

Dengue situation in Bangladesh: January to early August 2024

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Abstract

Aim: This study aimed to analyze the dengue situation in Bangladesh from January to early August of 2024, focusing on gender and age distribution of cases and deaths, and comparing data within semi-urban/rural and urban areas.

Methods: This descriptive epidemiological study utilized data from the Dengue Dynamic Dashboard for Bangladesh, which includes regularly updated information from hospitals and health centers. Data on demographic details and geographic locations of reported cases and fatalities were collected.

Results: Between January 01 and August 03, 2024, Bangladesh reported 6,751 dengue cases, with males (61%) outnumbering females (39%), especially in the 16-30 years age group. Mortality was slightly higher among females (52%) compared to males (48%), with the highest death toll in the 46-50 age group. Semi-urban/rural areas exhibited greater gender disparities, with males having more cases and females showing higher mortality. These findings highlight significant age and gender-based differences in dengue incidence and outcomes.

Conclusion: The study highlights that males are more frequently infected, while females experience higher mortality. Age and gender disparities, especially in semi-urban and rural areas, emphasize the need for targeted public health interventions and improved healthcare access to reduce the disease's impact.

Keywords: Dengue epidemiology; Dengue endemic in Bangladesh; Gender disparities in dengue; Age-specific dengue infection; Dengue surveillance in Bangladesh; Geographic dengue disparities

1. Introduction

Dengue fever, caused by the dengue virus (DENV 1-4) and transmitted through the bite of *Aedes* mosquitoes, poses a significant public health threat globally, particularly in tropical and subtropical regions like Bangladesh. Bangladesh, due to its proximity to the equator and subtropical climate, provides an ideal environment for the proliferation of *Aedes* mosquitoes, leading to increased dengue transmission rates [1]. The country has been grappling with recurrent dengue outbreaks since 2000, with 2019 marking one of the most severe outbreaks, recording over 100,000 cases and 164 deaths [2]. The situation is exacerbated by factors such as rapid urbanization, population growth, and climate change, which have contributed to a 30-fold increase in dengue cases globally from 1960 to 2010 [3]. The epidemiology of dengue in Bangladesh has shown an epidemiological shift in terms of morbidity and mortality, highlighting the escalating burden of the disease on public health [4].

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This study aimed to provide insights into the dengue situation in Bangladesh from January to early August 2024 by synthesizing existing government pre-analyzed data. As a descriptive epidemiological study, it sought to offer a detailed interpretation of dengue trends, contributing valuable information to enhance understanding and response strategies. The research identified key areas for public health intervention and further research to improve the management and mitigation of dengue endemic and outbreaks in Bangladesh.

2. Material and Methods

This descriptive epidemiological study utilized data from the government's dashboard. The dashboard compiles and presents pre-analyzed data on dengue cases and deaths reported across Bangladesh. The objective was to interpret and discuss this data to understand the dengue situation from January to early August of 2024.

The methodology for this study involved several key steps. Data was accessed from the Dengue Dynamic Dashboard for Bangladesh, which is updated regularly with information from hospitals and health centers across the country. This dashboard provides comprehensive data, including demographic details and geographic locations of reported dengue cases and fatalities. The study then focused on data interpretation, where data from the dashboard were examined to understand trends and patterns in the dengue situation. This process involved analyzing the distribution of cases and deaths by gender and age, as well as comparing data from different types of residential areas.

The interpreted data was subsequently discussed to identify possible reasons behind observed trends and disparities. Considerations included exposure risks, healthcare access, and socio-cultural influences to provide a thorough understanding of the dengue situation.

3. Results and Discussion

Table 1 Age and gender distribution of dengue cases in Bangladesh (January 01 – August 03, 2024)

Age Group	Male	Female	Total
00-05	379	298	677
06-10	249	226	475
11-15	278	218	496
16-20	493	290	783
21-25	567	291	858
26-30	503	298	801
31-35	399	220	619
36-40	306	203	509
41-45	232	148	380
46-50	168	124	292
51-55	152	92	244
56-60	140	81	221
61-65	106	50	156
66-70	69	54	123
71-75	34	14	48
76-80	21	16	37
80+	22	10	32
Grand Total	4,118	2,633	6,751

Table 1 provides a distribution of dengue cases in Bangladesh from January 01 to August 03, 2024, breaking down the data by gender and the total number of cases for each age group. Overall, the total number of reported dengue cases is 6,751, with 4,118 males and 2,633 females. The most affected age groups are those between 16 and 30 years old. Specifically, the 21-25 years age group has the highest number of cases, with 858 reported cases (567 males and 291 females). This is followed closely by the 16-20 years age group with 783 cases (493 males and 290 females) and the 26-30 ages group with 801 cases (503 males and 298 females). These figures suggest that young adults were particularly vulnerable to dengue during this period. On the other hand, the least affected age groups are the elderly, with the 71-75, 76-80, and 80+ age groups reporting the fewest cases—48, 37, and 32 cases, respectively. This trend could be due to a combination of lower exposure risks or underreporting among older populations. The data also reveal consistent gender differences across all age groups, with males consistently outnumbering females in dengue cases. This gender disparity is especially pronounced in the younger adult age groups (16-30 years), where the difference between male and female cases is more significant.

The observed gender disparity in dengue cases may be attributed to several factors. One possible hypothesis is that males are more likely to be exposed to the mosquito vectors responsible for transmitting dengue, such as *Aedes aegypti* and *Aedes albopictus*. This increased exposure could be due to occupational or outdoor activities, as men may spend more time outside in environments where these mosquitoes are prevalent. Additionally, social and cultural norms might influence behavior, leading to differences in the use of protective measures, such as wearing long sleeves or using mosquito repellents. Another consideration could be that males may be more likely to seek medical care and be admitted to hospitals, resulting in a higher reported incidence among males.

The overall distribution highlights that while dengue affects all age groups, there is a notable concentration of cases among young adults, particularly males.

Table 2 Age and gender distribution of dengue-related deaths in Bangladesh (January 01 – August 03, 2024)

Age Group	Male	Female	Total
00-05	01	02	03
06-10	01	04	05
11-15	00	00	00
16-20	05	01	06
21-25	03	01	04
26-30	01	03	04
31-35	03	01	04
36-40	00	01	01
41-45	02	03	05
46-50	04	05	09
51-55	02	01	03
56-60	01	01	02
61-65	01	03	04
66-70	01	01	02
71-75	01	01	02
76-80	01	02	03
80+	01	00	01
Grand Total	28	30	58

Table 2 provides data on the age group distribution of dengue-related deaths in Bangladesh from January 01 to August 03, 2024, breaking down the numbers by gender and totaling the deaths for each age group. The total number of dengue-related deaths is 58, with 28 males and 30 females, indicating a slightly higher number of deaths among females compared to males.

The most affected age group in terms of mortality is the 46-50 age group, which has the highest number of deaths, totaling 09 (04 males and 05 females). This is followed by the 16-20 years age group, with 6 deaths (05 males and 01 female). Other age groups, such as 41-45 and 06-10, also show relatively higher death counts, with 05 deaths each.

In terms of gender distribution across age groups, it is notable that while males generally have higher or comparable numbers of cases, the number of deaths among females is equal to or greater than that of males in several age groups, particularly in the 06-10, 41-45, and 46-50 years ranges. This observation contrasts with the infection data, where males were more frequently affected, suggesting that females who contract dengue may be more likely to suffer severe outcomes. A possible explanation for this discrepancy could be related to differences in health-seeking behaviors between genders. Females might experience delays in accessing healthcare or have less access to timely and adequate medical care compared to males, potentially leading to more severe disease outcomes. Additionally, cultural and socioeconomic factors may influence these disparities. Biological differences, such as variations in immune responses between males and females, could also play a role, with females potentially being more vulnerable to severe outcomes. Furthermore, females might have a higher prevalence of underlying health conditions or comorbidities that could exacerbate the severity of dengue, potentially contributing to the higher number of deaths observed among them.

Interestingly, despite older adults typically being more vulnerable to severe illnesses, the older age groups (66 and above) show lower numbers of deaths from dengue. This discrepancy highlights an unexpected trend in dengue-related mortality and could reflect either a lower incidence of severe dengue in these age groups or differences in reporting or access to healthcare.

The data suggests that while dengue affects a broad age range, certain age groups, such as those in middle age (46-50 years) and young adults (16-20 years), are particularly vulnerable to severe outcomes leading to death.

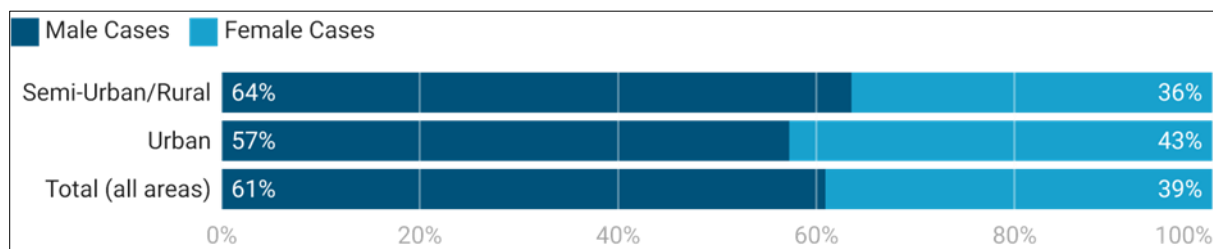


Figure 1 Gender distribution of dengue cases in semi-urban/rural and urban areas of Bangladesh (January 01 – August 03, 2024)

Figure 1 illustrates the distribution of dengue cases by gender across different residential areas in Bangladesh, comparing semi-urban/rural and urban environments, as well as the overall totals. In semi-urban and rural areas, male dengue cases account for 64% of the total, significantly outnumbering female cases, which make up 36%. This suggests that males in these regions are more exposed to conditions that facilitate the spread of dengue, potentially due to outdoor activities or occupational factors. In urban areas, the gender disparity is less pronounced, with males comprising 57% and females 43% of dengue cases. This indicates a closer balance between genders, possibly due to differing urban lifestyles, healthcare access, or reporting practices. When considering all areas combined, the overall trend shows that 61% of the dengue cases are male and 39% are female, underscoring a general male predominance in dengue incidence across the country. This pattern of higher male vulnerability, especially in semi-urban and rural areas, points to the need for gender-sensitive public health strategies that address the specific risks and exposures of different populations within Bangladesh.

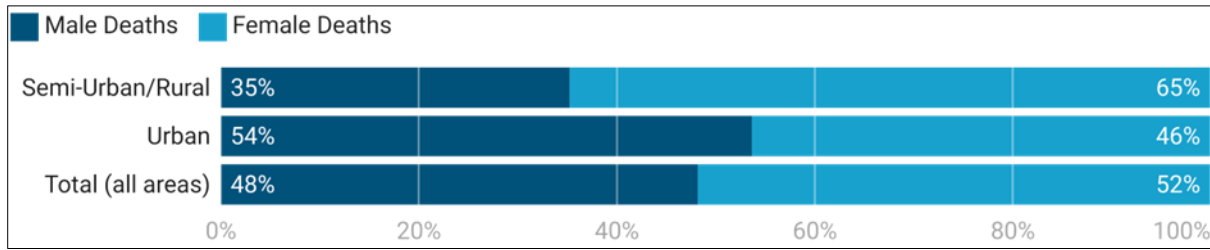


Figure 2 Gender distribution of dengue-related deaths in semi-urban/rural and urban areas of Bangladesh (January 01 – August 03, 2024)

Figure 2 illustrates the distribution of dengue-related deaths by gender across different residential areas in Bangladesh, comparing semi-urban/rural and urban environments, as well as the overall totals. In semi-urban and rural areas, female deaths constitute a significant majority, accounting for 65% of the total dengue-related deaths, while male deaths make up only 35%. This stark contrast suggests that females in these areas are more vulnerable to fatal outcomes from dengue, which could be attributed to various factors such as delayed access to healthcare, lower health literacy, or potential underreporting of male deaths. In urban areas, however, the distribution is more balanced, with male deaths slightly exceeding female deaths at 54% compared to 46%. This closer parity in urban areas could reflect better healthcare access and more uniform disease management across genders. When considering the total deaths across all areas, the data shows that female deaths (52%) slightly surpass male deaths (48%), indicating a broader trend where females are marginally more affected by dengue-related mortality across Bangladesh. This gender-based disparity, particularly pronounced in semi-urban and rural regions, underscores the need for targeted public health interventions that address the specific vulnerabilities of females in these areas to reduce the number of dengue-related deaths.

4. Conclusion

The dengue situation in Bangladesh from January to early August 2024 underscores the persistent public health challenge posed by the disease. The data revealed a concentration of cases among males aged 16 to 30, with the highest number of cases observed in the 21-25 years age group. This gender disparity in the number of cases is likely driven by higher exposure to the *Aedes* mosquitoes due to occupational and outdoor activities, alongside possible cultural factors that influence protective measures. Despite the higher number of cases among males, the study highlights a notable shift in the pattern of fatalities, with females experiencing a slightly higher number of deaths, particularly in semi-urban and rural areas where access to healthcare and timely medical intervention may be limited. These gender-based differences in both the number of cases and fatalities point to the need for targeted interventions that consider the specific vulnerabilities of each group. Furthermore, while the older population showed lower numbers of cases and deaths, this could be due to underreporting or reduced exposure, necessitating more nuanced research into their risk factors. Overall, these findings emphasize the importance of addressing the structural and social determinants of health that influence dengue transmission and outcomes in Bangladesh, advocating for gender-sensitive public health strategies and enhanced healthcare accessibility, particularly in semi-urban and rural regions. Continued surveillance, timely reporting, and robust preventive measures will be crucial for managing dengue endemicity and mitigating future outbreaks effectively.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there are no conflicts of interest.

Statement of ethical approval

Ethical considerations were carefully adhered to, as the data used in this study was publicly available and anonymized, ensuring the privacy and confidentiality of individuals. Since the study involved secondary data analysis of publicly

accessible datasets, no formal ethical approval was required. The study followed ethical guidelines for the responsible use of data to enhance public health understanding and interventions.

Statement of informed consent

Informed consent was not applicable for this study as it involved the use of secondary data from publicly available sources. The data was anonymized and did not include personally identifiable information, ensuring that individual privacy was maintained throughout the research.

References

- [1] Bhowmik KK, Ferdous J, Baral PK, Islam MS. Recent outbreak of dengue in Bangladesh: A threat to public health. *Health Science Reports* [Internet]. 2023 Apr 1; 6(4). Available from: <https://doi.org/10.1002/hsr2.1210>
- [2] Mahmood R, Benzadid MdS, Weston S, Hossain A, Ahmed T, Mitra DK, et al. Dengue outbreak 2019: clinical and laboratory profiles of dengue virus infection in Dhaka city. *Heliyon* [Internet]. 2021 Jun 1; 7(6):e07183. Available from: <https://doi.org/10.1016/j.heliyon.2021.e07183>
- [3] Islam MT, Rahman M, Sadia FJ. Outbreak of dengue amid the COVID-19 pandemic: An emerged crisis for Bangladesh. *Asia Pacific Journal of Public Health* [Internet]. 2022 Jan 11; 34(4):467–8. Available from: <https://doi.org/10.1177/10105395211072841>
- [4] Mutsuddy P, Jhora ST, Shamsuzzaman AKM, Kaiser SMG, Khan MNA. Dengue Situation in Bangladesh: An Epidemiological Shift in terms of Morbidity and Mortality. *Canadian Journal of Infectious Diseases and Medical Microbiology* [Internet]. 2019 Mar 10; 2019:1–12. Available from: <https://doi.org/10.1155/2019/3516284>