

# COVID-19 and mosquito-borne diseases in Bangladesh: Is the pandemic masking another sinister public health threat?

Sadia I. Mou<sup>1</sup>, Humayun Kabir<sup>2</sup>, Md. K. Hasan<sup>2</sup>

## AFFILIATION

**1** Department of Biochemistry and Molecular Biology, University of Dhaka, Dhaka, Bangladesh

**2** Department of Public Health, North South University, Dhaka, Bangladesh

## CORRESPONDENCE TO

Md. K. Hasan. Department of Public Health, North South University, Dhaka, 1229, Bangladesh. E-mail: kamrul.hasan11@northsouth.edu

ORCID ID: <https://orcid.org/0000-0002-3032-7640>

## KEYWORDS

COVID-19, mosquito-borne diseases, misdiagnosis, malaria, dengue, Bangladesh

**Received:** 25 September 2021, **Revised:** 7 December 2021,

**Accepted:** 4 January 2022

Popul. Med. 2022;4(January):2

<https://doi.org/10.18332/popmed/145535>

## Dear Editor,

For more than one and half years, the world has been combating outbreaks of the virus SARS-CoV-2 that caused COVID-19. Bangladesh reported its first COVID-19 case on 8 March 2020<sup>1</sup>, with over 1.3 million confirmed cases and 21638 deaths as of 4 August 2021<sup>2</sup>. Besides COVID-19 related health issues, this pandemic has caused great concern for other diseases, such as those that are mosquito-borne<sup>3,4</sup>. Mosquito-borne diseases, e.g. malaria, dengue fever, zika, yellow fever, chikungunya, Japanese encephalitis, etc., affect nearly 700 million people worldwide every year<sup>5</sup>. Especially in Bangladesh, mosquito-borne diseases cause high morbidity and mortality due to low socioeconomic status, propinquity to water reservoirs and forests, poor schooling, etc. Notably, Bangladesh is one of the four major malaria-endemic countries in South-East Asia<sup>6</sup>.

Dengue, spread by *Aedes* mosquitoes, infected 101354 people in 2019 in Bangladesh and afflicted 1405 people during the COVID-19 first wave in 2020<sup>7</sup>. There is a sharp diminution in dengue cases; nevertheless, this decline may not always indicate a low infection rate. However, there is a high possibility of striking disparity in the reported data, which can be interconnected with COVID-19 related situations<sup>8,9</sup>. Dengue shares some signs and symptoms with COVID-19, namely, lymphopenia, leukopenia, thrombocytopenia, elevated transaminases, malaise, headache, etc., leading to misdiagnosis<sup>3,9</sup>. Similarly, some symptoms of malaria may be confused with the early symptoms of COVID-19, including fever, breathing difficulties, fatigue, acute onset of headache, etc., leading to an erroneous diagnosis with the possibility of co-infection being overlooked<sup>9</sup>. Misdiagnosis causes hindrance and inappropriate treatment leading to escalation of mortality

rate and more complications. As a result, the situation is alarming in Bangladesh<sup>8</sup> and in neighboring countries India and Pakistan, where overlapping signs of COVID-19 and other diseases like dengue, chikungunya, typhoid fever, etc., have resulted in misdiagnosis<sup>9</sup>. Diagnostic tests specific for several forms of malaria (Giemsa staining) and dengue (NS1 and IgM) can assist in minimizing their misdiagnosis of these manifestations in COVID-19 patients.

During this pandemic, the full attention of the public health system has been diverted to COVID-19 responses<sup>10</sup>. This may lead to laxity in mosquito control measures in Bangladesh. There are inadequate human and economic resources to effectuate necessary control measures<sup>3</sup>. Besides the diseases like malaria, dengue, etc., diagnosis and treatment are also disrupted owing to the hazards confronted by health workers during this pandemic<sup>9</sup>. Moreover, Bangladesh introduced a lockdown several times in this pandemic to alleviate the spread of COVID-19<sup>1</sup>, which affected the epidemiology of mosquito-borne diseases in many ways. During the lockdown period, buildings and sites like schools, construction sites, cemeteries can be a more significant environment for breeding and multiplication of mosquitoes, increasing their infection<sup>3</sup>. In addition, many people hesitate to visit healthcare centers due to the COVID-19 concerns, resulting in diagnostic delay and critical situations<sup>7</sup>. In a nutshell, this pandemic can cause misdiagnosis, improper treatment, untreated mosquito-borne disease cases, and disruption in the health delivery system leading to increased mortality and morbidity<sup>9</sup>.

The interrelation between COVID-19 and mosquito-borne diseases can be destructive, especially in middle- and low-income countries like Bangladesh. Therefore, developing and enhancing early mosquito or vector control

measures is crucial. Vector control strategies, including insecticide-treated nets, indoor residual spraying, and chemoprevention for adults, children, and pregnant women, should be introduced<sup>9</sup>, and special permission should be granted to continue these strategies even during lockdown by maintaining social distancing measures. Moreover, community participation to engage with the strategies should be reinforced during the lockdown as people are supposed to stay at home. They need to be reminded of the vectors' life cycle, mode of transmission and emboldened to discard plastics or containers filled with rain or stagnant water, apply insect repellent, adequately cover water storage containers, etc<sup>3</sup>.

Furthermore, it is necessary to educate the whole population and train health workers on the significance of precise diagnosis, and resources need to be provided for the diagnosis of dengue, malaria and other vector-borne diseases to lessen the chance of misdiagnosis. Also, it should be ensured that surveillance and epidemiological control strategies are updated to fight off any emerging outbreaks<sup>9</sup>. As the world is still facing COVID-19, the toll of mosquito-borne epidemics might be too high, especially in poor and developing countries. The government should take sufficient measures, including increasing hospital beds, providing diagnostic kits, improving quality of care, organizing awareness campaigns and different awareness initiatives, and implementing affordable diagnostic charges. Even though COVID-19 and post COVID settings are expected to lead to significant changes in public health policies in many countries, mosquito-borne diseases control will continue to be a significant public health concern. Various aspects of public health measures, including community and household initiatives, may be incorporated.

## REFERENCES

1. Biswas RK, Huq S, Afiaz A. Relaxed Lockdown in Bangladesh During COVID-19: Should Economy Outweigh Health? *Int J Health Policy Manag.* 2020;9(11):488-490. doi:10.34172/ijhpm.2020.98
2. [Government of Bangladesh. Covid-19 Current situation.] Page in Pengali. Accessed May 6, 2021. <https://corona.gov.bd/>
3. Wilder-Smith A, Tissera H, Ooi EE, Coloma J, Scott TW, Gubler DJ. Preventing Dengue Epidemics during the COVID-19 Pandemic. *Am J Trop Med Hyg.* 2020;103(2):570-571. doi:10.4269/ajtmh.20-0480
4. Rahman MT, Sobur MA, Islam MS, Toniolo A, Nazir KHMNH. Is the COVID-19 pandemic masking dengue epidemic in Bangladesh? *J Adv Vet Anim Res.* 2020;7(2):218-219. doi:10.5455/javar.2020.g412
5. Sharma A, Lal SK. Zika Virus: Transmission, Detection, Control, and Prevention. *Front Microbiol.* 2017;8:110. doi:10.3389/fmicb.2017.00110
6. Islam N, Bonovas S, Nikolopoulos GK. An epidemiological overview of malaria in Bangladesh. *Travel Med Infect Dis.* 2013;11(1):29-36. doi:10.1016/j.tmaid.2013.01.004
7. Ahamad R. Dengue sees spike in Nov-Dec. *NewAge Bangladesh.* January 8, 2021. Accessed May 6, 2021. <https://www.newagebd.net/article/126668/dengue-sees-spike-in-nov-dec>
8. Mahmud F. Double blow: Bangladesh battles dengue outbreak amid COVID crisis. *Al Jazeera.* July 30, 2021. Accessed August 4, 2021. <https://www.aljazeera.com/news/2021/7/30/bangladesh-dengue-outbreak-covid-crisis>
9. Phadke R, Mohan A, Çavdaroğlu S, et al. Dengue amidst COVID-19 in India: The mystery of plummeting cases. *J Med Virol.* 2021;93(7):4120-4121. doi:10.1002/jmv.26987
10. Khan SA, Webb CE, Abu Kassim NF. Prioritizing mosquito-borne diseases during and after the COVID-19 pandemic. *Western Pac Surveill Response J.* 2021;12(2):40-41. doi:10.5365/wpsar.2020.11.3.017

## CONFLICTS OF INTEREST

The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

## FUNDING

There was no source of funding for this research.

## ETHICAL APPROVAL AND INFORMED CONSENT

Ethical approval and informed consent were not required for this study.

## DATA AVAILABILITY

Data sharing is not applicable to this article as no new data were created.

## AUTHORS' CONTRIBUTIONS

Original draft and writing: SIM and HK; Review and editing: HK and MKH; Conceptualization: HK and MKH; Investigation, project administration, validation: MKH.

## PROVENANCE AND PEER REVIEW

Not commissioned; internally peer reviewed.

## DISCLAIMER

The views and opinions expressed in this article are those of the authors.