



## Coronavirus Disease 2019: The Emergence of Popular Unverified Myths and Realities to Its Spread

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**Abstract:** In December 2019 there was a plague of a novel human coronavirus disease called coronavirus disease 2019 and abbreviated as COVID-19. It's caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The disease is being described as a world pandemic following its spread across over 199 nations and territories in several regions of the globe. The disease is characterized by respiratory distress and fever, with the likelihood of being transmitted via contact with droplets emanating from the cough and sneezing of an infected patient which readily contaminates animate and inanimate surfaces with a period of 2-14 days. On contact, approximately 80%, 5% and 14% of infected persons display mild symptoms, critical condition and develop severe conditions respectively, while the opposite 1% are asymptomatic. Based on online data available as at March 30<sup>th</sup> 2020, 15:49 GMT, over 746, 066 confirmed cases, 35,347 fatalities and 157,078 recovered cases have been ascertained. According to current global trends at the time of this study, the mortality in Africa, Asia, Australia/Oceania, South America, North America and Europe were 3.10%, 4.07%, 0.39%, 6.31%, 1.79% and 2.29% respectively. The continuous spread of the virus has also given way to the popularization of numerous misconceptions or myths hovering through the news and social media channels. Hence, this paper clarifies information about the virus with respect to various terms (its spread, intermediate host, creation/source, conditions for survival, treatment drugs/vaccines, persistence on inanimate surfaces, among others) and the need for research to be carried out on the myths surrounding the virus.

**Keywords:** Coronavirus; Facts; Global pandemic; Misconceptions; COVID-19; Public health.

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## I. INTRODUCTION

Globally, the emergence of a unique coronavirus in 2019 (COVID-19) has recently emerged from China with over 746, 066 confirmed cases, 35, 347 fatalities and 157, 078 recovered patients as at March 30, 2020, 15:49 GMT<sup>1</sup>. This implies that approximately, 553, 641 persons are infected by the virus at the time of the study. Of the entire number with the disease, 95% and 5% showed mild and significant conditions respectively. Approximately 5%, 80% and 14% of persons infected by the virus often display critical conditions, mild symptoms and develop severe diseases like pneumonia and significant conditions and respectively, while the opposite 1% are asymptomatic.<sup>2</sup> The *Coronaviridae* family can cause diseases in both humans and animals. A number of the coronaviruses that cause disease include Raccoon dog CoV, Feline CoV, Porcine respiratory CoV, Transmissible gastroenteritis virus, Human CoV 229E, Human CoV-NL63, Bat CoV HKU7, Bat CoV HKU8, Bat CoV HKU6, Porcine epidemic diarrhoea virus, Bat CoV HKU2, Human CoV OC43, Porcine hemagglutinating encephalomyelitis virus, Bovine CoV, Giraffe CoV, Stable antelope CoV, Murine hepatitis virus, Human COV HKU1, Bat SARS CoV, Civet SARS CoV, Human SARS CoV, Bat CoV HKU9, Bat CoV HKU4, Bat CoV HKU5, Peafowl infectious bronchitis virus, Infectious bronchitis virus, Partridge infectious bronchitis virus, Asian wildcat CoV.<sup>3</sup> Other coronaviruses include Respiratory Syndrome (MERS), human coronavirus (HCoV), transmissible gastroenteritis virus (TGEV), mouse hepatitis virus (MHV), Severe Acute Respiratory Syndrome (SARS) among others.<sup>4</sup> Aside from the effect of the coronaviruses on biodiversity (living organisms) they can persist on inanimate surfaces like metal, wood, paper, plastic, glass (SARS-CoV, Strain P9), plastic, steel, PVC, silicon rubber, ceramic, glass, Teflon (HCoV, Strain 229E), plastic (SARS-CoV, Strain HKU39849), plastic, steel (MERS-CoV, Isolate HCoV-EMC/2012), paper, disposable gown (SARS-CoV, Strain GUV6109), aluminium, surgical gloves (HCoV, Strains 229E and OC43), plastic (SARS-CoV, Strain FFMI), steel (TGEV, unknown; MHV, Unknown).<sup>4</sup> Authors have reported that SARS-CoV is the first novel virus to cause a major outbreak in the new millennium.<sup>3, 5-7</sup> SARS-CoV-2 is the third most pathogenic human coronavirus that has emerged within the last twenty years, which means that SARS-CoV-2 is third to Severe Acute Respiratory Syndrome (SARS) coronavirus and Middle East Respiratory Syndrome (MERS) coronavirus.<sup>4</sup> Basically, there are about 36 coronaviruses that belong to the family *Coronaviridae* within the order *Nidovirales*.<sup>3</sup> The author further reported that this group of virus causes respiratory or intestinal infections in biodiversity. Before now there have been two major coronaviruses that cause severe human diseases. They include SAR-CoV which was discovered in China in 2003, MERS-CoV which was discovered in Saudi Arabia in 2012. In December 2019, the third novel coronavirus that has not been previously identified in humans was identified in Wuhan, China. The official disease name was recognized after material creation, any mention of nCoV refers to COVID-19.<sup>8</sup> Currently, there is an increase in the dissemination of information about the COVID-19 in literature. Being a novel infectious disease, researches about it are on-going. However, there are several facts, misconceptions and inaccurate information circulating within the public domains concerning the COVID-19 pandemic. Some of these myths have persisted in the news and across social media. Inaccurate information or claims about the COVID-19 might create panic or enhance non-scientifically

validated or unproven cures to the causative agent of the disease which could portend adverse public health implications and undermine efforts to prevent its spread.<sup>2</sup> At the instant, health professionals and government agencies have started taking steps to debunk a number of the unsubstantiated claims about the virus that is in the public domains (social media, newsrooms, among others). Therefore, there is a need to keep the public abreast of some of the misconceptions about the COVID-19. As a result, this paper is geared toward addressing the myths and facts about the COVID-19.

### 1.1 COVID-19

The novel coronavirus pandemic was first identified in Wuhan, Hubei province, China in December 2019. The World Health Organization on February 11, 2020, officially announced the name of the 2019 novel coronavirus-causing disease as coronavirus disease 2019 and abbreviated as COVID-19. The 'CO' stands for 'corona', 'VI' stands for 'virus', and 'D' stands for 'disease'. Before the announcement, the disease was observed as "2019 novel coronavirus" abbreviated as "2019-nCoV".<sup>9</sup> Shortly after the name of the virus was announced, the International Committee on Taxonomy of Viruses gave the name of the virus as SARS-CoV-2.<sup>10</sup> The coronaviruses is a spherical enveloped (the envelope bears club - shaped glycoprotein that is projected) particles that is made up of single - stranded ribonucleic acid thus, RNA (the RNA is a polymeric molecule crucial in several biological functions including coding and decoding, regulation and expression of genes) related with a nucleoprotein within a capsid consist of matrix protein. Before the outbreak of the 2019 novel coronavirus, SARS-CoV and MERS-CoV which was first identified in China (17 years ago) and Saudi Arabia (8 years ago) respectively are known causes of severe ailment in humans. Coronaviruses that cause severe ill health in humans are often characterized by respiratory and gastrointestinal symptoms. The respiratory symptoms include the common cold, and mild and severe upper respiratory infection. Some coronaviruses are known to affect certain animals,<sup>3</sup> while it is believed that some viruses found in animals can be transferred to humans when ingested in their raw or uncooked form. As a result, the consumption of prawn and sea foods in open market places where animals are kept may increase the tendency to aspirate or make contact with aerosols from these wildlife. COVID-19 is mostly transmitted from patients to family members and others who have come in contact with infected persons including medical/healthcare workers. Sometimes, the viruses could be transmitted to humans through a spillover. Viruses being an obligate intracellular parasite can only replicate within tissues of susceptible hosts. Coronaviruses have the potential to remain on inanimate surfaces for some specific period. The duration of survival is dependent on the type of surfaces, strain and type of coronavirus, environmental/climatic factors, among other influences. Therefore, COVID-19 can be transmitted when a susceptible host (human) comes in contact with SARS-CoV-2 contaminated surfaces and/ or hands. Before now, authors have reported some strains/isolates of SARS-CoV, MERS-CoV and TGEV could persist on inanimate surfaces such as metal, wood, paper, plastic, glass, steel, PVC, silicon rubber, aluminium, ceramic, teflon, disposable gown and surgical gloves.<sup>4</sup> However, the dynamics of the COVID-19 transmission is yet to be scientifically ascertained. Since COVID-19 tends to affect the respiratory tracts, it could be transmitted through droplets of cough and sneezes. In general,

most disease conditions possess risk factors. The risk factor of COVID-19 is high among people with their immune systems compromised due to known medical conditions or amongst the elderly and infants. The other groups of people vulnerable COVID-19 are individuals exposed to potential intermediate hosts of the virus, family members of patients and healthcare workers. In terms of the effect of human health conditions, individuals with cancer, diabetes, cardiovascular, chronic respiratory, kidney, and liver diseases are at risk of high fatality. On a general note, the fatality rate of the disease is yet to be specified. This is so because it is a novel coronavirus, with its foremost outbreak yet to be terminated. The COVID-19 is characterized by mild to severe cases and symptoms of fever and respiratory problems such as shortness of breath and dry cough, pneumonia etc. COVID-19 is presently being diagnosed by a polymerase chain reaction technology that uses fingerprint. The technology is grossly inadequate in many parts of the world where the virus has been contracted. For instance, in Nigeria, where about 200million inhabitants are at risk of the virus, the diagnostic centres are about six in number, while the test kits are also inadequate as March 30 2020. Presently, there is no vaccine and specific medication for the treatment of COVID-19, apart from supportive care. Research is ongoing for the development of treatment technology and vaccine production. Presently, the best method of managing COVID-19 is prevention. One way of preventing the virus is by limiting the geographical spread. In other words, those that are exposed to the virus in a particular territory are to remain in such vicinity to forestall its spatial distribution. Other means of curbing the outspread of the virus includes the implementation of standard hygiene practices including disinfection of surfaces, covering the mouth and nose when sneezing, avoiding constant stroking of eyes or touching of mouth and nose, keeping away from infected patients as well as those handling or managing them, using nasal or facial masks and required personal protective equipment in hospital or healthcare settings, regular scouring of hands with soap and water or scrubbing with alcohol-based hand sanitizers, and avoiding unnecessary contact with live animals especially in virus prone areas. Another safety principle involves coughing into the crook of the elbow. Since animals are a major source of dietary protein there is a need to thoroughly cook the meat before consumption, whilst it is important to adequately clean the butchering surfaces. In case of high body temperature, fever, persistent cough and difficulty in breathing, there is the need to seek medical care as soon as possible.

## 1.2 COVID-19: MYTHS VS FACTS

Before now numerous myths have emerged about the COVID-19 but a number of them are quite incorrect. There is a need for scientific investigation to be carried out about the virus before generalizations are made. The fact that the virus is behaving in distinct patterns does not give credence to the emergence of unconventional generalizations, rather it should prompt further research to ascertain its behavioral pattern. Therefore, this section of the paper discusses the myths and some of the facts about the virus.

### 1.2.1 COVID-19 and temperature

Temperature is a major determinant factor that controls the survival of organisms including microbes. Microbes by their nature are ubiquitous (everywhere), reproducible/rePLICATE

fast, produce enzymes, possess broad metabolic/physiological diversity and environmental tolerance. The replication of microbes is influenced by factors in their environment including temperature, pH, water activity, oxygen, nutrients, among others. Temperature influences a lot of activities in living organisms. In some, elevated temperatures can result in denaturation and inactivation of proteins. Hence, critical temperature conditions are specific to organisms and are often graded as the minimum (temperature value below which growth is not possible), optimal (temperature range within which growth is most rapid), and maximum (temperature value at which growth could no longer occur). Microbes are grouped into categories based on the temperature ranges required for their growth including psychrophilic (a low-temperature condition with optimal being about 4°C), mesophilic (normal temperature condition that encourages the survival of several living organisms with the optimal being around 39°C), thermophilic (higher temperature condition of about 60°C), hyperthermophilic (extreme temperature condition with optimal being around 88°C) and hyperthermophilic (very extreme temperature condition with optimal being around 106°C). Globally, the temperature of human is around 33.0 – 38.0 °C, with normal value being 36.5 – 37.5 °C depending on the region, gender and physiological status of the person. It is believed that COVID-19 cannot survive in hot and humid regions such as India, but WHO has reported that the virus can survive in both hot and humid regions.<sup>11, 12</sup> Thus far, the virus has been identified in about 199 countries and territories of the world, covering some major continents including Africa, Asia, Australia/Oceania, South America, North America and Europe. The occurrence of COVID-19 in wide geographical areas suggests that the virus has broad temperature tolerance and can survive in any area where humans can survive. Also, it was alleged that extreme cold climatic conditions and snow can kill the virus, but the fact is that the virus cannot be destroyed under cold weather.<sup>11, 12</sup> Due to the nature of viruses, they may remain inactive for some time when the condition is not suitable for them and/or in the absence of a susceptible host. Meanwhile, another myth suggests that hot water baths can prevent COVID-19; however, this practice is incapable of exterminating the virus since the temperature of hot water used for bathing cannot reach the thermophilic temperature range. Meanwhile, thermophilic temperatures tend to result in burns.<sup>11</sup> Most importantly, humans are warm-blooded animals. This implies that changes in the temperature of their environment do not affect their body temperature unlike that of other animals such as pisces, amphibians and reptiles that have their body temperatures being controlled by ambient conditions (cold-blooded animals). Therefore, persons with the disease will continue to be affected by the virus irrespective of thermal changes in their external environment.

### 1.2.2 COVID-19 transmission through the mosquito bite

Mosquito is a blood-sucking vector that transmits many life-threatening diseases including malaria, filariasis, yellow fever, dengue fever, encephalitis, etc. Mosquito belongs to the order Diptera (Insecta) and family Culicidae with three subfamilies including Anophelinae, Culicidae and Toxorhynchitinae.<sup>13-21</sup> A mosquito that belongs to the genus *Aedes*, *Culex*, *Anopheles* and *Mansonia* transmit diseases in humans and animals.<sup>22</sup> Within the genera, several species transmit diseases including female *Anopheles* (*A. gambiae*, *A. funestus*, *AN. arabiensis* and *A. melas*) that transmits malaria; *Culex quinquefasciatus* transmits lymphatic filariasis; and *Aedes aegypti* transmits chikungunya,

yellow and dengue fevers. The myth is that COVID-19 can be transmitted through mosquito bites, but the fact is that the virus (SARS-CoV-2) is new and information about it is rare. Presently, there is no scientific evidence to suggest that the virus is transmitted through mosquito sting.<sup>11, 12</sup> The effect of COVID-19 disease on the respiratory tract, which occurs in about 2 to 14 days after being contracted means that it can be transmitted through droplets from the respiratory system.

### **1.2.3 Hand dryers, alcohols or chlorine as effective measures for killing the causative agent of COVID-19**

Viruses tend to persist in inanimate surfaces. The spraying of alcohol and chlorine on the body cannot kill the virus. This is because viruses are obligate intracellular parasites. The viral particles that have already entered the body cannot be killed by the alcohols or chlorines which are biocidal agents. Biocidal agents such as povidone-iodine, glutaraldehyde, ethanol, 2-propanol and 1-propanol benzalkonium chlorides, didecylmethyl ammonium chloride, chlorhexidine digluconate, sodium hypochlorite, hydrogen peroxide and formaldehyde possess the tendency to reduce viral infectivity of some strains/isolates of SARS, MERS, MHV, CCV, HCoV in inanimate surfaces.<sup>4</sup> Even though alcohol and chlorine are essential in disinfecting surfaces, they need to be applied under strict guidance.<sup>11, 12</sup> Another myth is that hand dryer is effective for killing COVID-19, but the fact is that there is no scientific evidence to indicate that hand dryer could kill the virus. The World Health Organization also disproves the claim that hand-dryers can kill the virus,<sup>12, 23</sup> while some believe that certain environmental and chemical conditions can stem the outbreak of the virus, the use of alcohol or chlorine on the skin is not yet proven to exterminate the virus. However, these chemicals can be used to sanitize surfaces as their alcohol composition tends to break the lipid coating of viruses, thereby disrupting the physical structure of virus as well as reducing or eliminating its effect. Sanitizers are harmful when ingested by mouth or exposed to the eyes. Furthermore, washing the nose with salt solution has not been scientifically and sufficiently proven to decimate the risk of acute upper respiratory tract infections given the limited participants during scientific trials.<sup>24</sup>

### **1.2.4 COVID-19: Children cannot contract the virus and the elderly are at risk**

The immune system of humans is affected by age and underlying health/medical conditions. It is known that infants and elderly are often at risk during the outbreak of health pandemics, especially respiratory diseases. For Instance, it has reported that elderly and children are susceptible to respiratory conditions that could emanate due to exposure to noxious gases and particulates.<sup>25, 26</sup> Again, individuals with compromised immune systems are at higher risk of contracting diseases associated with respiratory tracts. Hence, the myth which believes that kids cannot contract the virus is incorrect as children are equally suffering from the virus.<sup>11, 12, 27, 28</sup> Authors had reported the virus in 15 and 19 years old boys and the cases presented with mild respiratory and gastrointestinal symptoms, and after general and symptomatic treatments both children recovered quickly.<sup>29</sup> The children of all ages (<1 to >15 years) were susceptible to COVID-19 showing varying levels of severity by age, including asymptomatic, mild, moderate, severe and critical cases. The authors further reported that clinical manifestations of

pediatric patients are less severe than those of adult patients. In the same study, young children, mainly infants are vulnerable to COVID-19, thus, the proportion of severe and critical cases was 10.6 %, 7.3%, 4.2%, 4.1% and 3.0% for the age groups of <1, 1-5, 6-10, 11-15 and >15 years respectively. Also, a 14-year-old boy from Hubei province in China died of the virus.<sup>30, 31</sup> Therefore, it is untrue to claim that the virus does not affect children. Also, there is a myth that indicates that COVID-19 only affects the elderly, but the fact is that it affects humans of all ages in the same distribution as other age grades and are asymptomatic in some patients.<sup>32</sup> It is a fact that older people with underlying medical conditions such as diabetes, chronic respiratory and cardiovascular diseases are more vulnerable to becoming severely ill with the virus.<sup>11</sup> Besides, pregnant women, immune-compromised individuals and others with chronic diseases are highly at risk.<sup>2</sup>

### **1.2.5 Status of COVID-19 Vaccines**

For vaccines to be developed for the treatment of viral diseases there is usually background research (including vaccine discovery, proof of concept and preclinical trials, amongst others). COVID-19 is a novel disease condition. Hence, there is no known vaccine and medication for it before now. Few months after the identification of the disease, there were myths of the availability of vaccines for the contagious viral disease, but the fact is that vaccine development usually takes a long period before it becomes commercially available because several research-based investigations are required.<sup>11, 12, 33</sup>

### **1.2.6 Pneumonia vaccine and COVID-19**

There is this notion that vaccines used against pneumonia can be effective for the management of COVID-19. This is not correct because the causative agent of pneumonia and the COVID-19 are different, as such, the pneumonia vaccines including pneumococcal vaccines and Haemophilus influenzae type B vaccines cannot be used for the treatment of the novel virus. However, research for the vaccine for COVID-19 is ongoing.<sup>23</sup> Generally, vaccination against respiratory infections is highly necessary to protect one's health.

### **1.2.7 COVID-19: the use of ultraviolet lamp as a disinfectant and thermal scanners in detecting the patients**

Ultraviolet lamps are used for sterilization of surface and materials. There is a myth that ultraviolet lamps can be used to kill the virus, but this is incorrect because human body parts are not supposed to be exposed to ultraviolet radiation as they are known to irritate human skin. Therefore, it is not an option to use ultraviolet lamps to kill the virus in the human body. The World Health Organization also disproves this claim.<sup>12, 23</sup> Also, there are myths that thermal scanners are effective in detecting people who have contracted the COVID-19. Despite the use of thermal scanners to determine body temperatures of patients in comparison to normal body temperature, it is impossible to identify the virus in affected individuals using this device. This is because the symptom of the virus usually emanates from 2 to 14 days after infestation. Contrastingly, thermal scanners cannot be used to detect infected people that have not developed a fever. Moreover, fever and/or high body temperature is not particular to only COVID-19. Therefore, the detection of elevated body temperatures with thermal scanners does not necessarily

narrow it down to the COVID-19. Besides, the popular assumption that warmer temperatures tend to stop the viruses is yet to be supported by any scientific evidence, hence, the effect of thermal changes on the response of COVID-19 is unknown.<sup>24, 34</sup>

### 1.2.8 Preventing COVID-19 using garlic

Garlic is a common food species that belongs to the family *Alliaceae*.<sup>35</sup> The plant contains phytochemicals such as terpenoids, glycosides, flavonoids, saponin, tannins and hydrocyanide<sup>36, 37</sup> that supports its therapeutic properties. The plant extract has been reported to have antimicrobial potentials against several microbes (bacterial, yeasts and moulds). Garlic is effective for the treatment and management of heart disease, stroke and hypertension. The enormous effects of garlic on the management of diseases have led to another misapprehension that garlic impedes the growth of the virus, similar to its action on bacteria.<sup>38</sup> However, eating garlic does not prevent COVID-19 as there is no scientific evidence to suggest that garlic possesses anti-viral properties against the SARS-CoV-2.<sup>2, 11, 12, 23</sup>

### 1.2.9 COVID-19 and Antibiotics

Antibiotics are substances that can mitigate or control the growth of microorganisms especially bacteria and fungi. Antibacterial agents are substances used to kill or inhibit the growth of bacterial infections.<sup>23</sup> The myth that antibiotics are effective against COVID-19 is inappropriate because the virus is new and nearly all antibiotics are ineffective against viruses.<sup>2</sup> Any claim that antibiotics can be used to treat the infection is unreliable. However, it may be possible if COVID-19 infected patients with other health conditions related to bacterial infection.<sup>11, 12</sup> In such a case, the antibiotics are specifically for bacterial infection and not COVID-19.

### 1.2.10 COVID-19 and gargling with substances

There is a myth that one can be protected from the COVID-19 by taking in or gargling with ethanol, salts, bleach, steroids, acetic acid, essential oil among others, but the fact is that none of these substances can safeguard a person from the disease<sup>33</sup>, hence, its use should be discouraged to forestall adverse public health implications. Some of these substances are dangerous to human health if used improperly. For instance, bleach which has sodium hypochlorite as an active ingredient is toxic to human health. Excess salt in the body could exacerbate other health issues. Another myth is that the effectiveness of gargling with or squirting brine up the nose to prevent transmission of the virus, but there is no scientific corroboration to this claim, and it is worthy of note that high salt content could destroy the upper respiratory tract in humans.<sup>2</sup>

### 1.2.11 COVID-19 was created and released to the people

At the beginning of the pandemic, the social media had been agog with numerous claims which had no evidence to the fact that the virus had emanated from a research laboratory in the Chinese territory. There is a myth that claims the COVID-19 was intentionally created in the laboratory or released to the people,<sup>39</sup> but a virus similar to SARS-CoV-2 has been detected in animals. Some animals that carry viruses specific to the coronavirus strain have been reported.<sup>3</sup> Viruses by their nature possess the tendency to mutate. Viral disease

outbreaks have occurred in the past when specific viruses found in some animals had mutated and passed on to man. This is supported by the fact that reports have suggested that residents of the province where the COVID-19 was first identified had been in contact with live animals. Therefore, the COVID-19 may be a zoonotic virus or animal virus that mutated and then passed on humans.

### 1.2.12 COVID-19 is contracted by buying products high-risk countries

There is a myth that individuals that buy general goods shipped from high-risk countries are susceptible to viral infection. However, scientific evidence suggests that these viruses cannot survive extended days of shipping at atmospheric temperature. Specifically, there is a myth that believes that using China-made products will predispose individuals using them to risk of contracting the virus. However, this claim is untrue.<sup>23</sup> Presently, scientific investigation is ongoing to determine the actual mechanisms of infection, but the case is that the virus cannot survive in inanimate surfaces for a long time.<sup>34</sup> Therefore, the tendency of contracting the virus through the purchase of products from COVID-19 pandemic endemic zones may be inaccurate since the products usually spend days or even weeks on transit before they can get to the recipients.

### 1.2.13 COVID-19 is protected by face or nose masks

There is a myth that the use of face or nose coverings can protect a person from the disease, but the fact is that professional, tight-fitting respirators such as N95 can protect healthcare workers as they are constantly in contact with infected patients.<sup>2</sup> The use of lightweight disposable surgical masks that do not fit tightly may be incapable of protecting against the deadly virus because they can allow tiny droplets to get into the nose, mouth and eyes which could lead to illness. Also, personnel with the virus-contaminated hands may unknowingly get infected when their face is touched beneath the facial covering. Be that as it may, these masks can lessen the chances of contracting the disease by individuals with respiratory illness.<sup>33</sup>

### 1.2.14 COVID-19 as a bio-weapon or man-made

There is a myth that the COVID-19 is a biological weapon or being intentionally made by man, but the reality is that there is no genetic evidence to conclude that the virus was engineered to be used as a bio-weapon rather it appears to be a normal virus that occurred naturally. In the region where it was first identified (Wuhan, China), there are coronavirus study centres.<sup>27, 28</sup> Authors have reported that increased contact between live animals and humans tends to increase the risk of virus transformation in Southeast Asia.<sup>2</sup> For instance, in early 2003 there was SARS caused by SARS-CoV and late in 2003, there was a re-emergence of the disease after the resumption of the wildlife market in southern China. Afterwards, a similar virus was identified in horseshoe bats, called bat SARS-CoV. Authors have indicated that SARS could reemerge if conditions necessary for their introduction, mutation, amplification, and transmission occurs.<sup>3, 40-43</sup> In the Guangdong province of China, SARS-CoV and other similar viruses have been isolated in palm civets and Raccoon dog from the wild.<sup>44</sup> A large reservoir of SARS-CoV-like virus present in horseshoe bats, and eating exotic mammals in southern China, is a pandemic time-bomb.<sup>3</sup> The authors further reported the

tendency of the reemergence of SARS and other novel viruses from animals or laboratories. Consequently, it was concluded that there is a need for the scientific community and the public to be prepared.<sup>3</sup> Approximately thirteen (13) years after the publication was made by Cheng et al., a novel coronavirus (SARS-CoV 2), similar to SARS-CoV has emerged. This suggests that some exotic animals could be the source of human infection.

### ***1.2.15 COVID-19 survival in the throat***

There is a myth that coronaviruses remain in the throat for four days leading to sore throat and cough, after which it can get to the lungs. Therefore, drinking a lot of water and gargling with warm water containing salt or vinegar could kill the virus. A senior scholar in Johns Hopkins Center for Health Security opined that coronaviruses depict the tendency to cause a sore throat and therefore gargling with warm water may make it feel better without any direct effect on the virus.<sup>28, 45</sup>

### ***1.2.16 COVID-19: Sweet potatoes, certain vitamins and supplements boost immunity***

There is a myth that sweet potatoes, certain vitamins and supplements such as colloidal silver can enhance the immunity level of the body and thereby lowering the risk of being infected by COVID-19 causative agent, but the reality is that there is no scientific evidence to show that these substances could make human immune to the disease.<sup>28, 45</sup>

### ***1.2.17 COVID-19 can be avoided by drinking warm water intermittently and a hot cup of coffee or tea***

There is a myth that COVID-19 can be avoided by drinking warm water at a quarter of an hour interval,<sup>28</sup> while others believe that drinking cold water could make the liver fibrotic, but there is no scientific evidence to support these fables.<sup>46</sup> Another disturbing illusion is that a cup of coffee tea can kill the virus, but the reality is that hot beverage while assisting in relaxing the nerves reveals no scientific evidence suggesting that it could destroy the COVID-19 virus.<sup>2</sup>

### ***1.2.18 Chloroquine as a treatment remedy for COVID-19***

There is a myth that COVID-19 can be treated by taking chloroquine phosphate, which is an additive agent for cleaning fish tanks.<sup>28</sup> Before now, chloroquine was used in the treatment of malaria. However, over a decade ago, its use was banned in most countries of the world. But the reality is that chloroquine and hydroxychloroquine have been suggested as potential medications for the treatment of COVID-19. Specifically, chloroquine phosphate is lethal to the human system. With the outbreak of COVID-19 pandemic, there have been cases of hospitalization of patients due to chloroquine poisoning cases in Nigeria.<sup>47</sup> Presently,

hydroxychloroquine and chloroquine phosphate are yet to be scientifically validated for use in the treatment of COVID-19, although, there is ongoing research to ascertain the possibility of using these drugs for management of the virus.

### ***1.2.19 COVID-19 and animals***

Some persons opined that pangolins are the intermediate host of the virus while others believed they came from bats, with some attributing the spread to have come from the consumption of bat soup by some Chinese locals. Current evidence does not suggest that cats and dogs can be infected by the virus. Till date, most of the transmission cases reported have only been between humans.<sup>34</sup>

### ***1.2.20 COVID-19 and contact time***

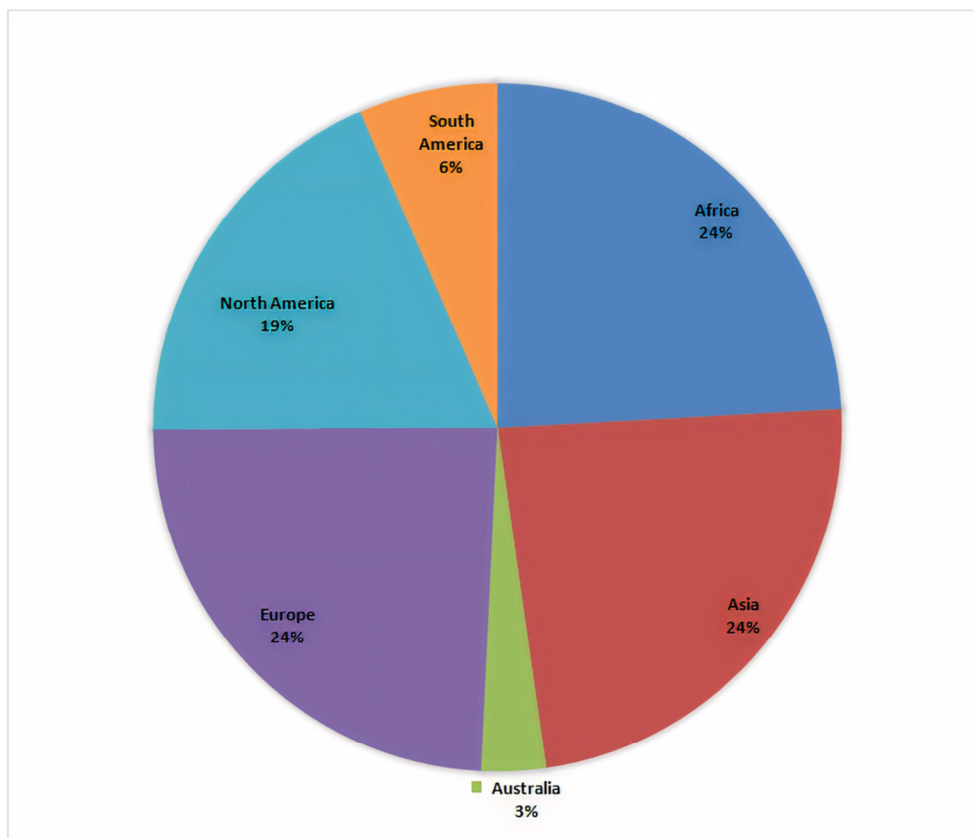
Some believe it takes at least 10 minutes of contact time with an infected person to become a carrier of the virus. In most cases, it is believed to require far less than this period, especially where the non-human spread is prevalent in the form of poor hygiene practices subsequent upon touching surfaces which may or may not have been infected with virus droplets from persons living with the virus.<sup>34</sup>

### ***1.2.21 COVID-19 and infected human excreta***

Another risk factor in the spread of the virus has been attributed to making contact with infected human excreta. Despite the unlikelihood, it is noteworthy that such viruses as the SARS-CoV-2 may depict some form of persistence in excrement.

### ***1.2.22 COVID-19: the deadliest***

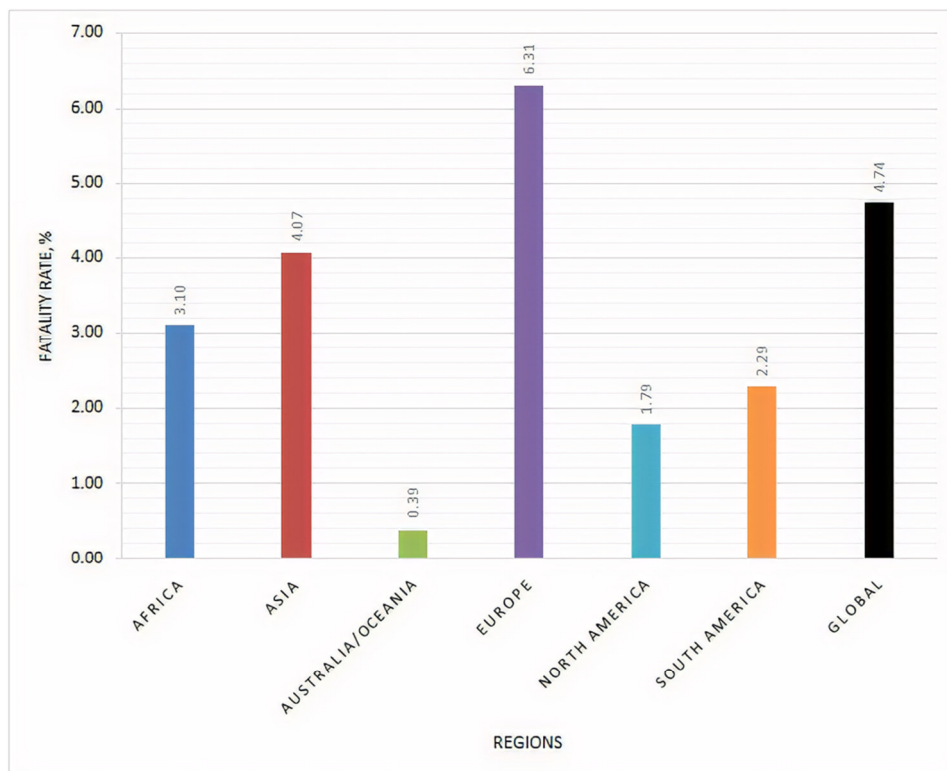
Finally, the virus has been overly misconstrued to be the deadliest, yet it does not seem to be as serious as influenza, or even Ebola which caused more deaths. Given the time of breakout and continuous spread of this pandemic and the current fatality rate of about 5% (Late December 2019 to late March 2020), it may be too early to generalize that it is the deadliest.<sup>34</sup> According to Worldometer,<sup>48</sup> the present status of COVID-19 has spread to 199 countries and territories around the world with the total number of confirmed cases at 746,066 and 35,347 recorded deaths on a global scale as at March 30, 2020, 15:52 GMT. This represents 4.74% in fatality cases. Apart from MS Zaandam, the virus has spread to 48, 47, 6, 48, 37 and 13 countries and territories in Africa (representing 24%), Asia (representing 24%), Australia/Oceania (representing 3%), Europe (representing 24%), North America (representing 19%) and South America (representing 6%) respectively (Fig 1). The Virus was first identified in China and as at today, the spread based on nations and territories is near equal for Europe, Asia and Africa.



**Fig 1: Geographical spread of COVID-19 based on regions of the world on March 30, 2020.**

Presently, the number of confirmed cases of COVID-19 infections across divergent regions of the world depicts the following global trends: 5,196, 167,942, 4,890, 400,315, 155,949 and 11,768 for Africa, Asia, Australia/Oceania, Europe, North America and South America respectively, coupled with a fatality rate of 3.1%, 4.1%, 0.4%, 6.3%, 1.8% and

2.3% respectively. From this, the global fatality is about 4.74% (Fig2). Of the current worldwide spread, Europe has over 50% of total global confirmed casualties and fatality rate of the pandemic. Hence, it is the present epicentre of the SARS-CoV-2 on a global scale.



**Fig 2: Fatality rate of the COVID-19 based on the regional spread.**

In Africa, some countries and territories have over 100 cases of the COVID-19, this includes South Africa, Egypt, Morocco, Algeria, Tunisia, Burkina Faso, Réunion, Côte d'Ivoire, Senegal, Ghana, Cameroon, Mauritius and Nigeria with (1,280, 609, 516, 511, 312, 222, 183, 165, 162, 152, 139, 128 and 111) respectively for confirmed cases (2, 40, 29, 31, 8, 12, 0, 1, 0, 5, 6, 3 and 1) respectively for the number of deaths, and (0.16%, 6.57%, 5.62%, 6.07%, 2.56%, 5.41%, 0.00%, 0.61%, 0.00%, 3.29%, 4.32%, 2.34% and 0.90%) respectively for proportion of fatality. Mayotte, Rwanda, Madagascar, Zambia, Uganda, Ethiopia, Guinea, Congo, Tanzania, Djibouti, Equatorial Guinea, Eritrea and Namibia are countries and territories with less than 100 confirmed cases but greater than 10 confirmed cases, yet no fatalities. Furthermore, Eswatini, Guinea-Bissau, Mozambique, Libya, Seychelles, Benin, Mauritania, Chad, Central African Republic, Liberia and Somalia are countries and territories with less than 10 confirmed cases but greater than 2 confirmed cases, yet no fatalities. Mali (25 cases), DR Congo (81 cases), Niger (22 cases), Zimbabwe (7 cases), Gabon (7 cases), Cape Verde (6 cases), Gambia (4 cases), Angola (7 cases) and Sudan (6 cases) with 8.00%, 9.88%, 13.64%, 14.29%, 14.29%, 16.67%, 25.00%, 28.57% and 33.33% fatality rate, respectively. The other African nations that the virus has spread to include Kenya (50 confirmed cases) and Togo (30 confirmed cases) with 2.00% and 3.33 % mortality rate. In Asia there has been about 81,470 cases with China dominating with 41,495 cases, Iran (9,661 cases), South Korea (9,217 cases), Turkey (4,347 cases), Israel (2,626 cases), Malaysia (2,578 cases), Japan (+Diamond Princess) (2,578 cases), Pakistan (1,650 cases), Philippines (1,546 cases), Thailand (1,524 cases), Indonesia (1,414 cases) and India (1,071 cases) with 4.06%, 6.64%, 1.64%, 0.37%, 1.41%, 2.48%, 1.21%, 5.05%, 0.59%, 0.55%, 8.63% and 2.71% fatality rate, respectively. Other Asian countries and territories with less than 1,000 confirmed cases but greater than 100 cases include Singapore, Hong Kong, Qatar, United Arab Emirates, Iraq, Bahrain, Armenia, Lebanon, Taiwan, Kazakhstan, Azerbaijan, Kuwait, Jordan, Cyprus, Vietnam, Oman, Uzbekistan, Afghanistan, Brunei, Sri Lanka, State of Palestine, Cambodia and Georgia. Other Asian regions with less than 100 confirmed cases include Kyrgyzstan, Macao, Maldives, Myanmar, Mongolia, Laos, Nepal, Bhutan and Timor-Leste. Also, Bangladesh (with 49 confirmed cases) and Syria (with 9 confirmed cases) has 10.20% and 11.11% mortality rate being the highest in the Asian region. In Australia/Oceania region, French Polynesia, New Caledonia, Fiji and Papua New Guinea has recorded less than 40 confirmed cases with no fatality yet, while Australia (with 4,245 confirmed cases) and New Zealand (with 589 confirmed cases) showed 0.42% and 0.17% fatality rates, respectively. In the European region, Italy (with 97,689 confirmed cases), Spain (with 85,195 confirmed cases), France (with 40,174 confirmed cases), United Kingdom (with 22,141 confirmed cases) and the Netherlands (with 11,750 confirmed cases) has the highest fatality rate of 11.03%, 8.62%, 6.49%, 6.36% and 7.35% respectively. Other European regions with over 16,000 confirmed cases are Germany and Switzerland. While Belgium, Austria, Portugal, Norway, Sweden, Czech Republic (Czechia), Ireland, Denmark, Luxembourg, Poland, Romania, Russia, Finland, Greece, Iceland and Russia have over 1,000 cases but less than 16,000 confirmed cases. Also, there are other 26 nations and territories in the European region with less than 1,000 confirmed cases. Of these, one of the nations and territories (San Marino has 230 confirmed cases and

10.87% fatality rate). In the North American region, the United States (with 145,131 confirmed cases) and Canada (with 6,671 confirmed cases) has the highest number of the infection with 1.80% and 1.00% fatality rates respectively. Each of the other 35 nations and territories has less than 1,000 confirmed cases. However, Guadeloupe (106), Dominican Republic (901), Saint Martin (15), Cayman Islands (12), Curaçao (11) and Nicaragua (4 confirmed cases) showed the highest fatality rate of 3.77%, 4.66%, 6.67%, 8.33%, 9.09% and 25.00%, respectively. In the South American region, Brazil (4,362 cases), Chile (2,449 cases) and Ecuador (1,924 confirmed cases) are the nations and territories with the highest confirmed cases showing fatality rates of 3.23%, 0.33% and 3.01% respectively. The other ten nations and territories have less than 1,000 confirmed cases. Of these, Peru (852), Venezuela (129), Argentina (820), Bolivia (97), Paraguay (64) and Guyana (8 confirmed cases) showed the highest fatality rates of 2.11%, 2.33%, 2.68%, 4.12%, 4.69% and 11.50% respectively. In the different regions of the world, there have been closed cases (dead and recovered patients), which is approximately 192,425 on the global scale as at the time of this study of these, 82% recovered while the remaining 18% died of the infection.

## 2. CONCLUSION

COVID-19 is an infectious disease caused by SARS-CoV-2. Following the initiation of the virus from Wuhan in China and the increasing spread across different countries, the World Health Organization (WHO) conventionally classified the situation as a pandemic having previously only categorized it as a case of international widespread health catastrophe by March 11, 2020, following the infection of over 245,000 persons worldwide and with deaths exceeding 10,000. The current statistical trend shows that the global fatality rate is about 4.74%. Majority of those infected with the SARS-CoV-2 encounter mild to moderate respiratory illnesses and recover without requiring special treatment. On the other hand, the aged and those with basic medical conditions like vascular ailment, diabetes, chronic respiratory disorder, and cancerous growths show increased tendencies to experience rapid degeneration in their ill-health. Some common misconceptions have been in circulation since the virus became prevalent, some of which are quite untrue or scientifically unverifiable. The discussed opinions have been formed based on the fear generated by the pandemic and public response has shown the vulnerability of the populace to misinformation. It is pertinent that the relevant regulatory health agencies continue to issue updates on the virus, increase the level of sensitization to forestall the outbreak of substance or drug-poisoning due to wrong usage or overuse.

## 3. AUTHORS CONTRIBUTION STATEMENT

Dr Sylvester Chibueze Izah, Dr Saket Singh Chandel and Dr Ayobami Omozemoje Aigberua collected data from different sources and drafted the paper. Dr T Venkatachalam and Mrs Deepshikha Verma verified the data and suggested improving the content of the paper.

## 4. CONFLICT OF INTEREST

Conflict of interest declared none.



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