

Mask crisis during the COVID-19 outbreak

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Abstract. On December 31, 2019, the World Health Organization (WHO) reported a cluster of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province, China. As of February 29, 2020, the National Health Commission of China has reported 79,389 confirmed cases of SARS-CoV-2 infection in 34 provinces. The masks can be used to block respiratory transmission from human to human, and are an effective way to control influenza. It is, therefore, necessary to wear a mask when respiratory infectious diseases are prevalent. China has a population of 1.4 billion. Assuming that two-thirds of the people in China must wear a mask every day, the daily demand for masks will reach 900 million. The Chinese government has taken many measures to solve these problems. Additionally, more measures should be taken to properly dispose of mask garbage. Although the outbreak originated in China, person-to-person transmission of SARS-CoV-2 has been confirmed, which means that it can be spread to anywhere in the world if prevention measures fail. The issues regarding face mask shortages and garbage in China, therefore, deserve worldwide attention.

Key Words:

Mask, Crisis, COVID-19 outbreak, SARS-CoV-2.

On December 31, 2019, the World Health Organization (WHO) reported a cluster of cases of pneumonia of unknown cause detected in Wuhan City, Hubei Province, China^{1,2}. A novel coronavirus was detected as the cause, and was named SARS-CoV-2 by the International Committee on Taxonomy of Viruses (ICTV). As of February 29, 2020, the National Health Commission of China has reported 79,389 confirmed cases of SARS-CoV-2 infection in 34 provinces³. The number of cases from Hong Kong, Macao, and Taiwan is re-

ported to be 98, and that from other countries is 1530³. The number of infected humans is growing rapidly. Coronaviruses are RNA viruses that can cause respiratory, enteric, hepatic, and neurological diseases, and are sometimes fatal in humans⁴. SARS-CoV-2 primarily causes respiratory symptoms, and is similar to the Severe Acute Respiratory Syndrome coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome coronavirus (MERS-CoV)^{5,6}.

Masks can be used to block respiratory transmission from human to human, and are an effective way to control influenza⁷. It is therefore necessary to wear a mask when respiratory infectious diseases are prevalent. The Chinese government has encouraged all people to wear masks in public areas. The use and popularity of masks reached a new climax in 2003 due to the emergence of SARS, during which the public rushed to drugstores to buy masks. Eventually, masks went out of stock⁸. In 2009, the popularity of masks again increased due to the emergence of H1N1 influenza⁹. In 2013, a large amount of haze appeared throughout China, and the public became aware of the problem of air pollution; thus, masks have been widely used during hazy weather. Unexpectedly, at the end of 2019, masks once again became scarce, and they were not available in drugstores. China has a population of 1.4 billion. Assuming that two-thirds of the people in China must wear a mask every day, the daily demand for masks will reach 900 million. However, masks must be changed every day, which will create a substantial demand for masks in China. Masks are currently in short supply, especially in hospitals, and it is therefore difficult for the public to buy masks at drugstores. People will also have to use their masks repeatedly. This particular epidemic breakout occurred during the Spring Festival, during

which the mask factory was closed and the factory workers were on vacation. Although some workers have since returned to work because of the government's appeal, the factory is far from reaching 100% of its production capacity, and masks therefore remain in short supply. On February 10th, Lei Limin, Chairman of the Safety and Health Protective Equipment Committee of the China Textile Commercial Association, said that 180 million masks of various types are expected to be produced every day by the end of February (Figure 1). However, this is not sufficient for the public's needs.

Additionally, another important concern will arise. The mask factory produces a large number of masks every day, which means that the public consumes almost the same number of masks daily. However, as time has progressed, increasingly more mask garbage has been produced and must be disposed of. Many used masks have been discarded in different places, such as buses, train stations, hospitals, streets, etc. These discarded masks may cause secondary infections, which is a foremost concern of medical professionals. Therefore, the proper disposal of mask gar-

bage should be actively promoted, and the public should learn how to properly deal with used masks. Recycling bins for masks should be placed in public areas, and should be very eye-catching with a prominent logo to help the public quickly find them. The Chinese government has taken many measures to solve these problems.

Therefore, mask shortages and mask garbage during the SARS-CoV-2 outbreak in China are to be considered crises. As of February 29, 2020, the number of confirmed cases has continued to rise in Japan, South Korea, and Australia. Australian GPs have raised concerns about the shortage of face masks¹⁰. Therefore, the public should maintain a sense of self-protection. In areas where there have been outbreaks, the local governments should actively reserve masks to meet the needs of the public.

Additionally, more measures should be taken to properly dispose of mask garbage. Although the outbreak originated in China, person-to-person transmission of SARS-CoV-2 has been confirmed, which means that it can be spread to anywhere in the world if prevention measures fail. The issues regarding face mask shortages and

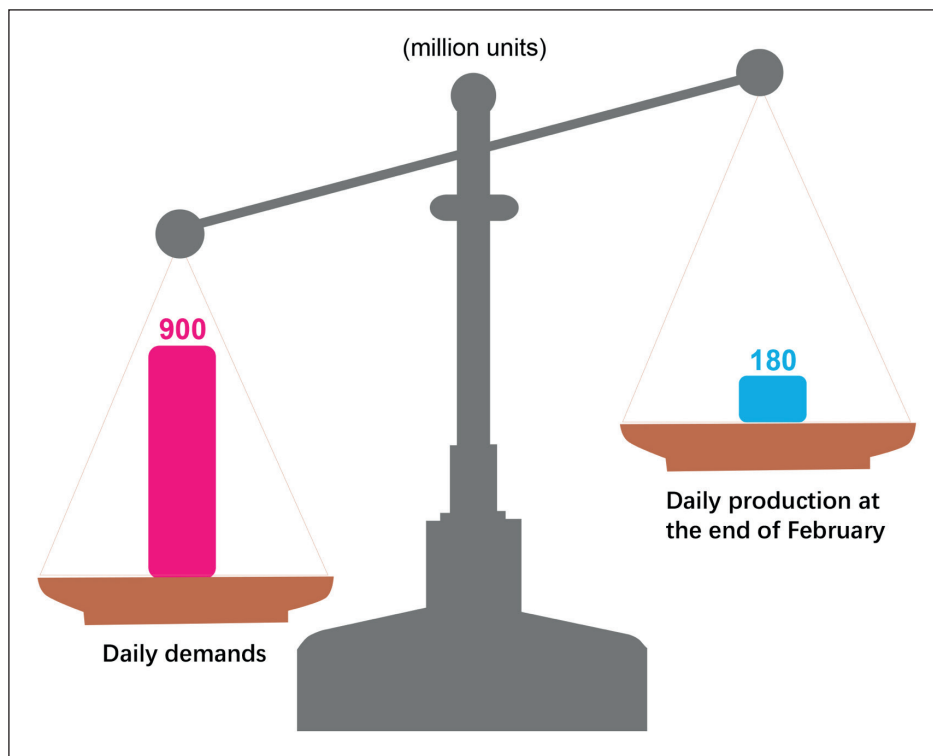


Figure 1. Trend map of the supply and demand of masks. 180 million masks of various types are expected to be produced every day by the end of February. This data was sourced from the Ministry of Industry and Information Technology in China.

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Conflict of Interests

The authors declare that they have no conflict of interests.

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