Dear Editor,

For more than one and a 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\(^1\), with over 1.3 million confirmed cases and 21638 deaths as of 4 August 2021\(^2\). Besides COVID-19 related health issues, this pandemic has caused great concern for other diseases, such as those that are mosquito-borne\(^3,4\).

Mosquito-borne diseases, e.g. malaria, dengue fever, zika, yellow fever, chikungunya, Japanese encephalitis, etc., affect nearly 700 million people worldwide every year\(^5\). 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\(^6\).

Dengue, spread by \textit{Aedes} mosquitoes, infected 101354 people in 2019 in Bangladesh and afflicted 1405 people during the COVID-19 first wave in 2020\(^7\). 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\(^8,9\). Dengue shares some signs and symptoms with COVID-19, namely, lymphopenia, leukopenia, thrombocytopenia, elevated transaminases, malaise, headache, etc., leading to misdiagnosis\(^9\). 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\(^9\). Misdiagnosis causes hindrance and inappropriate treatment leading to escalation of mortality rate and more complications. As a result, the situation is alarming in Bangladesh\(^8\) 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\(^9\). 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\(^10\). This may lead to laxity in mosquito control measures in Bangladesh. There are inadequate human and economic resources to effectuate necessary control measures\(^3\). Besides the diseases like malaria, dengue, etc., diagnosis and treatment are also disrupted owing to the hazards confronted by health workers during this pandemic\(^9\). Moreover, Bangladesh introduced a lockdown several times in this pandemic to alleviate the spread of COVID-19\(^1\), 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\(^3\). In addition, many people hesitate to visit healthcare centers due to the COVID-19 concerns, resulting in diagnostic delay and critical situations\(^7\). 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\(^9\).

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

**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

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measures is crucial. Vector control strategies, including insecticide-treated nets, indoor residual spraying, and chemoprevention for adults, children, and pregnant women, should be introduced, 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.

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. 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

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