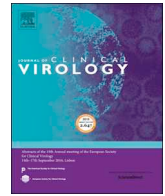




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## Short communication

## Challenges of SARS-CoV-2 and lessons learnt from SARS in Guangdong Province, China

Junguo Zhang<sup>a</sup>, Guanwen Lin<sup>b</sup>, Jie Zeng<sup>a</sup>, Jianguo Lin<sup>c</sup>, Junzhang Tian<sup>a</sup>, Guowei Li<sup>a,d,\*</sup><sup>a</sup> Center for Clinical Epidemiology and Methodology (CEM), Guangdong Second Provincial General Hospital, Guangzhou, China<sup>b</sup> Department of Infection Management, Guangdong Second Provincial General Hospital, Guangzhou, China<sup>c</sup> P3 Biosafety Level Laboratory, Guangdong Second Provincial General Hospital, Guangzhou, China<sup>d</sup> Department of Health Research Methods, Evidence and Impact (HEI), McMaster University, Hamilton, ON, Canada

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## ABSTRACT

With lessons learnt from the SARS outbreak in 2003, Guangdong Province is taking the lead in bringing COVID-19 under control by multiple strict regulations in combination with effective healthcare provision.

Since December 2019, SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2), has widely and rapidly spread in China and across other countries, causing an outbreak of Corona Virus Disease 2019 (COVID-19) [1]. The Spring Festival travel rush from January 10<sup>th</sup> to 24<sup>th</sup> in 2020 in China made the human-to-human transmission remain accelerating, with a large number of infected patients undetected [2]. As of February 18<sup>th</sup>, 2020, there have been 74,576 cases of SARS-CoV-2 infections confirmed in mainland China [3]. Guangdong Province that was the epidemic focus of severe acute respiratory syndrome (SARS) in 2003, has the second largest number of infected patients in China currently. In this comment, we analyzed the current status of SARS-CoV-2 infection in Guangdong Province, and assessed the responses and countermeasures of prevention and control learnt from SARS for the outbreak of SARS-CoV-2.

### 1. Current status of SARS-CoV-2 infection in Guangdong Province

Guangdong Province has a population of 113.46 million residents, ranking first in China. Based on the big data of "Baidu Migration" (<http://qianxi.baidu.com/>), during the period of Spring Festival travel rush, approximately 94 thousand people inter-migrated from Wuhan City to Guangdong Province. On January 19<sup>th</sup>, 2020, the National Health Commission of People's Republic of China confirmed the first case of COVID-19 in Shenzhen City, Guangdong. Until February 18<sup>th</sup>, 2020, Guangdong government has reported 1331 cases of COVID-19 and 5 death events. Although the number of new cases remains increasing, day-on-day ratio of Guangdong, which is calculated by the number of newly identified COVID-19 cases today divided by the

accumulated number up to yesterday, has changed over time. As shown in Fig. 1A, the day-on-day ratio fluctuated substantially from 23.1%–85.7% during the period of the first week, and then leveled off from January 27<sup>th</sup> to 31<sup>th</sup>. Since from February 1<sup>st</sup>, the day-on-day ratio of Guangdong had gradually decreased. Generally, the ratio in Guangdong was significantly lower than the average ratio in mainland China (except Wuhan City). Guangzhou and Shenzhen, the two cities with the largest floating population in Guangdong, have the biggest number of accumulative cases ( $n = 339$  and  $416$ , respectively). The trending pattern of the number of newly confirmed cases in Guangdong is highly consistent with Shenzhen and Guangzhou (Fig. 1B).

### 2. Control measures of Guangdong Province

It is the primary principle of 'early detection, early reporting, early isolation, and early treatment' in Guangdong for the combat of SARS-CoV-2 outbreak. The rapider and stricter the control measures are, the lower day-on-day ratio in the early stage is. Based on the experience and lessons from the SARS outbreak in 2003, Guangdong is the first province in China to initiate the highest level of public health emergency response on January 23<sup>th</sup>, 2020. Following the *cordon sanitaire* set up by Hubei Province, Guangdong conducted multiple corresponding procedures including monitoring human body temperature in public places, restricting or closing public transit, and enforcing respirator use [4].

However, screening of SARS-CoV-2 infection might omit around half of the infected migrants who are unaware of their exposures or for those having not yet developed symptoms [5]. Given the large number of potential infected migrants, public panic and confusion might play a

\* Corresponding author at: CEM, Guangdong Second Provincial General Hospital, Guangzhou 510317, China.

E-mail address: [lig28@mcmaster.ca](mailto:lig28@mcmaster.ca) (G. Li).

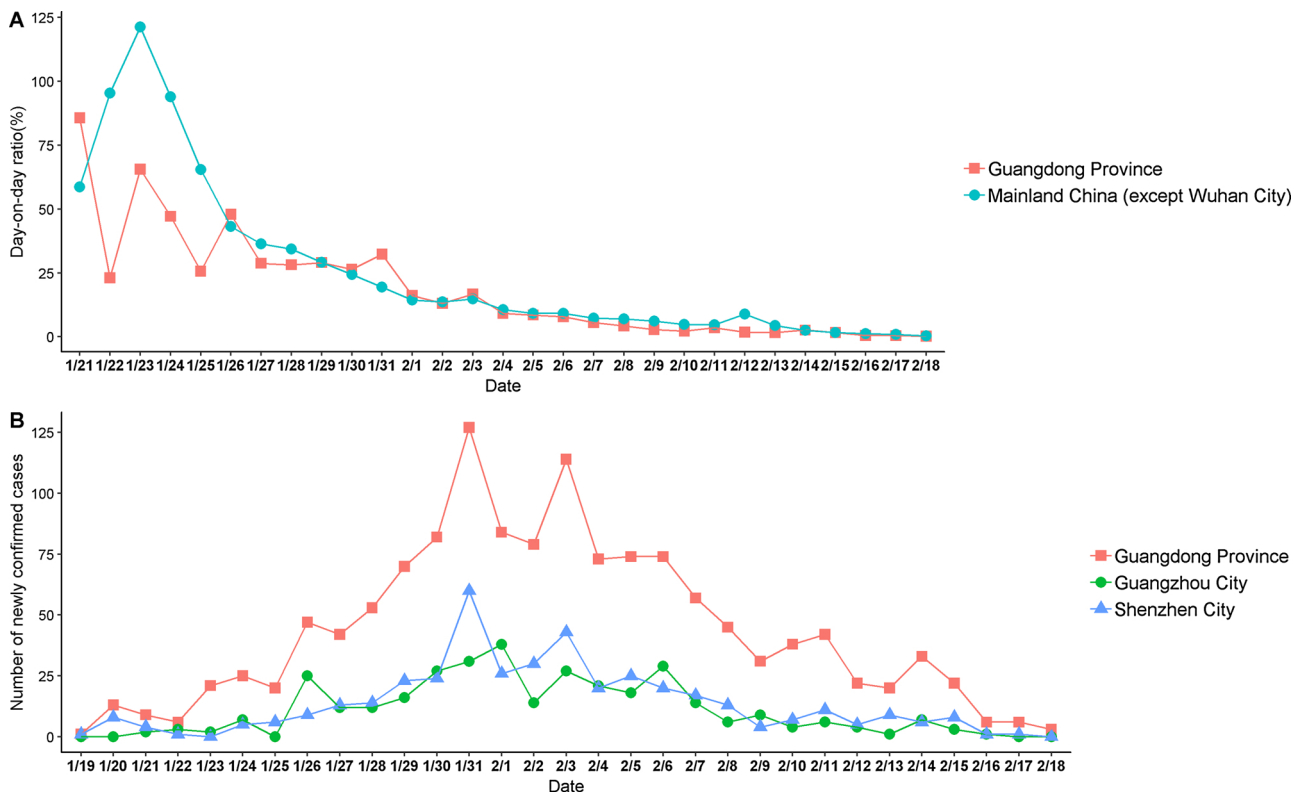


Fig. 1. A. Day-on-day ratios of Guangdong Province and mainland China (except Wuhan City) during January 20th to February 18th, 2020. B. Number of newly confirmed cases of Guangzhou City, Shenzhen City and Guangdong Province during January 20th to February 18th, 2020.

critical role in the social consequences [6]. Since from January 19<sup>th</sup>, Guangdong has performed various regulatory activities including releasing most up-to-date epidemic data regularly, popularizing knowledge, interviewing experts for their opinions and predictions, and providing common-sense suggestions. Furthermore, a sizeable proportion of hospitals in Guangdong launched free online consultation to reduce the potential risk of nosocomial infection. Guangdong government also encouraged residents to avoid public places and work at home, with all unnecessary gatherings cancelled. On January 27<sup>th</sup>, Guangdong issued another strict regulation for those whoever did not wear a respirator in public would be punished and isolated. Moreover, considering the incubation period ranging from 2 to 14 days, Guangdong government announced to extend Spring Festival holidays to delay returning to work and school.

Since from February 4<sup>th</sup>, Guangdong has required residential areas to implement closed-off management, including access restrictions for non-owners and their vehicles, and closure of public gathering venues. All public areas should be ventilated, cleaned and disinfected strictly. Specifically, for those areas with poor ventilated conditions including elevators and basement garages, they are required to be disinfected for no less than four times daily. Moreover, in order to control the propagation of SARS-CoV-2, Guangdong required all the restaurants to only provide take-outs without any dine-in services. Furthermore, Guangdong disposed 104 hospitals and over 17 thousand medical professionals across the province to ensure that all the infected patients can be properly and promptly treated. Most of the hospitals and professionals arranged by the government have substantial experience of fighting against SARS in 2003.

### 3. Bringing COVID-19 under control

Although with the day-on-day ratio of Guangdong decreasing, the inflection point and plateau of the SARS-CoV-2 outbreak may have not arrived yet. More importantly, approximately 435 thousand people in

Wuhan will return to Guangdong for work or study when traffic resumes, among whom 57.7 % have a destination of Guangzhou or Shenzhen City. While the majority of newly confirmed cases are from Shenzhen and Guangzhou currently, more draconian policies to control imported cases and reduce risk of human-to-human transmission are urgently needed especially in these two metropolises. Moreover, Guangdong government will continue the effective monitoring, release the timely information, and encourage the residents for maximum self-protection. With lessons learnt from the SARS outbreak, Guangdong has reserved sufficient healthcare resources and will consistently ensure the satisfaction of healthcare and medical supply from the public. It is anticipated that Guangdong is taking the lead in bringing COVID-19 under control by multiple strict regulations in combination with effective healthcare provision.

### Declaration of Competing Interest

The authors declare that there are no conflicts of interest.

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