DOI: 10.1002/jmv.26269

LETTER TO THE EDITOR

JOURNAL OF MEDICAL VIROLOGY WILEY

# Coinfection, coepidemics of COVID-19, and dengue in dengue-endemic countries: A serious health concern

To the Editor,

The WHO has declared coronavirus disease-2019 (COVID-19) outbreak as a global pandemic.[1] The outbreak of COVID-19 caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has spread in 213 countries across the world. As of 30 June 2020, the total confirmed cases of COVID-19 have reached over 11 million with over half million deaths globally.[2] During the COVID-19 pandemic, dengue cases have been increased in most of the dengue-endemic countries in the world. While COVID-19 causes havoc across the world, countries in South and South-East Asia and Latin America are faced with the prospect of a second epidemic: dengue.[3] The countries in South America like Brazil, Paraguay, Bolivia, Argentina, Colombia, Mexico, and in the Southeast Asia like the Philippines, Malaysia, Singapore, Vietnam, Thailand, and Indonesia are currently in the high risk of dengue outbreak as dengue infection is increasing at an alarming rate.[4,5] Besides, several South Asian countries like India, Pakistan, and Bangladesh are also suffering from dengue disease this year. Interestingly, almost all these countries are currently suffering seriously from COVID-19 due to its pandemic situation.[4] Therefore, in these countries both COVID-19 and dengue are occurring simultaneously.

Dengue, a mosquito-borne viral infection, itself a great threat in the world. Severe dengue is a leading cause of serious illness and death in some Asian and South American countries that are dengue endemic.[6] The dengue-endemic countries have a history of occurring repeated outbreak of dengue. During the COVID-19 crisis, the situation would be very difficult to manage if the dengue epidemic is further added in these countries. At present all the countries are struggling against COVID-19, further epidemic of dengue will really pose new challenges to combat. As the combination of COVID-19 and dengue is assumed as dangerous for health care professionals in any country.

Corona and dengue, both viruses are coexisting currently in the dengue-endemic countries. Therefore, the coinfection of these viruses to the patients has been reported recently in different dengue-endemic countries like Singapore, Thailand, India, and Bangladesh. As an extremely unique occurrence, Singapore at first confirmed two patients who were coinfected with both corona and dengue virus.[7] In Thailand, a man who also had dengue died from coronavirus infection.[8] Also, an old patient with coinfection of dengue and corona died in India.[9] Moreover, two patients from Bangladesh were coinfected with both corona and dengue and one of them died.[10] Hence, it can be speculated that coinfection cases may be increased in the upcoming days as peak dengue season. Coinfection poses a challenge for accurate diagnosis and treatment, particularly when symptoms such as fever and aches are similar for several viral diseases like COVID-19 and dengue. The distinction can be made with disease progresses. In fact, the symptoms of these viral diseases begin with fever. Guan et al[11] in their recent study reported that fever, cough, and headache were observed as the most common symptoms for patients with COVID-19[11] whereas fever, headache, and skin rash were observed for patients with dengue. Besides, patient with COVID-19 could present with a rash that was mistaken for dengue.[8] The clinical and laboratory features of both dengue and COVID-19 are quite identical, and therefore, it is difficult to distinguish. In Singapore, patient with COVID-19 produced false-positive dengue results in rapid serological test.[7] Thus, a new symptom of COVID-19 was discovered where the patient was suspected of suffering from dengue. The report warned that patients with COVID-19 were wrongly considered as dengue resulting a delay in diagnosis of corona infection and further spread of the virus.[7]

The dengue-endemic countries are at the risk of possible coinfection and coepidemics in where COVID-19 and dengue disease are coexisting, and the viruses are cocirculating. It has appeared that several patients have been coinfected with corona and dengue virus and coepidemics have also been started in several countries. Coinfections may cause illness with overlapping signs and symptoms that make diagnosis and treatment difficult for physicians. Coepidemics of dengue and COVID-19 have been grown as a new burden. Thus, coinfection and coepidemics trigger alert, especially in the dengue-endemic countries where the dengue epidemic occurred repeatedly. For facing the upcoming dengue epidemic, special measures should be taken in these countries and therefore, an effective mosquito control program is strongly recommended.

## CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

## AUTHOR CONTRIBUTIONS

Both authors prepared manuscript, critically read and revised the manuscript, and gave final approval for publication.

Md. Asaduzzaman Miah[1]
Asmaul Husna[1,2]

[1]*Department of Entomology, Patuakhali Science and Technology University, Patuakhali, Bangladesh*
[2]*Mycology Division, School of Biological Sciences, University Sains Malaysia, George Town, Malaysia*

  

**Correspondence**
Md. Asaduzzaman Miah, Department of Entomology, Patuakhali Science and Technology University, Bangladesh.
Email: mamiah81@yahoo.com

## ORCID

*Md. Asaduzzaman Miah* http://orcid.org/0000-0003-2966-249X

## REFERENCES

1. WHO Director-General's opening remarks at the media briefing on COVID19-March 2020. https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19—8-june-2020. Accessed June 29, 2020.
2. https://www.worldometers.info/coronavirus/. Accessed June 28, 2020.
3. Ridwan R. COVID-19 and dengue: a deadly duo *Trop Doct*. 2020. https://doi.org/10.1177/0049475520936874
4. Dengue worldwide overview. https://wwwecdceuropaeu/en/dengue-monthly. Accessed June 9, 2020.
5. Dengue fever in America. https://www.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en/dengue-nacional-en/252-dengue-pais-ano-en.html?start=2. Accessed June 29, 2020.
6. Dengue and severe dengue. https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue. Accessed June 29, 2020.
7. Yan G, Lee CK, Lam L, et al. Covert COVID-19 and false-positive dengue serology in Singapore. *Lancet Infect Dis*. 2020;20:536.
8. Joob B, Wiwanitkit V. COVID-19 can present with a rash and be mistaken for dengue. *J Am Acad Dermatol*. 2020;82:177.
9. Ayub J, Stung by dengue, patient dies of coronavirus co-infection in Bhopal, in The Times of India. 2020. https://timesofindia.indiatimes.com/city/bhopal/stung-by-dengue-patient-dies-of-coronavirus-co-infection-in-bhopal/articleshow/75330826.cms. Accessed June 25, 2020.
10. Report SO, A double struggle: Home ministry PRO battling Covid-19, dengue, in The Daily Star. 2020; Bangladesh. https://www.thedailystar.net/coronavirus-deadly-new-threat/news/double-struggle-homeministry-pro-battling-covid-19-dengue-1905013. Accessed June 26, 2020.
11. Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics of coronavirus disease 2019 in China. *N Eng J Med*. 2020;382:1708-1720.