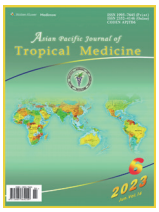

Letter to Editor

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Association between the extent of public health measures and other respiratory infectious diseases cases amidst the COVID-19 pandemic in Thailand

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Public health strategies have resulted in declines in some respiratory infectious viruses during the COVID-19 pandemic[1], while the way to assess the extent of public health measures and their impacts on respiratory infectious diseases varies[2-4]. During the pandemic, Thailand has implemented a strong and rapid governmental response according to its incidence rate[3], and we attempted to investigate the association between the extent of public health measures and other respiratory infectious diseases cases amidst the COVID-19 pandemic in Thailand. In this way, the level of public health measures and their impacts on other kinds of non-SARS-CoV-2 respiratory infections will help the government formulate more efficient policies.

Containment and Health Index (CHI), a composite measure of the response metrics such as school closures, cancellation of public events and wearing masks, is calculated by the Oxford COVID-19 Government Response Tracker Project in January 2020, to record containment and health system policies[5]. The data spanned from 2020 to 2021 to represent the time when public health measures were put in place in Thailand. The monthly CHI data was an average of daily CHI from Oxford COVID-19 Government Response Tracker in the corresponding month[6]. The reported cases of respiratory infectious diseases such as influenza, tuberculosis, measles, scarlet fever, pneumonia, pertussis, were obtained from the national database for disease surveillance repository provided by Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand[7]. These concerned respiratory infectious diseases have been reported with a significant drop in the incidence by an average of 61% in a recent review[3]. However, the influences brought by differenet extents of public health measures were unsure. To further explore their association, regression analysis, Shapiro-Wilk test was used to test the normality of data distribution and scatterplot was used to illustrate their trend. Spearman Correlation Analysis was used to detect the correlation between monthly CHI and reported cases of respiratory infectious diseases in 2020-2021 because of their skewed distribution and negative trend. We found negative correlations between CHI and the notification of the above six respiratory infectious diseases ($-1< r <-0.5$) in moderate/strong extent using a non-parametric Spearman Correlation Analysis at a significance level of 0.01 (Table 1).

However, after using the seasonal autoregressive integrated moving average model to compare with the hospitalization of tuberculosis cases when no public health measures are in place, it underwent an insignificant reduction in the backdrop of public health measures[3]. In contrast to other infectious viruses or bacteria, the transmission of tuberculosis is more multifactorial for its features of incubation period, and reactivation infections[3]. Its high correlation coefficient still suggested that the public health measures taken by governments to curb the spread of SARS-CoV-2 played a significant role in reducing tuberculosis incidence. The reduction in community transmission of *Mycobacterium tuberculosis* by movement of asymptomatic tuberculosis patients, less access to public transportation, health care facilities and testing and confirming diagnosis services for high-risk tuberculosis population were indispensable reasons[8].

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Overall, our study showed that public health measures would impact incidence of respiratory infectious diseases in different extents by employing a COVID-19 response metric. It is crucial for the government to explore a more proper way to investigate the impact of public health measures.

Table 1. Summary of correlation between monthly containment and health index and reported cases of respiratory infectious diseases from 2020 to 2021.

Diseases	$r^{\wedge}$	P value[&]
Influenza (n=135 169)	-0.814	<0.001
Tuberculosis (n=26 686)	-0.702	<0.001
Measles (n=1 279)	-0.672	<0.001
Scarlet fever (n=1 516)	-0.672	<0.001
Pneumonia (n=357 731)	-0.601	0.002
Pertussis (n=30)	-0.529	0.008

[^]Spearman correlation analysis and [&]non-parametric test were used.

Conflict of interest statement

The authors declare they have no conflict of interest with respect to this research study and paper.

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Data availability statement

The detailed data of this study are available from the corresponding author.

References

[1] Shapo L, Puca E. What could drive the re-emergence of infectious diseases in a post-Covid19 era? *Travel Med Infect Dis* 2023; **52**: 102546.

[2] Smedberg JR, DiBiase LM, Hawken SE, Allen A, Mohan S, Santos C, et al. Reduction and persistence of co-circulating respiratory viruses during the SARS-CoV-2 pandemic. *Am J Infect Control* 2022; **50**: 1064-1066.

[3] Ndeh NT, Tesfaldet YT, Budnard J, Chuaicharoen P. The secondary outcome of public health measures amidst the COVID-19 pandemic in the spread of other respiratory infectious diseases in Thailand. *Travel Med Infect Dis* 2022; **48**: 102348.

[4] Li YF , Guo C, Wu Q, Guo ZM. Characteristics of post Wuhan COVID-19 outbreaks in mainland China. *One Health Bull* 2022; **2**: 7. doi: 10.4103/2773-0344.346831.

[5] Hale T, Angrist N, Goldszmidt R, Kira B, Petherick A, Phillips T, et al. A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker). *Nat Hum Behav* 2021; **5**: 529-538.

[6] Our World In Data. *Policy responses to the coronavirus pandemic; 2022.* [Online]. Available from: https://ourworldindata.org/policy-responses-covid. [Accessed on 3 May 2023].

[7] MoPH. *National disease surveillance report 506.* [Online]. Available from: http://doe.moph.go.th/surdata/index.php. [Accessed on 3 May 2023].

[8] Dheda K, Perumal T, Moultrie H, Perumal R, Esmail A, Scott AJ, et al. The intersecting pandemics of tuberculosis and COVID-19: Population-level and patient-level impact, clinical presentation, and corrective interventions. *Lancet Respir Med* 2022; **10**: 603-622.

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