Hygiene and Sanitation to Prevent COVID 19

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Abstract: At the end of 2019, people around the world were shocked by the Corona Virus (COVID-19) pandemic which caused panic everywhere. This virus was discovered in Wuhan, China for the first time and has infected 90.308 people as of 2 march 2020. The number of deaths has reached 3.087 people or 6%, the number of patients who have recovered is 45.726 people. COVID-19 is an infectious disease that has created a public health emergency. Therefore, preventive measures against types of infectious diseases, especially COVID 19, must be carried out as quickly as possible. This study uses a literature review research method, which aims to build and construct a stronger conception based on empirical studies that have been carried out related to the prevention of COVID 19. Hygiene and sanitation is one form of effort to prevent COVID-19. So that with the hope of breaking the chain of spread or transmission.
Keywords: Hygiene, Sanitation, Prevent, COVID-19

Introduction

The corona outbreak with the SARS-Cov-2 virus type which was first detected by its appearance in Wuhan China has now spread widely to all parts of the world. As it is known that SARS-Cov-2 is not a new type of virus. The SARS-Cov-2 virus is the result of an old virus mutating to form a new genetic makeup, in short, the virus remains the same type and only changes identity (Huang *et al.,* 2020). This virus is named SARS-Cov-2 because genetically the corona virus has a close relationship with the virus that causes SARS and MERS (Wang *et al.,* 2020). COVID-19 initially only became an outbreak in the city of Wuhan, it didn't take long for it to transform into a pandemic that was troubling the whole world. After the corona virus managed to infect more than 118.000 people in 114 countries and caused 4.291 people to die, the World Health Organization (WHO) finally declared the corona virus outbreak a global pandemic (Yarmaliza *et al.,* 2020). In Indonesia itself, cases of being infected with the corona virus were first announced on March 2, 2020. After that incident, the number of patients who were positively infected continued to grow. Today the community is not only troubled by anxiety but is suffering from tremendous panic (Zhang *et al.,* 2020).

The increase in the number of cases took place quite rapidly, and spread to various countries in a short time. As of 9 July 2020, WHO reported 1.184.226 confirmed cases with 545.481 deaths worldwide (Case Fatality Rate/CFR 4.6%) (Kementerian Sekretariat Negara RI, 2020). The COVID-19 situation at the global and national levels is still at very high risk, in Indonesia on April 13, 2020 there were 4557 cases with a death rate of 399 people (Casanova *et al.,* 2020). As long as vaccine development is still in progress, the world is faced with the reality of preparing to coexist with COVID-19. Therefore, guidance is needed in efforts to prevent and control COVID-19 to provide guidance for health workers and the wider community to stay healthy, safe, and productive, and all Indonesian citizens get services that are according to standards (Kampf *et al.,* 2020). Guidelines for the prevention and control of COVID-19 are prepared based on WHO recommendations which are adjusted to the development of the COVID-19 pandemic and the provisions of applicable laws and

regulations. Coronaviruses are also a large family of viruses that cause illness ranging from mild to severe symptoms. There are at least two types of coronavirus that are known to cause illnesses that can cause severe symptoms such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). Coronavirus Disease 2019 (COVID-19) is a new type of disease that has never been previously identified in humans (Wang *et al.*, 2020). The virus that causes COVID-19 is called Sars-CoV-2. Corona viruses are zoonotic (transmitted between animals and humans). Research states that SARS is transmitted from civet cats to humans and MERS from camels to humans. Meanwhile, the animal that is the source of transmission of COVID-19 is still unknown (Chen *et al.*, 2020).

Information about this virus is of course still very limited because many things are still under research and epidemiological data will be very developed as well, for this reason this review is a review based on limited information which is summarized with the aim of providing information and it is very possible that there will be policy changes and other related matters accordingly. development of research results, epidemiological data and advances in diagnosis and therapy (Chen *et al.*, 2020). Provision of safe water and sanitation as well as a hygienic/clean environment is important in order to protect human health in the event of an outbreak of infectious diseases, such as the current outbreak of COVID-19 (WHO, 2020). Ensuring the implementation of good and consistent WASH practices and waste management at the community, household, school, market and health facility levels will help prevent transmission or transmission of the COVID-19 virus from one person to another (Yarmaliza *et al.*, 2020).

Many people still think that the transmission of COVID-19 can still be avoided by simply keeping away from sufferers, even though this disease can spread through particles that stick to objects around them (Holshue *et al.*, 2020). The virus can be transmitted from 1 to 2 meters through coughing or sneezing. Another way of transmitting the virus is through hand contact, or an environment with a virus such as door handles, tables and chairs. One of the ways to do sanitation is to wash your hands and face regularly. If sanitation is not considered, then the distribution will be even wider. For example, someone who is infected with the COVID virus sneezes and is not covered with a tissue or wiped with his inner arm, can infect the people around him, or if someone who is infected sneezes and then his hand holds an object in a public place and someone else holds it. can lead to disease transmission (Gundy, *et al.*, 2020).

One of the ways to prevent transmission and spread is to always maintain personal hygiene and the environment. Maintaining personal and environmental hygiene can be done by using antiseptics and disinfectants. Antiseptic is a substance that can inhibit the growth and development of microorganisms without having to kill these microorganisms in living tissues. Antiseptics usually contain alcohol, chlorhexidine, and anilides. Disinfectants are substances that can kill pathogens in the environment. Disinfectants usually contain glutaraldehyde and formaldehyde. The use of these substances was previously more the responsibility of medical personnel, but for now the use of these substances can be used not only in hospitals, but also at home (KEMENKES, 2020).

Based on scientific evidence, COVID-19 can be transmitted from human to human through close contact and droplets, not through the air (Still under research). People who are most at risk of contracting this disease are people who have close contact with COVID-19 patients, including those who treat COVID-19 patients. The standard (Kementerian Kesehatan, RI

2019), practice coughing and sneezing ethics, avoiding direct contact with livestock and wild animals and avoiding close contact with anyone displaying symptoms of respiratory illness such as coughing and sneezing. In addition, implementing Infection Prevention and Control (PPI) while in health facilities, especially the emergency department at the health service level, needs to be taken seriously to break the chain of transmission.(KEMENKES RI, 2012).

Methods

The method used in this research is literature study, which is a study where the object of research is literature, either in the form of scientific journals, books, articles in the mass media, or statistical data. This literature will be used as a reference in this article relating to personal hygiene and prevention of COVID 19. This study aims to build and construct a stronger conception based on empirical studies that have been conducted.

Result

COVID-19 is a disease caused by a type of corona virus that attacks the respiratory system. The real corona virus was first identified in the 1960s (Huang, 2020). Generally this virus is found in animals with different species such as camels, cows, cats and bats. But what is happening now is a new type of corona virus, namely COVID-19. This disease has reached the epidemiological criteria which is now called a global pandemic because it has successfully infected more than 100,000 people in more than 100 countries (Wang, 2020).

Discussion

The pathogenesis of COVID-19 infection is not fully understood. At first it was known that this virus might have similarities with SARS and MERS CoV, but from the results of the genomic evaluation of isolation from 10 patients, it was found that the similarity reached 99% which indicated a new virus, and showed similarities (88% identical) to batderived severe acute respiratory syndrome. SARS) - like coronaviruses, bat-SL-CoVZC45 and bat-SLCoVZXC21, taken in 2018 in Zhoushan, Eastern China, the proximity to SARS-CoV is 79% and furthermore to MERS-CoV (50%). Phylogenetic analysis shows that COVID-19 is part of the subgenus Sarbecovirus and genus Betacoronavirus. Other studies have shown protein (S) facilitates the entry of the coronavirus into target cells. This process relies on the binding of protein S to cellular receptors and priming of protein S to cellular proteases (WHO, 2020).

Epidemiology Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by a new type of Coronavirus. This disease begins with the emergence of a pneumonia case of unknown etiology in Wuhan, China at the end of December 2019 (Lu R, et al., 2020). Based on the results of an epidemiological investigation, the case is suspected to be related to the Seafood Market in Wuhan. On January 7, 2020, the Chinese Government then announced that the cause of the case was a new type of Coronavirus which was later named SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). This virus comes from the same family as the viruses that cause SARS and MERS. Even though they come from the same family, SARS-CoV-2 is more infectious than SARS-CoV and MERS-CoV (Wang *et al.,* 2020).

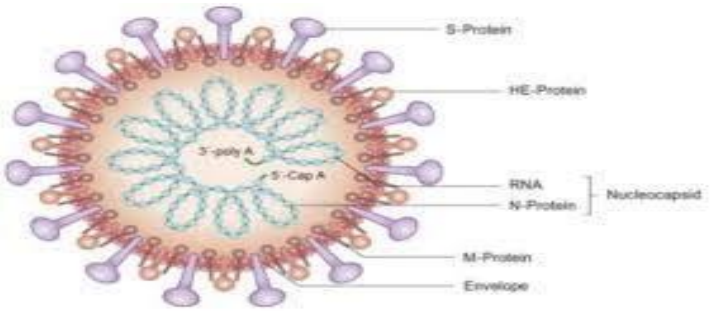

Figure 1. Structure of COVID 19

There are two main transmission routes of the COVID-19 virus: respiratory and contact. Respiratory splashes come from coughs or sneezes of an infected person. Anyone who has close contact with someone who has respiratory symptoms (Such as sneezing and coughing) is at risk of being exposed to infected splashes. The droplets may fall on surfaces where the virus can survive, therefore the environment around the infected individual can become a source of transmission (Known as contact transmission). From the results of the study to date, the risk of being infected with the COVID-19 virus from the feces of an infected person appears to be low. Some studies suggest that the COVID-19 virus may cause intestinal infections and can be found in feces. An average of 2-10% of confirmed COVID-19 cases also experience diarrhea, and two studies have detected the presence of COVID-19 RNA in the stool of patients with COVID-19. However, only one study has cultured the COVID-19 virus from a single stool specimen. There are currently no reports of transmission of COVID-19 through the digestive tract (Fecal-oral transmission).

Corona viruses are zoonotic, so there is a possibility that the virus originated from animals and was transmitted to humans. In COVID-19 it is not certain that the process of transmission from animals to humans is, but phylogenetic data allows COVID-19 to also be a zoonotic. Subsequent data developments show human to human transmission, which is predicted through droplets and contact with viruses released in droplets. This is in accordance with the incidence of transmission to health workers treating COVID-19 patients, accompanied by other evidence of transmission outside China from a person who came from the City of Shanghai, China to Germany and accompanied by finding a positive result in people met in the office. In this case report, it is even said that the infection occurred when the index case was not yet experiencing symptoms (asymptomatic) or was still in the incubation period. Another report supporting human-to-human transmission is a report of 9 cases of direct human-to-human transmission outside China from index cases to close contact persons who do not have any travel history.

The incubation period for COVID-19 averages 5-6 days, with a range between 1 and 14 days but can reach 14 days. The highest risk of transmission is acquired in the first days of illness due to high concentrations of the virus in secretions. An infected person can be infectious up to 48 hours before symptom onset (presymptomatic) and up to 14 days after symptom onset. Based on current epidemiological and virological studies, it is proven that COVID-19 is mainly transmitted from symptomatic people to other people who are in close proximity through droplets. Droplets are water-filled particles with a diameter of> 5-10 µm. Droplet transmission occurs when a person is in close proximity (within 1 meter) of someone who has respiratory symptoms (for example, coughing or sneezing) so that the droplets are at risk of hitting the mucosa (mouth and nose) or the conjunctiva (eyes). Transmission can also occur through objects and surfaces contaminated with droplets around infected people.

Hand Hygiene Practices Paying attention to hand hygiene is the main thing in handling the Corona virus. Cleaning your hands with soap and water or using an alcohol-based cleanser should always be done according to the instructions known as "Wash Hands at 5 Critical Times". If your hands don't look dirty, the recommended method is to rub your hands with an alcohol-based sanitizer for 20-30 seconds using the correct technique. If hands are visibly dirty, then hands should be washed with soap and water for 40-60 seconds using the correct technique. Hand hygiene should always be done at 5 critical times, including before and after using personal protective equipment (PPE); when changing gloves, after making contact with patients; both those that have been confirmed and suspect COVID-19; after contact with respiratory secretions; before eating; and after using the toilet. If an alcohol-based sanitizer is not available, then using chlorinated water (0.05%) for hand washing is an option. But this is not ideal as it can cause dermatitis which can increase the risk of infection and asthma due to the possibly inappropriate chlorine content.

However, if other options are not available then chlorinated water may be an option for hand washing. Facilitation of well-functioning hand hygiene should always be available to medical personnel at service delivery points and areas where personnel remove and use PPE. In addition, well-functioning hand hygiene facilities should also be available to all patients, family members and visitors, and preferably within 5 m of toilets, waiting areas, dining rooms and other public spaces. Hand hygiene, outside of health care facilities, is the most important thing to prevent transmission/infection of COVID-19. This practice must be carried out at home, school, public places such as markets, places of worship, trains and bus terminals. Regular hand washing should be done before preparing food / cooking, before and after eating, after using the toilet or after changing a child's diaper, and after handling animals. Well-functioning hand washing facilities equipped with soap and running water must be provided a maximum of 5 m from the toilet.

Safe management of wastewater and feces. Currently there is no evidence that the COVID-19 virus can be transmitted through the sewage system with / or without wastewater treatment. Furthermore, there is no evidence that workers handling sewerage acquired acute respiratory tract disease or SARS caused by another type of coronavirus which caused an outbreak of acute respiratory disease in 2003. As part of an integrated public health policy, the wastewater that is flowed through the sewerage must be treated with a centralized treatment system safely. Each stage of processing (Including waiting times and dilutions) should eliminate potential risks. Stabilization ponds (Oxidation ponds) are generally a practical and simple form of wastewater treatment technology that can kill pathogenic bacteria, which have a waiting / retention time of up to 20 days or more combined with exposure to sunlight, increasing pH, and biological processes. , is a factor that can accelerate the destruction of pathogenic bacteria. The additional disinfection step at the end can be considered if the available wastewater management is not optimal in eliminating the virus. Good practices to protect the health of staff in wastewater treatment facilities must also be followed. Staff should wear appropriate personal protective equipment (PPE), including safe work clothing, gloves, boots, goggles or face covering, and a mask. Officers also need to always carry out hand hygiene and avoid touching the eyes, nose and mouth with unclean hands.

The main prevention is to limit the mobilization of people at risk to the incubation period. Other prevention is to increase endurance through healthy food intake, wash your hands more, use a mask when you are in a risky or crowded area, do sports, get enough rest and eat food that is cooked until it is cooked and if you are sick, immediately go to a referral hospital

for evaluation. Until now there is no vaccination for primary prevention. Secondary prevention is to immediately stop the viral growth process, so that the patient is no longer a source of infection. Important preventive measures include quitting smoking to prevent pulmonary parenchymal abnormalities. Prevention of health workers must also be done by paying attention to the placement of patients in wards or intensive isolation rooms (Biao & Xia, 2020). Control of infection in the health care of suspected patients in the isolation emergency room (IGD) and regulate the flow of patients in and out. Prevention of health care workers starts at the first door of the patient including triage. In patients who may experience COVID-19 infection, health workers need to use standard PPE for infectious diseases. Standard precautions are carried out routinely, using PPE including masks for medical personnel (N95), eye protection, gloves and long gown (Gown) (Backer JA & Klinkenberg D, 2020).
Several studies have shown that the use of antiseptics and disinfectants is effective to kill the virus, but if this is not followed by limiting the distance between the patient and the carrier, the transmission will still increase and cannot be avoided. Individual behavior and general rules of personal hygiene are very important to control the spread of COVID-19, such as early self-isolation and maintaining social distancing (Kanne, 2020).

Further education is needed on how to use effective antiseptics and disinfectants so that the potential for prevention is better. The use of a good antiseptic can be done by following the 6 steps of washing hands according to the standards of the WHO in 20-30 seconds. In addition, limit the contact distance with the contaminated area because the higher the degree of contamination, the greater the number of microorganisms present. Increasing the visibility and availability of alcohol-based handwashing and hand rub stations is beneficial and reduces transmission (Rothe *et al.,* 2020).

Washing hands with water alone is more common, however, this has proven ineffective in maintaining health than washing hands with soap. Using soap in washing hands actually causes people to spend more time washing their hands but using soap is effective because the dirt that sticks to it will come off when the hands are rubbed and rubbed in an effort to remove them. In this clinging dirt, the germs live (Biao & Xia, 2020).

Another effect is that the hands smell good after washing them with soap and in some cases, it is the hands that become fragrant which make washing hands with soap more attractive to do. Washing hands with soap is one of the sanitary measures by cleaning hands with fingers using water and soap by humans to be clean and break the chain of germs.(Backer & Klinkenberg, 2020). Washing hands with soap is also known as an effort to prevent disease. This is done because hands often become agents that carry germs and cause pathogens to pass from one person to another either by direct contact or indirect contact (Using other surfaces such as towels, glasses). Hands that come into direct contact with human or animal feces, or other body fluids such as snot, and contaminated food/drink when not washed with soap can transfer bacteria, viruses and parasites to other people who are not aware that they are being transmitted. (KEMENKES RI, 2015).

Handwashing with Soap (CTPS) is also an effort to improve mitigation against the COVID-19 virus, known as the current Coronavirus. People are encouraged to wash their hands with soap before or after activities in the home environment. Washing your hands properly and properly using soap is also as effective as removing bacteria and viruses. On the other hand, access to running water and soap is now easier than hand sanitizers (Gundy & Gerba, 2020).

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The use of antiseptics and disinfectants is also a form of prevention from COVID 19, and this must be well socialized to the public, especially regarding their proper use where antiseptics can be used for body parts and disinfectants are used for inanimate objects such as items or the floor of the house. Education can be done either using media or direct education by health workers, especially pharmacists. It is the responsibility of both the community and health workers to always maintain health (KEMENKES RI, 2020).

Conclusions

The COVID-19 infection caused by the new corona virus is a new pandemic with a very fast spread between humans. Until now, there is no specific antiviral therapy and no vaccine for COVID-19 has been found. For this reason, it is necessary to increase the hygiene / hygiene of the hands and the respiratory tract, as well as the need to develop prevention models around the world, such as creating an environment to have good sanitation and improvement of optimal hygiene.

References

Backer JA, Klinkenberg D, W. J. 2020, *Incubation period of 2019 novel coronavirus (2019-nCoV) infections among travellers from Wuhan, China, 20-28 January 2020. Euro Surveill*. 25(5).

Biao, T., & Xia, W. 2020, *Estimation of the Transmission Risk of the 2019-nCoV and Its Implication for Public Health Interventions*. 9(2).

Casanova, L., Rutalal, W., Weber, D., & Sobsey, M. 2020. Survival of surrogate coronaviruses in water. *Water Res. 43*(7).

Chen N, & Zhou M, Dong X, Qu J, Gong F, H. Y. 2020, Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y. 2020. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet.*

Gundy P, Gerba CP, P. IL. 2020, Survival of coronaviruses in water and wastewater. *Food Environ Virol* : 10-14

Holshue *et al.*, 2020. For the Washington State 2019-NCoV Case Investigation Team. First case of 2019 novel coronavirus in the United States. *N Engl J Med.*

Huang. 2019. *Clinical features of patients infected with 2019 novel coronavirus in Wuhan,China.The Lancet.* 6736(20) : 1-10

Huang. 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet.* 497–506.

JP. 2020, Chest CT findings in 2019 novel coronavirus (2019- nCoV) infections from Wuhan, China: key points for the radiologist. *Radiology*.

Kampf, Todt, & faender. 2020. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J Hosp Infect*. 104(3) :246–251.

KEMENKES RI. 2020. *Pedoman Kesiapsiagaan Menghadapi Infeksi Novel Coronavirus (2019- nCoV).* Jakarta

KEMENKES RI. 2020. *Pedoman Pencegahan dan Pengendalian Coronavirus Disease (COVID-19) Revisi ke 3*. Jakarta

KEMENKES RI. 2019. *Pedoman Pencegahan dan Pengendalian Coronavirus Disease (COVID-2019).* Jakarta

KEMENKES RI. 2015. *Sanitasi Total Berbasis Masyarakat Sanitasi Total Berbasis Masyarakat. MCA-Indonesia dan Kementerian Kesehatan Republik Indonesia*. Jakarta

KEMENKES RI. 2012. *Manlaknis STBM : Pedoman Teknis Pelaksanaan Teknis STBM Tahun 2012. Kementerian Kesehatan Republik Indonesia.* Jakarta.

Kementerian Sekretariat Negara RI. 2020. *Pemerintah Perhatikan Kebutuhan APD Bagi Tenaga Media.* Jakarta

Lu, Zhao, Li J *et al.*, 2020. Genomic characterisation and epidemiology of 2019 novel coronavirus: implications for virus origins and receptor binding. *Lancet.* 395 :565-74.

Rothe, Schunk, Sothmann *et al.*, 2020. Transmission of 2019-nCoV infection from an asymptomatic contact in Germany. *N Engl J Med.*

Wang. 2020. A Novel Coronavirus Outbreak of Global Health Concern. *The Lancet.*6736(20): 1-4.

WHO. 2020. *Getting your workplace ready for COVID-19.* Geneva

WHO. 2020. *Guidelines on sanitation and health.* Geneva.

Yarmaliza, Y., Farisni, T. N., Fitriani *et al.*, Literature Review of Epidemiological Phenomena: Corona Virus Disease Pandemic 2019. *European Journal of Medical and Health Sciences*. *2*(3): 1–6.

Zhang, Y., Chen, C., & Zhu. 2020. Isolation of 2019-nCoV from a stool specimen of a laboratoryconfirmed case of the coronavirus disease 2019 (COVID-19)]. *China CDC Weekly*. 2(8).