


## Letter to the Editor

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# COVID-19 and Dengue Co-epidemic During the Second Wave of the Pandemic in Bangladesh: A Double Blow for an Overburdened Health-Care System

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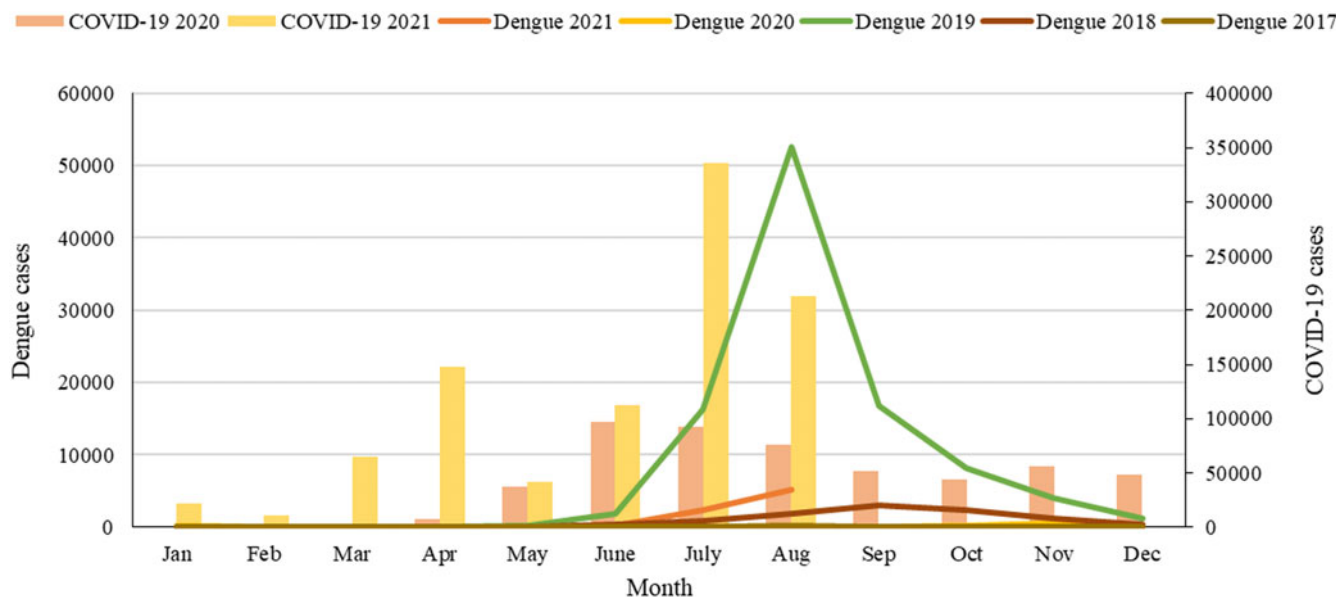
The coronavirus disease 2019 (COVID-19) pandemic brought unprecedented risk to public health worldwide.<sup>1</sup> While the world struggles to cope with this crisis time, the Dengue outbreak has threatened the South Asia and Latin America regions.<sup>2,3</sup> With the monsoon in South Asia, dengue is prone, emerging as a deadly combination to manage in developing countries such as Bangladesh, with vulnerable health systems and highly dense populations. The country observes a sharp rise in dengue cases, placing additional burdens on the health-care system, already battered by the COVID-19 crisis.<sup>2</sup>

Bangladesh has passed 17 mo of infection without reaching zero cases since the first case was reported on March 8, 2020. It is now undergoing a catastrophic second wave of the pandemic, primarily due to the Delta variant.<sup>4</sup> As a border country with India, Bangladesh was in an alarming situation because of the spreading of the Delta variant. Despite precautions, Bangladesh detected its first case due to the Delta variant in a patient returning from India on May 8, 2021.<sup>4</sup> A study conducted between June 29 and July 30, 2021, in Dhaka, reported that 98% of detected COVID-19 cases were infected with the Delta variant in Bangladesh.<sup>5</sup> Since the emergence of the Delta variant, cases in Bangladesh grew drastically.<sup>4</sup> On July 28, 2021, the highest ever case count reached 16,230. As of August 22, 2021, more than 1.4 million confirmed cases and 25,282 deaths and ranked 2nd in the South Asia region were reached.<sup>6</sup>

Dengue virus puts approximately 390 million individuals at risk worldwide each year.<sup>7</sup> The onset of severe dengue causes illness and deaths in the tropic and sup-tropic environment, ideal for breeding the *Aedes* mosquitoes. Every year, Bangladesh, a tropical country, experiences dengue outbreaks due to its high population density, unplanned urbanization, hot and humid climate, heavy rains during monsoon season, environmental degradation, and insufficient sanitation facilities.<sup>8</sup> This year has also witnessed a sharp spike in dengue cases as soon as the monsoon arrived in Bangladesh (June-July). Additionally, a high proportion of dengue patients have been infected with DEN-3, a deadly variant of the dengue virus that may induce severe illness and increase mortality risk.<sup>9</sup> According to the Directorate General Health Services, Ministry of Health and Family Planning of Bangladesh (DGHS), the country has reported around 7763 dengue cases this year, including 36 fatalities.<sup>6</sup> From January 1, 2017, to August 8, 2021, the country reported a total of 120,429 dengue cases. Epidemiological data from the last 4 y has shown that Bangladesh has experienced a significant dengue outbreak during the monsoon season (June-September) (Figure 1). Dengue outbreak hit harder than ever in Bangladesh during 2019, with approximately 101,354 cases recorded.

Given that monsoon has already started in Bangladesh with heavy rainfall, experts have cautioned that an outbreak pattern similar to that of 2019 may occur this year. Concurrently, the country has seen an increasing rise in COVID-19 cases in recent months (Figure 1), which is likely to exacerbate in the following months as the government lifted the restrictions on public movement to reopen the economic activity throughout the country from August 11, 2021. This chronological congruence suggests that dengue and COVID-19 are co-epidemic.

Several countries, including Bangladesh, have reported dengue and COVID-19 coinfection.<sup>10,11</sup> Last year, 2 people in Bangladesh were diagnosed with coinfection; 1 of them died.<sup>10</sup> The coinfection has been observed in major specialized corona hospitals in Dhaka city during the past months; however, the DGHS has not released any information on the coinfection this year.<sup>12</sup> This coinfection could complicate the diagnosis process because COVID-19 and dengue have similar clinical and laboratory characteristics, making them challenging to distinguish.<sup>10</sup> Because of this coinfection and heavy workload on health-care workers, the probability of misdiagnosis is very high. The low capacity of the health-care system in the country has



**Figure 1.** Simultaneous increase of COVID-19 and dengue cases in Bangladesh as of August 22, 2021 (modified from the Directorate General Health Services, Ministry of Health and Family Planning, Bangladesh, 2021).

further intensified the situation. The doctor-patient ratio in Bangladesh is 5.81 per capita, the second-lowest in South Asia, only before Afghanistan, a war-affected country.

There is not a single critical care bed per 10,000 people in Bangladesh.<sup>13</sup> The country recorded only 1217 intensive care unit (ICU) beds compared with 15,000 COVID-19 cases daily and more than 200 dengue cases.<sup>6</sup> Even in several outskirts of the capital, there are no single ICU beds in 16 hospitals, which worsens the situation. A lack of oxygen supply further threw the country into an utmost pain, although the spokesperson of DGHS estimated that they could supply 210-220 oxygen tons daily. However, the oxygen demand has crossed 230 tons daily during the first week of August.<sup>14</sup> In addition, the slow rate of vaccination and shortage of rapid test kits has further exacerbated the already fragile health-care system to tackle the crisis in Bangladesh.<sup>9</sup> If the country is forced to deal with 2 epidemics concurrently, the vulnerable health-care system of Bangladesh will lead to catastrophe. Likewise, the development of deadly COVID-19 and dengue coinfections, including coinfections recently demonstrated in Peru,<sup>11</sup> necessitates further study to determine the potential for this pair during the upcoming post-monsoon season, with increasing dengue infections. Thus, an immediate and strict action plan must be needed and implemented immediately to reduce the risk of increasing coinfection and fatalities.

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**Ethical standards.** The study involves no human sample, thereby requiring no ethical approval.

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