

# Coronavirus disease (COVID-19). A socioepidemiological review



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## Abstract

This article examines the current COVID-19 pandemic in relation to the international epidemiological observation and monitoring activities by institutions such as the World Health Organization, the European Centre for Disease Prevention and Control, the Italian Ministry of Health, the Istituto Superiore di Sanità, the Robert Koch-Institut, the U.S. Centers for Disease Control and Prevention, and others. COVID-19, contrary to other Coronaviruses discovered decades ago, was unknown before the 2019 pandemic outbreak in Wuhan China, which quickly spread throughout the world.

## Keywords

Coronavirus disease, COVID-19, infectious diseases, sociology, epidemiology, pandemic, epidemic

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SARS-CoV, was the most widely distributed coronavirus among a sample of Sunda pangolins.<sup>6</sup> More in detail, COVID-19 is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, previously known as 2019 novel coronavirus or 2019-nCoV).<sup>7</sup> This coronavirus can be transmitted from human to human, primarily via respiratory droplets from coughs and sneezes within a range of about 6 feet as well as through indirect contact via surfaces previously contaminated, as it was confirmed during the 2019 Wuhan pandemic.<sup>8</sup> There are several scientific hypotheses on the etiopathogenesis of SARS-CoV-2, although more and more consensus arose on the possible relation with the extremely venomous snake *Bungarus multicinctus*, found on the markets in Wuhan.<sup>9</sup>

## Symptomatology

Common signs of COVID-19 infection include previously discussed respiratory symptoms (about 1 out of 5 affected individuals will develop respiratory difficulties, although about 80% of individuals will recover from it without special treatment)<sup>10</sup>, shortness of breath and breathing difficulties, cough, fever, and possible severe acute respiratory syndrome, pneumonia, kidney failure, and death in more severe cases.<sup>11 12</sup> In Italy, one of the countries most affected by COVID-19<sup>13</sup> and the first country to implement a series of protective measures at an incredible rate and efficiency, especially in comparison to neighboring and/or similar socio-economic areas,<sup>14</sup> the Decree of the President of the Council of Ministers on March 8<sup>th</sup>, 2020 recommended that all elderly people, or those suffering from one or more chronic diseases or with states of congenital or acquired immunosuppression, should avoid leaving their home except for strict necessity, and in any case should avoid crowded places, where it is not possible to maintain the interpersonal safety distance of at least one meter. Furthermore, individuals with underlying medical problems such as high blood pressure, heart problems or diabetes, are more likely to develop serious

illness. Medical attention is necessary in the case of cough, respiratory difficulties, and fever.<sup>15</sup>

## Safety, Prevention, and Sanitization

Scientifically approved tests for the respiratory illness COVID-19 and the associated SARS-CoV-2 virus include, as of March 2020, Antibody Assays (more specifically enzyme-linked immunosorbent assay or ELISA), Chest CT (computed tomography) scan, NAT (nucleic acid test), and RT-PCR (real-time polymerase chain reaction).<sup>16</sup>

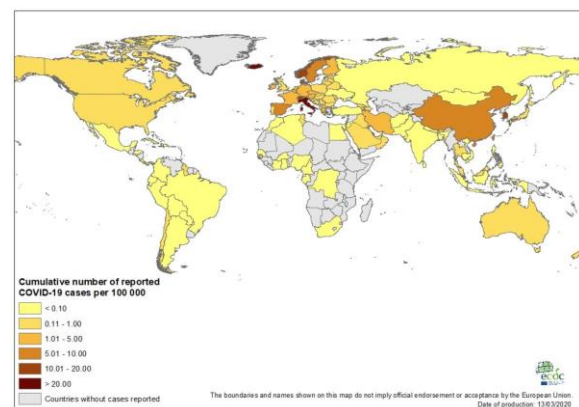
As preventive sanitizing measures to prevent infection spread, general clinical recommendations include covering mouth and nose with tissues when coughing or sneezing and disposing the tissues immediately after use. Of note, human-to-human transmission is generally identified as being caused by human contact, via respiratory droplets. However, transmission can take place directly, from person-to-person, or indirectly through contact between hands and the mucous membranes of the mouth, the nose or the conjunctiva of the eyes. There have been reports of persons who were infected by individuals who had only shown slight or non-specific symptoms of disease.<sup>17 18</sup> Other recommendations include washing hands regularly (possibly with hydroalcoholic solutions, with at least 60% alcohol content), drinking fluids regularly, getting adequate rest and sleep, following medical orders and taking prescribed and/or (depending on the clinical situation) over-the-counter medicines in the case of fever or sore throat, cooking meat and eggs thoroughly, avoiding close contact with others, particularly in the context of individuals showing symptoms of respiratory illness or fever, and avoiding unprotected contact with dead or alive farm or wild animals,<sup>19</sup> although there is no scientific evidence that pets, such as dogs and cats, have contracted the infection or can spread it in Europe, as of March 2020.<sup>20</sup> Further recommendation by the Italian Ministry of Health for the general population include staying at home as much as possible, and leaving home only for work needs, health reasons and other governmental approved-specified needs,

avoiding common standard greeting forms such as hugs, handshakes, and/or kisses, maintaining, in social contacts, an interpersonal distance of at least one meter, avoiding the promiscuous use of bottles and glasses, especially during sports, avoiding touching one's eyes, nose and mouth with hands, cleaning surfaces with chlorine or alcohol-based disinfectants, and avoid taking antiviral drugs and antibiotics, unless prescribed by a physician, and of course in relation to bacterial infections.<sup>21</sup> According to the Italian Government, the WHO, and the CDC, the use of masks is only recommended if the affected individual is coughing or sneezing or when one is taking care of someone with a suspected infection. Following the epidemiological analysis of the Ministry of Health of the Italian Republic, the most common symptoms of COVID-19 in the individual are fatigue, fever, and dry cough. Some patients may experience nasal congestion, runny nose, sore throat, general soreness and muscle pain, and/or diarrhea. According to the most recent observations, these symptoms are generally mild and begin gradually. However, in severe cases, the infection can cause pneumonia, severe acute respiratory syndrome, kidney failure and even death.<sup>22</sup> The international community is working toward a decrease of the epidemic peak, as a vaccine against SARS-CoV-2 is not yet available. Focusing on damage reduction is essential as it provides support, in terms of time per patient, to healthcare systems around the world, as well as time for the research toward the development of a vaccine and treatment strategies.

## Epidemiological Analysis

While monitoring the evolution of this pandemic is an extremely difficult task, due to the rapidly evolving situation, multiple testing methods, strategies, and polices, ongoing outbreak investigations, and specific parameters in different geopolitical areas, multiple institutions are constantly providing data on the most recent epidemiological analysis. According to the European Centre for Disease Prevention and Control, as of Friday, March 13<sup>th</sup> 2020, there

were 133.860 cases of COVID-worldwide.<sup>23</sup> The epidemic is affecting 137 countries and territories around the world, as well as 1 international conveyance in Yokohama, Japan, the Diamond Princess Cruise ship.<sup>24</sup> A total of 4.967 deaths are subdivided as follows: China (3.179), Italy (1.016), Iran (429), Spain (84), South Korea (67), France (61), United States (40), Japan (19), United Kingdom (10), Iraq (8), International conveyance in Japan (7), Germany (5), Netherlands (5), San Marino (5), Switzerland (4), Australia (3), Belgium (3), Egypt (2), Philippines (2), Albania (1), Algeria (1), Argentina (1), Austria (1), Bulgaria (1), Canada (1), Greece (1), Guyana (1), India (1), Indonesia (1), Ireland (1), Morocco (1), Norway (1), Panama (1), Poland (1), Sweden (1), Taiwan (1) and Thailand (1), as reported in Fig. 2.<sup>25 26</sup>



**Figure 2.** Geographic distribution of cumulative number of reported COVID-19 cases per 100 000 population, worldwide according to the European Centre for Disease Prevention and Control. Source: <https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases>

Throughout the world, countries are following the direct intervention implemented by COVID-19 epicenters such as China and Italy. As an example of this strategy, the German Federal Public Health Service (ÖGD) continues to pursue the goal of detecting infections in Germany as early as possible and delaying the further spread of the virus, in order to keep the number of concurrently ill people as low as possible and to free up time to make further preparations, such as protective measures for particularly vulnerable groups, increasing

treatment capacities in clinics, avoiding stress peaks in the health system and developing antiviral drugs and vaccines enable.<sup>27</sup> Following the analysis of the World Health Organization, scientists are aware of possible human-to-human transmission of the virus from previously infected yet asymptomatic individuals, but they underline its rarity. Based on the current scientific evidence on coronaviruses (e.g. MERS-CoV), we know that the transmission of the virus from asymptomatic cases is very rare.<sup>28</sup> Based on these data, the WHO concludes that transmission from asymptomatic cases is probably not one of the main causal factors of the transmission of the new 2019-nCoV coronavirus. Furthermore, monitoring external causal variables such as (quality) of food and water, is an essential component of these investigations. As we previously discussed, some of the originating factors in the Chinese epicenter of the disease were linked to food consumption. In regard to the latter aspect, the scientific consensus indicates that the COVID-19 virus has not been detected in drinking water. According to the CDC, filtration and disinfection as standard water treatment methods should remove or inactivate the virus that causes COVID-19.<sup>29</sup> In conclusion, it is important to understand the role each individual, scientist, research center, national and international organization and government plays in monitoring the COVID-19 pandemic and its diffusion. In particular, it is essential to further investigate the definition of a case (suspect, probable and confirmed), based on the information and scientific knowledge currently available and reviewed based on the evolution of the epidemiological situation.

### Limitations

The primary limitation of this study of the current available scientific data on the COVID-19 pandemic, is the nature and structure of this analysis, which is a simple informational review, the content of which is not intended to be a substitute for professional medical advice, diagnosis, or treatment, and does not constitute medical or other professional advice.

### Declaration of Conflicting Interests

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