

# Coronavirus disease 2019 (COVID-19): The need for a multidimensional approach

Enfermedad por coronavirus 2019 (COVID-19): Necesidad de un enfoque multidimensional

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## Ms. Editor:

Coronavirus disease - 2019 (COVID-19), caused by the SARS-CoV-2, is currently a major concern worldwide<sup>1</sup>. COVID-19 has produced millions of infections worldwide, also causing hundreds of thousands of deaths<sup>1</sup>, a fact that has led the World Health Organization (WHO) to declare COVID-19 as a pandemic<sup>2</sup>. This Letter aims to discuss the main characteristics of COVID-19 and to raise the need for a multidimensional and multidisciplinary approach to deal with this type of threat to global public health.

Coronaviruses (term because of its “crown” appearance in electron micrographs) are a group of enveloped, (+) ssRNA viruses that cause respiratory, hepatic, enteric, and neurological disorders of varying severity in animals, including humans<sup>1,3</sup>. There are many species of coronaviruses, all of them belonging to the *Coronaviridae* family. SARS-CoV-2 belongs to the *Betacoronavirus* genus<sup>1,3</sup>.

SARS-CoV-2 is a zoonotic virus<sup>1,4</sup>. This means that SARS-CoV-2 has a wild animal reservoir, and also an intermediate animal, which would transmit the disease to humans. It is suspected that the reservoir would be bats, but the intermediary is unknown, although snakes, civets, pangolins are candidates<sup>1</sup>. Some of those wild animals were sold or consumed at the Huanan Seafood Wholesale Market, located in Wuhan, the Chinese city where the epidemic outbreak started. SARS-CoV-2 is phylogenetically related to other zoonotic viruses<sup>1</sup>, such as SARS-CoV, the origin of the epidemic of severe acute respiratory syndrome, which caused 916 deaths, as well as MERS-CoV, the origin of the epidemic of the Middle East respiratory syndrome, which caused 858 deaths.

SARS-CoV-2 spreads from humans to humans. The infection produces COVID-19, a respiratory syndrome characterized by symptoms including fever, malaise, lung infiltrates, dry cough, dyspnoea, and respiratory distress<sup>1</sup>. When COVID-19 worsens, it can progress to severe pneumonia and multi-organ failure. The case fatality rate is close to 3% although in some countries such as Italy a much higher one has been observed. Those most affected are the elderly aged 60 and over. In this group, COVID-19 complications and the case fatality rate increase significantly. Various countries are currently in a real race to develop a vaccine soon as well as to develop compounds that inhibit SARS-CoV-2<sup>5</sup>.

The advance of SARS-CoV-2 has left the scientific community wondering how quickly these new pathogens can spread, becoming a serious threat to the world population<sup>1,4,6</sup>. It should not be forgotten that zoonoses are a constant challenge to global health security, a fact that requires permanent health prevention measures and timely response to epidemics that can become pandemics, so clearly exemplified with COVID-19. Several researchers argue to face these threats through a collaborative effort under the One Health approach<sup>1,4,6</sup>. It integrates human, animal and environmental health in an interrelated way that is especially appropriate for zoonoses that threaten mankind<sup>1,4,6</sup>. Physicians, health sciences professionals, veterinarians, biologists, food professionals, environmental professionals and health educators, among others, must participate in this multidisciplinary approach.

Facing pandemics like COVID-19 requires a multidimensional approach that integrates joint action between the main public and private institutions in a country. However, although it is necessary to make integrated decisions at the public policy level, prevention should not be neglected among people, with measures recommended by WHO<sup>2</sup> such as: washing hands frequently, maintaining social distancing, avoiding touching eyes, nose and mouth, practicing respiratory hygiene in the case of fever, cough and breathing difficulty, seeking medical care early, staying informed and following the advice given by healthcare providers<sup>2</sup>. These recommendations have also been reinforced from governmental authorities of countries that have reached alarming levels of contagion and mortality, e.g., China, Italy and Spain. Regarding quarantines, these imply the paralysis of a city or country, keeping the health sector and providers of medical supplies and household supplies operating. For this, it is necessary to work strictly to

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maintain efficient levels of communication between the main public and private institutions where quarantine is applied. In this context, it is important to ensure both home-working conditions and a remote

learning modality for students, for example, through the availability of computers and internet connection. Finally, employers and educational institutions must place special emphasis on permanent, updated and effective preventive actions to flatten the contagion curve.

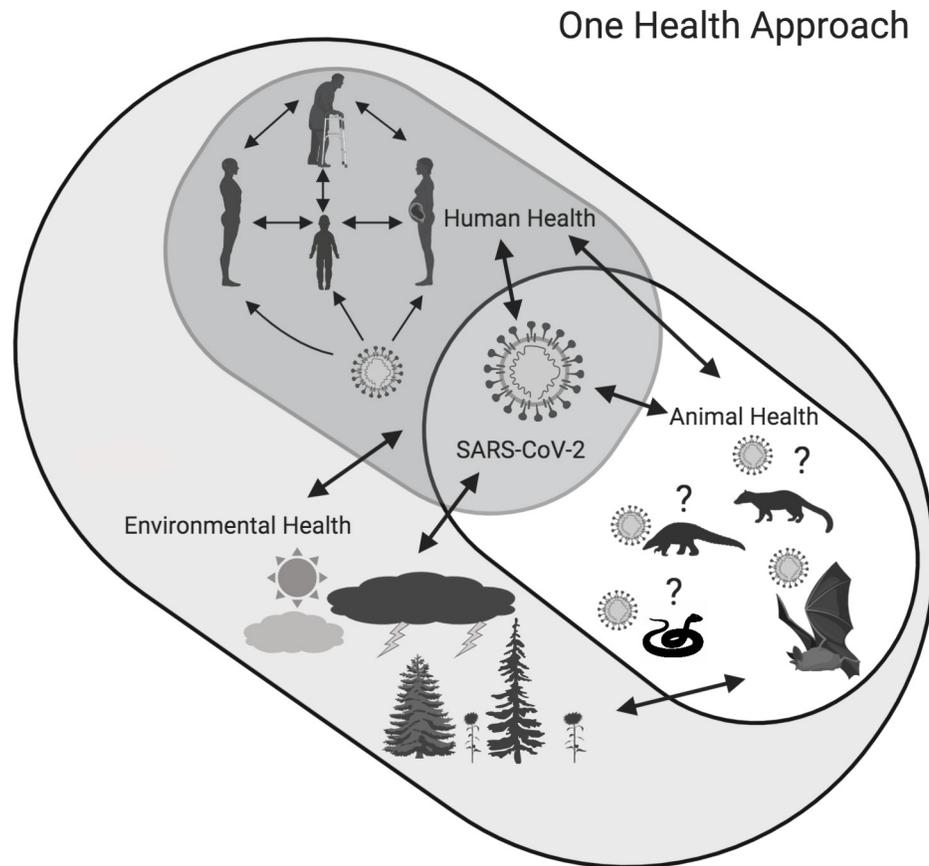
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None declared.

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**Figure 1.** Set representation for the One Health approach in the context of coronavirus disease 2019 (COVID-19) caused by the SARS-CoV-2. Redrawn after Bonilla-Aldana et al<sup>6</sup>. Created with BioRender.

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