



### HOW TO OVERCOME THE FEAR OF CORONAVIRUS?

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In the last few months, since the first time it was identified (2019) the current novel coronavirus had been given a series of names by the World Health Organization, NCoV-19, Covid-19 or SARS-CoV-2 has spread fear across the globe.[1] This fear needs to be overcome by knowing better the virus, so that our fellow citizens can act proportionally and appropriately. Certainly, this is not only the responsibility of government but also the responsibility all of us including infectious diseases practitioners, scientists, academicians, communities and even individuals. One way to overcome this issue is by educating the people about what coronavirus really is.

#### What is coronavirus?

There are several known coronaviruses to science. Coronaviruses (CoV) are a large family of viruses that cause illness ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).[2] The term coronavirus comes from the structure of the virus that impart the look of a corona (spherical shape) surrounding

the virion (the main body of the virus) that assembled from single strand RNA as illustrated in the Figure revealed by the Center for Diseases Control and Prevention (CDC), the United States of America. RNA or ribonucleic acid is a genetic material that composes living organisms which include virus.[3,4]

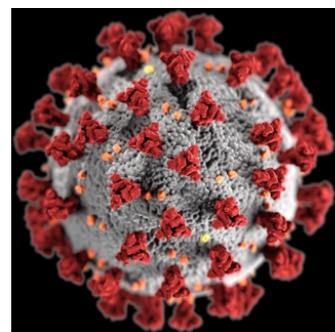


Figure 1. Coronavirus structure

There are several types of coronavirus and they are commonly found in animals such as bats, cats and other animals, and some are found in human. This is due to the characteristics of coronaviruses which are zoonotic. Zoonotic means that the viruses transmit among animals and also human.

Actually, human has been living so closely with different types of viruses since the beginning of mankind history. Viruses can be found almost everywhere in our environment including sea water. In

fact, about 90% of known viruses are originated from ocean, according to a study conducted by a group of scientist from University of California Santa Barbara in Galapagos Island. So, it is safe to say that not all viruses have the ability to infect human. Otherwise, whoever been to ocean would have been infected by these viruses. On top of that, of course, this is due to the grace of God, that we human being are already well equipped with defense mechanism that protect us from being sick from different types of microbial pathogens such as viruses, bacteria and other microbial agents. However, in the other hand, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) which currently causes an outbreak is a new strain that has not been previously identified in humans. Therefore, it is very important to get to know this virus better.

### Fatality and Severity Level of SARS-CoV-2

When we talk about fatality and severity of a disease caused by any infectious microbial agents, at least there are two important aspects of the pathogens that need to be known and taken into consideration even by common people. So that the fear caused by the pathogens is proportional to the real danger of the outbreak. The two aspects are pathogenicity and transmissibility. These two factors will determine the severity level of pathogens. Pathogenicity is the ability of the pathogen (in this case is coronavirus) to infect human. The pathogenicity is a parameter that directly indicates fatality rate of the disease. While the transmissibility is the ability of the virus to be transmitted among individuals. The combination of the two parameters

will then determine the severity of a disease.

According to some studies, SARS-CoV-2 coronavirus has a fatality rate (around 3%) and its transmissibility rate is in between 1.4-5.5. [5,6] The data were then compared with the results from studies on two previously known coronavirus, SARS-CoV and MERS-CoV that causing outbreak in 2002 and 2012, respectively. The data showed that SARS-CoV has fatality rate of 10% with transmissibility rate between 2-5. While MERS-CoV has fatality rate of 40% with transmissibility less than 1. All these data indicated that SARS-CoV-2 has relatively low pathogenicity and moderate transmissibility according to the report.[5] To show a more dramatic comparison of the severity between SARS-CoV-2 with other infectious diseases, Ebola virus and HIV are two excellent examples. In the same report above, the fatality rate of the two viruses are 70% and 80% (without medication), respectively which is considered as extremely high. In fact, they are the top two in this category. While transmissibility rate of the two are between 1.5-2.5 and 2-4, respectively in which would be considered as moderate.

Taken all these into consideration, the severity of SARS-CoV-2 will likely to be overcome by immunocompetent (healthy) individuals. However, please do keep in mind that we should not underestimate the scale of the event, but at the same time we also should not escalate the event out of proportion. Furthermore, from biosafety point of view, the action should always be taken a level higher than the magnitude of the danger. The least thing that can be done is by consistently minimizing the transmission of the disease as low as possible.

Further studies on SARS-CoV-2 still need a lot to be done to get more into biological insight of the virus. This is important, so that we can have a better understanding on how to respond and handle the virus proportionally and appropriately. This appropriate action will give benefit in giving assurance of the biosafety of the people that eventually could overcome our fear of the SARS-CoV-2 or other microbial pathogens in general. Educating the people is extremely important in strengthening public confidence, especially during current outbreak. This effort requires cooperation from whole society so that the outbreak can be contained and possibly eradicated.

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