



Journal of Acute Disease

Letter to Editor



jadweb.org

doi: 10.4103/2221-6189.390392

Impact Factor® 0.5

A public health perspective on dengue in Bangladesh in the twenty-first century

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Infectious diseases have accompanied human history from time immemorial. In the 21st century, we have witnessed striking pandemics such as severe acute respiratory syndrome, middle east respiratory syndrome, malaria, and coronavirus disease 2019. Dengue fever is a mosquito-borne disease and is prevalent in tropical regions[1]. Female mosquito, such as *Aedes aegypti*, or *Aedes albopictus* to a lesser extent, is one major cause of infection with dengue virus (DENV)[2]. These mosquitoes serve as vectors not only for dengue but also for chikungunya, yellow fever, and Zika viruses. The infection could be attributed to four closely linked dengue viruses, each inducing a spectrum of symptoms. These symptoms demand medical intervention and hospitalization and sometimes are exceedingly mild or inconspicuous[1,2]. In severe instances, fatality can happen. Unfortunately, a remedy remains elusive.

Dengue fever is characterized as a self-limiting febrile ailment, presenting latent to severe symptoms. Manifestations of dengue fever typically emerge approximately 4-10 days after the bite of an infected mosquito[3]. The common symptoms closely resemble those of influenza, including fever, cephalalgia, retroocular pain, myalgia, arthralgia, emesis, queasiness, rash, and profound fatigue[2,3].

As the disease progresses, patients may experience respiratory distress, nasal and gingival bleeding, along with a swift deterioration leading to shock. In cases where symptoms are not alleviated after treatments, this progression can ultimately end in fatality[4]. Vigorous case management protocols for dengue fever within healthcare institutions have played a pivotal role in diminishing case fatality rates to below 1% in most heavily affected nations[5]. The yearly occurrence of dengue fever is estimated at approximately 100 million documented symptomatic cases, coupled with about 300 million asymptomatic infections[6]. Asia shoulders the greatest burden, accounting for 75% of reported cases, followed by Latin America and Africa[5,6]. From January 1st to November 14th, 2023,

the Bangladesh Ministry of Health and Family Welfare reported 295 042 laboratory-confirmed cases of dengue fever and 1 496 associated deaths, with a case fatality rate of 0.50%[7] (Table 1). Between January 1st and August 20th, 97 860 cases and 476 deaths were recorded[6,7]. In comparison to the preceding five years, there has been a marked rise in case numbers and fatalities. DENV-2 (51.5%) constituted the predominant circulating serotype among 66 serotyped samples in June 2023[6,7].

Currently, dengue fever is endemic in Bangladesh and is a major concern of public health. The DENV can cause outbreaks with high morbidity and mortality. However, no targeted therapeutic regimen is currently available for afflicted cases, consequently, clinical management strategies for comprehensive supportive care are needed. Timely diagnosis and appropriate clinical interventions can decrease morbidity and mortality. The mitigation and control of dengue fever depends on the meticulous management of its vector population[6,7].

Owing to various social and economic factors, a substantial number of immigrants from Bangladesh to other nations and a significant influx of international tourists to Bangladesh heighten the risk of international disease transmission[8]. Similar to the global

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How to cite this article: Uçar M. A public health perspective on dengue in Bangladesh in the twenty-first century. J Acute Dis 2023; 12(6): 255-256.

Article history: Received 25 September 2023; Revision 14 November 2023; Accepted 27 November 2023; Available online 12 December 2023

Table 1. Dengue cases, deaths, and case fatality rate in Bangladesh for 2018, 2019, 2021, 2022 and 2023.

Year	Cases	Deaths	Case fatality rate
2018	10 148	26	0.26%
2019	101 354	164	0.16%
2021	28 429	105	0.37%
2022	62 382	281	0.45%
2023 (as of 14 November)	295 042	1 496	0.50%

Data source: Directorate General of Health Services, Ministry of Health & Family Welfare of Bangladesh (data for 2020 is limited due to COVID-19)[7].

spread of COVID-19, dengue fever could rapidly disseminate across borders[9]. Nations within the Asia Pacific region must remain vigilant against the threat of a dengue fever epidemic.

China's effective endeavors in malaria eradication[10] can be adopted as a blueprint for overcoming Bangladesh's dengue crisis. China's approach revolves around targeting mosquito vectors, addressing the infection source, and protecting vulnerable individuals. Many effective steps should be taken such as the development of novel tools for early detection, management of *Aedes aegypti* and *Aedes albopictus*, fostering community awareness, and bolstering the healthcare system.

Conflict of interest statement

The authors report no conflict of interest.

Funding

This study received no extramural funding.

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