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Letter to the Editor

## Contextual response to the COVID-19 pandemic from the experience of South Korea

Since SARS-CoV-2 invaded global society in December 2019, more than six million people have died from COVID-19. Remarkably, each country's performance has varied in COVID-19-related health indices. For instance, South Korea's cumulative mortality rate is less than 1/6 to 1/3 compared with Western countries (Appendix). It has depended not only on social structures such as population aging and health care but also on the societal reactions to the threat.

From the beginning of the pandemic, South Korea adopted combined non-pharmaceutical interventions (NPIs), focusing on active testing, tracing, and quarantine (TTQ) to maximally suppress the spread of the potentially lethal virus.<sup>1,2</sup> These strategies significantly contributed to maintaining low morbidity and mortality of COVID-19 without an entire lockdown of society throughout the pandemic.

In contrast, many Western countries missed the right time to fully use TTQ measures and had to rely on imposing lockdown measures until vaccines were available. The hesitation in the setup of strong NPIs may have arisen partly from the underestimation of the risk and uncertainty of the virus. Another reason for the failure might be that their response was based on a monophasic mitigation model developed from the experience of a previous influenza pandemic.<sup>3,4</sup> They anticipated that they would be able to mitigate the morbidity and mortality of COVID-19 under the pre-existing healthcare capacity, although the intensity of NPIs was not maximized. For example, the United Kingdom's back and forth approach to the early closing of the containment phase might have affected the following surge of COVID-19 and its related deaths during the first wave.<sup>5</sup>

However, SARS-CoV-2 was a different virus from influenza in that it had higher infectivity and lethality. The COVID-19 pandemic has also displayed multiple waves of infectivity and fatality due to emerging variants and expanding population immunity over the long term. In contrast to previous pandemics, by using rapid diagnosis with modern technology, infected individuals and close contacts have been able to be quarantined more selectively and efficiently. The effect of NPIs on inhibiting the spread of the virus

has tended to decrease over time.<sup>6</sup> Long-term enforcement of social distancing measures has instead damaged socio-economic status. Therefore, a more dynamic response to the polyphasic context of the COVID-19 pandemic should have been taken.

The maximal suppression strategy in Korea provided a window of opportunity to expand population vaccination and prepare for healthcare capacity extensions, such as more intensive care unit beds and home-based care systems for the phases with the more infective Delta and Omicron variants. From mid-January 2022, the number of daily confirmed cases with COVID-19 was too large to continue testing and tracing. The Omicron variant was widespread in the community, and social distancing measures did not keep public mobility low. As vaccine-induced population immunity and healthcare capacity were estimated enough to protect people from severe disease with the less-lethal Omicron, Korea changed its strategy to mitigation in February 2022 and loosened the TTQ and its NPI measures. The number of patients with COVID-19 sharply increased due to extensive testing and a lack of natural immunity resulting from preceding successful suppression. Shortly after the peak in mid-March 2022, the number of infected and deceased individuals gradually decreased; consequently, all restrictions excluding indoor mask wearing were lifted in mid-April 2022.

South Korea has provided a good example of a contextual response to the COVID-19 pandemic. This was a practical and flexible approach to the risk that depended on the context of the pandemic (Table 1). The context of the COVID-19 pandemic was composed of three variable factors: virus (variant, infectivity, and lethality), population immunity (acquired by vaccination and natural infection), and healthcare capacity. When the causative virus is suspected to be highly infective or lethal, as in the phases of early pandemic or Delta variant, and population immunity to the virus is low, maximal suppression with all kinds of NPIs including TTQ is essential. If the number of cases is expected to exceed the healthcare capacity (i.e. risking healthcare system collapse), lockdown will be unavoidable. Once the risk to society is manageable, a mitigation strategy can be used. At this point, virus lethality is low, and population immunity is high

**Table 1**  
Strategies in the context of the pandemic.

Context			Strategy
Virus <sup>a</sup>	Population immunity	Preparedness of healthcare capacity	
High infectivity and/or high lethality	Inappropriate	Poor	Lockdown
High infectivity and/or high lethality	Inappropriate	Good	Maximal suppression with TTQ
High or low infectivity and low lethality	Appropriate	Good	Mitigation

TTQ, test, tracing, and quarantine.

<sup>a</sup> Infectivity or lethality could be considered high when it is higher than that of seasonal influenza.

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enough to sufficiently reduce the risk of severe illness (as in the Omicron phase); furthermore, extra healthcare capacity should be more prepared for expected additional patients.

We suggest that the contextual strategy be used as an effective and realistic model for responding to COVID-19 to protect people and promote a safer and more efficient exit from the pandemic.

### Author statements

### Competing interests

None declared.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.puhe.2022.07.015>.

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