



(REVIEW ARTICLE)



## COVID-19: Prevention and control

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### Abstract

The coronavirus disease 2019 (COVID-19) epidemic was first identified in Wuhan in December 2019, and on March 11 of the following year, the World Health Organization declared it to be a pandemic virus. The infectious disease COVID-19 frequently causes acute respiratory distress syndrome. As a result, the virus outbreak is very concerning for human health in general and poses a particular risk to people who already have underlying illnesses like chronic obstructive pulmonary disease, chronic heart failure, diabetes, and renal failure. Attempts have been made to treat, detect, prevent, and predict the disease using a variety of medical, social, and engineering approaches. Our case study can help people learn more about the condition and how it affects human health as well as give them examples of effective self-care methods and treatments.

**Keywords:** COVID-19; Control Prevention; Treatment; India

### 1. Introduction

In Wuhan, a city in the Chinese province of Hubei, an outbreak of acute respiratory sickness was discovered to be caused by a novel coronavirus, now known as SARS-CoV-2. The World Health Organization (WHO), which stands for coronavirus disease 2019, classified the illness as COVID-19 in February 2020. Asymptomatic pneumonia with severe pneumonia with acute respiratory distress syndrome, septic shock, and multiorgan failure, which may be fatal, are all clinical manifestations of 2019-nCoV infection. The WHO classified the COVID-19 outbreak as a public health emergency of international concern on January 30, 2020.[1] It started to be referred to as a pandemic in March 2020 to emphasize the seriousness of the situation and compel all nations to take action to identify infection and halting spread. Primarily by respiratory droplets that are created when an infected person coughs or sneezes.[2] People nearby may get these droplets in their mouths or noses, or they may inhale them and get them in their lungs. Inhaling aerosols created during aerosol-generating operations and contacting contaminated fomites are two routes to spreading coronaviruses. It has also been documented that SARS-CoV-2 can be transmitted by asymptomatic people (or people still in the incubation period). The amount to which this occurs is uncertain, however. Unfortunately, the FDA has approved no medication, gone through controlled studies, and demonstrated an effect on the virus during this global pandemic.[3] Although there are cures for illnesses and developments made in leaps and bounds in our day, the strongest and most effective weapon that society has against this virus that is affecting not just health but also economics, politics, and social order is the prevention of its spread. The interim guidance published by the WHO on 7 March 2020, "Responding to community spread of COVID-19," states that preventing COVID-19 from spreading is through the development of coordination

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mechanisms not just in health but in areas such as transportation, travel, commerce, finance, security, and other sectors that encompass the entirety of society. Preventative measures are currently being taken to stop the spread of instances. Early screening, diagnosis, isolation, and treatment are necessary to stop the disease from spreading. The main aims of preventive measures are to control the spread of infection carefully and to keep patients isolated. When diagnosing and treating an infected patient, this entails taking the appropriate safety measures.[4] Significant locally based Prevention and control methods for COVID-19.

The public should focus on regularly washing their hands, using portable hand sanitizer, and avoiding contact with their face and mouth after coming into contact with a potentially contaminated environment. People should be instructed to wash their hands thoroughly, practice respiratory hygiene (i.e., cover their coughs), and, if possible, stay away from crowds and close contact with sick people to lower the community's transmission risk. In order to guard against COVID-19, numerous organizations have created posters and booklets that are extensively used worldwide. The WHO and comparable health organizations have created visual aids, including videos and posters, to illustrate how hand hygiene should be practiced.[5] These flyers, dispersed across society to highlight the value of good hand hygiene, raised awareness among recipients. The pandemic was contained considerably more swiftly thanks to the rise in people carrying hand sanitizer for on-the-go hand hygiene and the widespread use of masks in nations like China, Korea, and Japan. The exponential growth in instances persists in those nations where such precautions are not required. It is advised to keep social distance, especially in areas with communal transmission. Many nations have implemented quarantine measures and physical and social segregation to stop the virus from spreading further.[6]

### **1.1. Protect yourself and others from COVID-19 by following these precautions:**

- Get all the recommended doses of the COVID-19 vaccine.
- Keep a safe distance from others, especially in closed spaces
- When indoors, open windows if possible.
- Wear a mask if you or those around you are at high risk of severe illness.
- Keep hands clean.
- Cover coughs and sneezes.
- Stay home when feeling unwell.
- Here, we will examine the literature that is currently available on COVID-19 prevention and control.[7]

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## **2. Methodology**

The following steps of Dr. Dobbin's evidence-informed decision-making (EIDM) methodology are recommended by the Rapid Review Guidebook: The framework was Steps for Conducting a Rapid Review. Utilizing the health Evidence™ tool, relevant research evidence was found and accessed, its methodological quality was evaluated, and finally, the evidence was synthesized.

### **2.1. Search Strategies**

The following key search terms were developed based on a quick review of research questions and COVID-19 prevention and control.

### **2.2. The final search string is as below:**

“COVID-19”, “Prevention”, “Control”, “Community”.

Four databases have been adopted to conduct a thorough search for publications: Scopus, Google Scholar, PubMed, and the Cochrane Library. Since there are not many publications in the COVID-19 field, Google Scholar has been added to give the gray literature a wider audience. Scopus, PubMed, and the Cochrane Library provided excellent coverage of peer-reviewed articles.

### **2.3. Eligibility criteria**

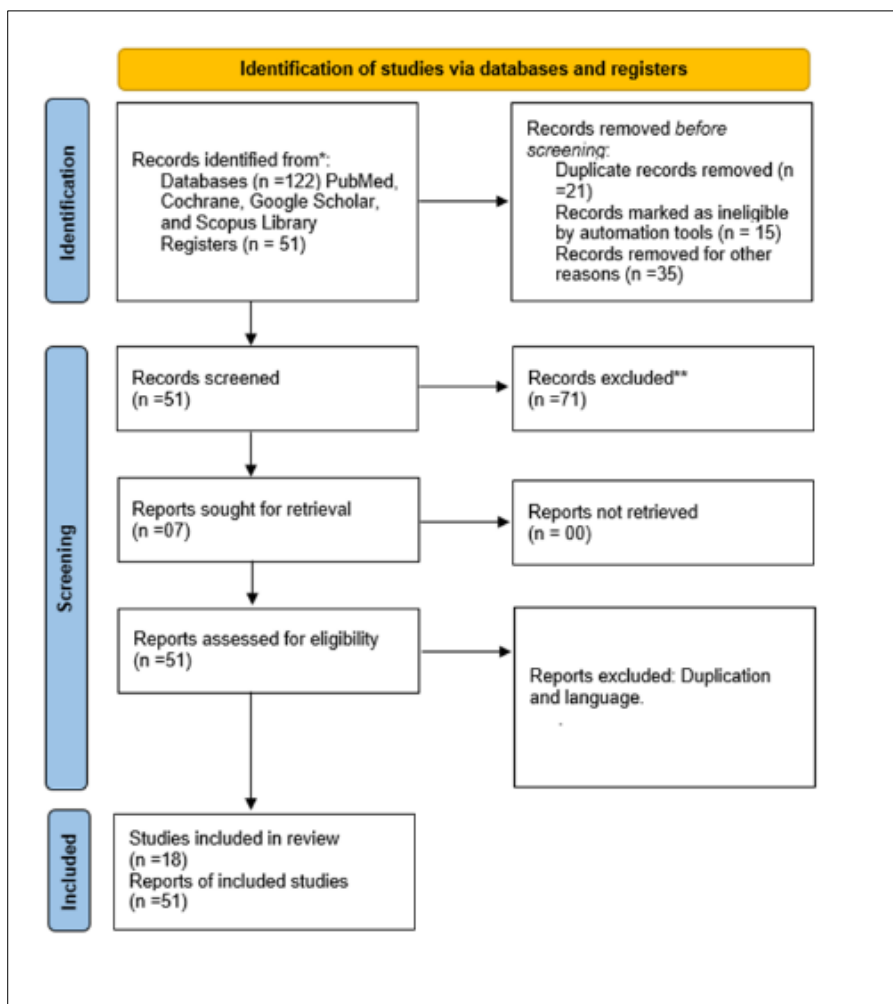
All COVID-19 articles, theses, and review papers published before January 2023 were included in the literature search.

## 2.4. Data Extraction

Two impartial reviewers from the medical community examined the articles to guarantee the selection's impartiality. On the finalized list of articles for additional data extraction, the two reviewers have achieved an eighty percent agreement.

The preliminary screening process resulted in the reduction of 122 articles to potentially relevant articles. Non-relevant articles were eliminated due to their non-English language, title, abstract, and book chapter. Based on the inclusion criteria, 51 studies were discovered (Figure 1: Preferred Reporting Items for Reviews) (Health Evidence™ tool).

We conducted this review according to Preferred Reporting Items for Reviews (PRISMA) Figure (1)



**Figure 1** Preferred Reporting Items for Reviews (Health Evidence™ tool) [8] (PRISMA) flow diagram of the literature screening process

## 3. Results and discussion

It was discovered that the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) served as the inspiration for the infectious disease and the first generation of COVID-19. The virus was first identified in Wuhan in December 2019 and displays common clinical symptoms like fever, dry cough, and fatigue that differ depending on age group (such as adults and children). Additional disease clinical symptoms included exhaustion, body aches, headaches, a new loss of taste or smell, sore throats, stuffy or runny noses, nausea or vomiting, and diarrhoea.[9] Chinese researchers confirmed the second-generation mutation with, without, or with only minor clinical symptoms. On January 30, 2020, the World Health Organization (WHO) issued a global alert regarding the viral epidemic. The epidemic is difficult and has an impact on people's quality of life because of the COVID-19 virus's detrimental effects on human health as well as its other issues, such as the rising rate of poverty and the global financial and employment crises. The virus can enter the upper and

lower respiratory systems and cause lung infections and chronic obstructive pulmonary disease. COVID-19 poses a serious health risk to those with underlying conditions. Three specific traits of the virus—environmental sustainability, lifetime, and pathogenicity—increase the likelihood of an epidemic in the upcoming years all over the world.[10] To stop the COVID-19 outbreak, many medical, social, and engineering strategies have been suggested. Therapy, prevention, detection, and prediction techniques are a few of these methods. When a city is susceptible to the spread of the virus for one to two months, quarantine has been suggested as a method of preventing disease outbreaks. Techniques like social isolation and quarantine, which are based on a person's racial, ethnic, cultural, and demographic patterns, significantly reduced the risk of contracting the illness. Some case studies and observations have demonstrated the detrimental effects of social isolation and confinement on mental health, including depression and stress disorders.[11] Workers can be protected from exposure to and infection with SARS-CoV-2, the virus that causes Coronavirus Disease 2019 (COVID-19), depending on the risk of exposure. The degree of contamination in the workplace, the type of work being done, and the possibility of prolonged or other human contact all affect the level of danger. Following a thorough assessment of the risks in the workplace, employers should put infection prevention and control strategies into place. Employers should combine the appropriate engineering and administrative controls, safe work practices, and personal protective equipment (PPE) to prevent worker exposures. Several OSHA regulations that deal with preventing occupational exposure to SARS-CoV-2 require employers to train employees on aspects of infection prevention and control, such as PPE. Preventative measures are currently being taken to stop the spread of instances. Early detection, diagnosis, isolation, and treatment are necessary to halt the disease's spread.[12] The main aims of preventive measures are to control the spread of infection carefully and to keep patients isolated. When diagnosing and treating an infected patient, this entails taking the appropriate safety measures. The general public should wash their hands frequently, use portable hand sanitizer, avoid touching their face or lips after touching a potentially contaminated area, and avoid touching their face or lips. To reduce the risk of transmission in the community, people should be advised to wash their hands thoroughly, practice respiratory hygiene (i.e., cover their coughs), stay away from crowds, and avoid close contact with sick people.[13] Posters and pamphlets on every subject related to COVID-19 protection have been produced by numerous organizations and are widely disseminated worldwide. Videos and posters have been produced by the WHO and other comparable health organizations to show how hand hygiene should be properly practiced in all aspects of society. In order to emphasize the importance of hand hygiene to as many people as possible, these flyers were distributed throughout society, raising awareness among all of them. The increase in the number of people carrying hand sanitizer with them for on-the-go hand hygiene applications and the widespread use of masks by people in countries like China, Korea, and Japan allowed the pandemic to be contained much more quickly. In those countries where such precautions are not necessary, the number of occurrences is still rising exponentially. Maintaining social distance is advised, especially in areas where communicable diseases are prevalent. In many countries, quarantine and physical or social segregation have been put in place to prevent the virus from spreading further.[14] The cancellation, outpayment, and restriction of significant events and small-scale gatherings; the full or partial closure of workplaces and higher education institutions; restrictions on visitors and interactions between residents and inmates in institutions like prisons and nursing homes; requiring a mandatory quarantine in residential areas, closing internal or external borders, and prohibiting residents of entire regions or countries from leaving the house.[15] The WHO does not advise against wearing a medical mask in public if you do not have respiratory symptoms because it does not lessen the significance of other general infection prevention measures. The spread of the disease cannot be halted by the use of a mask alone; in fact, using a mask improperly increases your risk of becoming ill. COVID-19. Medical mask use by healthcare workers was emphasized in interim WHO guidance on "Advice on the use of masks in the context of COVID-19." To stop COVID-19 transmission from potentially asymptomatic or PR symptomatic people, the ECDC advises wearing face masks. The community's use of face masks may be primarily for source control.[16] This measure can be extremely helpful in epidemic situations where there is a high likelihood that the population contains a large number of asymptomatic but contagious individuals. When entering crowded, enclosed spaces like supermarkets, shopping malls, etc., when using public transportation, and at specific workplaces and professions that necessitate close proximity to many other people (like those involving the police, cashiers, etc.), wearing a face mask might be an option if teleworking is not an option. Beginning in April, the American Centers for Disease Control and Prevention (CDC) updated its recommendation, telling people always to wear fabric over their faces when they are in public settings where it is challenging to maintain social distance, especially in places where there is a lot of community transmission.[17] People should be reminded to wash their hands frequently after handling the covering and should be warned to keep their hands away from their eyes, noses, and mouths when removing it. The primary objective of the face covering is to prevent transmission by limiting secretions from those who have an asymptomatic or PR symptomatic infection. The CDC also reiterates that the recommendation against wearing facial coverings does not apply to medical masks, which are only worn by medical professionals. If the patient cannot wear a face cover while in the same room as a patient with suspected or confirmed COVID-19, caregivers should also cover their faces.[18] In larger groups where infected individuals may exist but have not yet been isolated because they have not yet been discovered, social distance is meant to reduce interactions between those individuals. Given that respiratory droplets need to be close together in order for disease transmission to occur, a person's social distance from another person will limit the spread of diseases. Social

distance is especially useful when there is a suspicion of community transmission but uncertainty about the relationships between cases, and when restrictions placed only on those who are known to have been exposed are believed to be insufficient to stop further transmission.[19]

Examples of social alienation include the closing of schools or office buildings, the suspension of public markets, and the cancellation of meetings. Promoting online shopping and limiting who can enter markets where it is not easy to maintain social distance may reduce interaction. The workplace is one of the locations with a high risk of COVID-19 transmission.[20] Therefore, wherever possible, it is essential to promote working from home. In businesses where working from home is not an option, adherence to WHO principles is still essential. Social isolation is essential for establishing control over the pandemic because studies have shown that SARS-CoV-2 is contagious even in the PR symptomatic stage. For high-touch areas like bedside tables and door handles, daily disinfection with a typical household disinfectant consisting of a diluted bleach solution (that is, one part bleach to 99 parts water) is advised. Surfaces that cannot be cleaned with bleach can be cleaned with 70% ethanol.[21] To clean and disinfect bathrooms and toilets, a bleach solution should be used sparingly (one part bleach to nine parts waters will produce a 0.5% sodium hypochlorite solution). Disposable gloves should be worn when handling or cleaning objects, garments, or linen contaminated with bodily fluids. All used, contaminated disposable items should be placed in a lined container before being disposed of with regular household waste. Bath and hand towels, sheets, and clothing should all be washed in a machine with regular laundry detergent and water at a temperature between 60 and 90 degrees Celsius. Disposable gloves should be worn when handling or cleaning objects, garments, or linen contaminated with bodily fluids.[22] All used, contaminated disposable items should be placed in a lined container before being disposed of with regular household waste.[23] All ministries distributed general guidelines on COVID-19 prevention and control techniques within their organizations.[24]

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#### 4. Conclusion

Since there is currently no known treatment for COVID-19, it is imperative to stop its spread in society. The main tactics for preventing the disease from spreading in society are hand hygiene, social seclusion, and quarantine. Tighter quarantine regulations will be able to reduce secondary cases due to increased testing capacity and the ability to identify more positive individuals in the community.

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#### Compliance with ethical standards

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There are no conflicts of interest, according to the authors.

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