



To What Extent Was China's Existing Health System Well Prepared for COVID-19?

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Abstract

In early January 2021, the United Kingdom initiated a nationwide lockdown in response to the rapid spread of a novel COVID-19 variant, underscoring the global challenges posed by the highly transmissible virus. While COVID-19 first identified in Wuhan in December 2019, has continued to afflict nations worldwide, China, where the outbreak initially emerged, managed to control and eliminate the virus within two months. This disparity in pandemic response highlights the crucial role played by China's healthcare system. This essay critically examines the level of preparedness of China's healthcare system in the face of the COVID-19 crisis. It explores the system's notable achievements and inherent weaknesses and their impact on pandemic preparedness. In the context of this analysis, the essay discusses China's healthcare infrastructure, epidemic prevention measures, and the system's inherent vulnerabilities. Ultimately, this investigation concludes that while China's medical system exhibited commendable aspects, it was not fully equipped to address the challenges posed by COVID-19.

Keywords

China, COVID-19, Chinese medical system, CDC

1. Introduction

On Monday, January 4th, 2021, the UK prime minister declared a new nationwide lockdown that would last until at least mid-February to tackle a quickly spreading new COVID-19 variant (Kirka & Hui, 2021). COVID-19 is a highly transmissible virus that is still a conundrum for many countries worldwide. Since Coronavirus was discovered in Wuhan in December 2019, the pandemic experienced explosive growth worldwide (WHO, 2020). As of January 2021, the number of infected patients reached 90,807,588, while the cumulative number of deaths has exceeded 1,945,266 people (World Meter, 2021). Nevertheless, while most countries are still bitterly struggling in the morass of the COVID-19 situation, as the initial location of a large outbreak, China spent only two months inhibiting and eliminating COVID-19 (Talha, 2020). This striking contrast of this anti-epidemic performance seems to be attributed to the current Chinese medical system. Today, there is a debate about China's current medical system's performance in the crisis of COVID-19. Given this background, this essay attempts to analyze to what extent China's current medical system was well prepared for COVID-19. On the one hand, China's medical system may have had a series of measurable successes when confronting COVID-19; on the other hand, a host of inherent weaknesses in the health system may inevitably affect the preparation for COVID-19. These demerits may have caused the CDC and local authority officials to be slow in their reports. This essay will delve into China's medical system toward the outbreak of COVID-19. Initially, this essay will introduce COVID-19 and China's existing medical system and the epidemic prevention system. Then preparations for the Chinese medical system towards COVID-19 are undertaken in the second section. The third section will discuss the inherent vulnerability of China's sanitary system. Finally, based on the

preceding debates, this essay concludes that China's medical system was not entirely ready for COVID-19.

2. Main Body

2.1 The eruption of COVID-19 and Chinese medical system

2.1.1 The brief introduction of COVID-19

COVID-19 is a catastrophe for the whole world because it appears to be unprecedented in its contagiousness and destructiveness. The intense contagiousness of COVID-19 might be inextricably linked with its transmission channels. The novel coronavirus was more infectious than similar SARS and MERS viruses (Martin, 2020). Infection through contact has also been an essential form in terms of the Coronavirus spread and droplet infection and respiratory tract infection (WHO, 2020). For example, the deadly Coronavirus can remain infectious on object surfaces for days or in the air for hours (Emery, 2020). WHO (2020) has also corroborated that Coronaviruses are spread through person-to-person contact and by inhalation of infective aerosols. Novel Coronavirus, even in urine and faeces, can spread through aerosols (Howes, 2020).

The asymptomatic transmission of the disease also made scientific attempts to curb the spread more difficult. Along with highly contagious features, COVID-19 seems to be intensely disruptive to human health. Scientists have validated that COVID-19 can induce severe or fatal complications, for instance, respiratory failure, cardiovascular and cerebrovascular diseases, even contributing to a series of chronic after-effects and multiple organ failure (Larson, 2020). Elder age groups thus have had higher fatality rates because the elders may be much more physically vulnerable. According to the figures, the mortality rate of elders over 80 infected by the virus is 7.8% (Mizrahi et al., 2020). Many countries have taken strict measures to eradicate Coronavirus by introducing mass vaccination campaigns or imposing stringent lockdown policies to curb the spread (FT teams, 2020). COVID-19 has highly infectious characteristics resulting in many infected patients worldwide, concurrently possessing strong destructive effects towards human health triggering higher mortality, and exerting enormous stresses on global health systems.

2.1.2 The explanation of Chinese existing medical system

Before the Coronavirus outbreak, the Chinese government had been committed to ameliorating its public health systems to grapple with public health emergencies effectively. Since the PRC's inception, the Chinese government established a top-down and state-led medical and health system. These initiatives seem to be traced back to the schistosomiasis eradication in Mao's era. Schistosomiasis is a highly contagious and harmful parasitic disease that wreaked havoc on the Yangtze River's lower reaches for more than two thousand years (Conrad, 1988). Mao called upon the CCP to perceive eliminating schistosomiasis as the overarching political priority in 1955 (Zheng, 2007). Mao then fueled the cooperative medical wave that universalized China's countryside in 1955, establishing rural grass-roots health organizations (Chen et al., 2012). The Chinese government simultaneously established provincial, municipal, and county-level public hospital networks and rural counties, townships, and village-level medical and health service networks (Wang, 2011). Statistics show that as of 1976, 93 percent of the Chinese production units (administrative villages) under the cooperative medical care system had covered 85 percent of the country's rural population, and more than 1.5 million barefoot doctors were serving this system. Meanwhile, Chinese average life expectancy increased from 35 years old in 1949 to 68 years old in 1980 (Edward, 1987). After the reform's onset, China's health system has since undergone a new round of reforms, aiming to strengthen primary-level medical and health services and cover poverty-stricken national counties and remote areas. A five-level telemedicine service system will be gradually established at the national, provincial, prefectural, county, and township levels (Meng et al., 2015). This top-down health system driven by state-level apparatus enabled the national medical resource to be inclined to parochial medical centers and renders the HFPC to perform this function at the national level (Sun et al., 2017). Chinese government in 2018 installed the NHC of the PRC to replace the HFPC ranging from the state level to township level when considering formulating national health policies (CPC Central Committee, 2018). This state-led and top-down medical system has made a degree of strides considering China has a considerable population and impoverished peasantry. Nowadays, China's average life expectancy stands at 76.4 years, placing it 49th in the world (WHO, 2019). Therefore, these previous state-led medical reforms may have had their purported impacts in forging an effective Chinese wellness system from the top down.

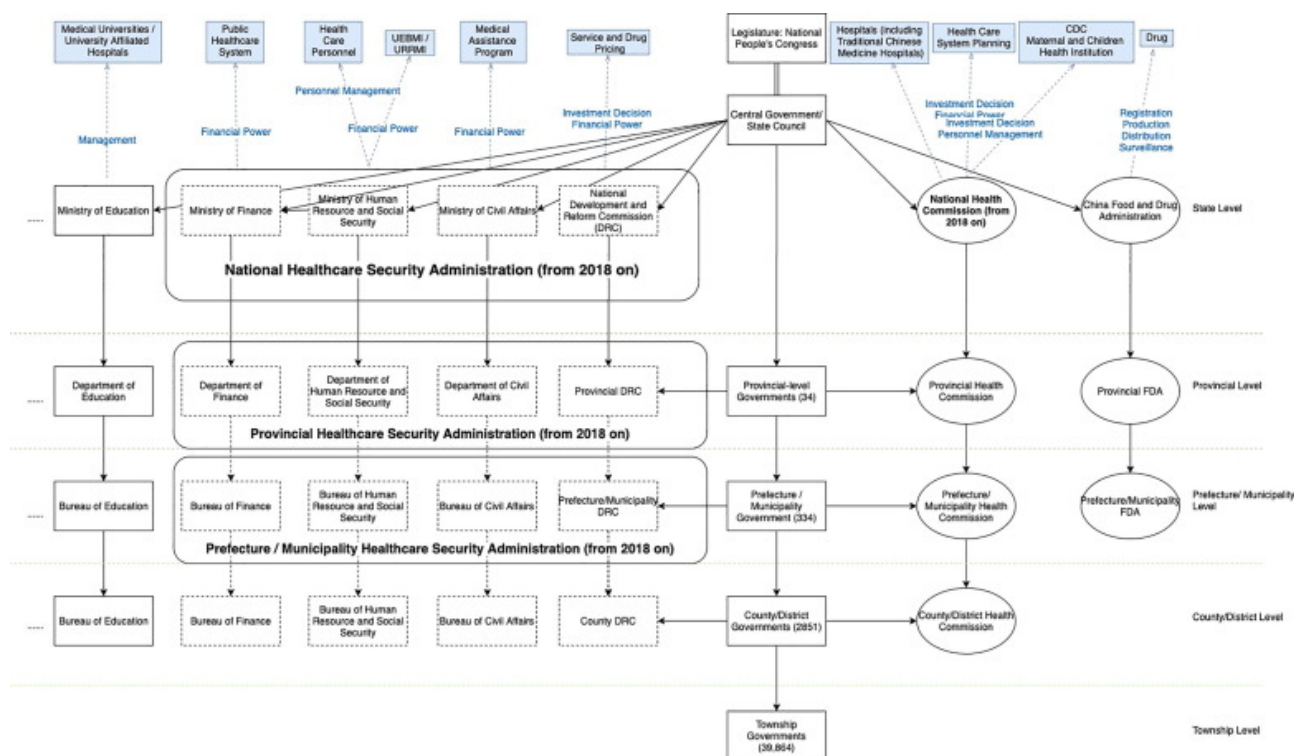


Fig. 1. 'Organisations of China's health system' (Meng Q. Y. et al., 2015).

2.1.3 The constitution of China's hygiene and the anti-epidemic system

Under the Chinese medical system's ongoing reform, the SARS eruption in 2003 enabled a greater emphasis on public health emergencies. SARS was a global respiratory epidemic in Guangdong, China, in 2002, which spread across Southeast Asia and even the whole world, giving rise to 774 deaths in China (Joan, 2004). Following the CDC model in the United States, the Chinese government established its CDC in 2003 (Peng, J. et al., 2003). Considering the disruptiveness of SARS, the Chinese government pumped money into the CDC and enabled the CDC to be affiliated with the Ministry of Health in the PRC as a state-owned public institution (Wu, 2004). The CDC is mainly composed of national, provincial, district-level, city-level, and county-level disease control institutions, which undertake the core professional functions of strengthening governments' capacity for prevention, control, and emergency response to acute infectious diseases (Li et al., 2016). The Chinese government explained the purpose of instituting this system to improve the ability to prevent and control diseases and respond to public health emergencies (The Ministry of Health, PRC, 2004). Before the outbreak of COVID-19, the Chinese CDC appeared to respond to a series of global contagions. For instance, MERS and avian influenza were successfully alerted and controlled by the CDC, and only a few people were infected in China (Peng, 2020). Thus, since 2003 China's new hygiene and anti-epidemic system has been established and has previously warded off a series of challenges before the eruption of COVID-19.

2.2 Measurable success in China's health system against the COVID-19

On the one hand, the existing top-down Chinese medical system seemingly made a series of superficial triumphs when quickly responding to the outbreak of COVID-19.

2.2.1 Exceptional mobilized capability in China's current health system

As one of the pivotal parts of this one-party state, China's current health system seems to be empowered with a robust mobilization capacity. Initially, the government accommodated sanitation's suggestions and made a quick response. When China's CDC reported human-to-human transmission of the coronavirus to the government, China's decision-makers leveled a strict lockdown policy in Wuhan within three days (Ma, 2020). These strict lockdown policies applied to the whole of Hubei province and a state of emergency was declared in all provinces (WHO, 2020).

The rigorous lockdown policy in Hubei province seemed to prevent the spread of the virus across China. According to the WHO's prediction model, if the start date of containment closure had not been delayed by three days, the estimated 30,699 confirmed cases of COVID-19 would reportedly have risen by 34.6 percent (to 41,330 people) in non-Wuhan regions (Yuan, 2020). Considering the concentration and severity of the COVID-19 outbreak in Wuhan, the current Chinese health system (NHC) urgently mobilized medical resources throughout the whole country. As an authoritarian country, this one-party-state provided strong mobilization capabilities to its medical system when facing the coronavirus pandemic. In turn, China's top-down medical system fully mobilized medical resources, dispatching them to the epidemic areas via the authoritarian regime's officialdom. Thus, the Chinese government has mobilized resources, public health teams, and testing kits through its medical system in support of Wuhan, and two field hospitals with more than 1,000 beds each were built in 12 days (Gander, 2020). Meanwhile, more than 41,000 medical workers and 330 medical teams from all over the country were mobilized and organized by the top-down medical system to aid Wuhan, and more than 18,000 public health workers were also organized to form a Wuhan epidemic tracking team (Sun, 2020). As a component of this one party-state, China's medical system whose strong top-down mobilization seems to have been efficacious when encountering the disease, and on 8th April 2020, following a 76-day lockdown, the number of cases reported were in the single digits across an entire week. Subsequently, Hubei's home quarantine order was dismantled, and people began to return to their daily (The State Council Information Office, 2020). Accordingly, China's current medical system's mobilized capability may have been a critical determinant in allowing China to contain the coronavirus pandemic effectively.

2.2.2 The exertion of a set of new initiatives in current Chinese medical systems

China's current health system incorporated a series of scientific methods to curtail the spread of COVID-19, promoting these technologies to the whole country and relying on its substantial capacity for mobilization. Epidemics of infectious diseases mainly depend on three vital links - the source of infection, route of transmission, and susceptibility of the population (Seventer & Hochberg, 2016). Initially, the lockdown policy implemented in Wuhan effectively restrained the source of infectious COVID-19 in China. The Chinese medical system also took a stab at controlling its transmissibility paths, thus enacting the Joint Prevention and Control Mechanism of the State Council. And this mechanism was the novel coronavirus epidemic prevention and control mechanism by the NHC (Wang, 2020). The establishment of this mechanism sought to establish a platform at the national level, deploying and forming a resultant power-driven Chinese medical system to contain the diffusive trails of COVID-19. For instance, under this mechanism's synergy, the NHC issued the necessary directive of nationwide home quarantine and other strict control measures to contain the Coronavirus during the outbreak of COVID-19 (Information Office of the State Council, 2020). After controlling COVID-19, the Chinese medical system employed a series of technology methods such as big data, artificial intelligence, cloud computing, and other digital technologies to better support epidemic surveillance and analysis, and virus tracing, and keenly exercised it (Li, 2020). Traditional Chinese medicine (TCM) is perceived as an effective medicine to improve immunity when it comes to the population's susceptibility. According to media coverage, TCM participation in the prevention and treatment of confirmed cases accounted for 92 percent of confirmed cases in Hubei province, with TCM utilization rate and total effective rate exceeding 90 percent (Tian, 2020). TCM seemingly proved to be impactful. Chinese patients had lower fatality rates compared to other countries (Baud et al., 2020). Therefore, after controlling the source of COVID-19 in Wuhan, China's medical system established the specialized official apparatus to execute and maximize its function, using a series of new technologies to curb transmission routes. Meanwhile, TCM was used in a broader application in curing patients and improving their immunity. These behaviors plausibly controlled the sweeping outbreak in China and cured many patients who affected the COVID-19.

2.2.3 Healthcare Reform Achievements made the Chinese medical system enduring

The fruits of China's medical reform appear to have enabled its medical system to be resilient through the coronavirus outbreak. According to the PRC's Law on Basic Medical and Health Care and Promotion, China's healthcare reform aims to build a primary healthcare system for all and provide safe, effective, convenient, and low-cost medical services to all 1.38 billion Chinese citizens (NPC, 2019). Under the guidance of this law, on the one hand, Chinese per capita medical resources did make significant strides before the outbreak of COVID-19. According to Zhu's statistics in 2020, before the COVID-19 outbreak, Wuhan also had higher per capita medical resources than the US average counterpart, also having a higher density of doctors (3.6 per thousand doctors in Wuhan compared to 2.6 per thousand in the US) and many more hospital beds (7.4 per thousand beds compared to 4.7 per thousand in the US).

Furthermore, this progress and the medical system's makeup meant that most Chinese did not fret about treatment expenses. Ergo, China's expanding per capita medical resource indeed helped it in facing incidences of plague. On the other hand, the Chinese government vastly expanded its health expenditure towards the medical system. Since 2013, 95 percent of China's 1.4 billion population has been covered by social, and medical insurance (Guo, 2019). Corresponding to the ever-expanding reach of the social welfare system, the Chinese government also incrementally allotted its fiscal budget to its medical system. The total national health expenditure is expected to reach 6519.59 billion yuan in 2019, or 6.6 percent of its GDP (NHC, 2020). The Chinese medical system had much budgetary preparation for confronting the contagion, and free treatment for patients affected the COVID-19 was provided. Accordingly, the Chinese government has been reforming its medical system, seeking to expand the fraction of coverage towards medical resources and offering central budgetary support with the top-down medical system. These measures effectively ensured flexibility and resilience when coping with the emergent contagion.

2.3 China's medical system was not entirely ready for COVID-19

However, these superficial triumphs may not imply that the Chinese medical system is ready for an outbreak of COVID-19.

2.3.1 Rigidity of China's medical system

On the macro level, China's existing medical system's rigidity hindered information flow, leading to the epidemic being initially concealed. As a part of the Chinese bureaucracy, the Chinese medical system seems to have been unavoidably influenced by this rigid bureaucratic system. Because the CDC of all different levels has a CCP party branch, this essentially meant the CDC was directly influenced if not led by a CCP branch (CDC, 2018). This top-down medical system admittedly has exceptional mobilization capacity, gathering strengths to deal with important matters as the Chinese medical system's strong mobilization demonstrably and rapidly suppressed the spread of COVID-19 within two months (Chen & Yu, 2020). Nevertheless, on the one hand, the rigidity of top-down China's medical system delays information flow, whereas the bottom-up information flow of information seems to have certain complicated matters. Yang (2020) described that according to a retrospective study by the CDC, there were already 104 positive cases of COVID-19, including 15 deaths, in December 2019. However, these case samples collected by Wuhan hospitals were not reported to the China CDC but were sent to private institutions for testing at the end of December 2019. The CDC did not receive the first sample from Wuhan until January 2nd (Yang, 2020). The bottom-up reports on outbreaks were repeatedly delayed by administrative power. Furthermore, when Hubei and Wuhan CCP's high-level cadres convened meetings, the Wuhan Local Health Commission artificially kept the reported number of infections at a lower level (*ibid.*). These administrative interventions increased the difficulty for the Central CDC in understanding first-hand information about the epidemic. On the other hand, China's medical system's rigidity prevented effective precautionary measures from being taken, resulting in a lag in the emergency response activation. On January 19th, the China CDC sent a third investigation team to Wuhan for further investigation. Finally, it was concluded that the novel Coronavirus was highly contagious among human beings (Ma, 2020). Any effective pre-emptive measures were not implemented for three crucial weeks in January. Preventative measures were thus implemented late, contributing to the chaos and eruption of COVID-19 in Wuhan. Therefore, even if China's medical system has strong mobilization capability, the system's rigidity may have inhibited the pandemic's information flow, forcing further procrastination on the topics of disease prevention and emergency response.

2.3.2 The Marginalization of Centers for Disease Control

On the micro-level, the administrative position of the CDC is usually vulnerable in the Chinese medical system. This marginalized position seemingly affects its discourse power in the government decision-making system, even though the Chinese government forged the CDC as a potent vehicle to be responsible for preventing and controlling diseases and responding to public health emergencies following the outbreak of SARS (Wang, 2012), the CDC *de facto* assumed only an auxiliary role in predicting and preventing contagions. In the Chinese political system, the CDC was situated merely as a public institution and social service organization that implemented governmental CDC services (Zhu & Li, 2020). Thus, the CDC lacked administrative authority to publish epidemic data and deploy preventative and control measures. Whereas the Bureau for Disease Control and Prevention, under the National Health Commission, served as the executive branch (NHC, 2018). Usually, the CDC was positioned somewhat like a think tank of the NHC, which mainly provided decision-making advice to the health administration regarding disease prevention and emergency response. Furthermore, as previously mentioned, the CDC is mainly composed of national,

provincial, district-level, city, and county-level disease control institutions in the structural organization. Nevertheless, this structural feature does not mean that the CDC is an entirely vertical management system. The national CDC had only the authority to provide technical guidance and support to subordinate institutions. At the same time, the local CDC at the provincial, city, and county levels mainly reported to the local health commission and government and had no legal responsibility or administrative responsibility (Special Expert Group for Control of the Epidemic of Novel Coronavirus Pneumonia of the Chinese Preventive Medicine Association, 2020). This improper organizational structure directly led to the local CDC's easily being impeded by the local Health commission and government. Thus, in a crisis, the local CDC was likely to give priority to local government interests. For example, around January 11, 2020, health officials in Wuhan began instructing local hospitals to "cautiously report" cases of unexplained pneumonia, which could only be reported after step-by-step testing and approval from the Hubei Provincial Health Commission (Yun et al., 2020). This CDC status enabled local cadres to postpone reporting on the pandemic to some extent considering the local government's interest. Additionally, the CDC's marginalized position is also articulated to reduce the funding for it as stated before, even if the Chinese government is committed to reforming its medical system and dramatically expanded spending on the health care system. However, facets of public health capacity and pandemic responses were relatively underfunded. Over the last five years, the NHC has cut its budget contribution to the CDC by 70%, from a high of 1.1 billion yuan (\$157.5 million) during the H7N9 outbreak in 2015 to \$40 million in 2019 (Cheng, 2020). These measures may have weakened disease preparedness and response in China. Consequently, the CDC's administrative position in Chinese bureaucracy is located in an auxiliary position that only provides technical guidance and support to subordinate organizations, resulting in a CDC constrained by local government and faced with a predicament of insufficient funds. These characteristics are likely to have retarded the CDC's ability to respond to the outbreak of COVID-19 promptly.

2.3.3 An inadequate public health system

China's incomplete public health system may well have thwarted the preparation for COVID-19. On the one hand, this fault was embodied in an opaque infodemic of the Chinese medical system. Albeit in the nascent days of the COVID-19 pandemic, local CDC and frontline clinicians had already recognized the existence of COVID-19, but the public knew nothing about the Coronavirus. Until December 2019, Li, who was an ophthalmologist at Wuhan Central Hospital, communicated with his colleagues in a WeChat group on the potential re-emergence of SARS and reminded his peers to pay attention to their safety. As a result, he became one of the first medical personnel to disclose information on the epidemic nature and the severity of this particular infectious pneumonia to the outside world and was known as the epidemic whistle-blower (Yuan & Taylor, 2020). The public *da qui cos* realized the contagious COVID-19 that spread in Wuhan. On December 31, 2019, the Wuhan Health Commission issued the first public notification of the epidemic situation (WHO, 2020). These passive information exchanges and promulgation reflected that China's public health system seemed somewhat untransparent towards the public. Furthermore, this lack of transparency meant that citizens did not become aware of the epidemic's existence promptly, meaning an opportunity to have quickly contained the virus's spread may have been lost. On the other hand, China's public health system's imperfection is manifest in that high-tech means in China's public health system might tend to persist as part of China's increasingly rigorous system of social surveillance and management continues. A series of scientific methods were exercised in the Chinese public health system to curb the coronavirus outbreak, such as big data and artificial intelligence to track down people's daily routines (Yi, 2020). However, these technological methods might become the norm in the post-epidemic era, further strengthening the Chinese government's control over its people without adequate legal regulation of said technologies. Therefore, the opacity of China's public health system seemingly meant that the public was ill-prepared, while the government's technological means may, in turn, weaken transparency and strengthen its rigorous control over citizens.

3. Conclusion

The outbreak of COVID-19 poignantly impacted the world and all human beings, because this virus has strong transmissibility and destructive effects that give rise to the high mortality rates for particular age groups. Thus far, most countries are still struggling with the exponential proliferation of COVID-19. Before the disease outbreak, China had established a top-down, state-led healthcare system and had steadily been reforming it. The outbreak of SARS in 2003 ensured that the Chinese medical system placed significant effort into epidemic prevention. The CDC was established to respond to public health emergencies in 2003 effectively. This global contagion of COVID-19 erupted

in Wuhan. On the one hand, China's current medical system only spent two months to control and eliminate the virus. This has depended primarily on the excellent mobilization capabilities of China's top-down existing medical system that urgently mobilized medical resources and doctors in support of Wuhan, enacting the lockdown policy to contain the source of spread in Wuhan. With this top-down medical system's help, China applied multiple scientific methods to implement large-scale virus testing and centralized isolation treatments, even using digital technology to monitor and track down the virus. In the meantime, healthcare reform in China offers abundant medical resources to ordinary people, and the government allocated investment into medical care. These strengths may be useful in maintaining flexibility and resilience in response to outbreaks of infection.

On the other hand, these advantages do not automatically mean that the Chinese health system has been well prepared for COVID-19. The epidemic prevention of COVID-19 may inevitably be affected by vulnerabilities intrinsic to China's medical system, leading to missing the best opportunity to control this virus's spread. From the macroscopic perspective, although China's current medical system's rigidity has been robust in mobilizing capacity, certain rigidities complicated a bottom-up information flow, preventing effective early preventive measures towards COVID-19. Because officials are only accountable to their superiors, these flaws seemingly delay disease prevention and emergency responses. From a microscopic perspective, the CDC was located in the Chinese medical system's marginalized position, unavoidably confronting local governments' constraints. The Chinese government also cut down on departmental spending. These disadvantageous situations may have blunted the CDC's quick response to COVID-19. Furthermore, an opaque system for releasing information in China's medical system prevented citizens from becoming aware of the epidemic promptly. Many digital technologies used for tracking the patients' routines and detecting people's behaviors, in turn, exacerbated this opacity and tight control over citizens.

4. Abbreviations

CCP - Chinese Communist Party
 CDC- Centers for Disease Control
 COVID-19 - Coronavirus Disease 2019
 GDP - Gross Domestic Product
 HFPC - National Health and Family Planning Commission
 MERS - Middle East Respiratory Syndrome
 NHC - National Health Commission
 PRC - People's Republic of China
 SARS - Severe Acute Respiratory Syndrome
 TCM - Traditional Chinese Medicine
 WHO - World Health Organization

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