



Exploring Different Types of Healthcare Policies Toward COVID_19 Used by China

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Abstract. The COVID-19 pandemic has had a profound and lasting impact on the entire world. However, China took quick and effective actions in the face of the epidemic, not only curbing the transmission chain of COVID-19 in Wuhan but also implementing a dynamic zero-clearing policy in the following three years. This article aims to study China's anti-epidemic experience in vaccination, transportation, nucleic acid testing, isolation, etc., to provide a reference for the normalized control measures of countries around the world in the post-epidemic era. By sorting out the official documents of the Chinese government and related literature, this paper presents the policies that the Chinese government applies to combat COVID-19. The research found that over half of the world's population has received at least one dose of vaccine for one person.

Keywords: COVID-19 Pandemic · Government Policy · Vaccination · Transportation · Quarantine.1

1 Introduction

The official name of COVID-19 is Coronavirus disease 2019. From 2019 to 2022, COVID-19 has spread to the whole world and has generated serious effects in the global range. People who are infected by COVID-19 experience symptoms like dizziness, fever, coughing, and general weakness. Children and the elderly, who are vulnerable to COVID-19, constitute the majority of novel coronavirus infected cases. At the beginning of the epidemic, a large number of aged people died because of a lack of immunity to fight the virus. Given the situation that the epidemic spread at such rapid speed and generate effect such extensive, approximately all countries in the world have introduced prevention and control policies against COVID-19. Nevertheless, most countries did not stick to the policies and then failed to put COVID-19 spread control. As the COVID-19 pandemic's infection scale spread to a global range in barely three years, scientists are

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interested in doing research based on the situation of the COVID-19 pandemic both to medically care for patients and to predict its tendency in the incoming years. In this article, paragraphs are organized to present the policies that the Chinese government used to fight against COVID-19. By collecting and analyzing these policies, this article helps to explain the intention and policies of the Chinese government and provides supportive points for readers. This article used “COVID-19”, “policy”, “vaccination”, “transportation”, “quarantine” as keywords, collecting articles from 2020 until now on google scholar. Through selection, there are in total 11 articles incorporated into the range of research of this article.

This article searched on Google Scholar for articles from 2019 to now using the keywords “COVID-19”, “China” and “policy”. After screening, a total of 7 articles were included in the analysis scope of this paper.

2 Different Types of Healthcare Policies

2.1 Vaccine Research and Vaccination Rates Against COVID-19

COVID-19 now has been included in the Class B infectious diseases stipulated in the “Law of the People’s Republic of China on the Prevention and Control of Infectious Diseases” and is managed following the Class A infectious diseases. The COVID-19 vaccine is the key element to terminating the spread of the epidemic and rehabilitating the world’s overall situation.

2.1.1 Vaccination Rate

According to “Tracking coronavirus vaccinations around the world”, 63.4% of the world population has received at least one dose of a COVID-19 vaccine [1].

Table 1 shows the COVID-19 vaccination rates in several example countries around the world. As can be seen that China is one of the countries with the highest vaccination rate, reaching 90.0% of the overall vaccination rate.

Table 1. Data of vaccination rate of different countries in world from Our World in Data [2]

Worldwide			
	Doses given	Fully vaccinated	% of population fully vaccinated
	12.7B +2.8M	4.94B +283K	63.4%
Location	Doses given ↓	Fully vaccinated	% of population fully vaccinated
 China (Mainland)	3.44B	1.27B	90.0%
 India	2.18B	948M	68.7%
 United States	616M	225M	68.3%
 Brazil	473M	172M	81.0%
 Indonesia	437M	171M	62.4%
 Japan	322M	103M	81.7%
 Bangladesh	298M	122M	73.9%
 Pakistan	296M	132M	59.6%
 Vietnam	258M	83.8M	86.1%
 Mexico	234M	79.9M	62.0%
 Germany	185M	63.5M	76.2%
 Russia	178M	76.9M	53.3%
 Philippines	169M	72.7M	66.4%
 Iran	154M	58.4M	69.5%
 Turkey	152M	53.2M	63.0%
 United Kingdom	151M	50.7M	75.5%
 France	150M	53.1M	78.7%
 Thailand	143M	53.5M	76.6%
 Italy	141M	48M	80.5%
 South Korea	129M	44.7M	86.3%
 Argentina	109M	37.8M	83.3%

2.1.2 Types of Vaccines

At the beginning of the epidemic, to speed up the process of researching the clinical use of the urgently needed COVID-19 vaccine, a team of the Joint Prevention and Control Mechanism of the State Council was quickly established. The scientific research team composed of the Ministry of Science and Technology of China, National Health Commission, Ministry of Industry and Information Technology of China, National Development and Reform Commission, State Drug Administration, State Administration of Traditional Chinese Medicine, and other departments have firmly grasped the inactivated vaccines, recombinant protein subunit vaccines, adenovirus vector vaccines, influenza attenuated virus vector vaccines and nucleic acid 5 technical paths for vaccines selected superior teams, and comprehensively promoted the development of new crown vaccines [3].

In China, the most widely used vaccine is the inactivated vaccine for COVID-1, including Sinopharm Zhongsheng Beijing Company, Sinopharm Zhongsheng Wuhan Company, and Beijing Kexing Zhongwei Company. The protection rates after the completion of the vaccination program are 79%, 72.51%, and 91.25% respectively [4].

China conducts vaccination at the health service center or general hospital in its jurisdiction regio. The Chinese government also encourages eligible people to get vaccinated by distributing small gifts like milk and eggs, as well as coupons and shopping vouchers.

2.1.3 Phases of Vaccination in China

The progress of vaccination in China can be divided into approximately three phases [5].

China launched the covid-19 vaccination in January 2021. The first step taken was to carry out emergency vaccination of key groups of people aged 18 to 59 before the Spring Festival in 2021, such as front-line customs inspection and quarantine personnel at the port of importing cold chain items, international and domestic transportation practitioners, etc. The second step taken was to further expand vaccination coverage to high-risk groups. With the approval of the vaccine and the gradual increase in the efficiency and scale of production of vaccines, the third step was to carry out preventive vaccinations in an orderly manner so that all eligible people are vaccinated. As a result, it gradually builds immune barriers in the population to block the spread of the novel corona-virus variation in China.

According to “Vaccine Development, Testing, and Regulation”, the development and testing process of vaccination is composed of approximately 3 stages: Laboratory and Animal Studies, Clinical Studies with Human Subjects, and Approval and Licensure. Taking Laboratory and Animal Studies as an example, the exploratory stage, pre-clinical stage, and IND application stage are involved. Normally, the exploratory stage would take up to 2–4 years to do basic laboratory research. The pre-clinical stage would take approximately another 1–2 years for researchers to conduct pre-clinical tests.

2.2 Transportation Policies

As the escalating situation of COVID-19 took place at the end of 2019, the government of China took immediate action by shutting down the whole city of Wuhan and also the transportation.

As the spread of the COVID-19 virus continued, more and more countries decided to take actions that limited transportation. On the day when Wuhan was shut down, all the transportation beyond the range of the city has been closed. Planes, package delivery services, trains, and intercity buses are all made unavailable until the city reopened. Then it is required to take a survey and present it to the examiner before entry of any means of transportation. The policy itself has made a great cost to the local industry and government. Many delivery services are suspended due to the immediate shutdown and many local companies have also lost financial and material support to continue their business. On the other hand, setting up the strict check and quarantine standards also costs a huge amount of money for the government. For example, passengers who traveled from foreign countries need to be quarantined for 2 weeks and the government needs to take the expense. On one hand, these strict and comprehensive methods make it easy for the Chinese government to control the spread of COVID-19; on the other hand, it also made a significant cost to the government to balance.

As mentioned in the article “Transport-related experiences in China in response to the coronavirus (COVID-19)”, the Chinese government also applies indirect transportation policies such as using community forces like “Didi Travel” to provide services through different communities [6]. Transportation methods are only available unless the passenger has permission.

Also, as mentioned in “Impact of different control policies for COVID-19 outbreak on the air transportation industry: A comparison between China, the U.S., and Singapore”, the effectiveness of policy for COVID-19 control is determined by two main factors: strictness of policy of control, duration of the policy. The policy that the Chinese government takes follows the pattern of long-term duration and is individually secured and permitted. The Chinese government takes the policy of hierarchical ranking of the risks of regions. Regions are classified as different levels and policies implemented according to the risk level of different regions.

Limits also extended to international transportation. “The U.S. blocks dozens of flights by Chinese airlines in response to virus policy” points out that the restriction that US Department issued “begins Jan. 30 and runs until March 29. They affect flights between Los Angeles and New York and five Chinese cities [1]. Uncertainty of cancellation of international airline services reduces the tendency that people take international airlines and decrease passenger evaluation of airline companies and government.

2.3 Nucleic Acid Testing and Isolation

Nucleic acid testing and isolation are essential options for identifying novel coronavirus cases and protecting people's health. China has made clear policies and provided comprehensive services in the world in terms of nucleic acid testing and isolation. Until herd immunity is achieved, almost all Chinese citizens were susceptible to novel coronavirus infection. Therefore, the strategies taken by the Chinese government are to use nucleic acid testing and isolation policies to guarantee citizens' health and the operation of the national medical system.

According to "Ending Isolation and Precautions for People with COVID-19: Interim Guidance", patients have the opportunity to spread the virus even after the onset of symptoms [10]. Even though most people remain infectious within no more than 20 days after the onset of symptoms of COVID-19, some immunocompromised cases can last even longer than this period. It remains a challenge for governments to make policies that can both release patients timely with the result precondition of ensuring patients are not infectious.

In the early stage of the outbreak and spread of COVID-19, Wuhan was the first city to discover COVID-19 in China. To control the spread of the disease timely, the Chinese government issued a lockdown policy in Wuhan. The lockdown policy for Wuhan is tantamount to isolating Wuhan from other provinces in China, that is, city-by-city isolation. After this policy, the epidemic in the whole country has been effectively controlled, but the epidemic in Wuhan is still very serious. To understand the epidemic situation in Wuhan at that time, the Chinese government decided to conduct a comprehensive nucleic acid test for all the population over the age of 6 in Wuhan from May 14th to June 1st 2020 [7].

The Chinese government also continued these nucleic acid testing and isolation policies for all foreign passengers entering China for a whole year, including the Chinese citizens themselves. First of all, anyone entering the country is required to stay in a government-arranged quarantine hotel for 14 days after entering the country immediately and undergo PCR testing, which is a type of nucleic acid test, every day. Only people who have tested negative for 14 days can be released. In 2022, the Chinese government introduced the "14 + 7" quarantine policy. This policy stipulate that even after the completion of the 14-day hotel quarantine, travelers still have to stay at home for seven days for further isolation to ensure a negative result. In addition to quarantine and nucleic acid testing for foreign nationals, China has adopted a policy of nucleic acid testing for all patients who seek medical treatment in hospitals. All patients are required to take PCR testing before admittance to enter the hospital. Not only patients but also health care faculty members, including doctors and nurses who come into contact with patients, are subjected to PCR testing (which is the most regular testing method adopted among the world) to ensure everyone's health and safety [8].

These policies can identify not only infected persons with obvious symptoms but also infected persons with no symptoms at all as COVID-19 patients. The Chinese government also classified the country into high, middle, and low-risk areas, and introduced stricter nucleic acid testing and isolation for people in high-risk areas.

3 Conclusion

Research about symptoms of COVID-19 and models that predict the trends of spread have been conducted. Research has successfully detected and generalized the symptoms of COVID-19 and possible infectious approaches of COVID-19, but method that can efficiently and accurately predict and quarantine the patients remains blank in large part. Most of the predictive models currently involve only variables on a mathematical level but ignore the data and effect of policies on the spread condition of COVID-19. Also, current curing methods only involve quarantine methods that cost time and money for individuals and the government. Vaccines can only increase the immunity level to the COVID-19 virus but Vaccines are unable to cure it when get infected. Injections that can successfully cure COVID-19 immediately are believed to be able to highly diminish the government's cost in curing COVID-19 patients. Injections are also believed to be able to terminate the COVID-19 pandemic.

Now scientists are concerned about two critical factors in combating COVID-19: The effectiveness of COVID-19 vaccines, and the accuracy of a range of policies.

COVID-19 spread with the speed of over 300,000 cases per day worldwide. The main tasks the Chinese government and global governments face are controlling the spread of COVID-19 and healing current infected cases.

Vaccinations now face the problem of uncertainty to prevent the disease. Even though vaccinated with a plus dose, it is still possible to get infected. Also, current medical methods to cure COVID-19 are rural quarantine methods that isolate patients and observe the test result to determine whether to let go of the patient. Direct injections that can fully cure the patient remains empty. Vaccination researchers are affected both by the technological limitations and the speed of variation of the COVID-19 virus.

The policy is also a critical factor that determines the process of spread of COVID-19 and countries' destinies. Countries that fail to format successful policies may eventually experience a breakdown of the medical system and economy, and their citizens remain in danger. Policies that accurately and rapidly control the origin of cases are results that governments and scientists hope to generate. Therefore, the technology needed to create the according to a standard that guarantees the accuracy of policies.

Scientists can do more researches on models that combine the methods of pure mathematical modeling and newest data. Technologies that more accurately detect regional spreading trend of COVID-19 can be developed based on the current devices. Injections and other medical methods that can cure COVID-19 rapidly are fields that are valuable and critical in terminate COVID-19 pandemic and diminish governmental loss.

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