible pneumonia with unknown etiological cause, even though SARS virus which killed about 770 people between 2002 and 2003 was ruled out. January 6 – 12th 2020 the virus was identified and named 2019-nCov belonging to the coronavirus family; thereafter a 61 years old man in Wuhan, China who purchased meat from Wuhan seafood market died of heart failure on January 9th, 2020. January 13th to 19th, WHO reported the first case of the novel coronavirus outside China in Thailand. The second death arising from COVID-19 occurred 17th January, 2020 in Wuhan. This made the health authorities in the US to announce that the three major international airports in the US will embark on passengers screening particularly arrivals from China. By January 18th, 2020 confirmed cases of new coronavirus were reported in United State, France, Nepal, Singapore, Malaysia, South Korea, Vietnam and Taiwan. January 20 – 26th, 2020 Chinese government confirmed cases of human-to-human transmission via CCTV state broadcast leading to quarantine of City of Wuhan, Chibi and Xiantao all in Hubei Province. The lockdown affected about 56 million persons who reside in this province. At this point, the WHO reported that the outbreak of the novel coronavirus do not constitute serious public treat of global concern since there are no evidence of human-to-human spread. By 30th January, 2020 WHO affirmed the new coronavirus a global emergency case as the death toll of coronavirus rose to

170 with over 7711 confirmed cases. By the same week, China recorded 304 deaths with over 14,380 infections. Countries such as United Kingdom, Canada, Australia, Japan, Germany, United State, UAE and Vietnam recorded new confirmed cases. The 1st death recorded outside China was in Philippines on 2nd February 2020. February 6th, 2020 Malaysia government reported the first known human-to-human case of COVID-19. By February 17th 2020 a Chinese Doctor Li Wenliang who first sounded an alarm on the novel coronavirus died from complications arising from the virus. February 9th, 2020 recorded 811 death toll of COVID-19 and 37198 infection surpassing the 2002-2003 SARS epidemic; this made the WHO investigation team of experts depart to China for investigation. February 13th, 2020 Japan recorded the 1st confirmed case, and Egypt was the first African country to report the first case of coronavirus on 14th February, 2020. Two deaths arising from the new coronavirus was reported in Iran on February 19th and 21st February, 2020.

Israel reported its first confirmed case from a woman who return from cruise ship expedition. By the end of February, the coronavirus pandemic spread to several countries such as Bahrain, Kuwait, Qatar, Oman, Afghanistan, North Macedonia, Brazil, Netherlands, Norway, Romania, Greece, Georgia, Pakistan, Lithuania, Denmark, Ireland and Wales. By February 28th, 2020 the world has recorded 82000 confirmed cases and the US death toll hitting record 2800. The spread continued unabated to several other countries with primary and secondary trade route with China.

5.4. Management and Eradication of COVID-19

Today, there are now several vaccines that are in use against COVID-19 while several other vaccines are undergoing clinical trials in several research centres/institutes put together by countries who are badly hit by the COVID-19 pandemic. However, the WHO must ensure safety and quality of vaccines distributed all over the world. Suggestions have been made for the use of herbal remedies for the treatments and managements of COVID-19. The WHO welcomes innovations around the world including repurposing drugs, traditional medicine from plants and development of new therapies in search of potential treatment for COVID-19. Management of COVID-19 should follow the WHO coronavirus disease technical guidelines put together by renown experts (WHO, 2020). Some of the technical guidance for the management/eradication of COVID-19 include early investigation, set-up of investing laboratories, constitute surveillance and rapid respond team, risk communication and community engagement to prevent person-to-persons spread, prevention of infection by obeying guidelines such as social/physical distancing, proper hygiene practices, putting on nose mask in public places, washing of hands for up to 20 seconds or used of hand sanitizers (> 70% IPA), provision of PPE for medical personnel's.

The advent of the novel coronavirus saw the world battling misinformation with regards to where, how and the purpose COVID-19 was set to achieve. Several conspiracy theories flooded the news and print media and social medial space owing to the blame game between the US and China. One of the conspiracy theory averred that the novel coronavirus (COVID-19) escaped from a laboratory in Wuhan Institute of Virology. This story may look plausible but it got worse when MR. Donald Trump (USA president January 2017 to January 2021), made a public claim to this theory and it was published in Washington Post, the UK Times and other international outlets. This theory was refuted when Shi Zhengli (Cohen, 2020) reported that SARS-CoV-2 coronavirus genetic sequence did not match any of the virus sequence undergoing investigation at the Wuhan Institute of Virology (Lynas, 2020). Another theory surrounding the COVID-19 was that the virus was a biological weapon or economic weapon targeted at the US. Chinese government defended herself by claiming the US military brought the virus to China as means of blackmail on Chinese nation, this was a public statement given by Chinese Foreign Ministry spoke person, Zhao Lijian. The 5G network is another theory on COVID-19 that looked elusive but rather difficult to believe. As enticing as the theory seemed, it was debunked by the WHO that virus/viral particles cannot travel via mobile network system, as evidence in the spread of COVID-19 in countries that had no 5G installation (Schraer and Lawrie, 2020). Another theory surrounding COVID-19 was that the virus does not exist, rather a plot by globalist to take the freedom of human race. This lead to anti-luck down protest in the US which help to rapidly spread the virus in major Cities in the US.

The China-US feud on COVID-19 became worse when China pledge the sum of $2 billion to combat the deadly coronavirus. This led to criticism by the US government that it was a strategy to head off the scrutiny of China's handling of the pandemic. New York Times reported that the meeting scheduled by WHO to chart a way forward for the coronavirus pandemic ended up escalating tension between China and the US (The New York Times, 2020). Mr. Donald Trump, the then US President accused the WHO of complicit and dependence on China in his letter written to WHO Director General, Dr. Tedros Adhanom Ghebreyesus. This lead to Mr. Trump stripping the WHO of funds and assistance. The feud has continued unabated till today. The feud has caused more harm than good in that, the energy exacerbated in the feud should have been channeled to fighting and combatting the common enemy called COVID-19. No doubt, the feud significantly influenced the conspiracy theory surrounding COVID-19 and the spread of the novel coronavirus.

5.5. Public Health Paradigms

The outbreak of COVID-19 has changed the perception of individuals all over the world to the threat of pandemics. The rapid spread of the COVID-19 and the subsequent economic and social effects have no doubt been felt all

through the globe. The other pandemics that occurred in the 21st century were contained in early stages and phased out perfectly much before they could reach the scale to which the present COVID-19 has spread across the world.

Prior to this time issues regarding pandemic preparedness were sometimes not taken seriously by individuals and even public health experts and environmentalist especially in developing countries. A vast majority of the population would never have imagined a situation where lockdown, total movement restriction can get to this scale as we have it today with the incidence of COVID-19 pandemics. In recent times people are constrained to wear face masks in public places and maintain hygiene at all times. The COVID-19 pandemic has heightened awareness on outbreak of infectious diseases at global level, thus reawakening citizens the need for caution in dealing with issues regarding their health and safety. At this point what matters is staying alive hence the slogan "STAY SAFE".

5.6. The Role of W.H.O. in the COVID-19 Pandemic

The W.H.O. is the international body with the mandate to ensure health at the highest levels in every individual. During any pandemic, they are required to coordinate the response of various CDCs of countries in order to combat the pandemic. The International Health Regulation (IHR) mandates countries to report outbreak of new diseases to W.H.O to enable them take action on the spread of the disease.

The approach of W.H.O to COVID-19 has come under serious criticism especially from the Trump led American Administration. The US government blames WHO for the data given by China. They assert that what was reported about COVID-19 amounts to an under reporting of the disease and the cases of the disease. The US administration believed that W.H.O was too dependent on Chinese data and delayed too long to warn the world about risks including human-human transmission. The purported late response from W.H.O. prompted the US President, Mr. Donald Trump to stop U.S. funding of the W.H.O. He blames W.H.O for failing to investigate reports that were in conflict with that of the Chinese government leading to late implementation of travel restrictions and containment measures. But the W.H.O in her defense maintains that she is providing up to date information about the COVID-19 pandemic. Again, W.H.O" s powers are limited as she only has access to what countries who are affected by the outbreak of pandemic. Some of the objectives of W.H.O. in controlling COVID -19 Pandemic include:

- Control of secondary infection (human-human transmission)
- Detecting, Quarantining and caring for persons early
- Identifying and decreasing transmission from animal sources
- Accelerate diagnostics therapeutics and vaccines development
- Communicate information on critical risk and event
- Minimizing social and economic impact of infection through multilateral partnership

5.7. Public Health Interventions to Tackle COVID-19

Some of the preventive measures adopted by various governments to tackle COVID-19 include; maintain personal hygiene and frequent washing of hands with soap and water, use of IPA-based alcohol as hand sanitizers, maintain physical and social distance, cover mouth and nose with tissue or handkerchief while sneezing and coughing or sneeze while your face is place on your elbow, desist from handshakes, wearing of face/nose mask, avoid touching eyes and nose with your hands, restrict movement by remaining indoors. Other preventive measures that portends social and economic impacts include total shot down of all none-essential businesses, companies and transactions; restriction of vehicular movement in and out of cities within a country. The model of total or complete luckdown experimented in China, US, Italy etc. may not be suitable for developing countries particularly Africa. This is so, because governments in Africa and other developing countries do not have accurate data base of persons, lack of state of the art medical facilities, little or no resources to provide support in the form of palliatives, dwindling economic indices that cannot sustain the populace for the period of the luck down. It is important to state that the model to tackle COVID-19 pandemic should be designed based on peculiar nature of the country/region. For example, most business in Nigeria are small and medium sized enterprises (SME's) that depends on daily sales for family upkeep. If these business are short out for a long time, hunger, crime and other societal vices may set in. As deadly as COVID-19 pandemic, hunger remain a treat to human existence.

This paragraph underscores the public health intervention role played by some countries in the world to tackle COVID-19. The preventive measures adopted by various governments to tackle COVID -19 have been under public scrutiny for many leaders of the advanced and emerging world. A case in view is Nigeria, United States of America and South Korea. Before the index case in Nigeria, the mass media clamored for stringent screening of all individual movement through the entry points (land, sea and air point). Some school of thought advocated for total shot down of all these routes. The lack of self will lead to the arrival of an Italian into Nigeria, who was confirmed positive for COVID-19 by early March 2020. At this time, the government was indifferent to stop the influx of newcomers into the country. The news that the Chief of Staff to the government of Nigeria, Mr. Abba Kyari had tested positive after arriving from an international trip angered most of the populace. Following these occurrences, more cases of COVID-19 were recorded and the tally of positive cases began to rise till date.

The United States of America is seen as a competent global leader and they have been adjudged supper world power. Her handling of COVID-19 was criticized by

experts in the field of public health. The criticism punctured the Donald Trump led administration in that the government was not responsive to the pandemic of coronavirus. A state like New York which was the epic center of the disease was gasping for breath in an attempt to cope with the number of COVID-19 cases. Even though the Governor of New York at that time promised to build more hospital to contained the spread of the virus, health care system in the U.S. was after all inadequate to tackle the scourge of COVID-19. The quest to open up the economy is another action that received criticism. Mr. Trump has been vehemently criticized and he does not seem to agree with developments arising from COVID-19. Critics said that if COVID-19 case is not properly controlled, more cases and deaths are envisaged. Taubenberger and Morens, (2009) had earlier documented that some outbreak was categorized as trans-regional and global. Currently, COVID-19 has made it to the seat of governance (the White House). President Trump Deputy, Mr. Mike Pence contracted the infection and this was another blow to the government in terms of their ability to curtail this infection. Inquiry by British Broadcasting Corporation (BBC) claimed that there was lack of coordination between the key agencies that should be controlling the pandemic. The case of Nigeria and US is at variance with the South Korean government. The government in Soul learnt a lot of lesson from the Ebola outbreak and was able to use what was learnt as a platform to curtail coronavirus outbreak. They act rapidly by synergizing all facet of response. The structural modification made after some crisis was a guide to quick steps in the appropriate route. Interestingly, the populace trusts the intent of the government of South Korea. The Technology industries was able to develop a phone application that is able to detect if an individual nearby has the virus. The buzzing from the phone is able to guide the owner of the phone. In addition, the efficiency of the contact tracing group was actually superb as claimed. At this moment, there are very few case of confirm COVID-19 in the country.

Covid-19 pandemic has exposed the inadequacy and deficiencies experienced in medical care centers, hospitals and health facilities in many countries. For example, in Nigeria medical tourism by political office holders and highly placed persons in the society has continued to improve the economy of developed countries hitherto deplete the economy and GDP of developing countries particular in Africa. Every nation was overwhelmed by the numbers of patient medical practical personnel's have to attend to. As the pandemic bite harder, there was shortage of bed space, ventilators, personal protective equipment (PPE), nose mask etc. Medical practitioners have been in the front burner in the fight against the pandemic of coronavirus. Many of them lost their life's in the course of duty. As the world was looking for a quick fix on COVID-19, attention was drifted to health sectors. Massive funding by government and donor agencies, training and retraining of medical workers on the tips on how to handle COVID-19 patience, building of makeshift medical facilities all over the world to accommodate patience, research funding for COVID-19 drug trials, increase in salaries and better health insurance for health workers were put in place.

One major draw-back to the public health approach to COVID-19 is the partial/total shift of attention to coronavirus pandemic, forgetting that other debilitating diseases are still very much around us. There was a spike in death owing to little or no attention to patients with other underlying courses, fear of been infected by COVID-19 by medical workers, intensive care unit was reserved for mainly corona virus patients as if COVID-19 was the only cause of respiratory disorder. Some of the public health approach to COVID-19 focused on the transmission pattern, pathogenicity, infectivity, virulence, immunogenicity, surveillance diagnosis and management of clinical case (Kolifarhood et al., 2020). These approaches to COVID-19 is similar to other pandemics in the time past but the fear, uncertainty and rumor spread via social and print media gave undue attention to the scourge of coronavirus pandemic.

5.8. Public Health Approach to Diminish COVID-19

The public health approaches to diminish COVID-19 are strategies aimed at mitigating or suppress the COVID-19 pandemic. The mitigation strategies include isolation of confirmed cases and quarantining of exposed persons help to reduce the spread of the virus. From past experience, these strategies have played a significant role in the reduction of death rates by over 50% (fifty percent) (WHO, 2020a). Travel restrictions and effective border surveillance, use of pharmaceutical interventions to treat symptoms, planning/for surge facilities/isolation/treatment centers to help relieve the burden on the existing health care system. Exchange of information with relevant stakeholders to ensure appropriate and decisive actions to mitigate the level of risk are measures taken at National and State levels. In tackling COVID -19, the response measures are improved testing, contact tracing, isolation, quarantining and sanitization. Positive cases of the virus are confined in isolation centers while treatment of symptoms as they present themselves are carried out until the patients test negative. For individual and household levels, personal hygiene, limited social contact as much as possible is highly recommended.

Regular Hand washing, use of alcohol based hand sterilizers, disinfecting surfaces, use of face marks especially in public places have become key approaches in the reduction of transmission of the virus. In recent times it has been legislated in some countries like Nigeria that the use of face marks is compulsory in public places. Other measures encouraged in the control of the spread of COVID19 include avoiding touching the face particularly eyes, nose and mouth, remaining home when sick and staying at least 2 meter away from people (physical distancing). Social distancing is limiting contact with people. Social distancing is any act taken to reduce

close interaction with other individual/persons. In this regard personal responsibility is always emphasized (ECDC, 2020).

In a bid to reduce the COVID-19 spread/curve, non-pharmaceutical interventions including use of personal protective materials (Face Masks) and hygiene Measures like respiratory hygiene and etiquette, frequent cleaning of surfaces, minimal sharing of objects, adequate ventilation and social distancing are strictly to be adhered to both on a personal and communal basis. The term "social distancing" in the context of pandemics refers to all measures aimed at reducing contact with people and within a community especially contact with infected persons. Because of the infectious rate of COVID-19 the possibility of infected individuals not showing symptoms and the unavailability of instant testing, it is imperative to limit contact between the infected, unsuspecting infected and non-infected to interrupt transmission of the virus in the population. Social distancing measures include stay at home orders, closure of educational institution, work place, worship centers cancellation and restriction of public gatherings including recreation and sporting activities (ECDC, 2020).

5.9. Effect of Upscale Testing, Isolation, Quarantining and Improvement of Health Services in Diminishing the COVID-19 Cure

Arising from the global spread of COVID-19, there has been a dramatic increase in the need for measures to put a check on the spread of the disease as no substantive cure or vaccine has been developed to eradicate the disease completely. Limited testing capacity can be a major bane in the control of the spread of COVID-19. Therefore, there is need for upscale testing to check its spread. COVID-19 is a respiratory disease and it is therefore not unlikely that other respiratory pathogens are in circulation thereby making it difficult to specifically ascertain the presence of the SARS- Cov2 virus. There has been serious upscale testing in all the countries around the world even the less prepared countries in terms of pandemic response. In line with W.H.O advice that all nations prepare for containment, active surveillance, early detection, isolation, case management, contact tracing, and data sharing with W.H.O. was paramount in the interruption of the transmission of the virus. Most countries including developed and developing countries were tasked with prevention of secondary transmission (WHO, 2019).

In a bid to flatten the curve and reduce the spread of the disease, diagnostic, therapeutic and non-pharmaceutical measures were put in place to achieve the goal. The first step most countries took was to upscale testing for COVID-19. The up scaled testing helped to detect the presence of the virus and as such carriers were isolated, quarantined and treated. The WHO strategic preparedness and response plan recommends prioritization of who gets tested. This is to avoid overwhelming the laboratories and producing inaccurate results. But it also stipulated that all suspected cased should be tested. As part of the COVID-19 preparedness, readiness and response, establishment and increase of testing capacity of countries was paramount in response to the disease outbreak.

The COVID- 19 pandemic response saw countries building new hospitals especially the developed countries while the developing countries were building makeshift isolation centers to be able to accommodate the surge. In some countries, stadiums were turned to makeshift isolation centers in a bid to accommodate the expected surge in the number of patients. These measures taken have helped to drastically reduce the transmission of the disease. If these measures were not put in place, we probably would have seen a repeat of what happened in 1918-1920 during the Spanish flu. Although the cases keep rising the responses of both countries and international institutions are commendable, it probably would have been worse.

5.10. Effectiveness of Response Measures

The non-pharmaceutical measures for COVID-19 have helped to reduce the explosion of the disease by more than 50%. The early implementation of social distancing in African countries like Nigeria helped to slow the spread of the disease. Nigeria for instance had the first case of COVID-19 on the 27th of February, 2020 and subsequently international travel ban was placed on 21st March, 2020 followed by full lockdown (Social distancing) measures which were implemented from the 1st of April, 2020 up until the end of May, 2020 with gradual re-opening of the economy. Although as at May 31st 2020, there are about 10000 confirmed cases of the disease with about 273 deaths. These cases would have been worse if the above control measures were not in place.

In Wuhan, China, there was a complete lockdown for close to 90 days to help stop the transmission of the disease. And as at May 31st the City experienced gradual re-opening of their economy after successes in the control and transmission of the disease. Between March and May 2020, many countries imposed strict social distancing measures including total lockdown to help curtail the transmission of the virus.

5.11. Public Perception as It Relates COVID-19

The social distancing measures taken by governments to interrupt transmission of the disease adversely impacted both local and global economies. All sectors of the economy have taken a hard hit as a fall out from the coronavirus.

The effect of COVID-19 on the global economy left unbearable mark on the population of the world. The COVID-19 pandemic led to job loss, serious unemployment cut down in demand and supply chains directly affecting production. Even the financial sector was not spared in this regard. Public perception saw coronavirus as an economic threat than health threat, this is because a large number of persons have recovered from the disease and in some cases some persons are asymptomatic carriers of the disease (figure 4, 5). So far

there is high level of information about the COVID-19 among residents in developed and developing countries.

In the UK, US, France and Italy, people are more concerned about economic issues arising from loss of jobs and pay cuts. In Nigeria a lot of persons believe that the disease is a biologically engineered virus from a laboratory in China (Kolifarhood et al., 2020). Findings from a survey carried out in Nigeria showed that about 75% of people sampled were aware of social distancing as a way to stop spread of the coronavirus, 25% of the sampled population did not care about social distancing (Goslin and Friedman, 2015). Also there is a lot of mistrust about the figures the government is raising as regards the virus. A lot of people believe it is just a bid to access funds from international organizations, while some see it as an avenue for state governments to access funds from the federal government. In general, there is great success in the fight against the COVID-19 because of the high level of compliance to the social distancing measures especially at the early stages of the lockdown.

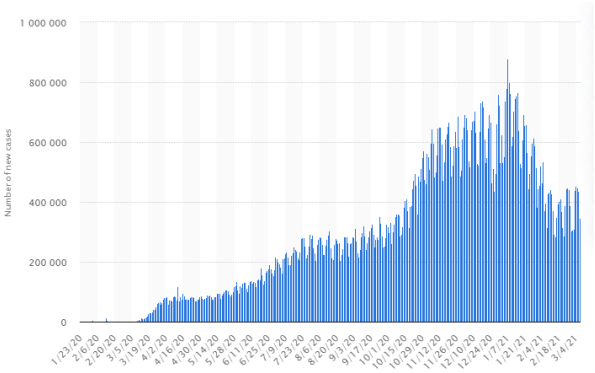

Figure 4. Statistics of total confirmed cases from January, 2020 to March, 2021 (Statista, 2021).

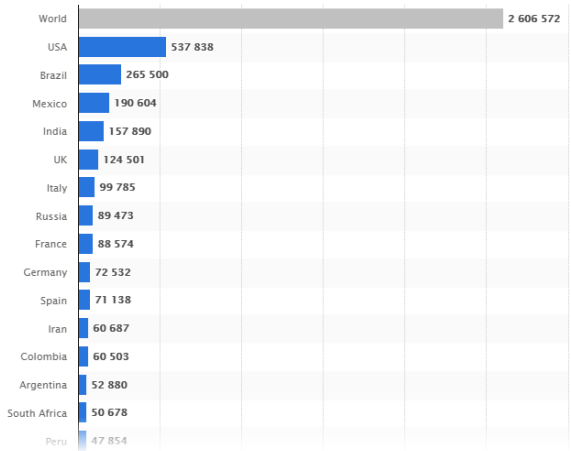

Figure 5. Statistics of mortality rate as of March 8th 2021 for countries badly hit by COVID-19 (Statista, 2021).

5.12. Public Approach to Wipe Out COVID-19

COVID-19 has structure the way and manner people, organization and nations think and act. There is need for the virus to be eliminated because it is telling on leadership, security, economy, relationship between government and more. Diseases with cyclic global recurrences, widespread and recurrent geographic spread could lead to a pandemic situation (Donaldson et al., 2009). A cursory look on COVID-19 showed that the pandemic possesses these features.

Government at all levels is empowering pharmaceutical companies financially through grants. This race against time demands that novel drugs should be manufactured and sent to the bedside of the patient. The ability to do this will determine whether more or less people will be ill or eventually die. A lot of research are ongoing in different institutions with funding from governments and non-governmental organizations. This singular aim is to find a cure to tame the tide of coronavirus pandemic.

A typical vaccine development can take five to seven years' timeline before approval can be obtained. Successes have been recorded concerning COVID-19 vaccine even though several other vaccines are still undergoing clinical trials. Billions of dose of vaccine will be produced and there is crucial need for collaboration between industry, the scientific community and regulators. It is expected to be available in most parts of the globe to ensure that no virus reservoir remains. From the moment it was obvious the world was facing a global pandemic, it became apparent that a vaccine will be a crucial tool in limiting infection and spread. Although, there is unparalleled cooperation between industry, researchers and regulators, huge challenges still exist. For COVID-19 vaccine programme to be successful, a number of factors such as speed, scale, global access, fast regulatory approval, design of trials conducted during emergencies and ethical considerations in conducting trials in a pandemic case must be keenly considered.

5.13. Crude Integrated Approach to Wipe Out COVID-19

Several synthetic drugs such as camostat, nafamostat, chloroquine, hydrochloroquine, remdeivir, lopinavir, ritonavir and favipiravir have been suggested and used in the treatment of COVID-19 (64), but none of these drugs have successfully passed clinical trials for the treatment of coronavirus patient in the world at large. Plant based therapy for the treatment and management of COVID-19 has gained public attention with the successful development of herbal tonic from artimisia and other indigenous herbs popularly branded Covid-Organics by Madagascar government. Medical doctors and other stakeholders in the health sector has continued to shy away from the possible herbal solution to COVID-19, stressing that combination of herbal tonic may fuel the possibility of drug resistance to malaria parasite in Africa. No doubt, the Covid-Organics has been politicized with no recourse to whether herbal remedies may just be the solution to COVID-19. The posture of WHO on herbal solution casted serious aspersion on Covid-Organics advertised to the world by the President of Madagascar, Mr. Andry Rajoelina. WHO's reason for rejection of Covid-Organics produced from natural plants is that there is no scientific evidence to back it up. Even though clinical

trials are yet to be admit on the Covid-Organics, successes stories have been recorded in Madagascar, owing to the levels of patients recovering from coronavirus infection in Madagascar and decline in the number of confirmed cases of coronavirus. Natural remedies from plants are known to have preventive and curative capacity due to the phytochemical components present in plants. For example, phytochemical components such as flavonoids are reported to interfere with modulatory inflammatory response to SARS coronavirus. Flavonoids are active against SARS virus through multiple mechanisms (Moghaddam et al., 2014; Dai et al., 2019). Some of the underlying symptoms of COVID-19; fever, dry cough, tiredness (most common), diarrhea, headache, aches/pains, loss of taste (less common), difficulty in breathing or shortness in breath, chest pain, loss of speech (severe case) are implicated as malaria symptoms. Herbal remedies popularly called 'agbo' was successfully used by our progenitors before the advent of combination therapy for the treatment of malaria. The world should not disregard African-based solution to COVID-19 using plant based therapy, because the solution is coming from Africa, rather WHO should act as a frontier by harnessing the phytochemical components present in the plant combination in order to combat coronavirus pandemic.

6. Conclusion

The emergence of the new corona virus (COVID-19) in Wuhan, China in 2019 have changed the pattern of public health approaches to pandemic outbreak. The effect of COVID-19 pandemic that ravaged the world economy and other social activities would have been minimal compared to what is the case, only if concerted efforts were put in place to quickly curtail its spread. Notable events that accounted for the negligence and indifference to the new coronavirus include the delay by the host country of incidence (China) to make public the revenging tendency of the virus, the blame game between the US and China opened the door for doubts if the virus actually existed, delay in closing exit and entry routes by counties having trade link with China, conspiracy theories surrounding the emergence of COVID-19 and many more negatively influenced the paradigmatic approach to COVID-19. If we must win the war against COVID-19, all countries under the United Nation should bridge the gap in knowledge sharing with regards to research into vaccine and drugs to combat the deadly coronavirus. Individuals should take responsibility in keeping safe by adhering strictly to the guidelines set out by WHO and CDC's of resident countries. Together we can defeat the common enemy called COVID-19.

Author Contributions

BI; wrote out the presentation guidelines and synopsis that directed the final write-up. OFI, IJC, EBO and FOE; wrote the manuscript. OFI and BI; did the editing. FOE; coordinated the Team.

Conflict of Interest

The authors declare that there is no conflict of interest.

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