# Countermeasures for improving public health governance in China: from the perspective of experience and Enlightenment from the prevention and control of COVID-19

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**Abstract:** Based on the background of the prevention and control of COVID-19 and considering the development needs of the new era, this paper puts forward reasonable suggestions on the main problems of public health governance in China. A series of measures have been put forward, including promoting zoning, classification and hierarchical prevention and control under centralized and unified leadership, clarifying the government functions of public health governance, strengthening the grass-roots organizational structure and functions of public health prevention and control, deepening the division and coordination of public health prevention and control and medical service system, and public health related legislation[1]. It aims to build a public health governance system suitable for the development requirements of the new era, in order to contribute to the optimization of public health governance in China.

## 1. The concept of public health governance

The concept of governance originates from the ancient Greek word "steering". Its original meaning is to control, guide and manipulate. It means to exercise authority within a specific scope[2]. It implies a political process, that is, to establish consensus or obtain recognition in the fields where many different interests play a role together, so as to implement a plan.Public health governance is to give full play to the role of various subjects in the field of public health through a set of effective institutional arrangements and certain technical means, so as to achieve the goal of preventing and treating infectious and chronic diseases, resolving major public health risks and maintaining and promoting national health[3]. ① With the continuous development of society, the content of public health governance is also enriching. Before SARS, the research on public health in China mainly focused on infectious diseases, natural disasters and other fields; After the SARS incident, the problem of public health governance has really received attention in China. China's public health work has gradually stepped on the right track, and a public health governance system has been gradually established that takes into account major infectious disease outbreaks, public health emergencies and 14 basic public services[5].

At present, the two aspects of "health" and "modernization" are increasingly highlighted in China's public health governance. On the issue of health, China has put forward the development strategy of healthy China and issued the outline of the "healthy China 2030" plan[6]. The people-oriented concept of health has been further highlighted in public health governance. On the issue of modernization, in the "decision of the CPC Central Committee on several major issues concerning upholding and improving the socialist system with Chinese characteristics and promoting the modernization of the national governance system and governance capacity", China made a strategic plan for the modernization of national governance and social governance[7]. Building a modern public health governance system has gradually become a new direction for the development of China's public health governance in the new era, It focuses on the modernization of technology, system and people. Among them, the modernization of people, that is, the modernization of ideas, is particularly important to promote the modernization of public health governance[8].

## 2. Research on public health events in China

In foreign studies, public health events are usually studied in crisis management or emergency management in management and social risk theory. At present, the research of public health events in China is based on China's unique historical environment, politics and media ecology[9]. Zhang Zili believes that public health events are an independent basic research direction in the research of health communication, and puts forward that the in-depth study of the causes and mechanisms of such events and the effective communication and emergency plans adopted after the crisis not only has strong theoretical value, but also has important practical guiding significance[10]. Zhang Zili also pointed out that this research direction has gradually sprung up since the SARS epidemic in 2003. On the whole, the research on public health events in China is mainly divided into three stages: 2003 is the initial stage, 2004-2008 is the initial development stage, and 2009 is the initial stage of in-depth research and development (2003). The academic attention to public health events shows an exponential upward trend, Affected by the outbreak of SARS and the regulations on public health emergencies issued by the general office of the State Council, the main content of this stage of research is to describe the phenomenon of public health emergencies and put forward countermeasures and suggestions[11-12]. In the academic research at this stage, most domestic scholars studied from the standpoint of the government, pointed out the shortcomings of governments at all levels in dealing with public health emergencies, and made it clear that we should "strengthen legislative guarantee"[13] refer to foreign governance experience and "introduce foreign management emergency plan" [14]emphasize the establishment of "national long-term mechanism for urban disaster prevention and reduction" [15]and put forward countermeasures such as "media interaction" [16] and "improving medical insurance system".

## 3. The problems in public health treatment in China

With the continuous deepening of the research on public health emergencies, whether learning from international management experience or based on the actual needs of China, the fragmented and single subject governance model of "headache and cure head" and "each acting in its own way" in the process of public health emergencies governance has lagged behind, and comprehensive governance strategies need to be adopted[17-18]. As a strategic response to the fragmentation problems in the internal reform process of traditional public administration and new public management paradigm, the holistic governance theory with coordination and integration as the core provides an effective solution to the fragmentation and fragmentation dilemma in the current governance process of public health events in China[19-20]. Therefore, improving China's public health governance and building a framework model of comprehensive management of public health events with the explanatory power of China's national conditions have become the focus of domestic theoretical research. However, it should be pointed out that the research on the overall governance of public health emergencies in domestic academic circles is still in its infancy[21]. Although the theoretical results of relevant research show explosive exponential growth, on the whole, these research results are still lack of academic rationality and systematicness.

## 4. Study on the improvement of public health management in China based on the prevention and control of COVID-19

Characteristics and transmission routes of SARS-CoV-2 virus

Coronavirus is a single-stranded, normal RNA virus with a genome size between 2.7-3.2 kb. SARS-CoV-2 is a beta coronavirus with the same degree of gene as SARS (Ministry of Health of the People's Republic of China, 2020a[22]); Gralinsky and Menacheri (2020)[23].

The main modes of transmission are droplets and close contact. In a relatively closed environment, long-term exposure to high concentrations of aerosols can diffuse through the atmosphere (Ministry of Health of the People's Republic of China, 2020[24]). The results showed that SARS-CoV-2 survived in the air for 3 hours, 4 hours, 4 hours, 24 hours, a plastic and a stainless

steel tolerance in a laboratory setting. The relative humidity was 40% to 65% and the temperature was 21 to 23°C (van Doremaren et al, 2020[25]). In addition to hospital aerosol generation programs, respiratory infections are also transmitted through inhalation of droplets when speaking, coughing, and sneezing (Xie et al, 2009[26]; Zhu et al，2006[27]）. Once manufactured, they stay in the air for a long period of time and then spread with the flow of airflow (Kwon et al., 2012[28]; Gratton et al., 2011[29]; Chen et al., 2009[30]; Yang et al., 2007[31]). Social distancing of 1 to 2 meters can significantly reduce the risk of infection and contagious diseases (Gameiro Da, 2020[32]).

The source of COVID-19 is symptomatic or asymptomatic patients (Ministry of Health of the People's Republic of China, 2020[33]). A German was infected by an asymptomatic patient in the early stages of COVID-19 (Rothe et al, 2020[34]). Therefore, more attention should be paid to the asymptomatic proportion of COVID-19 patients. Asymptomatic patients, like symptomatic patients, have higher viral loads (Zou et al., 2020[35]). A recent survey in Ningbo showed that 2147 close contacts were traced, and the results showed that close contacts with asymptomatic people had an infection rate of 4.11% (Chen et al., 2020[36]). Another survey in Wuhan showed that at least 59% of patients were undiagnosed, which may include asymptomatic or mildly symptomatic patients (Wang et al., 2020[37]). The spread of COVID-19 is made very difficult by the presence of asymptomatic infectious diseases, which spread before symptoms appear. An increasing number of SARS-CoV-2 viruses can be transmitted by people who are not showing any symptoms (Bai et al, 2020[38]). It is believed that testing for the virus should include those who have been in the outbreak area or who have been in close contact with confirmed cases (Lipsitch et al., 2020[39]). So, it is now clear that all people have the disease and the incubation period is 2-14 days (Li et al., 2020[40]; Guan et al., 2020[41]; Backer et al., 2020[42]).

Every occurrence of crisis events is a good opportunity for learning and progress. Post crisis experience summary is the key content of emergency management of public health emergencies. Accordingly, based on the research and analysis of the current situation, existing problems and causes of relevant problems of China's public health governance system and mechanism in the governance of the COVID-19, we will study the Optimization Countermeasures of China's public health governance from the perspective of the experience of China's COVID-19 prevention and control, in order to further enrich the path construction of China's public health governance[43].

### 4.1 Clarify the hierarchical and classified prevention and control measures of public health governance

Based on the scientific classification of public health risks, the establishment of corresponding response mechanism and prevention and control measures is an important link of public health governance. It provides a framework for the theoretical research on the classification of public health governance. Therefore, all provincial emergency joint prevention and control institutions (leading groups and headquarters) and local people's governments at all levels should further promote the concept of classified and hierarchical prevention and control under centralized and unified leadership, earnestly implement the requirements of classified and differentiated management, and formulate scientific and complete classified prevention and control measures, which are shown as follows: first, we should formulate classified standards for public health governance. The central government should establish a unified risk classification standard and divide low-risk areas, medium risk areas and low-risk areas nationwide according to the actual degree of risk. In high-risk areas, provinces and regions can fine tune according to the actual situation and development trend of public health emergencies in the region[44].

### 4.2 Implement the principle of classification and classification of public health governance

Principles of scientific evaluation. The risk level of public health event outbreak areas can be evaluated by using scientific econometric analysis methods, powerful intelligent data technology and standard evaluation models. 2、The principle of precise implementation. All provinces and regions can refine local public health emergency response measures on the basis of fully implementing the spirit of the Party Central Committee, so as to adjust measures to local conditions

and implement policies accurately. 3、Classification management principles. All provinces and regions should strengthen the control of personnel flow and classify and manage the risk of public health events in the places of origin of foreign personnel. 4、Dynamic adjustment principle. All provinces and regions should dynamically carry out risk assessment and timely adjust various response measures according to the development trend of public health events. 5、 The principle of prevention and control according to law. Strictly implement laws and regulations related to epidemic prevention, strictly implement prevention and control measures according to law, and improve the legalization of public health governance.

### 4.3 Build a public health crisis management platform and improve risk monitoring and early warning systems

A keen monitoring system is a prerequisite for diagnosing and treating disease. Different bacteria have different incubation times. People infected with new coronavirus pneumonia generally do not show obvious clinical manifestations during the incubation period. According to epidemiological research, it is generally about 1 to 14 days, and most of them are 3 to 7 days[44-45]. This has caused great difficulty for medical units in the diagnosis and treatment of the new coronavirus pneumonia. Strengthening the monitoring and early warning of unknown infectious diseases is an important means to prevent and control public health crises. The early warning system of public health crisis includes three parts: crisis identification, crisis assessment and crisis handling, including early warning indicator system, early warning information system and emergency response system; resource sharing system, information release mechanism, etc. Events are graded and quantified[46]. Once emergencies occur, early warning and real-time monitoring are carried out immediately, and a specific prevention and control plan is formulated in a timely manner; rapid response, timely, accurate and efficient transmission of relevant information to relevant departments, and enhancement of emergency linkage capabilities.

### 4.4 Strengthen the daily prevention and control and risk early warning functions of grass-roots public health organizations

First, we should strengthen the construction of normalized prevention and control level of grass-roots public health organizations.

The disposal process of public health emergencies can be generally divided into three steps: pre prevention, in-process disposal and post recovery. In order to strengthen the daily prevention and control ability of grass-roots public health organizations, we should emphasize that we should have the first hand to prevent risks and pay attention to the pre prevention link. First of all, we should form a normalized awareness of prevention and control among grass-roots organizations nationwide and strengthen the resilience construction of grass-roots organizations. This is not only for the staff of grass-roots organizations, but also for the broad masses of the people. Secondly, we should increase the popularization and publicity of knowledge about the epidemic situation of relevant infectious diseases and the protection and self rescue of crisis events, so as to improve the general public's awareness of crisis events and self prevention and control awareness in daily life. Grass roots public health organizations can carry out publicity in stages, with focus and pertinence through the combination of online and offline[47]. In addition, reserve emergency materials. Generally speaking, after public health emergencies, the public's demand for various emergency materials will increase sharply. Therefore, the community should establish a special reserve fund for epidemic prevention based on local resources, and reserve various emergency materials in the process of normalized prevention and control according to the scale of the community, such as masks, disinfectant, goggles, temperature measuring guns and other medical materials, so as to prepare for emergency needs and prepare for emergencies. Finally, we should pay attention to the ability training of the staff of grass-roots public health organizations. On the one hand, efforts should be made to cultivate the ability and quality of grass-roots staff, including the ability to study and judge risks and the ability to control risks. Grass-roots staff should dare to face risks and challenges in their daily work, have the spirit of Taishan collapse in front of risks and challenges,

and be able to deal with and resolve various risks and challenges[48]. On the other hand, we should strengthen the ethical and moral construction of grass-roots staff, cultivate the sense of responsibility and mission of grass-roots staff, so that they can demand themselves with high standards in their daily work, have noble ethics, ethics and professional outlook, devote themselves to the realization of the interests of community residents, dare to bear hardships and are not afraid of hardship, and provide more high-quality and convenient services for the majority of grass-roots residents.

Mobilize the active participation of grass-roots people and give full play to the autonomy of grass-roots organizations

On the one hand, the majority of grass-roots staff should mobilize the people to actively participate in the daily prevention and control work. Various information can be released through wechat, microblog and other apps, as well as the posting of various offline posters, so as to enhance the participation preference of grass-roots people. In addition, a volunteer team can also be established to mobilize the majority of Party members to take the lead and actively participate. On the other hand, community workers should integrate the advantageous resources of the community. First of all, according to the principle of "autonomy, voluntariness and public welfare services", residents engaged in medical work will be included in community voluntary service organizations. In case of crisis, they can answer questions and solve doubts for the masses in time from a professional point of view, so as to eliminate the panic psychology of the masses. ① Secondly, we can comprehensively use modern technologies such as Internet, big data and cloud computing to develop a public service management platform for epidemic prevention and control, fully integrate hospitals, experts, the public and relevant medical resources, achieve co construction and sharing to the greatest extent, and better improve the level of prevention and control.

### 4.5 Strengthen multi-departmental collaboration, strengthen international cooperation, and build a strong command and support system

In order to effectively reduce the harm of public health crises, a government-led, cross-departmental and cross-regional emergency command and coordination mechanism must be established. At the same time, emergency departments, medical and health departments, scientific research institutions and other departments need to work together to build a public health emergency management platform[49]. A leading agency for emergencies shall be established to be responsible for the handling of emergencies. At the same time, the prevention and control platform integrates the big data of public health events, and conducts real-time and dynamic release of information such as command and dispatch, prevention and control measures, and government policies. In the face of new infectious diseases, the society should formulate reasonable and effective response measures as soon as possible, and rapidly expand the scale to provide support for scientific prevention and control[50].

In the face of the COVID-19 epidemic, governments of all countries must strengthen the detection capacity of health departments and strengthen the standardization and precise control of the epidemic. Establish isolation points, isolate admitted patients, strengthen close contact with patients, and strengthen strict, strict and meticulous screening. Scientific research units should strengthen pharmaceutical research and development, and strengthen immune research. According to the actual situation, an emergency medical service system has been established in terms of cross-regional medical treatment, diversified medicines, and convenient resettlement methods. Medical insurance should be comprehensive and fair. According to their respective job responsibilities and occupational characteristics, the emergency rescue team, as an emergency support force, coordinates the epidemic prevention and control and emergency rescue, and is ready to fight the "War of Resistance" at any time.

Another experience is to strengthen international cooperation through the exchange of experiences in fighting the disease. In the early days of the COVID-19 outbreak, China received assistance and support from many countries and people around the world. China, on the other hand, shoulders the responsibility of sharing information in a timely, open and transparent manner, and

makes its own contribution to the measures and experience in the global fight against the epidemic. So far, China has provided masks and protective clothing to more than 160 countries, regions and international institutions; assisting or providing medical materials such as testing reagents. China has also provided vaccine assistance and support to more than 100 countries, regions and international institutions. Multi-level and multi-faceted cooperation on a global scale is crucial to defeating the epidemic. Building a community with a shared future for mankind and jointly fighting the epidemic is a very important task[51].

### 4.6 Accelerate the construction of a systematic, scientific and standardized public health legal system

So far, China has promulgated a number of laws and regulations related to public health, covering most sectors of public health, such as the law on the prevention and control of infectious diseases, the law on emergency response, the law on the prevention and control of occupational diseases, the law on basic medical and health promotion, etc. At the level of public health legislation, China has initially formed a relatively complete public health legal system, which plays an important role in protecting citizens' rights and interests in life and health. However, with the continuous development of society, the incompatibility between some laws and regulations and the actual situation has become more and more prominent. Many public health laws and regulations can not really play the role of regulating and guiding medical institutions and public health institutions because of their weak legal effect and lack of authority. Especially after the COVID-19, China's current public health legal system has been difficult to meet the needs of social development, which clearly reflects the shortcomings of China's public health legislation[52]. Therefore, we believe that it is necessary to deeply reflect on the current situation of China's public health legislation, improve the top-level design of public health governance, and build a public health system framework and legal system suitable for the development requirements of the new era.

## 5. Conclusion

Based on the development status of China's public health field, combined with the COVID-19, this paper fully analyzes and summarizes the current governance status and main problems of China's public health emergencies, and puts forward a series of plans to improve the construction of China's public health governance system, in order to have reference and guiding significance for the expansion of China's public health governance path. In terms of governance means, it is proposed to make full use of the developed and interconnected information technology in the era of big data to create a diversified and integrated data cloud platform and realize the collaborative sharing of data. In terms of governance ideas, it is proposed to adhere to the working methods of combining peacetime and wartime, normalized prevention and control and flexible transformation of emergency management, in order to improve the resilience of China's society to resist risks. At the legislative level, it is proposed to strengthen public health legislation and law enforcement, constantly revise the loophole provisions of the infectious disease prevention and control law and the wildlife protection law, fully implement the provisions of the biosafety law, and build a complete public health legal system, so as to improve the legal issues related to public health governance in China. However, due to my limited knowledge and professional level, the research on public health governance is not deep enough, and the countermeasures and suggestions need to be further improved. Therefore, in my future study and life, I will continue to work hard to enrich my theoretical knowledge and comprehensively improve my scientific research ability, in order to obtain more valuable research in the field of public health governance.

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