LETTER TO THE EDITOR

35 COVID-19 mortality and gross domestic product loss: A wake-up call for government leaders

Sakuraba A, Sato T
ABOUT COVER

Editor-in-Chief of World Journal of Clinical Infectious Diseases, Wei Wang, MD, PhD, Associate Professor, Jiangsu Institute of Parasitic Diseases, Key Laboratory on Technology for Parasitic Disease Prevention and Control, National Health and Family Planning Commission, Jiangsu Provincial Key Laboratory on Molecular Biology of Parasites, Wuxi 214064, Jiangsu Province, China. wangweijipd@163.com

AIMS AND SCOPE

The primary aim of World Journal of Clinical Infectious Diseases (WJCID, World J Clin Infect Dis) is to provide scholars and readers from various fields of infectious diseases with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJCID mainly publishes articles reporting research results and findings obtained in the field of infectious diseases and covering a wide range of topics including community-acquired infections, cross infection, eye infections, focal infection, infectious gingivitis, intraabdominal infections, laboratory infection, Ludwig’s angina, necrotizing ulcerative periodontitis, opportunistic infections, pelvic infection, pregnancy complications, etc.

INDEXING/ABSTRACTING

World Journal of Clinical Infectious Diseases is now indexed in China National Knowledge Infrastructure (CNKI), China Science and Technology Journal Database (CSTJ), and Superstar Journals Database.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: Yan-Xia Xing Production Department Director: Xiang Li; Editorial Office Director: Ya-Juan Ma.

NAME OF JOURNAL

World Journal of Clinical Infectious Diseases

ISSN

ISSN 2220-3176 (online)

LAUNCH DATE

December 30, 2011

FREQUENCY

Continuous Publication

EDITORS-IN-CHIEF

Joao Mesquita, Caterina Sagnelli, Wei Wang

EDITORIAL BOARD MEMBERS

https://www.wjgnet.com/2220-3176/editorialboard.htm

PUBLICATION DATE

April 25, 2021

COPYRIGHT

© 2021 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

https://www.wjgnet.com/lbg/gerinfo/204

GUIDELINES FOR ETHICS DOCUMENTS

https://www.wjgnet.com/lbg/GerInfo/287

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

https://www.wjgnet.com/lbg/gerinfo/240

PUBLICATION ETHICS

https://www.wjgnet.com/lbg/GerInfo/288

PUBLICATION MISCONDUCT

https://www.wjgnet.com/lbg/gerinfo/208

ARTICLE PROCESSING CHARGE

https://www.wjgnet.com/lbg/gerinfo/242

STEPS FOR SUBMITTING MANUSCRIPTS

https://www.wjgnet.com/lbg/gerinfo/239

ONLINE SUBMISSION

https://www.f6publishing.com
LETTER TO THE EDITOR

COVID-19 mortality and gross domestic product loss: A wake-up call for government leaders

Atsushi Sakuraba, Toshiro Sato

ORCID number: Atsushi Sakuraba 0000-0003-2519-6129; Toshiro Sato 0000-0001-8353-8137.

Author contributions: Sakuraba A contributed to the conceptualization, methodology, and writing; Sato T edited and approved the final draft.

Conflict-of-interest statement: All authors have no conflicts of interest directly relevant to the content of this article.

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: https://creativecommons.org/License/s/by-nc/4.0/

Manuscript source: Unsolicited manuscript

Specialty type: Virology

Country/Territory of origin: United States

Atsushi Sakuraba, Department of Medicine, University of Chicago, Chicago, IL 60637, United States

Toshiro Sato, Department of Organoid Medicine, Keio University School of Medicine, Tokyo 108-8345, Japan

Corresponding author: Atsushi Sakuraba, MD, PhD, Associate Professor, Department of Medicine, University of Chicago, 5841 S Maryland Ave, Chicago, IL 60637, United States. asakurab@medicine.bsd.uchicago.edu

Abstract

Government leaders have struggled to reduce the infection and deaths due to coronavirus disease 2019 (COVID-19) as well as to keep the economy and businesses open. There is a large variation of mortality and damage to economy among countries. One possible cause leading to the large variation is the manner in which countries have dealt with COVID-19. Some countries or regions such as China, New Zealand, and Taiwan, acted quickly and aggressively by implementing border closures, lockdown, school closures, mass testing, etc. On the other hand, many European countries, United States, and Brazil delayed their decisions to implement these restrictions and measures. No study has assessed the correlation between gross domestic product (GDP) and COVID-19 mortality. In the present study, there was a negative correlation between GDP and COVID-19 mortality suggesting that countries that failed to control the virus (larger COVID-19 mortality) would see a larger decline in GDP. Governmental leaders should act fast and aggressively when making decisions because data shows that countries who have run after two hares have caught neither. Furthermore, citizens of each country need to do their own part by following guidelines and practicing social distancing and mask wearing, which are considered the most effective, easiest, and cheapest measures that can be taken, so that repeated lockdowns can be avoided.

Key Words: Coronavirus; COVID-19; Mortality; Gross domestic product; Economy; Global

©The Author(s) 2021. Published by Baishideng Publishing Group Inc. All rights reserved.
TO THE EDITOR

Coronavirus disease 2019 (COVID-19) has caused varying degree of infections and deaths among countries worldwide. Governmental leaderships have taken various measures, including border closure, lockdowns, and school closures, to mitigate the spread of COVID-19 infection\(^1\). A majority of these government implemented measures have a large impact on the daily life of the people and the economy causing dilemma and controversies. China and New Zealand rapidly implemented extremely strict measures and successfully contained the infection whereas some countries took minimum or delayed measures and decided COVID-19 to run its course\(^2,3\). While healthcare system, structural inequality, population characteristics, \textit{etc.} may also influence COVID-19 infection and mortality, governmental leaders take various factors into consideration when making decisions, so that they can maintain a balance between the casualty caused by COVID-19 and the economy\(^4\). One of the rationales to keep social activities intact is that restrictions would cause more economic crisis, societal damage, and ultimately loss of lives.

Strict restrictions on economic activity including lockdowns are effective in flattening the surge of infections, however, there is limited data regarding the relationship between the degree of COVID-19 tragedy and economic damage. In order to gain knowledge about these two dichotomous outcomes, we analyzed the association between COVID-19 mortality and gross domestic product (GDP) among countries in the Organisation for Economic Co-operation and Development (OECD) and partnering countries. Data of mortality was obtained from worldometers.info and that of GDP of the second quarter (Q2) 2020 were obtained from OECD.org. on October 2, 2020.

Among 46 countries, we found that there was a statistically significant negative association between COVID-19 mortality and GDP growth (Figure 1, \(R^2 = 0.18, P = 0.0034\)). The association suggested that with every 10 deaths/million increase, the GDP decreased by 0.53\%. China, which took aggressive measures after experiencing the outbreak in Wuhan and kept the mortality low at 3/million population was the only country that had a positive GDP growth. Other countries had a negative GDP growth ranging from 0-5\% in Russia, South Korea, and Finland, 5\%-10\% in Japan, United States, \textit{etc.}, and over 10\% in France, Spain, \textit{etc.} There was a significant trend for increasing loss of GDP among countries that had mortality in the range of 0-50/million, 50-250/million, and \(\geq\) 250/million (Jonckheere-Terpstra test for trend, \(P = 0.00033\)) confirming that countries with greater mortality had larger loss of GDP.

A limitation of this analysis is that we only included countries included or partnered with OECD. Each country has a different portfolio of personal consumption, business investment, and net exports, thus, it remains to be determined whether our results are generalizable to other countries. Furthermore, the COVID-19 pandemic is still ongoing, so the morbidity and economic damage are dynamically changing, especially during the third wave of winter 2020 happening right now. Case fatality rate is often used as between country comparison, but we chose mortality as there is less variation in identifying cases of death between countries. It should also be noted that some countries have different criteria when reporting deaths due to COVID-19.
Figure 1 Association between coronavirus disease 2019 mortality and gross domestic product growth. Data of coronavirus disease 2019 (COVID-19) mortality was obtained from Worldometer and that of 2020 Q2 gross domestic product (GDP) was obtained from OECD.org on October 2, 2020. Among 46 countries, there was a strong negative association between COVID-19 mortality and GDP growth ($R^2 = 0.18, P = 0.0034$). COVID-19: Coronavirus disease 2019; GDP: Gross domestic product.

and possibility of underreporting of cases/deaths have also been mentioned. Furthermore, we showed an association, but it does not mean that there is a causal relationship and other environmental and economic factors likely play a role\(^4\).

The current pandemic has caused enormous damages to human lives and economy. Our data demonstrated an association between COVID-19 mortality and economic loss suggesting that keeping the mortality low by various measures may result in smaller economic loss. Governmental leaders should take this fact into consideration and must act fast and aggressively when making decisions because data shows that countries who have run after two hares have caught neither. Furthermore, citizens of each country need to do their own part by following guidelines and practicing social distancing and mask wearing, which are considered the most effective, easiest, and cheapest measures that can be taken\(^5\), so that repeated lockdowns can be avoided.

REFERENCES

1. Lau H, Khosrawipour V, Kuchbach P, Mikolajczyk A, Schubert J, Bania J, Khosrawipour T. The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. J Travel Med 2020; 27 [PMID: 32181488 DOI: 10.1093/jtm/taaa037]
2. Carbone F, Montecucco F. SARS-CoV-2 outbreak and lockdown in a Northern Italy hospital. Comparison with Scandinavian no-lockdown country. Eur J Clin Invest 2020; e13302 [PMID: 32506507 DOI: 10.1111/eci.13302]
3. Anyane-Yeboa A, Sato T, Sakuraba A. Racial disparities in COVID-19 deaths reveal harsh truths about structural inequality in America. J Intern Med 2020; 288: 479-480 [PMID: 32452046 DOI: 10.1111/joim.13117]
4. Ayoub F, Sato T, Sakuraba A. Football and COVID-19 risk: correlation is not causation. Clin Microbiol Infect 2021; 27: 291-292 [PMID: 32891763 DOI: 10.1016/j.cmi.2020.08.034]
5. Chu DK, Akl EA, Duda S, Solo K, Yaacoub S, Schünemann HJ; COVID-19 Systematic Urgent Review Group Effort (SURGE) study authors. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. Lancet 2020; 395: 1973-1987 [PMID: 32497510 DOI: 10.1016/S0140-6736(20)31142-9]
