



Riding the waves of the COVID-19 pandemic in South Korea

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ABSTRACT

During the first months of the coronavirus disease 2019 (COVID-19) pandemic in early 2020, South Korea stood as one of the most successful in preventing a nationwide outbreak. The country was unique in that it did so without enforcing massive border restrictions and tight social distancing measures, instead focusing on maximal testing, contact tracing, and treatment. But as the year 2020 went on, the country has suffered second and third waves, each one being larger and harder to combat than the last. The Korean government, however, has been unwilling to impose stringent measures due to potential economic consequences and has still relied on its initial strategies in an attempt to prevent further disease transmission. It is therefore crucial to revisit their position beyond their early successes to re-evaluate the effectiveness of their strategy, and to finally decide if it is time to move on to more drastic measures.

KEYWORDS: Health policy; public health; infectious disease.

Introduction

South Korea was one of the first countries hit by the coronavirus disease 2019 (COVID-19) pandemic.^{1,2} Since the confirmation of their first imported case in January 2020, the number of cases rose to a total of 8,652 people exactly 2 months later.² With a population of 51 million people,¹ most of these cases were a result of transmission locally in churches, hospitals, nursing homes, and call centres of the more densely populated cities of the country.¹ The epicentre of the initial outbreak was identified as Daegu City, where numerous secondary cases stemmed from church activities.^{1,2}

Like other countries, South Korea also suffered difficulty during the early stages of the COVID-19 pandemic;¹ however, with the lessons learned from

their struggling response to the 2015 MERS-CoV outbreak, organisational and legislative reforms in preparation for future disease outbreaks were created, such as amendments to the Infectious Disease Prevention and Control Act.^{2,3} The government also undertook measures to reform and better organise the role of the Korea Centers for Disease Control, now known as the Korea Disease Control and Prevention Agency, to improve risk communication and health governance and prevent future outbreaks.³ Hence, they were well-equipped to respond immediately to the health crisis, further strengthened by the successful collaboration between the government, the scientific community, and the general public in the early months of the COVID-19 pandemic. Here, we revisit South Korea's position through the latter part of 2020.

Initial response to the outbreak

The swift and decisive response of South Korea's government quickly stemmed viral transmission, making it a model country at the start of the pandemic. This demonstrated a level of competence that inspired cooperative efforts between the public and private sectors which, coupled with increased availability of resources, further boosted the government's response. Central to the Republic of Korea's pandemic response were the 3Ts: Testing, Tracing, and Treatment.⁴ Joint efforts of the government and private sector paved the way for the immediate development and distribution of their own testing kits,³ resulting in massive increases in testing kit production and utilisation. Coupled with the implementation of drive-through and walk-in testing facilities all over the country,^{3,4} by the end of March 2020, South Korea surpassed the rest of the world in terms of COVID-19 tests conducted, having screened 400,000 people since the pandemic began.⁴

Regarding treatment, all confirmed COVID patients were initially admitted to hospital, but due to eventual issues on bed capacity, management was modified based on classifications of severity.^{3,4} Additional efforts were also made to increase bed capacity of hospitals and recruit more health-care staff.⁴

Efficient contact tracing was accomplished with the integration of the country's robust information and communication technology (ICT) infrastructure and the development of the COVID-19 Epidemiological Investigation Support System.⁵ With this innovation, inter-agency communication became streamlined, allowing instant collection, processing, and presentation of tracking data of confirmed COVID-19 patients.⁵ Self-quarantine for identified contacts was monitored with the 'Self-Quarantine Safety Protection' application, permitting individualised monitoring by health officers. With the consent of contacts, they could also be tracked using their phone's Global Positioning System (GPS) location. Penalties for violating self-quarantine protocols include fines of up to KRW 10 million (approximately USD\$9,000) or imprisonment of up to 1 year.^{3,4}

Effects of initial efforts

Aside from the 3Ts, the government took control of the distribution of face masks and set guidelines

for their production and purchasing to address the shortage of personal protective equipment (PPE). Their initiatives also encouraged civic engagement, increasing the general population's adherence to policies on personal hygiene, PPE and social distancing, and active participation in volunteer efforts for vulnerable areas.⁶ The collaboration between private and public institutions, and the general public, along with the increased preparedness following the 2015 MERS-CoV outbreak, led to a significant decline in new COVID-19 cases without the need for a nationwide lockdown.

In the midst of worldwide over-reliance on strict lockdowns, South Korea presented a more sustainable model that contained viral spread while preventing an economic collapse. Border restrictions were reserved only for countries with massive outbreaks, whereas the rest of incoming foreign nationals were subject to special entry procedures.⁴ Despite allowing businesses to operate and despite hosting an election in which millions participated, the country was able to bring down the virus' basic reproduction number (R0) to below 1 in April 2020. By this time, South Korea had a more flexible approach with protocols eased or restricted depending on the influx of new cases. However, the easing of limitations and the reopening of night-clubs, in particular, led to an increase in cases with clusters identified in the Seoul Metropolitan Region. Enhanced control measures were again implemented. High-risk facilities such as nightlife venues, internet cafes, and karaoke rooms were banned or limited and by early June to mid-July 2020, the R0 dropped below 1 once again.² Because of the ebb and flow in new cases, the South Korean government was aware of the imminent risk of a second wave and thus rallied for continued vigilance.

Issues pushing back early successes

Despite initial successes in containing the pandemic, South Korea nonetheless struggled with second and third waves of infections throughout the year. By mid-August through September 2020, a second wave was reported, with daily tallies reaching the highest since February 2020. The trajectory throughout the rest of the year 2020 showed a situation with COVID-19 subsiding in October³ but

by November, cases spiked again and reached record highs in December, signalling the third wave around the winter holidays.^{3,7} The second wave was largely triggered by clusters from a church and an anti-government rally.⁸ Unlike the first two waves, the third wave had no central cluster, with cases instead occurring in many small, scattered clusters in public places such as restaurants and churches,⁹ making it difficult to perform their once lauded contact tracing strategy.

The government's reluctance in implementing the tightest measures, largely due to the fear of economic repercussions,^{7,10,11} hampered its efforts to contain the subsequent waves. Officials have been constantly adamant that such measures can be extremely damaging to the economy.¹² Despite repeated calls for stricter measures by health experts, the public, and the media, authorities have tiptoed through the possibility of imposing the strictest social distancing measures.^{11,12} Level 3, the highest of the most recent social distancing levels,³ would close down all high-risk businesses and enforce work-from-home schemes with the exception of essential services.³ According to guidelines, level 3 should be implemented when the weekly average reaches over 800 cases. Therefore, this level should have already been raised by the second week of December 2020¹² to stem the third wave, yet the government refused to do so. Public opinion has also called for the government to take a more aggressive approach to the staggering rise in cases. Instead, varied restrictions based on the increase in cases in a specific area were imposed.⁷ Government response, lauded at the start of the pandemic, has now been repeatedly criticised for its laxity in containing the second and third waves.

Rapid easing of social distancing measures also contributed to a worsening situation. After containing the first peak of cases by April 2020, the country had a more flexible approach with their responses. As cases continued to dwindle, low-contact outdoor facilities and churches were reopened on 19 April 2020, and nightclubs followed suit at the end of the month, just before a week-long holiday.^{2,13} In October, with the second peak in cases seemingly subsiding, the early lowering of restrictions was thought to have contributed to the development of the third peak.¹⁰

Regaining momentum

South Korea has since lost the initiative in battling the pandemic, but it is still relatively successful in terms of its low number of infections and fatalities.¹⁴ It is not too late for the country to implement sweeping measures to effectively stop the spread of the disease. Hopes for prevention through vaccination seem too far ahead, as even though South Korea secured enough vaccine for its population, only 1% of the population is fully vaccinated at the start of May 2021 and recent vaccine shortages are slowing down vaccination efforts.¹⁵ In the meantime, South Korea must go back to the roots of what made their early response to COVID-19 successful, with the government, health experts, and the public working together, and with their efforts focused on pre-emptive instead of reactionary measures. They can go the way of other high-income countries such as New Zealand and Australia, which have largely overcome the pandemic by closing down their borders and imposing strict lockdowns.¹⁶ Figures 1 and 2 compare cases per capita between South Korea and New Zealand, which may reflect differences in each country's approach.¹⁷ They can also safeguard their economy by innovating further on their strong technology infrastructure to better enforce work-from-home programmes, so they can enable their highest social distancing measures, even temporarily.

Conclusion

South Korea was a model country at the beginning of the pandemic; however, it has not completely curtailed COVID-19 transmission despite its early successes, and has recently faced a third wave. The once highly praised government has now lagged behind in its efforts, and their strong cooperation with its health experts has weakened due to the constant fear of a crippled economy. Still, the situation can be salvaged by taking measures that may be painful to the economy for the moment. In the end, it is a question of what the country is more willing to risk: a public health crisis to protect the economy or an economic downturn to crush a harrowing pandemic.

Competing interests

The authors declare no competing interests.

Figure 1. Comparison of coronavirus disease 2019 (COVID-19) cases per million people between South Korea and New Zealand. Data retrieved from: Johns Hopkins Center for Systems Science and Engineering (CSSE) COVID-19 Data.¹⁷

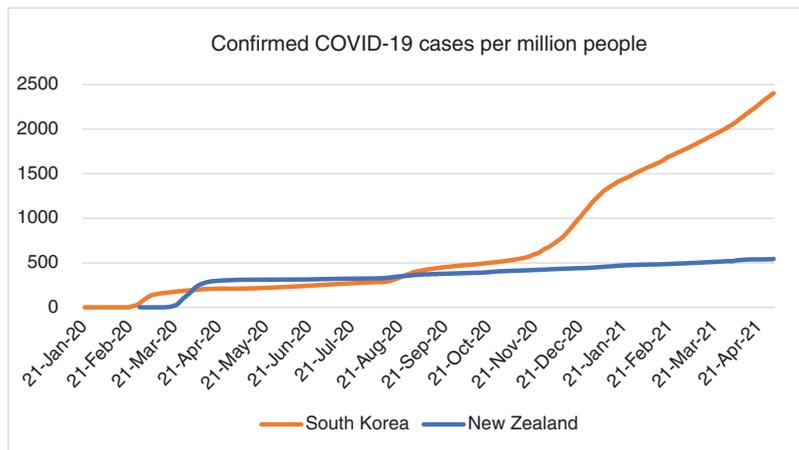
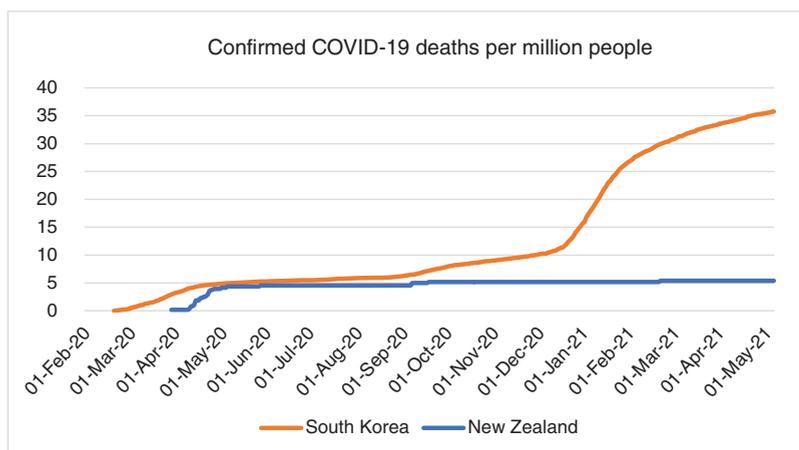


Figure 2. Comparison of coronavirus disease 2019 (COVID-19) deaths per million people between South Korea and New Zealand. Data retrieved from: Johns Hopkins Center for Systems Science and Engineering (CSSE) COVID-19 Data.¹⁷



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Author contributions

Joseph Christian Obnial and Don Eliseo Lucero-Prisno III conceived the idea. Joseph Christian Obnial, Maria Beatriz Baron, Hannah Andrea Sagsagat, Erika Ong and Ma. Alexandra Nicola Valenzuela wrote the draft of the manuscript, collected data and literature with joint equal

contribution by Don Eliseo Lucero-Prisno III. Don Eliseo Lucero-Prisno III assisted with article interpretation and language edit. All the authors read and approved the final manuscript.

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