

Dengue Death Rate Higher Among Women than Men in Bangladesh



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Abstract

Bangladesh saw a dengue epidemic in 2023 that resulted in a significant number of illnesses and fatalities throughout the country. The Directorate General of Health Services (DGHS) reports that there were 3,21,179 confirmed cases of dengue from January to December 2023, with a fatality rate of 0.53%. Most cases and fatalities in 2023 were documented from June to December. In Bangladesh, the prevalence of dengue fever is greater in men than in women, but women also die from the disease at a higher rate than in men. Given the atypical seasonality of the epidemic and the sudden spike in cases early on, it is noteworthy that mosquito and potential hotspot densities were at an all-time high throughout the previous years. [*Bangladesh Journal of Infectious Diseases*, June 2024;11(1):79-82]

Keywords: Dengue; Dengue virus; Outbreak; Male and female; Bangladesh

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Introduction

The dengue virus (DENV), which causes dengue diseases, is spread by *Aedes* mosquitoes, which include *Aedes aegypti* and *Aedes albopictus*. More than 100 tropical and subtropical nations in Southeast Asia, Africa, America, and some parts of Europe now have an endemic case of dengue. An estimated 390 million dengue infections and 25,000 fatalities were recorded annually, with 96 million cases presenting clinical symptoms¹. The DENV contains four antigenically different serotypes, namely DENV-1, DENV-2, DENV-3, and DENV-4². Long-term immunity against one serotype and

short-term immunity—which lasts for around six months—against the other three serotypes result after a primary infection. However, subsequent infection with another DENV serotype could induce severe illness with complications leading to dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) owing to antibody-dependent enhancement (ADE) or original antigenic sin¹. Consequently, dengue infection continues to be a significant risk factor for world health. As of right now, there is no FDA-approved drug to treat dengue; instead, treatments consist only of symptomatic care. Dengvaxia, the first licenced dengue vaccine, is not regarded as a safe and suitable vaccine option for dengue due to stringent

constraints surrounding age³. New antiviral medication development is still vital for preventing and managing DENV infection, especially despite advancements in vaccinations and conventional treatments.

Discussion

Bangladesh has also seen a sharp rise in dengue cases, which is consistent with worldwide patterns. Bangladesh has 2.4 million yearly infections and 40 million sick individuals nationwide. The term "Dacca fever" was established in 1964, when the first dengue outbreak in Bangladesh was documented in East Pakistan⁴. Bangladesh saw its first recognized dengue outbreak in 2000, which resulted in 5551 cases with 93 fatalities⁵. Bangladesh has now had an endemic case of dengue since that time. More than 10,000 cases of dengue were first reported in 2018. Notably, one of the worst dengue epidemics in the history of Bangladesh occurred in 2019, with 1,01,354 cases and 164 dengue-related fatalities recorded. There was a growing pattern of dengue epidemics in several nations, including Bangladesh, in 2022. As of December 31, 2022, Bangladesh reported 62,382 cases with 281 dengue-related fatalities, and this epidemic was the third highest since 2000 (Figure I)⁶.

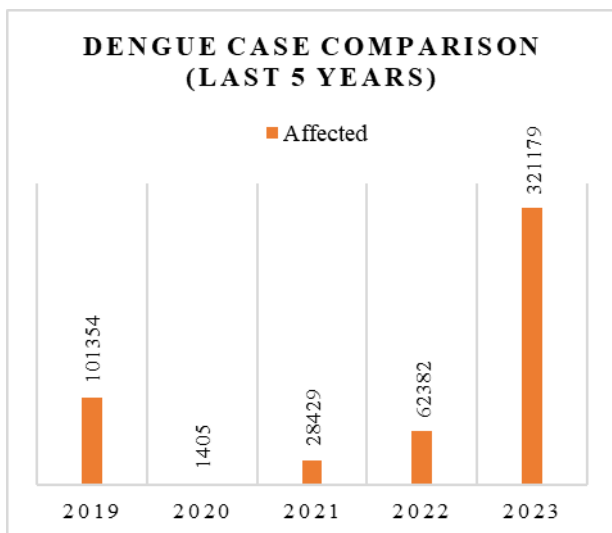


Figure I: Dengue Case Comparison Last Five Years (2019-2023)

Bangladesh experienced the biggest and worst dengue outbreak in 2023. The number of cases and deaths from dengue increased as the outbreak spread throughout the year (Figure II). The outbreak started in April 2023, with 143 cases and two dengue-related deaths. Dengue caused 1705 fatalities and 3,21,179 infections as of December

31, 2022 (Table 1)⁶. Bangladesh is experiencing a dire dengue crisis, with a marked rise in cases and fatalities. The outbreak has been connected to rising temperatures brought on by the climate crisis, which has spurred the disease's ongoing spread. Though recommendations have been made for more comprehensive measures, such as early detection and access to sufficient health care, given the possibility that recurrent infections might worsen the condition, the government and health authorities have been addressing the issue.

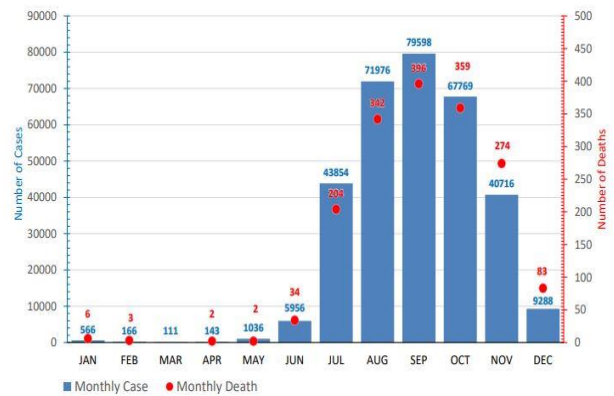


Figure II: Monthly Affected and Death by Dengue in 01/01/2023 to 31/12/2023

Dengue Affected in 2023: Gender Distribution (%)

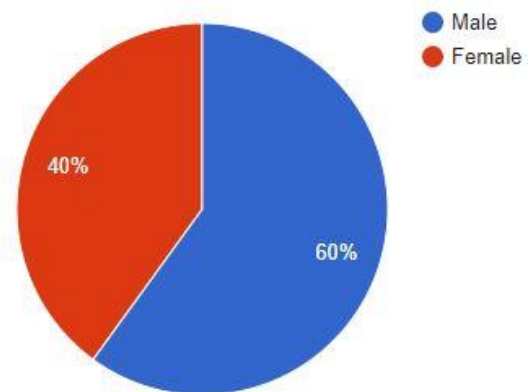


Figure III: Affected and Death by Dengue in 01/01/2023 to 31/12/2023 (Gender distribution in %)

The dengue scenario indicates that while the proportion of male illnesses is larger than that of female infections, the mortality rate for females is higher than that of men in Bangladesh (Figure III and Table 1). The World Health Organisation (WHO) reports that during the present dengue spike in Bangladesh, the case fatality rate (CFR) is greater in females than in males⁷. Likewise,

research published in Tropical Medicine and Health showed that males account for a greater percentage of dengue cases, whereas female fatalities account for a larger proportion of cases⁵. According to the Directorate General of Health Services (DGHS) in Bangladesh, female patients die from dengue fever

at a rate of 58% vs. 42% of male patients, even though there are more instances of the disease among men⁶. These sources constantly show that in Bangladesh, females die at a greater rate than males, even though dengue affects more men.

Table 1: Affected and Death by Dengue in 01/01/2023 to 31/12/2023⁸

Gender	Age Group								
	≤20			21 to 50			≥51		
	Affected	Death	Death Rate	Affected	Death	Death Rate	Affected	Death	Death Rate
Male	58548	129	0.22%	108932	307	0.28%	25130	299	1.19%
Female	34404	139	0.40%	75088	558	0.74%	19077	273	1.43%
Total	92952	268	0.29%	184020	865	0.47%	44207	582	1.31%

Total affected: 321179 and total death: 1705

People of all ages are the main target of the dengue virus in Bangladesh. In 2000, the first pandemic occurred, and the age group with the highest number of cases was 18 to 33 years old. Adults (those over the age of 18) made up over 80% of patients. Seniors and young adults comprised the bulk of cases in the 2018 (15–29; 65%) and 2019 (21–40; 50%) outbreaks. Based on Table 1, there were 92,952 instances (0.29%) of mortality among children aged 20 and under during the 2023 outbreak. Additionally, records for 2023 showed that among adults aged 21 to 50, there were 1,84,020 cases with 865 fatalities (0.47%) and 44,207 cases with 582 deaths (1.31%) among the oldest individuals (≥51 years old). In addition, 139 deaths (0.40%) out of 34404 cases were girls who were 20 years of age or older. In the year 2023, there were 19,077 confirmed cases with 273 deaths (1.43%) for females aged 51 or above, and 75,088 confirmed cases with 558 deaths (0.74%) for women aged 21 to 50 (Table 1). These statistics show that, in Bangladesh, although more men than women have dengue, women die from the disease at a higher rate than men do.

Conclusion

Dengue is an endemic disease with frequent outbreaks and is a serious public health problem in Bangladesh. The climate of Bangladesh is becoming more conducive to the spread of dengue, as well as other factors like flooding, waterlogging, temperature rise, and unusual changes in the nation's traditional seasons. Since 2010, dengue cases appear to correspond with the rainy season, which runs from May to September. With its unique

scope and timing, the dengue outbreak that is now raging in Bangladesh began in April 2023. All eight divisions of the country have been impacted by this outbreak, and hospitals are suffering from a shortage of fluids—a vital component of therapy since dehydration is a common ailment among dengue patients. About 30% of dengue infections in Bangladesh are in children and young adults under the age of 20 years, with younger children being especially susceptible to the virus due to immature immune systems. The dengue epidemic is more common in men than in women, but women also die from the disease at a higher rate in Bangladesh. A serious illness like the flu may be contracted from dengue, a virus spread by mosquito bites.

Abbreviations

DENV: Dengue virus
 DHF: Dengue hemorrhagic fever
 DSS: Dengue shock syndrome
 ADE: Antibody-dependent enhancement
 WHO: World health organisation
 CFR: Case fatality rate

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Conflict of Interest

The authors have no relevant conflicts of interest to declare.

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Contribution to authors:

Miah Roney: Conception and design, Data searched and drafted the manuscript; Mohd Fadhilzil Fasihi Mohd Aluwi: Reviewed,

edited and supervised the work; Both authors reviewed and approved the final manuscript.

Data Availability

Any questions regarding the availability of the study's supporting data should be addressed to the corresponding author, who can provide it upon justifiable request.

Ethics Approval and Consent to Participate

Not applicable.

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