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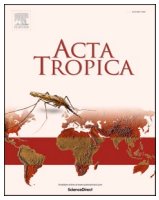

Record dengue deaths in Bangladesh as disease patterns change

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To the Editor,

The worst dengue outbreak to ever strike Bangladesh was in 2023, caused by the DENV-2 strain. The Directorate General of Health Service (DGHS) estimated case fatality rate of 0.53 % in 2023 based on a total of 32,1179 laboratory-confirmed cases and 17,05 associated fatalities. The outbreak has spread to all eight divisions of the nation and displayed unique seasonality as well as an early, dramatic rise in case count, peaking in late June. Along with regional diversity in the epidemic loads, the outbreak has also shown differences in morbidity and death associated with age and gender. The government has stepped up its anti-dengue campaign in response to the crisis, including initiatives to increase public awareness and manage the mosquito population.

The virus known as dengue is spread from person to person by the bite of an infected *Aedes aegypti* or *A. albopictus* mosquito. *A. aegypti* and *A. albopictus* are thought to be the two primary mosquito vectors that spread the dengue virus, which is present in tropical and temperate regions and has the capacity to affect half of the world's population with severe disease (Balestrino et al., 2022). Nonetheless, radiation did not raise the rate of dengue virus transmission in either of the mosquito species; *A. albopictus* showed an increase in DENV transmission at the individual level. Given that the spread and transmission rates of DENV vary from 33 % to 87 %, both species are well-known carriers of this virus (Gonçalves and Melo, 2014). For many years, it has posed a major risk to public health, especially in tropical and subtropical countries, mostly in urban and semi-urban regions like Bangladesh. In Bangladesh, the dengue virus (DENV) was first identified in 1964. In 2000, a case of dengue hemorrhagic fever—which can be fatal—was recorded (Bonna et al., 2023). Bangladesh is home to four different DENV serotypes (DENV-1–4). The number of cases unexpectedly increased in 2022, mostly because of mosquito proliferation brought on by high humidity, prolonged rainy season, and severe rainfall (Sarker, 2021). The dengue outbreak in Bangladesh is the worst it has ever seen, with hospitals overflowing and the death rate steadily growing. The DGHS reported that there were 32,1179 confirmed cases and 1705 confirmed deaths, including 156 children in 2023 in Bangladesh (https://old.dghs.gov.bd/index.php/bd/home/5200-daily-dengue-status-report).

Dengue is most common during June to September in South and Southeast Asia and the *Aedes* mosquito breeds in clean water during these times. The climate, precipitation patterns, and other environmental factors in Bangladesh are conducive to the growth and development of *A. aegypti*. Furthermore, the monsoon (June–September) and post-monsoon (October–November) seasons are when dengue cases are most reported, with September having the greatest frequency in Bangladesh (https://www.reuters.com/pictures/climate-change-drives-bangladeshs-worst-dengue-outbreak-2023-11-14/). In 2000, Bangladesh, a South Asian nation of 165 million people, saw its first dengue outbreak, resulting in 5551 hospital admissions and 93 fatalities. Bangladesh has recently had a string of significant dengue epidemics due to several risk factors. For instance, in 2019 there was the greatest epidemic (August had the highest incidence; (Haider et al., 2023), with 101,354 confirmed cases recorded and 179 fatalities. Further, there was another significant outbreak in 2021 (28,429 cases and 85 fatalities); the COVID-19 pandemic is said to have concealed the full scope of this outbreak. Additionally, 2022 saw the second largest outbreak (October had the highest incidence; (Haider et al., 2023) with 61,732 confirmed cases and 281 fatalities and the greatest yearly death in Bangladesh until the 2023 pandemic (Hossain et al., 2023). Apart from that, the number of infected and dead are also increasing year by year. The fatality rate of this year is 0.53 % which was 0.17 % in 2019 (Table 1). Proper preventative strategies are crucial in Bangladesh to address the dengue outbreak effectively. Numerous risk factors, such as inadequate planning for outbreaks, poor healthcare infrastructure, and low community knowledge of dengue illness, have contributed to the nation's repeated large-scale dengue epidemics. These elements have the potential to cause serious public health catastrophes in Bangladesh if appropriate prevention measures are not put in place (https://old.dghs.gov.bd/index.php/bd/home/5200-daily-dengue-status-report; Hossain et al., 2023; Kayesh et al., 2023; Siddique et al., 2024). Bangladesh was experiencing the worst dengue outbreak in recorded history, with over 32,1179 cases and over 1705 deaths (https://old.dghs.gov.bd/index.php/bd/home/5200-daily-dengue-status-report). These are the confirmed cases report by the Ministry of Heath, Bangladesh. Furthermore, these are the standardized results of laboratory confirmed cases of government and private hospital in different areas of Bangladesh using the PCR, RDT, ELISA, RT-PCR (https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON491; Zaman and Mitra, 2024). During epidemic week 17 (23–29 April 2023), the outbreak began in Dhaka division. By epidemic week 26, which was announced on June 25, 2023, the disease had spread to all eight divisions. Seasonality and the early, sharp increase in frequency are what set this pandemic apart; 63 % of cases and 62 % of deaths were recorded in July 2023 (https://www.who.int/emergencies/disease-outbreak-news/item/2023-DON481).

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