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The impacts of COVID-19 preventive and control interventions on other infectious diseases in China

Xiujuan Meng, Xun Huang, Feng Zhou, Yaowang Wang, Chunhui Li*，Anhua Wu*

Infection Control Center, Xiangya Hospital, Central South University, Changsha, 410008, China;

***Corresponding author:** Anhua Wu, M.D., Infection Control Center, Xiangya Hospital, Tel: +86 731 89753266; Fax: +86 731 84327237, E-mail address: xywuanhua@csu.edu.cn, Chunhui Li, M.D., Infection Control Center, Xiangya Hospital, Tel: +86 731 89753953; Fax: +86 731 84327237, E-mail address: lichunhui@csu.edu.cn

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To the Editor：

Beginning in December 2019, a novel coronavirus, named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused respiratory illness in infected persons, and the resultant disease was termed as COVID-19 (Coronavirus Disease 2019) [1]. By February 15, 2020, COVID-19 has rapidly spread throughout China and across the world, leading to a pandemic announced by the World Health Organization (WHO) on March 11, 2020 [2]. According to the WHO, as of November 14, 2020, there have been 53,164,803 confirmed cases of COVID-19, resulting in 1,300,576 COVID-19-related deaths [3].

With over fifty million COVID-19 cases being confirmed worldwide, China's contribution of less than 100,000 cases, which were mainly identified in Wuhan Province, seems low considering the country's large population size [4]. With a series of effective interventions being implemented in China, the spread of the virus was constrained within a short period of time [5]. Interestingly, it seems that these interventions also effectively blocked the transmission of other infectious diseases, such as influenza, tuberculosis, mumps, rubella, measles, and hand-foot-and-mouth disease (HFMD) [6]. According to the Chinese Center for Disease Control and Prevention, both the peak incidences and the number of cases of measles, rubella, mumps and HFMD were significantly reduced in 2020 compared with those in 2019. Meanwhile, compared with those in 2019, the incidences of influenza and tuberculosis in 2020 were lower. However, the incidence of HFMD increased after September 2020. The incidences of the six diseases in 2019 and 2020 in China are shown in Figure 1.

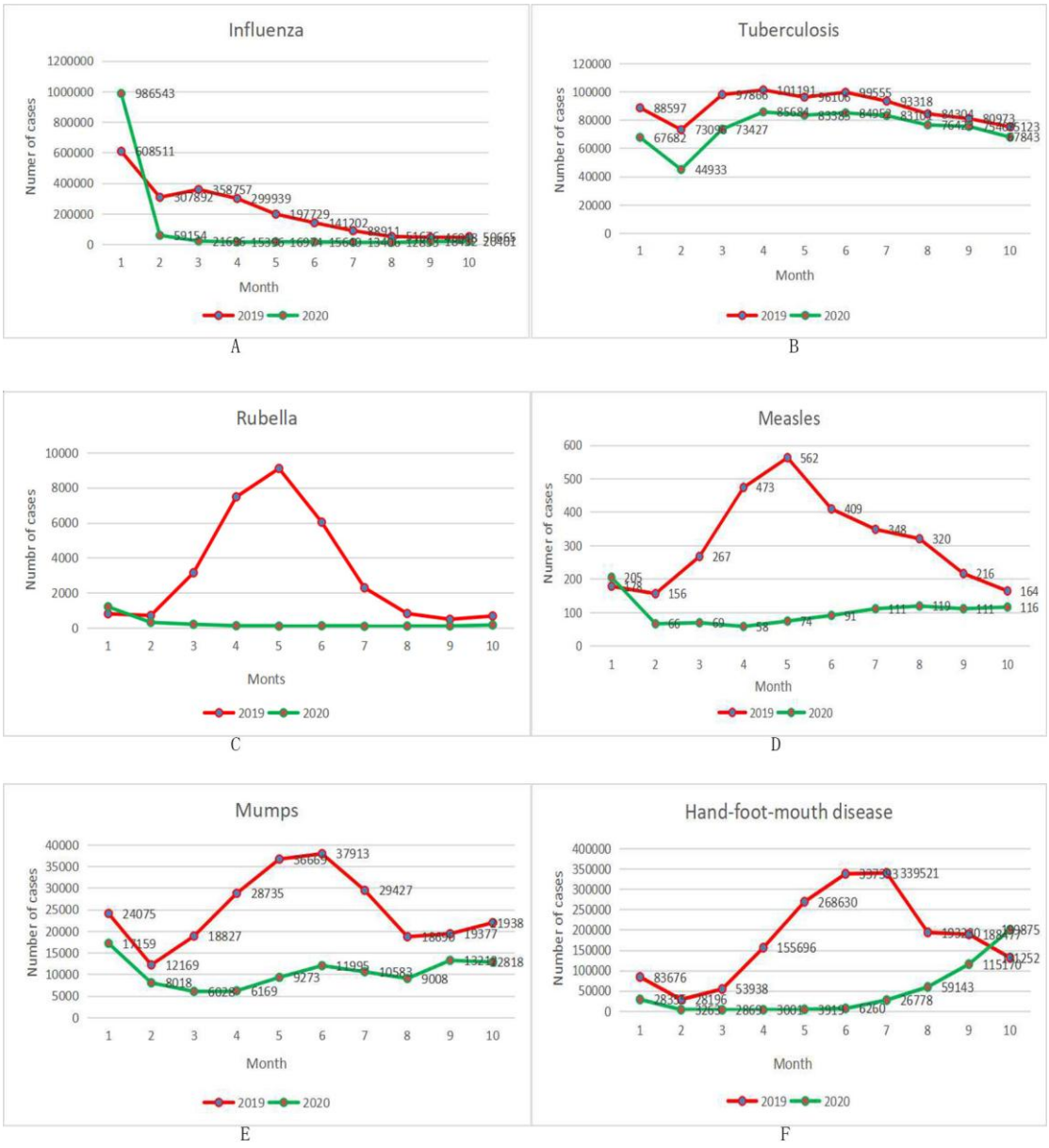

Figure 1(A) The number of influenza cases in 2019 and 2020 in China. (B) The number of tuberculosis cases in 2019 and 2020 in China. (C) The number of rubella cases in 2019 and 2020 in China. (D)The number of measles cases in 2019 and 2020 in China. (E) The number of mumps cases in 2019 and 2020 in China. (F) The number of HFMD cases in 2019 and 2020 in China.

Given that China's response to COVID-19 did not include additional interventions against these infectious diseases, it is an interesting question why the incidences of these diseases were also reduced during 2020. The characteristics of the transmission of SARS-CoV-2 and the role of community in China's response to

COVID-19 are possible explanations. COVID-19 is an infectious respiratory disease transmitted mainly by respiratory droplets and close contact, and some studies have found that SARS-CoV-2 can be detected in fecal and urine samples of COVID-19 patients [7]. Because influenza, mumps, rubella, HFMD and measles share similar routes of transmission, the following prevention and control measures against COVID-19 had played an important role in controlling their spread: Firstly, local communities had strictly implemented the firmest regime of community isolation—large gatherings were prohibited; some companies and schools initiated "cloud working" and online courses during the lethal pandemic, which helped maintain physical distancing. Since a previous study found that a physical distance of at least 1 m is probably associated with a large reduction in infection rates [8], these preventive and control interventions could also effectively reduce the transmission of influenza, mumps, rubella, HFMD and measles. Secondly, in response to the COVID-19 pandemic, China has implemented a policy of maximized autonomous testing to enable more patients with respiratory infectious diseases, not just COVID-19, to receive timely testing and treatment, thus preventing the spread of other infectious diseases [9]. Thirdly, the government promoted simple but effective self-protection measures, such as mask wearing, hand washing and room ventilation. Preponderance of evidence has indicated that public mask wearing played the most effective role in stopping the spread of SARS-CoV-2 [8]. The reason for the increase in the number of HFMD cases in October 2020 is not clear, but this may be related to the laxed prevention and control measures in China.

Although the prevention and control measures against COVID19 in some countries have been improved, the risk posed by the pandemic will exist for a long time. Since these prevention and control measures can effectively prevent and constrain the spread of COVID-19 as well as other infectious diseases, and that the role of community isolation was fundamental among these measures [10], the implementation of these measures, especially community isolation, as normal prevention and control strategies and guidelines against COVID-19, seems to be a

long-term process at present. However, whether these interventions will continue to be effective in preventing the spread of other infectious diseases in the long term or whether the incidences of other infectious diseases will rebound needs to be further observed and studied.

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