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**Assessment of the Prevalence of Covid-19 Pandemic: Issues Bordering on the Mode of  
Transmission and Prevention of the Virus by Women Globally**

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**BY**

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**ABSTRACT**

*Coronavirus has become a great concern and challenge to lovers of good health globally. As it is well known, coronaviruses are a large family of viruses which may cause disease in animals or humans. They usually cause a respiratory infection ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The Coronavirus Study Group later renamed coronavirus as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and World Health Organization as well named the disease coronavirus disease 2019 (COVID-19). The most common symptoms of COVID-19 include: fever, dry cough, fatigue, sore throat, nausea or vomiting, conjunctivitis, etc. Its modes of transmission includes, contact, droplet, airborne, fomite, fecal-oral, bloodborne, mother-to-child, and animal-to-human transmission. Some of its preventive measures are: washing of hands regularly and thoroughly with soap and water or use of alcohol based hand sanitizer, maintain social distancing, avoiding large events and mass gatherings, etc. The paper concluded that COVID-19 has spread to almost all countries in the world and transmitted rapidly among humans. Its speeds of spread and the severity of symptoms differs from any other infectious diseases. One of the recommendations was that government and health authorities should plan and supply resources efficiently for effective management of covid-19 pandemic.*

**KEYWORDS: Prevalence of Covid-19, Symptoms, Mode of Transmission and Covid-19 Prevention**

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**Introduction**

The coronavirus infects many animal species such as humans, causing acute and chronic diseases. In 2002, SARSCoV appeared in the human population in China, causing worldwide epidemics with severe morbidity and high mortality rates, especially in aged people (Weiss and Leibowitz, 2012). Coronavirus is an RNA virus that is present and widespread in humans, other mammals and birds and which cause respiratory, enteric, liver and neurological diseases. The coronavirus forms an envelope structure on the outer surface of the virion and its morphology is round with a diameter of 100-160 nm (Zhu, Zhang, Wang, Li, Yang, Song, Zhao, Huang, Shi, Lu, Niu, Zhan, Wang, Gao and Tan, 2020), and also contributes significantly to the spread of the virus in vivo and in the antagonist of the host cell response (Weiss and Leibowitz, 2012). Their genome is positive-sense (+) single-stranded (ss) RNA and measuring 27-32 kb. Coronaviruses have additional accessory genes in addition to genes for structural viruses of the virus (Huldani, Uinarni, Sukmana, Tommy, Said, Edyson, Eso, Sitepu, Arifin, Mawu, Polim, Effendi, Ariestiyanto, Martamba, Ahdiya, Ridhoni and Achmad, 2020; Adachi, TakaakiKoma, Doi, Nomaguchi and Adachi, 2020).

There are six species of corona viruses that cause disease in humans. Four viruses, 229E, OC43, NL63, and HKU1, usually cause the common cold symptoms in immunocompetent individuals. The other two types are SARS-CoV and MERS-CoV) originating from zoonoses and are associated with sometimes fatal diseases. SARS-CoV was the causative agent of a severe outbreak of acute respiratory syndrome in 2002 and 2003 in Guangdong Province, China. MERS-CoV is a pathogen responsible for the outbreak of severe respiratory disease in 2012 in the Middle East (Zhu, et. al., 2020). The first case was identified in December 2019, a group of patients with pneumonia whose cause was unknown was associated with the seafood wholesale market located in Wuhan, China (Huldani, et. al., 2020). The unknown Betacoronavirus was discovered through the application of unbiased sequencing in samples from patients with pneumonia. A new corona virus was isolated used human airway epithelial cells, named 2019-nCoV, which forms a clade in the sarbecovirus subgenus, the Orthocoronavirinae subfamily. 2019-nCoV is the seventh member of the corona virus family that infects humans (Zhu, et. al., 2020).

## Conceptual Review

### Concept of Coronavirus and Covid-19 Pandemic

Coronavirus has become a great concern and challenge to lovers of good health. As it is well known, coronaviruses are a large family of viruses which may cause disease in animals or humans (World Health Organization, 2020). Seven coronaviruses can produce infection in people around the world but commonly people get infected with these four human coronaviruses: 229E, NL63, OC43, and HKU1. They usually cause a respiratory infection ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS) and the most recently discovered coronavirus (COVID-19) causes infectious disease (Hafeez, Ahmad, Siddqui, Ahmad and Mishra, 2020; WHO, 2020). The World Health Organization originally called this infectious disease Novel Coronavirus-Infected Pneumonia (NCIP) and the virus had been named 2019 novel coronavirus (2019-nCoV). This pathogen was later renamed as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) by the Coronavirus Study Group (Gorbalenya, et. al., 2020) and the disease was named coronavirus disease 2019 (COVID-19) by the WHO. As of January 30, WHO declared the SARS-CoV-2 outbreak as a Public Health Emergency of International Concern (PHEIC) (Burki, 2020). On 11th February 2020, the (WHO) officially renamed the clinical condition COVID-19 (a shortening of Corona Virus Disease-19) (Singhal, 2020). An outbreak of COVID-19 subsequently named SARS-CoV-2 caused by the 2019 novel coronavirus now called severe acute respiratory syndrome coronavirus 2 began in Wuhan, Hubei Province, China in December 2019, the current outbreak is officially a pandemic (Murphy and Bell, 2020). It was initially reported to the WHO on December 31, 2019. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency. On March 11, 2020, the WHO declared COVID-19 a global pandemic (Akpan and Umoudo, 2020).

According to Mediawati, Susanto and Nurahmah (2020), the spread of the COVID-19 virus can be droplets or aerosol. Droplets of more than 20 microns are produced, for example when coughing, sneezing and screaming. Droplets follow the earth's gravitational force so that within 1-2 meters will fall to the ground. Whereas aerosols are fine particles whose diameter is below 10 microns which can travel several meters before falling to the ground or the surface of other objects. Among them are 10-20 micron particles that behave like droplets. There are smaller particles that are less than 5 microns so they can enter the lungs even to the alveolar and cause pneumonia. For particles between 5-10 microns, it can only penetrate the

glottis and stop at the tracheal branch (Liu, 2020). The occurrence of aerosolization in this virus makes the virus can last 3 hours in the air (van Doremalen, Bushmaker, Morris, Holbrook, Gamble and Williamson, 2020). Likewise, with COVID-19, the survival time of airborne droplets will be longer when there is frequent airflow crossing such as the patient care environment with open doors and people walking around continuously so that the risk of droplets to spread becomes greater. Therefore, standardized mask and maintain physical distance is recommended (Mediawati, et. al., 2020). According to the Infectious Disease Vulnerability Index (IDVI, 2016), out of 25 countries most vulnerable to infectious diseases, 22 are in the African region (World Health Organization 2020). The WHO Africa estimated that there are 26 million people infected with HIV, 2.5 million with tuberculosis, 71 million with hepatitis B or C and 213 million with malaria in the African region (World AIDS Day, 2019; World Tuberculosis Day, 2019; World Hepatitis Day, 2019; World Malaria Report. (2019). Moreover, the double burden of non-communicable diseases (NCDs) such as cardiovascular diseases, cancers, chronic respiratory diseases and diabetes are also immensely significant in Africa, and all these conditions compromise the body's immunity (Mudie, Tan and Kendall, 2019). Therefore, it could be reasonably hypothesized that the majority of the African population, due to their immunocompromised conditions, will be at high risk for COVID-19.

Starting from Wuhan City, Hubei Province of China (Original epicenter of COVID-19) and spreading around the globe in less than 3 months, the COVID-19 pandemic is considered the one among the biggest pandemics to humans (Du, 2020; Anadolu Agency, 2020). As the pandemic is still ongoing, the number of countries involved, confirmed cases and mortality rates are changing every day. As the virus enters different countries at different time points, these countries are at different stages of the outbreak. With this complicity, true epidemiology is only possible at the end of this pandemic (Lone and Ahmad, 2020). Apparently, as of 18th April, 2020, the novel SARS-CoV-2 has emerged in all seven continents and affects 213 countries and territories with 2,121,675 confirmed cases, and a mortality rate of 6.7% (WHO, 2020). To date, the top eight most-affected countries with COVID-19 include the United States of America (33,274,659 confirmed cases), India (20,665,148 confirmed cases), Brazil (14,860,812 confirmed cases), France (5,680,378 confirmed cases), Turkey (4,929,118 confirmed cases), Russia (4,847,489 confirmed cases), United Kingdom (4,423,796 confirmed cases), and Italy (4,059,821 confirmed cases) (Worldometers, 2021). However, with the currently available data, the effort to monitor and track the epidemics of SARS-CoV-2 in the African continent is less or uneven due to inadequate testing capacity for COVID-19 while the true number of cases may remain undetected, which makes it challenging to predict or conclude the true epidemiology of COVID-19 in the African continent. Certainly, several major factors, such as late arrival of the pandemic, weak diagnostics, lack of essential medical supplies and a large susceptible population will significantly affect and change the epidemiology of COVID-19 in the continent (The World Economic Forum, 2020; Africa Center for Strategic Studies, 2020).

### **Symptoms of Covid-19**

According to World Health Organization (2020), the most common symptoms of COVID-19 include:

- Fever
- Dry cough
- Fatigu

*Other symptoms that are less common and may affect some patients include:*

- Loss of taste or smell,
- Nasal congestion,
- Sore throat,
- Headache,

- Nausea or vomiting,  Diarrhea,  Chills or dizziness,  Muscle or joint pain,
- Conjunctivitis (also known as red eyes)  Different types of skin rash.

***Symptoms of severe COVID-19 disease include:***

- Shortness of breath,  Loss of appetite,  Confusion,
- Persistent pain or pressure in the chest,  High temperature (above 38 °C)

***Other less common symptoms are:***

- Irritability,  Confusion,  Anxiety,  Depression,
- Sleep disorders,  Reduced consciousness (sometimes associated with seizures),
- More severe and rare neurological complications such as strokes, brain inflammation, delirium and nerve damage.

People of all ages who experience fever and/or cough associated with difficulty breathing or shortness of breath, chest pain or pressure, or loss of speech or movement should seek medical care immediately (World Health Organization, 2020).

**Covid-19 Mode of Transmission**

WHO (2020) briefly describes possible modes of transmission for Covid-19, including contact, droplet, airborne, fomite, fecal-oral, bloodborne, mother-to-child, and animal-to-human transmission.

***Contact and Droplet Transmission:*** Transmission of SARS-CoV-2 can occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks or sings (Liu, Liao, Qian, Yuan, Wang and Liu, 2020; Chan, Yuan, Kok, To, Chu and Yang, 2020). Respiratory droplets are >5-10 µm in diameter whereas droplets <5µm in diameter are referred to as droplet nuclei or aerosols (WHO, 2014). Respiratory droplet transmission can occur when a person is in close contact (within 1 metre) with an infected person who has respiratory symptoms (e.g. coughing or sneezing) or who is talking or singing; in these circumstances, respiratory droplets that include virus can reach the mouth, nose or eyes of a susceptible person and can result in infection. Indirect contact transmission involving contact of a susceptible host with a contaminated object or surface (fomite transmission) may also be possible.

***Airborne Transmission:*** Airborne transmission is defined as the spread of an infectious agent caused by the dissemination of droplet nuclei (aerosols) that remain infectious when suspended in air over long distances and time (WHO, 2014). Airborne transmission of covid-19 can occur during medical procedures that generate aerosols (“aerosol generating procedures”) (WHO, 2020). WHO, together with the scientific community, has been actively discussing and evaluating whether covid-19 may also spread through aerosols in the absence of aerosol generating procedures, particularly in indoor settings with poor ventilation. The physics of exhaled air and flow physics have generated hypotheses about possible mechanisms of covid-19 transmission through aerosols (Mittal, Ni and Seo, 2020; Bourouiba, 2020). These theories suggest that 1) a number of respiratory droplets generate microscopic aerosols (<5 µm) by evaporating, and 2) normal breathing and talking results in exhaled aerosols. Thus, a susceptible person could inhale aerosols, and could become infected if the aerosols contain the virus in sufficient quantity to cause infection within the recipient.

**Fomite Transmission:** Respiratory secretions or droplets expelled by infected individuals can contaminate surfaces and objects, creating fomites (contaminated surfaces). Viable SARS-CoV-2 virus and/or RNA detected by RT-PCR can be found on those surfaces for periods ranging from hours to days, depending on the ambient environment (including temperature and humidity) and the type of surface, in particular at high concentration in health care facilities where COVID-19 patients were being treated (Van Doremalen, Bushmaker, Morris, Holbrook, Gamble and Williamson, 2020; Cheng, Wong, Chen, Yip, Chuang and Tsang, 2020). Therefore, transmission may also occur indirectly through touching surfaces in the immediate environment or objects contaminated with virus from an infected person (e.g. stethoscope or thermometer), followed by touching the mouth, nose, or eyes.

### **Women Involvement in Covid-19 Prevention**

According to Lupri & Grandin (2021) around the globe, women have helped governments in imploring residents to stay home to protect themselves and others from the new coronavirus disease, COVID-19. But for domestic violence victims—the vast majority of whom are mostly women and children—home is a dangerous place. Experts have characterized an “invisible pandemic” of domestic violence during the COVID-19 crisis as a “ticking time bomb” or a “perfect storm”. Moving forward, it is critical that women help states in supporting the development of alternative reporting mechanisms; expand shelter options; strengthen the capacity of the security and justice sectors; maintain vital sexual and reproductive health services, where domestic and sexual violence victims are often identified and supported; support independent women’s groups; finance economic security measures for women workers, especially those serving on the front lines of the pandemic or in the informal economy, and other groups disproportionately affected by the pandemic, such as migrant, refugee, homeless, and trans women; and collect comprehensive data on the gendered impact of COVID-19. Civil society organizations (including women’s/ mothers’ groups), religious and traditional leaders, SBMCs, EIEWGN, parents/ guardians, international development partners, donors, teachers’ unions, and private sector (World Health Organization. 2019). According to Lupri & Grandin (2021), other involvements of women in prevention of Covid-19 pandemic are as follows:

#### ***Preventive Measures***

Supporting WHO (2021), Lupri & Grandin (2021) stated that women contribute immensely in prevention of Covid-19 pandemic by promoting campaigns and advising people on how to take care of their health and protects others. Hence, subsequent steps are noted:

#### ***Take Steps to Protect Yourself***

- ❖ Wash your hands regularly and thoroughly with soap and water for at least 20 seconds or with an alcohol based hand rub (hand sanitizer that contains at least 60% alcohol) completely cover your hands and rub them together until they do not dry especially after you have been visited a public place, or after blowing your nose, sneezing or coughing.
- ❖ Hands touch many surfaces and pick up viruses and these contaminated hands, can transfer the virus to your nose, eyes or mouth So, avoid touching these organs with unwashed hands. Because from there, the virus can enter the body and may cause persons to sick (Hafeez, et. al., 2020).
- ❖ Maintain social distancing (maintain at least 1 metre or 3 feet distance between yourself and anyone) and avoid close contact with people who are sick (who is coughing or sneezing). When infected individuals cough or sneezes, they spray small

droplets from their nose or mouth which may contain COVID-19 virus. The person can breathe in these droplets (WHO, 2021).

- ❖ Avoid large events and mass gatherings

### ***Take Steps to Protect Others***

- ❖ Stay home if you are feeling unwell, unless you're going to get medical care.
- ❖ If you have a cough, fever and difficulty breathing, seek medical attention consult online to your doctor
- ❖ If possible, stay isolated in a separate room from family and pets and wear a facemask when you are around other people (e.g., sharing a room or vehicle). If you are unable to wear a facemask (due to its causes trouble breathing or other reason) then you should cover your coughs and sneezes (Hafeez, et. al., 2020).
- ❖ Avoid direct physical contact (including physical examination and exposure) to respiratory and other body secretions. For instance, move potentially infectious people to isolation rooms and close the doors. In a working place, make the distance in workers, customers, and other visitors, especially from potentially infectious individuals' location.
- ❖ Restrict the number of individuals entering isolation areas, including the room of a patient with suspected and confirmed COVID-19.

### **Conclusion**

Coronavirus is an RNA virus that is present and widespread in humans, other mammals and birds and which cause respiratory, enteric, liver and neurological diseases. There are six species of coronaviruses that cause disease in humans. Four viruses, 229E, OC43, NL63, and HKU1 cause common cold symptoms in immunocompetent individuals. The other two SARS-CoV and MERS-CoV are associated with sometimes fatal diseases. COVID-19 was discovered in late December 2019. It has spread to almost all countries in the world and transmitted rapidly among humans. It speeds of spread and the severity of symptoms differs from any other infectious diseases. Due to its impulsive characteristics, WHO on January 30, 2020, declared COVID-19 outbreak a global health emergency. As on March 11, 2020, the WHO declared COVID-19 a global pandemic.

### **Recommendations**

1. Government of any nation should ensure that their citizens adhere to the Covid-19 recommended policies such as social distancing, mask wearing, avoiding large gatherings and seeking testing when symptomatic and other associated policies to alleviate further spread of this virus.
2. Government and health authorities should plan and supply resources efficiently for effective management of covid-19 pandemic.
3. To slow the spread, and ultimately eradicate the Covid-19 virus, countries must work together to develop a vaccine or create an effective therapeutic intervention to prevent further increase in death and transmission of the virus.

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