Proceedings of the 2nd International Conference on Biological Engineering and Medical Science (ICBioMed 2022), Part II
DOI: 10.54254/2753-8818/4/20220525

Comparison of Epidemic Prevention Measures for Different Levels of Infectious Diseases – Taking SARS and COVID-19 as Examples

Yutang Gao

Canada Yantai Secondary School, Yantai, Shandong Province, China, 264000

Minetalkers404@gmail.com

Abstract. Currently, the prevention and control measures are routinely implemented, which is not exactly the same as the situation of SARS. This paper compares China's different epidemic prevention measures against SARS and COVID-19 by analyzing previous literature. Both SARS and COVID-19 employed similar strategies, such as centralized isolation and treatment and regular case screening of citizens, but the degree of implementation of strategies during SARS was less than ideal for COVID-19 due to the technical limitations of the time. Government regulation and the use of advanced technologies are critical to controlling infectious diseases. The protection strategies that have been implemented have effectively mitigated the damage to society caused by the epidemic.

Keywords: Prevention Measures, SARS, COVID-19, quarantine, comparison

1. Introduction

Less than two decades after the outbreak of severe acute respiratory syndrome (SARS-CoV) in 2003, another pandemic caused by coronavirus known as acute respiratory syndrome (SARS-CoV-2) occurred in 2019. Even though both SARS and COVID-19 belong to the same family, it is proven that SARS-CoV-2 is more contagious and persistent than SARS-CoV, which explains the continuous damage to the social economy and the rising threat to global public health. In China, the strategy of "four-early" played a significant role in controlling SARS. After twenty years, it is still not out of date and also effectively helps China fight against COVID-19, guiding the Chinese government to lead people during an unusual period. From SARS to COVID-19, the "four-early" strategy has been well improved, and it shortens the time required from the discovery of infection to treatment and promotes control and management of public health [1]. On the basis of previous research on infectious disease prevention measures for SARS and COVID-19 implementing the "four early" strategy, this study further explores the similarities and differences between prevention methods for SARS and COVID-19, so that we can properly respond to public health emergencies more effectively in the future.

2. Similarities

In both SARS and COVID-19, the control and prevention measurements were implemented according to the "four-early" strategy, which basically means detect early, report early, isolate early, and treat early. This strategy guides the Chinese government to effectively conduct the screening, reporting, registering,

© 2025 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2753-8818/4/20220525

and management of infection cases and suspicious cases, in order to lower the incidence, narrow the range of infection, and minimize the damage to the social economy.

2.1. Active response

In response to SRAS and CPVID-19, active response measures have been taken, and the strategy of centralized isolation and treatment has been adopted. At the same time, under the leadership of the government, specialized hospitals and isolation facilities have been established with funds from the national treasury. Specialized hospitals like Xiaotangshan Hospital during SARS, Leishenshan Hospital, and Huoshenshan Hospital during COVID-19 were set up in a short time from design to being ready for treatment. Mobile cabin hospital Hospitals, also known as centralized isolation facilities, are widely built in different areas or organized based on existing facilities like auditoriums and other large buildings. Moreover, the Chinese government has also dispatched power from all sectors of society, sending medical staff teams and all types of necessary resources to severely infected areas to support the treatment work. During the emergency, the Chinese military participated in the arrangement and delivery of rescue medical personnel, necessary resources and hospital construction, and was committed to management and guidance. At the same time, military medical institutions were also dispatched to the hardest-hit areas to cooperate with local medical staff for rescue [2].

2.2. Establishment of health monitoring system

Unlike other non-communicable diseases, the prevention and control of SARS and COVID-19 focuses not only on curing patients, but more importantly on virus surveillance. Under the government's leadership, the regional disease control department cooperates with local hospitals. The hospitals report epidemic data every day, and the disease control department analyzes the reported data and conducts corresponding control methods. In the SARS epidemic, according to the "SARS Early Warning Symptom Surveillance Program" from the Chinese Ministry of Health, the surveillance system for fever and respiratory disease was set up in all provinces around the country. In the COVID-19 epidemic, further refined monitoring, isolation, and treatment emergency response mechanics enabled China to have better regulation on cross regional coordination and dispatchment of resources. Furthermore, with the help of new media, the real time control of locations of people and statistics of personnel information has become more efficient, relieving the shortage of medical resources.

3. Differences

During this period of about twenty years, the "four-early" strategy and other guidelines have improved with practice in public health problems like the outbreak of H1N1 and H7N9. The measures to combat COVID-19 differ significantly from those of SARS. These differences are mainly reflected in the improved implementation of various government departments and the strengthening of cross-regional cooperation and coordination between different regions in China, which are all conducive to improving the efficiency and effectiveness of disease control.

3.1. Different reaction rates

At the beginning of the outbreak of SARS, due to the lack of knowledge about the spread pathway of the SARS virus, effective control methods were not implemented at the time, causing the wide spread of SARS. There was no clear case definition of SARS at the beginning, and misdiagnosing, misclassification were possible to occur during the process of detecting and managing of suspicious cases without a complete method. Furthermore, insufficient attention to the media epidemic exacerbated the situation. Patients in the incubation period may also cause the spread of the virus. Related measurements were not enough to support further accurate control. Besides the multiple regional infections, the cross-province and cross-border mobile population also facilitates the spread of viruses.

A similar delayed response to an unexpected public health problem did not happen again in the epidemic of COVID-19 in 2019. In the early stages of the outbreak, Hubei Hospital of Integrated Traditional Chinese and Western Medicine reported the pneumonia case with an unclear cause to the

DOI: 10.54254/2753-8818/4/20220525

local center of disease control on December 27, 2019. Four days later, the China National Health Commission sent an expert group and staff group to Wuhan City to start an investigation and prepare a guide on emergency epidemic disposal. The city government also released an announcement about the pneumonia epidemic under the instruction of the Chinese Center for Disease Control and Prevention (CCDC). On January 8, 2019, the China National Health Commission first released the announcement "Bulletin on Pneumonia Caused by Novel Coronavirus Infection". The cumulative cases, new cases, cured cases, death cases, and other information were let out to the public [2]. From the urban detection of an epidemic to officially releasing an announcement and dealing methods by the Chinese government, all these processes were done within 20 days. Such a prompt response to an unknown disease is crucial to the control of the epidemic. The macro surveillance and further control can be carried out in a short time to reduce the risk and damage.

3.2. Different media platforms

During the SARS epidemic in 2003, the main sources of information for the public was newspaper, radio, and TV. Because it was not widespread, there was a delay between the public and real-time news. All types of dissemination of information lead to uncompleted, inaccurate, insufficient, and even fake information being widely spread among the public, causing unnecessary chaos and further damage to social economics. It was difficult to make every citizen in the country clear about what they should do at a certain time and know it accurately using limited types of dissemination methods, as discussion could lead to misunderstandings. The collection and statistics of data for medical purposes were carried out slowly due to the inconvenience and inefficiency of cross-regional cooperation of government departments, which led to the continuous spread of viruses and delayed actions [3].

With improved technology in 2020, during COVID-19, widespread internet terminals such as smart cellphones and national big data network terminals promote information transmission, allowing people to receive accurate real-time news and announcements from the government. Through tracking the geographical position of mobile terminals, the Chinese disease control department can better monitor the hazard of virus spread and track back to find the source of the virus in order to apply disease control measures. The health QR code under unified management enhances the control and monitoring of the health situation of the mobile population during the special period [4]. The coordination of other highly standardized and informationalized policies makes the detection and reporting timelier.

4. Conclusion

This paper talked about the differences of similar strategies applied in SARS and COVID-19. The various factors in different periods also affects the control and management of epidemic, so the comprehensive infectious disease control measurements of each country should be continuously improved and completed through long-term practice. Also, there should be modifications to the strategies based on the different situations.

Firstly, the system of control and management of infectious diseases should be continuously improved. Corresponding emergency plans and laws should be made, which can help to speed up the government's decision-making and ensure the execution of strategies in different areas. Secondly, establishing the storage of various resources such as facilities, equipment, staff, and related online platforms. Thirdly, popularize digital management, increase the efficiency of information exchange, and promote cross-regional cooperation in order to monitor the epidemic. The fourth point is to complete the establishment of sanitary departments at basic levels. Training for medical staff and infectious disease education should also be implemented, to make sure that the disease control system can cover every area of the country and the public can respond positively to policies [4].

Due to the lack of data and detailed analysis of policies, this paper cannot present a clear, intuitive result of comparison in other aspects. In order to better deal with similar public health issues, more studies about how to set up a more efficient disease control system and scientific measures for the implementation of emergency plans should be conducted.

DOI: 10.54254/2753-8818/4/20220525

References

[1] Feng Kong, Shiyuan Yi. (2022) Influence of “Four-early” Strategy on Infection Risk Prevention and Control in Hospital System in Major Public Health Emergencies – Based on the Comparison of SARS and COVID-19. Chinese Emergency Management.

[2] Qinghao Wang, Jianzhang Luo. (2021). Research on Government Emergency Response Strategy——Analysis of Event Process Based on New Coronary Pneumonia Epidemic. Journal of Anhui Administration Institute (03),63-68. doi:10.13454/j.issn.1674-8638.2021.03.010.

[3] Fei Huang, Guoxiang Zhao, Jianfeng He, Guanming Li & Junzhang Tian. (2013). Status and Prospect of Emergency Management of Infectious Disease Emergencies in China—From SARS to Human Infection with H7N9 Avian Influenza. China Emergency Management (06), 12-17.

[4] Peng Liu & Xiao Zhong. (2022). Smart Surveillance Promotes Epidemic Outbreak Risk Management – Taking COVID-19 epidemic as Example. Journal of University of Sichuan (Philosophy and Social Sciences Edition)(04), 172-183.