Chinese Government Response to Covid-19 and Its Feasibility under the New Variant-Omicron

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Abstract. Covid-19 has been a hot issue that dominated people's life ever since its birth. China, after over two years experiences of coping with Covid-19, is insisting on eliminating the virus national wide rather than living with Covid-19 as many other countries do. While the strict Covid policy was effective for a long time, the recent outbreak of Covid-19 in Shanghai has raised concerns about the dynamic zero covid policy made by the government since the large scale of the infection and the crucial status of Shanghai in China. The essay would discuss the general policy under the guideline of dynamic zero covid and the general advantages about it, the specific situation and specific policy in Shanghai, and the problems, especially in Shanghai, induced by zero covid policy to offer people an open discussion of Covid-19 policy experiences, both positive and negative, that could be studied to make better public policy for the society.

Keywords: Covid-19, Government Response, Omicron, Dynamic Zero Covid policy.

1. Introduction

Ever since the first case of SARS-CoV-2 was discovered in Wuhan city, China, the outbreak of the virus has been dominating people's lives all around the globe, and with the continuous variation and prevalence of the virus, people's strategies of coping with this disease are also evolving. China has insisted on the “Dynamic Zero Covid” policy — find one, extinguish one [1] — by enforcing practices like city testing, mandatory quarantines, etc. from the beginning of the first outbreak in Wuhan to now, 2022. Clearly, there are positive outcomes resulting from the zero covid policy. From 30 December 2019 to 8 April 2022, there are overall 494,587,638 confirmed cases and 6,170,283 death cases reported around the world, and China, the country that has the second-largest population, has only 935,640 confirmed cases and 14,048 death cases. [2] However, as the virus evolved and its characteristics changed (increasing infection rate and mild infection) [3], whether there could be changes in policy is under discussion. The essay is going to talk about the good sides and the bad sides of the dynamic zero covid policy, and the problems it appeared during the prevalence of omicron.

2. Current strategy

The dynamic zero covid policy refers to the essential aim of finding one case and extinguishing one case inside mainland China. These are the Chinese national guidelines for combating Sars-Cov-2 since August 2021, aiming to control and eliminate the spread of the virus in one incubation period (14D) in the minimum costs of time, resources with high quality, minimizing the negative effects on economic activities and citizens’ daily lives. In general, this strategy is employed by doing massive testing, finding the infectious sources among people and immediately enacting quarantine, using big data to precisely and accurately secure close contacts and risky groups, and distinguishing specific affected regions to employ control [1].

In detail, the main approach is to employ the combination of quarantine and covid tests. In preventing infection from foreign countries, a “14+7” quarantine is required, which means that a traveler needs to stay in an allocated quarantine hotel for 14 days (getting tested in D1,2,3,4,7 and 14) under centralized management, and another 7 days to stay in residence to self-quarantined (getting tested in D2 and D7). In preventing infection from internal sources, the government also employs “14+7”, “7+7”, “3+11”, and “2+14” to different risky groups [4]. For a more disease-prevalent region
like Shanghai, the policy, after several days of trials, is determined to be unregular covid tests in the combination of self-antigen tests, oropharyngeal swab tests, and nasal swab tests, and “7+7” quarantine for a specific residential community “Xiao Qu”, a workplace or a public place, once one positive case is discovered.

The auxiliary means to help achieve this approach more effectively is through big data and technology: creating color code, place code, and location tracker to identify which category a person belongs to, what places a person has traveled before testing positive, and is a person comes from a high-risk region. Once a person is identified as a certain risky group, the local disease control center would phone call the person to be prepared for quarantine and contact the corresponding residential committee to notice the case and to take over the case if necessary.

3. **Advantages of dynamic zero covid policy**

3.1. **Low infection rate and low death rate**

By 2022, China’s population has already reached 14.1 billion and among them, considerable numbers of people are especially vulnerable to the virus, such as the elderly. In fact, among the 264 million elderly who are above the age of 60, 52 million of them have not yet received the full vaccination, and only 51% of people who are above the age of 80 have received two shots and 20% of them have received a booster [5]. Lacking the protection of vaccination, a big proportion of the elderly also often suffers from other serious non-communicable illness such as cancer, diabetes, etc., adding to the natural aging of the physical body, making sure these people are living in a safe environment is important. Not only do the elderly need it, but also other vulnerabilities like children who are susceptible to the virus all need the same protection. Therefore, the government was determined to implement a strict zero covid policy to eliminate massive infection inside China. Looking back at the infection rate starting from August 2021, when the dynamic zero covid policy was first enacted, to the beginning of February, when Omicron was not prevalent in China, there were only hundreds of confirmed cases every day, and only a few or even zero death cases. Compared to the US, which had about 1 million to 5 hundred thousand confirmed cases every day and about 10 thousand death cases every day [6], the result of the dynamic zero covid policy was truly impressive in terms of infection rate and death rate, and its effect on protecting the vulnerable.

3.2. **Lifting burden on the healthcare system**

From the perspective of the costs of public health and clinical health measures in treating Covid-19, it is necessary to keep the infection rate down in order to maintain a stable and healthy government spending on the healthcare system. By December 2021, it is estimated that the total direct medical costs for public health care as a result of COVID-19 were $6.83 billion (The costs due to centralized quarantine, NAT, epidemiological surveys, disinfectants, PPE, and health education) and another $0.37 billion due to hospitalization [7]. As covid-19 spreads in a rapid pace, keeping the positive case low is the most direct way to reduce the spending on this area.

Except for the reason that is directly induced by Covid-19, the long-entrenched problem in the Chinese healthcare system could not be ignored too, which is the low number of healthcare workers and the enormous population that need healthcare service. By 2019, it is approximated that there was only 6.64 healthcare worker for every 10,000 people in the population, indicating the burden on the Chinese healthcare system was already overloaded [8]. Covid-19 made the situation even worser.

Firstly, treating covid-19 needs space in hospitals and healthcare workers to take care of the patients. As China has not yet announced that patients with mild or no symptoms could stay at home to wait for self-healing, once a patient is identified as a positive case, he or she would take up at least some medical resources. (In a severe outbreak, the city government would build a square cabin hospital for the centralized management of the patients.) Secondly, as medical workers are required to be at the frontline of combating with the virus, and are closely exposed to the infectious sources, they are more susceptible to the infection, which would
not only make themselves sick, but also would potentially infect other patients with underlying medical conditions. It is estimated that even with strict non-pharmaceutical prevention interventions the proportion of COVID-19 hospital-acquired infection rate still ranged from 0% to 65% [9]. By 2020, China has 563.6 million older adults, individuals with underlying health conditions and pregnant women [10]. These people are all very susceptible to the transmission of virus and often show up in hospital where infection is more readily occur. Without keeping the infection rate low, it would be a crisis to Chinese healthcare system in terms of a large difference between people who need help and people who could offer help.

Thirdly, if the hospital decides to prevent nosocomial infection, another problem would also appear, which is the cancel of appointment for people with underly medical conditions. For example, patients with cardiocerebrovascular diseases, chronic renal failure, and diabetes mellitus were not able to receive maintenance treatment when the hospital does not receive patient anymore for the prevention of the spreading of Covid-19 [8].

4. The challenges to dynamic zero covid policy in the face of omicron variant

4.1. The characteristics of Omicron Variant

Ever since the first omicron variant confirmed case was identified in November, 9. 2021, the globe has entered the phase of omicron era. Overall, Omicron is a heavily mutated variant with strengthened transmissibility and partial resistance towards the immunity brought by previously injected vaccine. [11]. In UK, when comparing the infection rate between Delta and Omicron, a study suggests that the household contact infection increased from 11% (Delta) to 16% (Omicron), and non-household contact infection even doubled from 4% (Delta) to 8%(Omicron) [12]. Due to the characteristic of Omicron variant, two doses of vaccine are not as effective as before and a booster is required for higher immunity rate. For example, two doses of ChAdOx1 nCoV-19(AstraZeneca) or BNT162b2 (Pfizer–BioNTech) vaccine, as study shows, could not provide sufficient protection against symptomatic disease induced by the omicron variant. At the same time, a BNT162b2 or mRNA-1273(Moderna) booster after either the ChAdOx1 nCoV-19 or BNT162b2 primary course substantially increased protection, but it is also noted that protection decayed as time passes [13]. After infected with Omicron variant, people generally exhibit mild symptom, including headache, body ache, muscles ache, cough, fever, generalized myalgia, and severe fatigue [3]. For Omicron, a study that involves Australia, France, India, Brazil, UK and America suggested that the overall hospitalization rate increase while the ICU rate decrease by comparing Omicron variant to Delta variant [14]. The factors that could contribute to this trend, as is explained by a study, could be the significant increase in people who receive booster shot, infection-acquired immunity and potential lower virulence of Omicron variant [15]. By 26, April 2022, in Shanghai Covid-19 prevention and control press conference, the vice-director of Shanghai healthcare commission Dandan Zhao suggested that there were 190 death cases, and the average age of them is 85.52 [16]. Except one was died from sudden cardiac death, others all passed away due to underlying medical conditions. Among them, only 12 patients had received the injection of Covid-19 Vaccine. This suggests that people with underlying medical conditions and have not yet received vaccine or booster shot would be at higher risk of death

4.2. Current Omicron variant outbreak situation in Shanghai

Shanghai has experienced a sharp increase in confirmed cases after the mid-March. Back to that time, the government chose to stick with “accurate and precise prevention and control” from dynamic zero covid guideline. The government did not employ a mandatory lockdown to the whole city until 1, April as they recognized the virus was spreading in a high pace that could not be prevented by only limiting certain groups of people [17]. During the lockdown, only people with permission license could move around in the city, and most of them are in charge in the delivery of food. Mandatory covid test is required in a daily base with self-antigen test, oropharyngeal swab tests or nasal swab
tests. People’s basic need for groceries is mainly provided by local government, donations from other provinces, group-buying in Xiao Qu (an enclosed neighborhood with only several entrances system that is prevalent in China), online shopping and the help from neighbors. Once people are detected as positive, they would immediately be transported to the “square cabin hospital” for centralized management. The building these positive patients lived would be closed off from the rest of the neighborhoods. As the confirmed cases reached to the peak in the mid-April, which is approximately over 2.5 thousand people [18], the government has also announced a new policy, which is marking every living community (basically an enclosed area where people are locked) such as XiaoQu or a workplace lockdown area (has positive case in 7D), control area (does not have positive case in 7D) and prevention area (does not have positive case in14D), enacting different policy towards each one. From 26, April to 1, May, the accumulated confirmed cases in Shanghai are 54091, among them, 36515 of them were cured, 17122 are in hospitalization (severe case: 441, extreme severe case: 93), 454 are died [18].

4.3. Problems of employing zero covid policy during the outbreak

4.3.1. People’s physical and mental health during lockdown

In Shanghai, most of the citizens are all locked down in their homes with very limited space and could only contact the outside world, including friends and families through internet. In such an isolated environment with high unpredictability towards future, mental health issue could be easily induced. A study investigated the psychological effects of SARS-quarantined persons in Canada reported 28.9% of people had a symptom of posttraumatic stress disorder, and 31.2% suffered from depressive disorder [19]. People during quarantine struggled to find the balance of life within a limited space, trying to be prepared for their work or academic study could be exhausted for them. Chinese search engine Baidu, in April has recorded a huge spike in searches for “psychological counselling” since March [20].

On the other hand, people with economic burden due to covid-19 and people with painful underlying medical conditions but could not get access to medicine or treatment are also susceptible to mental fluctuation, leading to even more extreme behaviors like suicide. So far, there were already reported suicide cases being disclosed on Chinese social media. For example, a son posted a very wide-spread blog on mainstream Chinese social media- Weibo. In 14, April, his father committed a suicide by jumping off the building. A day before his father died, his father suffered from painful pancreatitis at night. He and his father went to two hospitals. The first one declined their appeal for treatment by saying the hospital was full of covid positive patients and the other hospital was not even opened. At the same time, they couldn’t get access to useful pills due to the strict management of hospital and drug stores under Covid Outbreak. As a result, they came back to home at midnight with nothing, but his father couldn’t hold the pain anymore. As a result, he committed suicide in the next morning. This is a typical example in Shanghai, showing people in this period are extremely mentally vulnerable due to the lockdown requirement.

In terms of physical activity, due to the lack of space, it becomes harder for people to do some exercises as usual. In the outbreak of 2020, a study shows a 60% people having inadequate physical activity during quarantine and an over four hours screen time for young people [21]. However, due to the popularization on the internet and people’s raising awareness on physical health, it becomes easier for people to attain online fitness lessons that could be easily completed in homes. For example, there are several apps that could offer different physical activities for people and teachers could even set PE homework for their students.

4.3.2. Food supply

A major problem during lockdown is always food supply. The lockdown was initially announced to only sustain for five days, so many people didn’t prepare enough food to survive for a month. After knowing the lockdown was going to be extended, people were anxious about food. The resources from the government, depending on different region, is various, and usually is not adequate. There
are even government officials being investigated because he sold the food that are donated by the other province to the specific area he is in charge with for high price. People would need to find their own ways to get food. At early morning, the food on online food delivery apps is always sold out within a few seconds. Soon, there appears a new program called group-buying, which the neighborhoods together order a big deal from the stores that are allowed to produce and deliver food. Connecting the seller, negotiating the price, recording every buyer is an intense workload, but in the face of food shortage, many people still take this responsibility on their own.

The situation is even worser to old generations. In Shanghai, the population of elderly is about 5.3 million and 300 thousand of them live alone. [22]. Many of these people need food but they could not order food online nor participate in group-buying [23]. A 79 years old man Zhou Wen Long live with his neighborhoods that full of elderly, for example, a 60 years old man living with his 90 years old father. He told the media that, due to their poor usage of smart phones and the internet, they could not participate in group buying as young people do, so they could only rely on the food delivery from government, which is usually not enough, nutritious and regular. Furthermore, a lot of elderly have the same underly medical conditions like Zhou Wen Long do, like asthma, diabetes and cardiopathy, which require constant medicine supply, could not get enough medicine due the lock down of hospitals and drug stores, nor could use internet to register for medicine delivery. At the same time, they are unwilling to excuse the staffs from residential committee, which already have so many things to do during lockdown, to order drugs for them. Many of them choose to reduce the amount of pill they take in regular to overcome this period. This shows the inconvenience the elderly faced.

What’s more, generally, the limited production and storage of food also leads to price-gauging, disrupting the market, and making some people with unstable salary even harder to survive [22]. On social media-Weibo- A man posted his receipt of buying food during 44 days of lockdown that overall worth 20 thousand yuan for his three-people family, showing that incredibly high price food exists in current food market in Shanghai. [24].

4.3.3 Government management of allocating patients

After testing positive of Covid-19, people would be sent to the square cabin hospital for centralized patient management. However, there exist several problems. The first one is the pets. Sometimes the workers would ask the adults and pet owners to leave even if they know the house has pets who are still dependent on the care from others. Videos being released also shows that some pets would be beaten to death after their owners is removed to the hospital even it is certified that pets have little chance to spread the virus to human [25].

The second one is the separation between kids and parents. Sometimes, kids are positive so they are transported to the hospitals alone. Sometimes, the adults are tested positive, but they could only leave their children in the home. There are cases like 10 years old girl being separated from her parents to a centralized quarantine facility, or many unaccompanied infants crying with no response [26]. Also, videos about parents are crying because their kids (one of them is only two years old) are left alone in the house was also wide-spread in Chinese social media.

The third problem would be the environment in the square cabin hospital. These building are quickly established and some of them even are located in very remote area. As people stated, a worse hospital could be 3000 people living in one big room and sharing several disgusting toilets. Women would need to surround their beds with sheets to protect their privacy, and resources are not adequate. Water could even penetrate the roof [27]. These humanitarian problems all place a challenge to the effectiveness of zero covid policy.

4.3.4 Economic burden on individuals and the society

First of all, it is predicted that the strict lockdown in Shanghai would decrease the real GDP of China by four percent. Under the zero-covid policy, the capitals are outflowing from China. Hongkong, which experiences zero-covid policy, even though now is loosen up, Hong Kong’s equity fundraising has dropped by 87 per cent from the previous year, marking the worst quarter for the city’s equity capital markets since late 2008. Now, Shanghai is experiencing the same exodus of
capital. For example, car manufacturer VW suspended production during the Shanghai COVID lockdown [28].

On individual level, the zero-covid policy is also not very friendly. For blue-collar worker who get paid from practical work, they couldn’t get their salary, meanwhile they still need to pay their rents and buy food to survive. Also, for most of the ordinary people who have loans to pay but also have reduced income, the life gets harder. However, the government has also published policy to reduce the pressure individuals. Each commercial banks, based on client’s current status, could offer deferred payment and loan terms extension. [29].

4.3.5. Environmental problem

After testing positive, the government would always manage disinfection to the environment. However, the disinfection is not necessarily a completely good thing. After spraying the disinfectants to the environment, these chemicals would finally flow in to sewage, discharging to ocean, rivers and lakes. A study conducted shows that the hydrogen peroxide (0.5%, HP) and chlorine-based disinfectants (0.1%, HC), which WHO recommended as disinfectant, would affect the macroinvertebrates—an important component in the food web that alters the biota structure [30]. The chemicals could also form by products with other species that are harmful to the living organisms. On the other hand, these disinfectants could also potentially harm humans. During Sars-Cov-2, China used ozone in hospitals and homes, but this chemical aftermath became secondary pollutant that is harmful to local residents [31]. Therefore, the environmental issue could not be ignored if the city is going to experience disinfection again and again.

5. Conclusion

Any kinds of covid policy are controversial, especially for the Chinese government, which chose to stick with a strict regulation after two years of the prevalence of Covid-19. The effectiveness of the dynamic zero covid-19 policy was apparent when the Omicron variant did not exist. The outbreak of Covid-19 in Shanghai shows the potential difficulties and challenges that a dynamic zero covid policy would encounter in the face of the dominance of the Omicron variant. Improvements are certainly needed for the progress of the policy that could better help the public. The government would need to, firstly, establish a more efficient system for patients who need medical treatment and mental counseling during a lockdown and the on-time delivery of sufficient food and medicine to each household. Secondly, the government would also need to be prepared and well-organized before the establishment of temporary centralized quarantine places in order to guarantee the basic need and privacy of each patient. Thirdly, the government should also pay attention to the economic burden on society, on firms, and on every individual, maintaining the capital in Shanghai and offering help to those who are severely affected by lockdown. Finally, the government needs to pay attention to the potential harm brought by disinfection and control the use of disinfectants to minimize the harm to the surroundings.

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