Title: Evidence of Citizens' Obedience to Self-Quarantine: A Temporary Anti-dote to the Spread of Coronavirus

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Abstract

Since the emergence of COVID-19, it has been growing beyond borders affecting hundreds of thousands of individuals from different countries and causing lots of deaths. This deadly pandemic virus has propelled various countries laboratory scientists to painstakingly look for the vaccine and cure of this virus, apparently it seems that the cure is still on process. But in the meantime, it appears that citizens self-quarantining, social distancing and self-isolating are the temporary antidotes to quench the incessant spread of this deadly virus. This study highlighted the statistical evidences of the spread of the coronavirus in four countries which the analysis focused on the total laboratory confirmed cases and deaths cases in China, Italy, USA and Nigeria. Simultaneously, it also evaluated the relevance of citizens obeying to the rules and decisions of their governments in the fight of this deadly virus, by comparing the benefits and consequences of early and late movement restrictions and total lockdown by the government. Citizens obedience and insubordination to the lockdown rules have a significant influence on the declining and increasing rate of this coronavirus as shown in the study. This paper adopted comparative data analysis methodology of most infected countries with novel coronavirus after and before the lockdown of countries like China, Italy, USA and Nigeria. Furthermore, the analysis and comparison for this research study was cover from December 31, 2019 to March 31, 2020 which the data was analyzed both in daily basis for confirmed cases and monthly for confirmed death cases.

Keywords: Social Distancing, Self-Quarantine, Self-Isolation, Citizens Obedience and COVID-19

Introduction

Zhanwei Du, 2019, a Chinese scholar confirmed that the novel coronavirus (COVID-19) came into existence in the late December 2019, in Wuhan City, Hubei Province, China. At the time, it wasn't proscribed as a pandemic virus until the WHO (World health Organization) found it dangerous and declared it a public health emergency International concern on January 30, 2020. The next day the fatality rate said to be 192, and the laboratory scientists tested cases recorded 3,215 infected individuals and 8,576 cases across the whole cities in China. However, it gradually circulated to the neighboring countries and to the other parts of the countries of the world. Covid-19, was initially alleged and viewed to be non-communicable, and non-contractible virus, till the enormous upsurge in the number of the infected humans and its SARS like mode of transmission brought the interest of the general public to it. "The pattern of transmission of 2019-nCoV could have been exacerbated by the surge in domestic travel during the 40-day Chinese Lunar New Year celebrations (from 10 January to 18 February 2020)

which is the greatest recorded human movement in history yearly where thousands and millions of people migrating from every part of the globe for this celebration (Lai et al., 2020). Obviously, the escalation and contraction mode of corona-virus is directly related with the movement of the infected individuals knowingly and unknowingly transmitting this virus to other humans through close direct contacts or humans touching contaminated surfaces or objects that are being touched by the virus carriers. This was discovered at the time of the Chinese Spring Festival when there's a high mobility of Chinese citizens from the urban residential areas to rural areas which is traced as the fueling factor to the widespread of the COVID-19 in all cities in China and extended to other countries through contact of the people from China. Lai et al further affirms that other cities like Beijing, Shanghai, Guangzhou, Hubei, etc, got infected of 2019- nCoV due to influx of virus carriers from Wuhan having free passage to those cities without proper checks at the time of Chinese holiday. It's inevitably important with the length and rate of which this virus is moving that lockdown and movement restriction are the best options to contain the outbreak. It appears that this pandemic spreads like the speed of light in a second with the rate of the confirmed cases recorded so far in the space of weeks, it is quite of concern that early interventions are carried out to reduce the risk of the virus since it can't be controlled in Wuhan with the level it has speedily affected other cities in China, to reduce the risks of countries with direct commute links to china becoming epicenters in their own countries which might indeed affect the population of the globe. One of the obvious reasons of the widespread of COVID-19 to other nations of the world are the exported pre-symptomatic cases which the carriers show no symptoms at the early stage and being unaware they could be possibly transmitting the virus pathogens to anybody. Second reason, could be shortages of health practitioners and lack of adequate knowledge on how to handle the virus which resulted in a massive escalation of it (Wu, Leung, & Leung, 2020). For the sake of mitigating 2019-nCoV, Chinese Government on January 23-24, 2020 announced a total movement restriction within the country which gradually advanced to closing down of borders to avoid incoming cases in the country, grounded trains and airplanes travels and supplied body temperature detecting devices to all the security agencies in the nation, and to Chinese citizens in checking their body temperatures.

Studies from previous cases of virus attacks like influenza, Ebola, and corona-virus shown the necessity of adopting non-pharmaceutical method, which seemingly reduces virus escalation. Therefore, as the sudden emergence of this corona-virus leaves us in disarray without proper rescue interventions as it

broke out at the time, it is advisable that enough close monitoring and examination is done at each epidemic stage for quicker mitigation and control of it claiming lots of lives (Assessment, 2020).

Besides, lack of early restrictions of movement from the citizens of Asian countries that had symptoms of the virus necessitate to the outburst of 2019-nCoV to 143 countries, nations aside China according to World Health Organization report on March 16, 2020, (Bedford et al., 2020). It's advisable that world citizens obey and adhere to the self-quarantine, social distancing and individual isolation to help curb the transmission of COVID-19 since the vaccines to it are yet to be discovered.

The isolation of infected people has been applied to minimize wide range transmissions of this life-threatening disease, at least since the Old Testament period as an instrument for controlling and quelling the spread of viruses and contamination agents. Hence, isolation has been an orthodox and pivotal way of downsizing the velocity of any deadly virus through separation of symptomatic individuals who are the potential agents of transferring viruses to the great number of people in the public (Zhang, Wang, Zhu, & Wang, 2020).

The Nature and Features of 2019-nCoV

On January 8, 2019, news outlets and Pro Med-mail reported that genetic sequencing demonstrated a novel corona-virus as the potential causative organism (الزاوي, n.d.). Union et al, 2020, visualizes COVID-19 as a respiratory tract infected pandemic generated from zoonotic family of viruses (corona-virus). "It is a positive-sense enveloped single-stranded RNA virus, named "sever acute respiratory syndrome coronavirus-2" (SARS-CoV-2), has been characterized with pneumonia makes the patient hard to exhale and inhale air, and known from the most of the symptoms exhibited from the infected cases from the patients in Wuhan, China (termed cluster of acute respiratory disease). Genetic analysis shows that this corona-virus is a genetic cluster and found in the family of "genus Beta corona-virus" and "sub-genus Sarbecovirus" which has a direct relationship to SARS-CoV, (Union et al., 2020). The mode of transmission of this pandemic has a specific semblance with Ebola virus, although to a certain degree they both have similar mode of disease circulation and both are infectious transferable diseases. But the earlier virus is passed to through droplets or fluid-like coughed out from the infested person, and it gets into humans' body through touching one's mouth, eyes and nose.

The frequent medical diagnosed signs from the hospitalized patients are fever, followed by cough, dyspnea and myalgia, fatigue. Less common symptoms are diarrhea and vomiting. The infected people develop symptoms within 4–5 days on average; but approximately 1-14 days is the incubating period of COVID, after that the full symptoms surface. This virus infection mostly affects people over age of

60 and individuals with various underlying health sicknesses, diseases and infections for instance, cancer, AIDS/HIV, diabetes, high blood pressure, heart diseases, lung infections, failed organs, etc. However, with the variance of the deaths caused by this virus, it kills anyone regardless of the age who somehow has any health complications whether it's a child, teenager, adult, old and young (Assessment, 2020).

Literature Analysis

Quarantine practices had been adopted as a measure to control the exacerbation of any virus or pandemic that threatens human lives since 14th century and it has been effective till date(Sharma et al., 2020). As it has been witnessed with the previous endemic illnesses, the rudimentary traditions of the general health organizations would be raising numerous quarantine centers at the areas of the suspected cases. Enumerated instances are the incidents of SARS-CoV 2003, MERS-CoV (Middle East Respiratory Syndrome), Ebola infections and other various life-threatening cases that had attacked humans before these recent sicknesses, and these Covid-19. Safety approaches like self-quarantining, social distancing and self- isolating were implemented before the appropriate vaccines for these viruses were introduced. It is highly paramount to suggest that citizens heeding to these practices will serve as a momentarily vaccine to the nature of the spread of 2019-nCoV, to limit the contacts of people and close down the avenues of human meeting. For instance; transportation, work, get together, business meetings, etc.

"Quarantine and isolation have the distinct advantage of fever surveillance in addition to movement restriction, which proves effective in preventing droplet transmission as in the case of the current corona-virus pandemic'(Sharma et al., 2020). Sharma et al, 2020 highlights the essential of these processes, Quarantine method applies to the already infected and exposed humans to the virus for immediate medical diagnosis and treatment, whereas isolation is meant for the people exhibit SARS-CoV molecular symptoms. Thus, this could be possible through community containment, hospital quarantine, social distancing, self-quarantine to minimize the mortality density and for early control of the virus.

"Isolation is the separation of ill persons with contagious diseases from non-infected persons to protect the non-infected persons from contracting it, and usually occurs in hospital settings"(*Isolation, quarantine, social distancing and community containment*, 2020).

Fighting against any endemic or pandemic situation in every society involves everybody including citizens and governments. Conversely, citizens obeying to the lockdown instructions given by the

governments, by not flaunting the rules and regulations will definitely reduce the duration of the escalation of the virus. Chinese citizens are examples to that. It's their system that almost all the nations imbibe in fighting against the corona-virus pandemic. In regards to that all countries imposed lock-downs to cut off the exit and entry of individuals in the country to avoid outside transmission from people coming into the country whose pose a potential threat to the people of the visiting country(Engla & Journal, 2020). China closed and locked all the cities in the country, Italian government adopted a draconian restriction in the whole country, USA government enforced self-isolation and a ban for incoming individuals coming from the countries that had serious cases of the virus like China, Iran and few of the European countries and a serious check of the American citizens coming back to the nation which other governments implemented including Nigerian government.

We could see how these three parameters helped in some countries. People adhering to social distancing and self-quarantine reduced the chances of symptomatic patients transmitting the virus. On the contrary, this case would have been far more worse than the occurrences we are witnessing today, which might have resulted the situation lasting for a very long period and claim more than 70% of the world population(European Centre for Disease Prevention and Control, 2020)". Taking a closer look at the situation reports from the world health organization (WHO) of the cases of coronavirus, I can imply that countries with lower cases of fatality cases took early precautions from the origin country and made decisions and rules in controlling the spread their countries.

Methodology

Comparative analysis method is applied in determining the influence of lockdown and citizens obeying early to the instructions given by their government to protecting them and avoiding accidental contraction of the recent novel corona-virus in relation with the total number of confirmed cases and total deaths of the four countries in this study.

It is evident with the massive decline of the virus, that citizens of the various countries complying to isolate themselves from the public contributed tremendously in curbing and reducing the second phase of 2019-nCoV. Zhan et al, categorizes self-isolation in two forms, which are (a)Forceful or mandatory isolation and (b) voluntary or willingness to self-isolation by the individuals. These two categories of isolation were prescribed to the Pre-symptomatic patients to choose for their quick recoveries and safety of the other people. Mandatory or forceful isolation, is done at the hospitals where the infected persons are taken to the hospitals depending on the gravity of their health conditions with the virus for

immediate treatment. While voluntary isolation is much more opposite to the mandatory isolation. In this case an infected persons show mild symptoms which might not be detrimental to their health and they are asked to quarantine themselves at homes and with a follow up check ups by the medical practitioners(Zhang et al., 2020). Sequel to that, this study covers the statistical reports of countries with most recorded cases like China, Italy, USA, and Nigeria. The total cases confirmed and mortality cases of each of these countries will answer the behaviors of their citizens towards movement restrictions and their compliance with the government authorities to the corona-virus pandemic. The data coverage for this study covers reported cases of corona-virus from end of December to the of March.

COVID-19 RELATED TERMINOLOGIES

- Silent Spreaders: These are the infected virus carriers but show no sign of the symptom but they could transmit the virus from human to human through close contacts. Silent spreaders are further categorized in three forms; (a) Pre-symptomatic, (b) asymptomatic, (c) Very Mildly Symptomatic.
- Symptomatic Transmission: Symptomatic Covid-19 case, is described as where an individual shows signs and symptoms that are compatible to the Covid-19 virus infection. While symptomatic transmission is viewed as a transmission by an individual that is experiencing the symptoms of the virus(Culp, 2020).
- Asymptomatic Transmission: An asymptomatic laboratory confirmed case is a person infected with COVID-19 with no symptoms of the virus. And transmission of corona-virus by the infected with no symptoms of it to another person is termed as asymptomatic transmission of COVID- 19 (Culp, 2020).
- Pre-Symptomatic Transmission: This is an incubating period between exposure time of the patient and symptoms manifestation of the patient. Averagely it takes 5-6 days for a quick sign to show, or 14 days long as the case maybe. Pre-symptomatic transmission could also be referred as the time of virus contraction and symptoms manifestation. It is essential to state that patients at this stage can spread the virus to another person before the symptoms start manifesting.
- Very Mildly Symptomatic Cases: These are the infected individuals of COVID-19 whose case are less serious but they maintain keeping close contacts with other people.
- A Suspected Case: This is an individual who shows clinical signs of corona-virus, but there is no laboratory confirmation or test to confirm the existence of the virus.

- Confirmed Case is a person who has undergone a clinical diagnosis and his test results show full symptoms of corona-virus.
- Probable case: Probable case, epidemiologically has a relation to confirmed case, which occurs when there is a close contact with the positive tested patients or the person visited heavily infected area with COVID.

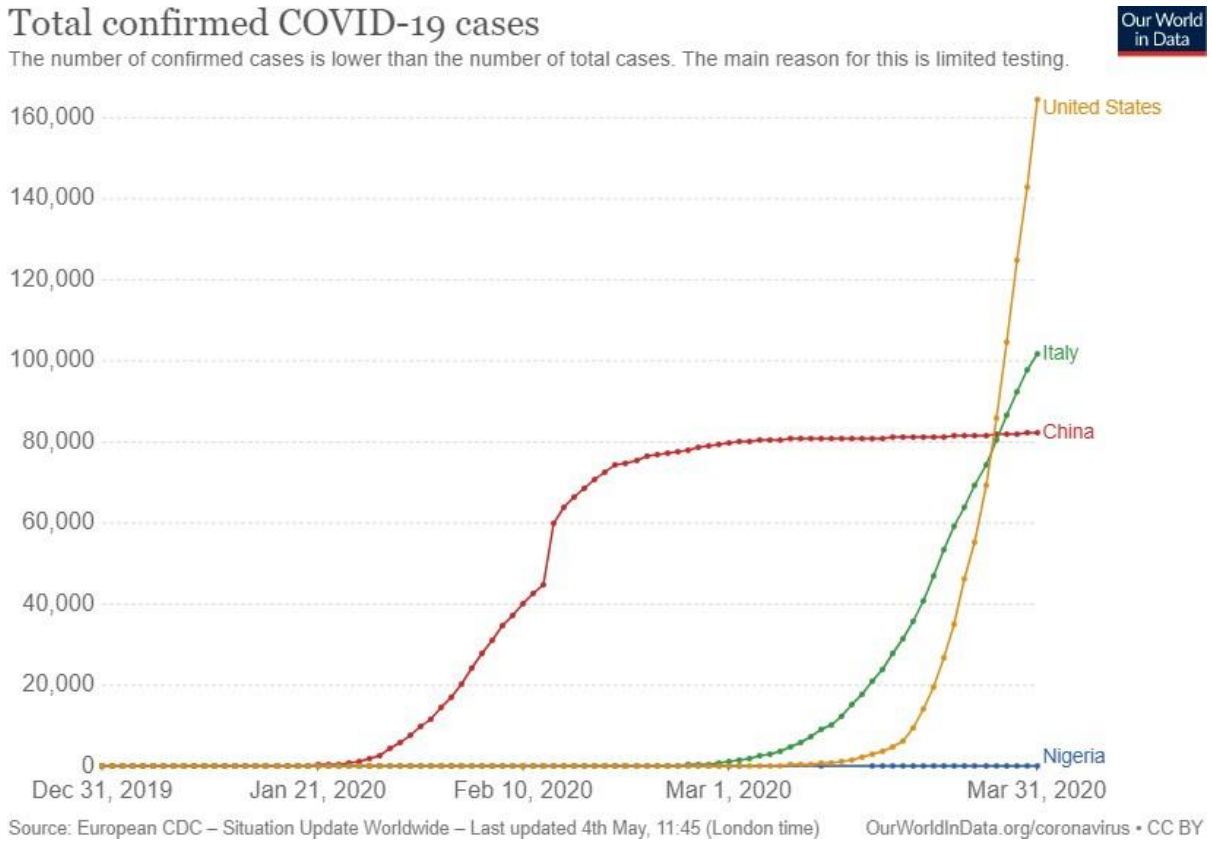

Fig. I. - Data Source: OurWorldin Data

The line graph represents the reported data cases from various International health organizations from WHO, CDC, Hopkins Hospital from the existential stages of the virus from December 31st to March 31st as shown in the diagram above. Note, on this line graph the dots on each country have daily reports on the total confirmed cases that entails with dates and figures of the cases of the countries. Overall, United States of America within the specified time of this study, is the highest country with the confirmed cases of 2019-nCoV with 164,620, Italy 101,739, China 82,241 and Nigeria 131 respectively. Putting the time of virus emergence in to perspective, as China being the source of the pandemic, Wuhan the epicenter of the outbreak had less cases from the noticed time to middle of January where the virus started manifesting, from January 20-21 it risen to few hundreds 386, USA 1, Italy 0 and

Nigeria 0. Without the idea of human to human transmission and lockdown was not quickly initiated then, the cases increased exponentially towards the end of month January and early February with huge movement of Chinese nationals in and out of the country, which preparation of Chinese festival is the cause of the rise. During the eve of Chinese spring festival (February 1, 2020), the confirmed cases had moved from 11,809 for China, USA 7, Italy 3, Nigeria 0. United States and Italy case's mode of transmission at this time were cases from China from the citizens that returned from China mostly from Wuhan before the movement restrictions and border closure was largely implemented. As of the time no African country had recorded a single case of COVID-19 in their respective countries. China started witnessing a significant upsurge in February 13 recorded 59,865 cases, United States confirmed cases started surging from March 12 at 1312 laboratory confirmed cases while Italy was from February 29 at 888 cases. For Nigeria, late transmission of 2019-nCoV necessitated at the gradual cases in Nigeria which started having a rise at March 23 approximately 30 confirmed cases. Factors that caused the spiking figures of the fatality cases mainly in Italy and USA and Nigeria, are late detection of the virus. Secondly, lack of testing kits for proper examination of the individuals coming into the countries from already existing corona-virus nations, late call for lockdown and movement restrictions. Thirdly, non-compliance of the citizens obeying to no movement regulations which led to a great percentage of them being exposed to the virus. Another reason to consider for these huge confirmed cases mostly in China, Italy and United States is infected patients who show no symptoms of this virus came into contacts with so many people and symptoms manifested much later.

As the cases continue to grow significantly, statistics below are the 5 days interval of the confirmed cases in the month of March 2020.

March 1: China 79,929, Italy 1,128, USA 69, Nigeria 1, March 5: China 80,497, Italy 3,089, USA 159, Nigeria 0, March 10: China 80,879, Italy 9,172, USA 754, Nigeria 0, March 15: China 80,995, Italy 21,157, USA 2,951, Nigeria 2, March 20: China 81,229, Italy 41,035, USA 14,250, Nigeria 8, March 25: China 81,631, Italy 69,176, USA 55,231, Nigeria 44,(March 26: China 81,733, Italy 74,386, USA 69,194, Nigeria 51,March 27: USA 85,991, China 81,827, Italy 80,539, Nigeria 65, March 28: USA 104,684, Italy 86,498, China 81,946, Nigeria 81) March 30: USA 143,025, Italy 97,689, China 82,157, Nigeria 97 and March 31: USA 164,620, Italy 101,739, China 82,241, Nigeria 131. With the above reported statistics, it's quite obvious that China continued to lead in confirmed cases till March 26. Note that from January to February China had a dramatic increase more than the other 3 countries, but the cases started subsiding with less thousands of laboratory cases in the middle of March. On other

hand, USA started topping the other countries from March 27 jumping from 69,194 as of March 26 to 85,991 (addition of 16,797 in a day). (highlighted figures in blue color are used to show how United States and Italy surpassed China within a short period of time). Italy took the position of China as the second highest confirmed cases from March 28 with 86,498 recorded cases and Nigeria still the least of the countries though having a significant increase in her cases in its own way but not to compare with other three giant countries.

Observation: From March 25, China's cases started witnessing stability in reduction with the cases which shows that the government early approaches in containing this virus played an important role and also Chinese citizens complying to the no movement instructions is also a factor of consideration. Comparatively for USA, Italy and Nigeria lack of testing kits, early precautions and taking early decisive measures by the government and negligence by the citizens leads to the enormous height of the cases in country.

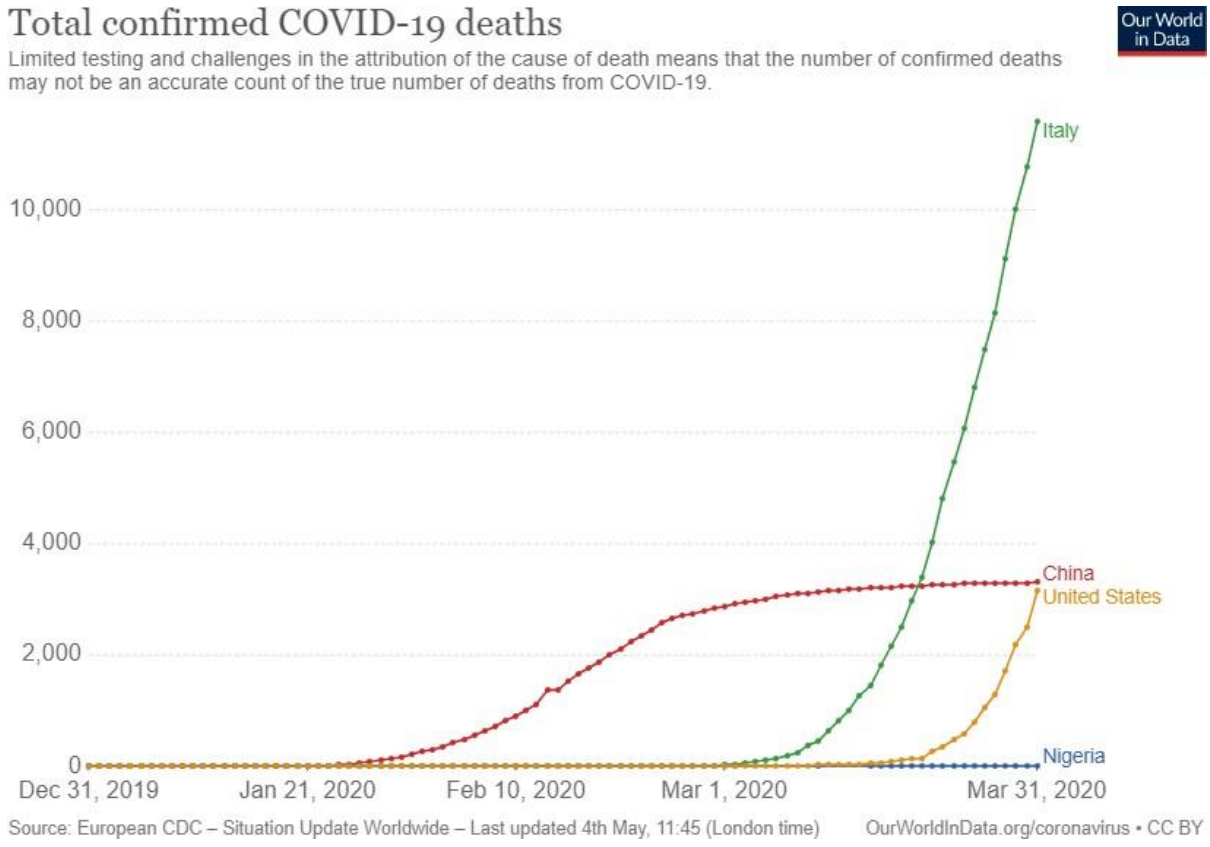

Fig. II.

The death reports of these four countries is basically compared monthly from December to March. However, the analysis of the total confirmed cases of covid-19 focuses on which country take the lead

at which month. Starting from China as the first country that witnessed the first death of coronavirus among the other countries of the world. As from December 31, 2019 no country recorded any death of COVID-19 including China. It was so from December 31to January 10. The first death case was reported on January 11, 2020 and it was China with one 1, USA 0, Italy 0 and Nigeria 0. In January 31 the total confirmed deaths for these countries are; China 213, Italy 0, USA 0, Nigeria 0. February 29: China 2,837, Italy 21, USA 0, Nigeria 0, March 31: Italy 11,591, China 3,309, USA 3,170, Nigeria 2. Between the month of December to February, China had been the country with the highest death cases, in march Italy became the highest countries with death toll at 11,591 more the other countries.

All in all, compared the total reported cases with the total confirmed cases, we agreed that the death cases were far more less than the confirmed cases which implies that the precautionary measures taken by the government and citizens contributions agreeing to the no movement rules had a positive significant effect to the containment of the virus. It is also worthy to note that there is every possibility that the death cases will exceed the level it was at this time. Furthermore, it's quite obvious to recall that the reason why these death cases were higher in China, Italy and America than in Nigeria is due to aging population and people who have medical health conditions which may have constituted to these high cases of death, while in Nigeria there was less death reports due to her young population. With the trend of death cases in Nigeria we forecast there is tendency that Nigerian cases will surpass that of China with the way things are going there due citizens inability to adhere to the lockdown rules.

Conclusion

This study highlighted the essence of citizens obedience to the lockdown rules initiated by the governments of China, USA, Italy and Nigeria and how it influenced in the reduction of the death cases compared to the total confirmed cases of these countries. However, the reason of the recorded high confirmed cases was the lack of detailed information on the transmission mode of the corona-virus which led to exponential growth of the infected individuals. Furthermore, as self-quarantine, isolation and social distancing had been adopted centuries ago as method of fighting endemic or pandemic viruses, it also resonated its needful at this period of 2019-nCoV since no distinctive vaccine has been made to eradicate the existence of corona-virus, it is important to state that self-quarantining, social-distancing and self-isolating are the temporary antidote to reduce the spread of this COVID-19. We observed that the countries with higher confirmed cases or death cases were as a result of lack of adequate testing kits, late lockdown and non-compliance of the citizens limiting their movements, aging

population, people with underlining medical health condition, etc. In addition, we deduced that there is possibility any other country might take lead either in the death case or confirmed cases.

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