

The Policy on Spread Control During COVID-19 Pandemic

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Abstract. The COVID-19 pandemic has posed significant challenges to global health, with governments and individuals seeking effective measures to control its spread, while the field of distancing were noticed the most. Social distancing has emerged as a crucial strategy in preventing the rapid transmission of the virus. This paper examines the importance of social distancing in controlling the spread of COVID-19, protecting vulnerable populations, and preventing healthcare system overload. The present occasion was also discussed, like the need for changes in current policies. In the rest parts, it explores potential future measures to fight the probable pandemic, including advance storage of antiviral drugs and vaccines. This paper emphasizes the importance of the public health approach in the campaign of epidemic situation. The method encompasses some factors such as ventilation, occupancy, and exposure time, while the potential influence of these factors were also taken into consideration. In conclusion, the continued research and adaptation of strategies are necessary to better fight against future pandemics. Governments must also consider the role of individual responsibility in preventing the transmission of infectious diseases.

Keywords: COVID-19; spread control; social distance; policy.

1. Introduction

On 30 January 2020, the coronavirus disease outbreak, or COVID-19, is a public health emergency of global concern. As the outbreak develops, Member States are thinking about ways to stop the disease from spreading to new regions or to lessen the spread of the COVID-19 virus from person to person in places where it is already present. In this period, most countries and regions in the world were using the social distancing to reduce the spread of disease, while the rules of the social distance were created in former pandemics and research.

The importance of paying attention to social distancing measures in the context of the COVID-19 pandemic can be understood from several perspectives.

The basement of the social distance is to control the spread of the virus. COVID-19 is usually transmitted through droplets from an infected person, as he coughing, talking, or breathing heavily. This measure is crucial in preventing the rapid spread of the virus within communities and across regions. According to the data collected in certain conditions, the transmission of virus will be reduced from 12.8% to 6.8% as the distance of people increased to 2 meters, which is the official Social Distance that need to follow.

From its very beginning, the social distancing was created to minimize close contact. Close contact with an infected person significantly increases the likelihood of contracting the virus. By practicing social distancing, individuals can minimize close physical interactions, such as handshakes, hugs, or being in crowded spaces. This reduces the chances of coming into contact with infected people, helping with the destruction the chain of spreading.

For those vulnerable populations, they can get a much more positive protection form this. Some sort of age groups, like the elderly and some people with bad health conditions, are at higher risk of severe illness or complications from the pandemic. The social distancing measures do help to protect them reducing their exposure to the virus. Using a safe social distance in daily life, we can help guard our safety and those who are more impressible to the virus.

To preventing overcrowding in the hospital system, from the quick spread of COVID-19, the potential to overload healthcare institutions were proved to be possible. For politicians, they may use this method to lower the number of patients who require emergency medical treatment and slow down

the transmission rate by plug in the hole of transmission in droplets. This keeps medical facilities from filling up too quickly and guarantees that people in need may receive the treatment they require.

As the spread was slowed, it might also buy time for the development of vaccines and treatment alternatives. Social distancing tactics buy scientists and researchers time to create COVID-19 vaccines and therapies that work. By reducing the rate of transmission through social distancing, we can decrease the overall burden on healthcare systems and allow researchers more time to study the virus and develop interventions.

In conclusion, paying attention to social distancing measures is crucial in controlling the transmission of COVID-19, protecting populations with basic disease, improve healthcare system to have a higher load, and buying time for the development of vaccines and treatments. It is the effort that requires individual responsibility and adherence to guidelines to effectively combat the pandemic. And when the epidemic curve finally has the true image from that research, there has necessity to discuss the current policy and looking forward to making a change in the future.

2. Former Researches

2.1. Origin of the 2 meter rule

It is widely accepted that the social distance is needed to be 2 meters, which is formal to even every governments and every citizens during the pandemic. When tracing the beginning of this policy, researchers who was in the early 19th century have already examined how droplets are released during speech or more strongly when sneezing or coughing.

For instance, Flugge suggested a safe distance of 1-2 meters in 1897 based on the range throughout which viruses were present in measured visible droplets [1]. During the 1940s, close-up still imagery of people talking, coughing, or sneezing made it feasible to visually document these emissions [2]. Less than 10% of the 48 subjects in a 1948 investigation on the spread of hemolytic streptococci produced big droplets, with only 65% of them traveling as far as 1.7 m [3]. On the other hand, hemolytic streptococci were found 2.9 meters (9.5 feet) away in 10% of the subjects.

But according to recent research in COVID-19 and Avian flu showed a result that the horizontal droplets can easily travel more than 2 m for particles up to 60 μ m [4]. Which means the recent policy we are using might not help to ease the fast spread of pandemic.

2.2. Is social distance useless?

The patient's droplet dispersal was seen over 6-8 meters in recent research. The findings provide evidence that the virus-carrying droplets from COVID-19 patients have the ability to travel much beyond 1-2 meters in a concentrated package when they cough or sneeze [5]. Recent pandemics including the avian flu, MERS-CoV, and COVID-19 have been shown in several investigations to have spread beyond two meters [5,6].

These results suggested that the current 2 meter rules in our quarantine policy might not be useful, as laboratory studies suggested that COVID-19 viral particles are stable in airborne samples, and the activity maintained for up to 16 hours [7].

The Figure1 below shows how the transmission occurs in different contact times, types of group activity and whether the masks were put on. The results indicates that those people who were confirmed to have the same symptoms as the COVID-19 have the duty to avoid any kinds of social works. The mask-wearing is also proved to be useful in the intervention of transmission. What's more, on most occasions, the outdoors activities were confirmed to be safer for those healthy people, which may mean that the 2 meters rule may not that important for them to follow.

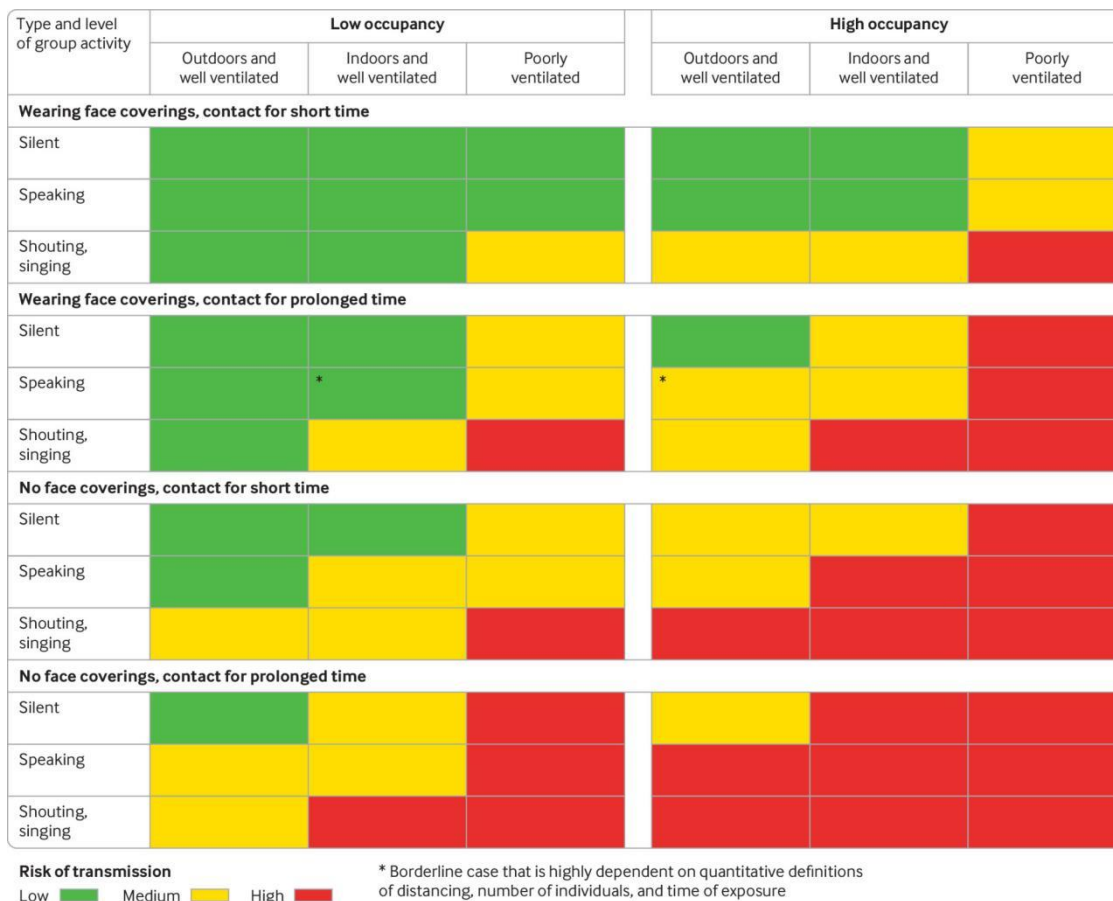


Fig. 1 Hazard of COVID-19 transmission from asymptomatic individuals in various environments, for varying occupation periods, ventilation requirements, and densities (without accounting for variations in susceptibility and viral shedding rates). Face coverings for the general public are meant, not premium respirators. The grades are not a quantifiable metric; rather, they are a sign of qualitative relative risk.

So it can conclude that the current rules on safe physical distancing which is noted to keep everyone the 2 meters distance are outdated. And the researches suggests that COVID-19 virus in the droplet may travel more than 2 m while the patients are coughing and shouting.

2.3. Changes needed to occur in recent policy

The risk levels depicted in Figure 1 are relative as there exists complicated factors on the spreading of virus, especially the time thresholds. These levels do not include some sorts of factors such as the potential individual infection, the level of viral spreading from an infected person, airflow patterns in a closed system, and the range between an individual and infected people. The role of humidity in this context is still being thoroughly investigated [7].

The present policy needs further research to create specific solutions for different types of environments with varying levels of occupancy. These three fields of uncertainty which was unclear for scholars didn't have enough information to measure their importance: the true duration for COVID-19 of exposure in relation to environmental conditions, occupancy, and virus living time in the air; detailed examination of how air circulation patterns have impact on the source of virus and its interaction with ventilation; and the character of emissions from breathe and droplets during different physical activities.

It is important to recognize that physical distancing is just one part of a comprehensive public health approach to fight against pandemic. It should be used in integral strategies which encompassed a management for people air and close space especially indoors environment. That includes hand

washing sanitation, in-door space cleaning, occupancy and management of a closed area, air quality control measures, and the appropriate use of protective equipment such as masks in relevant settings.

So, it is convinced that rules on distancing should reflect the multiple factors that affect risk, including ventilation, occupancy, and exposure time [8]. To make a difference in future pandemic solutions, more concentration must be put on how to create sufficient physical quarantine distance for in-door environment and out-door works through these different environment and complex conditions.

3. Future Measures to Fight the Pandemic

3.1. Former measurements and their influence

Figure 2 shows that during the 2003 SARS outbreak, eliminating transmission was the main goal of intervention efforts rather than only reducing the disease's consequences. Certain factors of the virus, such as transmission before the symptoms appears and the long period for the virus to proliferate, made this aim achievable [10]. The implementation of many public health strategies led to significant decreases in the SARS transmission rate (>70%, Figure 2, [9]). These treatments were implemented over the course of many weeks. A possible trend toward extending lesser impact therapies to attain eradication is suggested by the limited data that is currently available (Figure 2, triangles). On the other hand, the initial number of cases existing at the time these treatments were initiated also had an impact on how long they lasted. It is possible to achieve and maintain moderate reductions in influenza transmission at the community level for several weeks, according to empirical data from two major outbreaks.

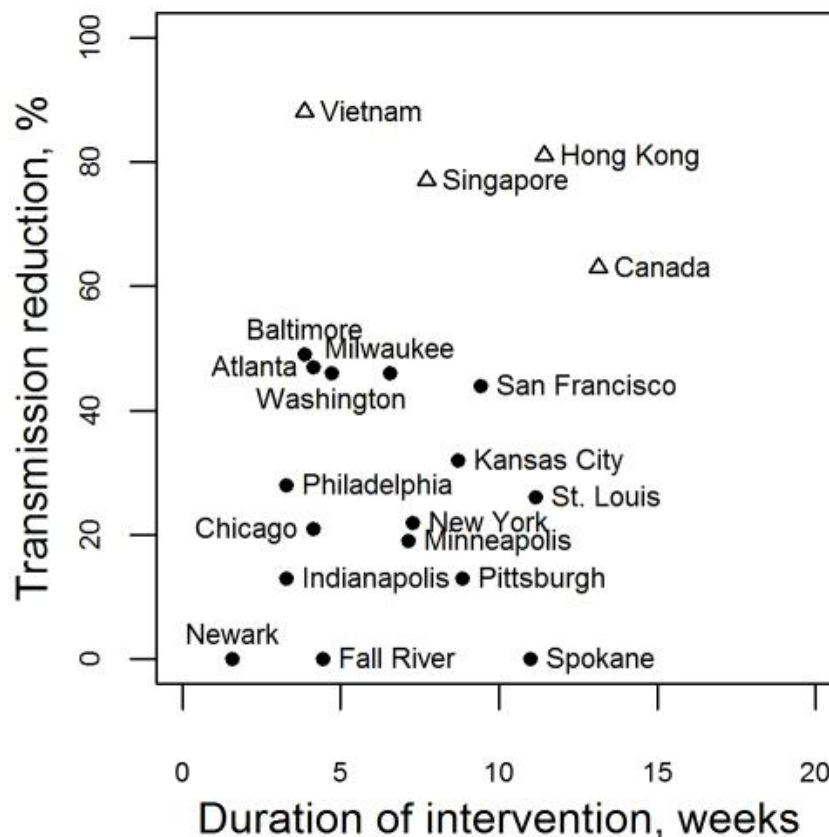


Figure. 2 [11] Response time and magnitude to prior outbreaks of catastrophic mortality.

Estimates of the length of interventions and the decrease in reproduction number during national reactions to the SARS epidemic in 2003 (triangles) and the 1918 influenza pandemic in certain cities (circles) [11]. An intervention that was predicted to have no impact on transmission is represented by a transmission decrease of 0% [10].

3.2. Potential measurements-antiviral drugs

There exists 4 reasons why we may choose to storage the potential antiviral drug to fight against future pandemic, which were completely proved to be right in the global viral prevalence of COVID-19.

The adequate supply is an important part that needed to be confirmed. While the COVID-19 pandemic has showed an urgent need for a robust and resilient supply chain for essential resources, focusing on advance storage can ensure that there is a sufficient stock of antiviral drug to meet the demands during times of crisis. This helps prevent shortages and ensures that critical resources are readily available when needed [12].

What's more, there exists disruptions of drugs during the COVID-19, such as the ibuprofen in China. The vulnerabilities in global supply chains were completely exposed in the Opening of China, with disruptions and delays in the procurement and distribution of essential things. By having an advance storage system in place, we can mitigate the impact of these disruptions. It provides a buffer against unforeseen circumstances, such as transportation restrictions or supply chain bottlenecks, ensuring a steady supply of antiviral drug.

Also, some critical sectors can be benefited. Some departments of the countries heavily rely on antiviral drug to maintain essential operations. This includes healthcare department and emergency services. By prioritizing advance storage, we can ensure that these sectors have a constant supply of antiviral drug to continue their vital functions even during times of crisis.

Lastly, from the storage, the resilience of a country to deal with a potential crisis can be guaranteed. Building resilience is crucial in navigating the challenges posed by a pandemic. By having an advance storage strategy for antiviral drug, we can increase our resilience to future crises. It allows us to adapt quickly and effectively, minimizing the impact on individuals, communities, and economies.

In conclusion, emphasizing advance storage of antiviral drug is essential in ensuring adequate supply, mitigating disruptions, enhancing preparedness and response efforts, supporting critical sectors, and promoting overall resilience during the COVID-19 pandemic. This is a proactive approach to prepare better for future challenges and uncertainties [13].

3.3. Potential Measurements-vaccines Storage

Ensuring the advance storage and technical reserve of vaccines is of paramount importance, particularly in the possible future pandemics.

One key reason for focusing on vaccine storage and technological preparedness is to prevent vaccine shortages. During an outbreak, the impact from infected or not citizens will be in urgent demand, which will surely have a devastating impact on the production and supply chain and lead to the shortage of vaccines. What's more, an adequate storage allows government to set their policy for a more suitable direction of economic recovery, as others were still struggling in the mud. By planning ahead and storing vaccines in advance, a sufficient and timely vaccination coverage can be promised [14].

The demand of vaccine fluctuations during pandemic was such a question for governments to deal with. Adequate vaccine stockpiles allow for the quick mobilization of supplies when outbreaks occur or vaccination campaigns are initiated. When the virus strike this area, a pre-established reservation in health departments can surely respond to surges in demand and in time, ensuring the availability of vaccines to meet population needs, which will help to ease the transmission.

The ability to respond swiftly to emergencies is critical in the judgement of whether a government is qualified in the global crisis such as pandemic. A maintaining storage of vaccine in advance is the key point whether a public health system can rapidly deploy vaccines in response to sudden outbreaks. This approach as the vaccine improving can enables authorities to launch a targeted vaccination strategy and make a full control to the spread of the disease.

Confidence in vaccine programs: An effective vaccine storage even they are just a simple pre-storage in a giant system, can truly enhances the public confidence in nearly every parts of the country's programs, that will ease the pressure of the following policy from the government. As

people have assurance that vaccines are stored properly, always available and adequate, they will do their best to build a group immunization effort in a much faster way. In return, this can also lead to higher vaccination rates, which can control the spread of pandemic like COVID-19.

From these factors, the advance storage do play a crucial role in responding to the future epidemics, and will have its special usage in future crisis. Pre-stored vaccines enable rapid deployment and immunization, helping to control the spread of infectious diseases. By addressing these aspects, we can bolster our collective efforts to combat the ongoing global health crisis [15].

4. Conclusion

Data from China indicate that the case fatality rate (CFR) has the strong connections between age and other diseases. Using the social distancing measures for those high-risk groups such as the elders and patients may be the most effective way to ease transmission rate and associated mortality. From the Ebola virus disease outbreak in West Africa from 2014 to 2016, deaths from other causes increased due to an overwhelmed healthcare system and the loss of healthcare workers. These incidents demonstrate how critical it is to strengthen the support for the hospital infrastructure and put in place practical safeguards against infection among staff members.

In countries located in the northern hemisphere, there exists and suppose that the weather during the summer months could potentially slow down the spread of the virus. However, considering the weather is still not a factor that can be predicted correctly, using the social distancing measures to ease the transmission would still be necessary. It is worth noting that during the summer of 2009, changes in transmission of pandemic influenza within Europe were largely attributed to school closures, although it is not believed that children play a major role in driving the spread of COVID-19. Analyzing data from the south part will provide valuable insights into the extent to which seasonality can influence the transmission of COVID-19.

Despite the uncertainty underlying COVID-19, model-based projections can help policymakers make timely and well-informed decisions. A critical aspect in mitigating the pandemic using social distancing treatments is figuring out the required amount of transmission decrease (see picture). To stop transmission, it is insufficient to just advocate for a 60% decrease in transmission or to place people in quarantine within a day of the beginning of symptoms. What social distancing tactics and communication methods people and governments should use to accomplish these goals are yet unknown. Quarantining and instituting social separation will require a practical method. Thus, epidemiological analysis and ongoing data collecting are crucial for evaluating the effects of mitigation initiatives as well as clinical research on the best ways to treat critically sick COVID-19 patients. [10] Governments face challenging decisions ahead. How the public will act when the pandemic occurs in the area they live is also a significant factor for preventing the pandemic transmission in the measure of government. In this case, it can conclude that in the future, we will improve our way how we act to a brand new pandemic, but human is still the most important part for politicians to take into consideration.

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