THE PLANET

Original Article

Spectrum of Dengue Manifestations: A Cross-Sectional Study Among Adult Patients in a Teaching Hospital (100 Cases)

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ARTICLE INFO

Received: 18 May 2026
Accepted: 23 May 2026
Published Online: 26 May 2026

DOI: 10.5281/zenodo.20387643

Volume: 9, Number: 3, Page: 228-232

e-ISSN: 2789-5912
ISSN: 2617-0817

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ABSTRACT

Background: Dengue fever is an emerging mosquito-borne viral infection presenting with a wide spectrum of clinical manifestations from mild febrile illness to severe life-threatening complications. **Objective:** To assess the clinical spectrum and demographic characteristics of adult dengue patients admitted to a teaching hospital. **Methods & Materials:** A cross-sectional study was conducted among 100 serologically confirmed adult dengue patients. Data on demographics, symptoms, warning signs, and complications were collected and analyzed descriptively. **Results:** Most patients were aged 26–35 years (40%), and males comprised 53%. Fever (90%), headache (81%), retro-orbital pain (60%), and nausea/vomiting (44%) were common. Myalgia and arthralgia occurred in 38% and 26%, respectively. Bleeding manifestations were present in 20% of cases, and severe signs such as shortness of breath (4%), altered consciousness (2%), and seizures (3%) were uncommon. **Conclusion:** The majority of dengue patients presented with classic symptoms, while a smaller proportion developed warning signs or severe manifestations. Early recognition and monitoring remain essential to reduce complications.

Keywords: *Dengue, severe dengue, dengue virus (DENV), DENV serotypes, epidemiology, global burden, clinical features, pathogenesis, diagnosis, laboratory findings, management, tropical infectious diseases, risk factors, disease severity, prevention and control.*

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INTRODUCTION

Dengue fever is a major global public health problem caused by the dengue virus (DENV serotypes 1–4), which is transmitted primarily by the mosquito Aedes aegypti. The World Health Organization (WHO) estimates that nearly 390 million dengue infections occur annually, of which about 96 million manifest clinically and require varying degrees of medical attention.[1] Over the last few decades, dengue has expanded rapidly across tropical and subtropical regions, becoming endemic in more than 100 countries and placing nearly half of the world's population at risk.[2] This escalating global burden highlights the need for continuous surveillance and deeper understanding of its clinical patterns. Clinically, dengue infection presents with a remarkably wide spectrum. Individuals may remain completely asymptomatic or develop classical dengue fever (DF), characterized by acute febrile illness. A proportion of patients progress to more severe disease forms, such as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS), which are associated with substantial morbidity and mortality.[3] Typical manifestations of dengue infection include high-grade fever, severe headache, retro-orbital pain, myalgia and arthralgia, generalized weakness, and a variety of skin rashes. Many patients also report abdominal pain, nausea, vomiting, and varying degrees of bleeding manifestations such as petechiae, gum bleeding, or gastrointestinal hemorrhage.[4] Severe dengue is distinguished by plasma leakage leading to hemoconcentration, shock, and the potential for multiorgan involvement including hepatic dysfunction, myocarditis, acute kidney injury and central nervous system complications.[5] In Bangladesh, dengue has emerged as a significant and rapidly evolving public health concern. The country has experienced recurrent seasonal outbreaks, particularly during the monsoon and post-monsoon periods, with rising numbers of hospitalized cases and increased mortality in recent years.[6] Although dengue was historically more common among children, recent epidemiological trends reveal a notable shift toward higher incidence among adults. Urbanization, environmental changes, and vector proliferation have contributed to widespread transmission across major cities, as well as previously less-affected regions.[7] Clinical patterns of dengue in Bangladeshi adults may vary by region and season, and local data are essential for understanding disease behavior in specific populations. Recognition of the diverse clinical presentations of dengue is essential for timely diagnosis, risk stratification and proper management. Early identification of warning signs such as persistent vomiting, severe abdominal pain, mucosal bleeding, hepatomegaly, lethargy, and rising hematocrit with decreasing platelet count plays a crucial role in preventing progression to severe disease. Because no specific antiviral therapy exists for dengue, supportive care remains the cornerstone of management. This includes careful fluid therapy monitoring for complications and early management of shock or bleeding tendencies. Given the shifting epidemiology and evolving clinical trends in Bangladesh, further research is needed to explore demographic profiles common presenting features and factors associated with complications among adult dengue patients. Understanding these patterns will help clinicians identify high-risk patients at an earlier stage optimize clinical decision-making and improve patient outcomes. Therefore, this study aims to assess the demographic characteristics and clinical manifestations of adult dengue patients admitted to a teaching hospital. The findings are expected to contribute to improved clinical recognition, early detection of severe cases and better resource planning during seasonal outbreaks.

METHODS & MATERIALS

This cross-sectional descriptive study was conducted in the Department of Medicine, Dhaka National Medical College, Dhaka, Bangladesh from January to December 2024. The objective of the study was to assess the demographic characteristics and clinical manifestations of adult patients diagnosed with dengue infection. A total of 100 participants were included using a consecutive sampling technique. All adult patients aged 18 years and above presenting

with symptoms suggestive of dengue and confirmed by laboratory testing were enrolled after obtaining verbal and written informed consent.

Inclusion criteria consisted of patients of either sex, aged 18 years or above, with serologically confirmed dengue infection based on nonstructural protein-1 (NS1) antigen positivity and/or dengue-specific IgM antibody detection by ELISA.

Exclusion criteria included patients with inconclusive serological results, those with alternative diagnoses explaining their symptoms and individuals who did not provide consent or had incomplete clinical data.

A structured and pre-tested data collection form was used to record information from each participant. The questionnaire consisted of four main components: demographic profile, clinical presentation, bleeding manifestations and comorbid conditions. Demographic data included age sex and occupation. Clinical manifestations documented included fever, headache, retro-orbital pain, myalgia, arthralgia, nausea or vomiting, abdominal pain, diarrhea and skin rash. Warning signs and severe features such as shortness of breath, altered consciousness and seizures were also recorded. Bleeding tendencies such as gum bleeding, melena, epistaxis, hematemesis and menorrhagia were systematically assessed. Past medical history of hypertension, diabetes mellitus, chronic kidney disease and other relevant comorbidities was also noted.

All patients were evaluated by attending physicians, and findings were recorded at admission and during the course of hospitalization. Routine laboratory investigations were performed as part of standard care, including complete blood count, hematocrit, liver function tests and renal function tests. However, this study focused primarily on clinical manifestations rather than laboratory parameters. All patients received management according to the WHO dengue management guidelines and hospital protocols.

Data were collected manually and then entered into a spreadsheet for processing. Descriptive statistical methods were used to summarize the findings. Categorical variables were expressed as frequencies and percentages. No inferential statistical test was applied as the primary objective was to describe the spectrum of clinical features rather than test hypotheses or determine associations.

Ethical approval for the study was obtained from the institutional ethics review committee prior to data collection. Patient confidentiality was maintained throughout the study. All identifying information was removed during data entry and analysis to ensure anonymity. The study followed the ethical principles outlined in the Declaration of Helsinki.

This methodology allowed for systematic and comprehensive assessment of the clinical spectrum of dengue infection in adult patients, providing valuable insight into common symptoms, demographic patterns and severity indicators within the hospital setting.

Analysis: All collected data were checked manually for completeness and consistency at the end of each day of collection. After verification, the data were entered into a spreadsheet (Microsoft Excel) and analyzed using descriptive statistical methods. Since the aim of the study was to describe the demographic characteristics and clinical manifestations of dengue among adult patients, emphasis was placed on summarizing the variables through frequencies, percentages and proportional distribution.

RESULTS

A total of 100 adult patients with confirmed dengue infection were included in the study. The age of the patients ranged from 15 to 80 years. The majority belonged to the 26–35-year age group, comprising 40% of the sample, followed by 26% in the 15–25-year group and 17% in the 36–45-year group. Smaller proportions were noted in the 46–55-year (6%), 56–65-year (10%), and 66–80-year (1%) age groups. Males accounted for 53% of cases, while females constituted 47% (*Table I* & *II*).

Table I
Distribution by Age (*n* = 100).

Age Group (years)	n	%
15–25	26	26%
26–35	40	40%
36–45	17	17%
46–55	6	6%
56–65	10	10%
66–80	1	1%

Table II
Sex Distribution.

Sex	n	%
Male	53	53%
Female	47	47%

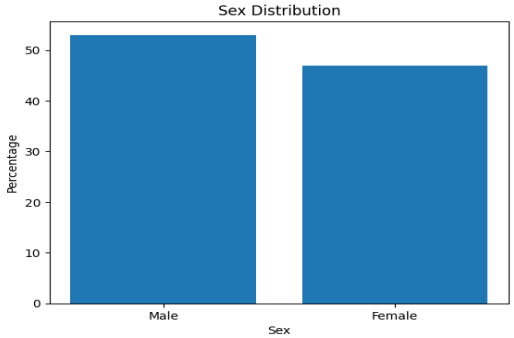

Figure 1 Bar diagram of sex distribution.

Figure 1 show the sex distribution among study participants Regarding occupation, housewives (27%) and service holders (24%) formed the largest groups. Students accounted for 23%, while unemployed individuals represented 11%, day laborers 9%, and teachers 6% (*Table III*).

Table III
Occupation.

Occupation	n	%
Housewife	27	27%
Day labour	9	9%
Student	23	23%
Service holder	24	24%
Teacher	6	6%
Unemployed	11	11%

Fever was the most common presenting feature and was present in 90% of patients. Headache was also frequent, affecting 81%. Retro-orbital pain was reported by 60%, whereas myalgia occurred in 38% of patients. Arthralgia was less common, present in 26%. Gastrointestinal symptoms were prominent, with 44% reporting nausea or vomiting, 32% reporting abdominal pain and 31% experiencing loose motion or diarrhea. Cutaneous manifestations such as rash were noted in 30% of patients (*Table IV*).

Table IV
Clinical Manifestations.

Symptom	Yes (n)	%	No (n)	%
Fever	90	90%	10	10%
Headache	81	81%	19	19%
Retro-orbital pain	60	60%	40	40%
Myalgia	38	38%	62	62%
Arthralgia	26	26%	74	74%
Nausea/vomiting	44	44%	56	56%
Abdominal pain	32	32%	68	68%
Diarrhea	31	31%	69	69%
Rash	30	30%	70	70%

Bleeding manifestations were observed in 20% of the study population. The most common types included menorrhagia (10%), followed by gum bleeding (5%) and melena (5%). No cases of epistaxis or hematemesis were recorded. The remaining 80% of patients had no bleeding symptoms (*Table V*).

Table V
Bleeding Manifestations.

Type	n	%
Gum bleeding	5	5%
Nosebleed	0	0%
Melena	5	5%
Hematemesis	0	0%
Menorrhagia	10	10%
None	80	80%
Total patients: 100		

Severe manifestations were relatively uncommon. Shortness of breath was observed in 4% of patients, altered consciousness in 2%, and seizures in 3%. These findings indicate that only a small proportion of cases presented with complications suggestive of severe dengue (*Table VI*).

Table VI
Severe Symptoms.

Symptom	Yes	No	% Yes	% No
Shortness of breath	4	96	4%	96%
Altered consciousness	2	98	2%	98%
Seizures	3	97	3%	97%

Comorbid conditions were present in a minority of patients. Hypertension was noted in 6 individuals, diabetes in 4, chronic kidney disease in 2 and other comorbidities in 3 patients (*Table VII*).

Table VII
Comorbidities.

Comorbidity	n	%
Hypertension	6	6%
Diabetes	4	4%
CKD	2	2%
Others	3	3%
Total patients: 100		

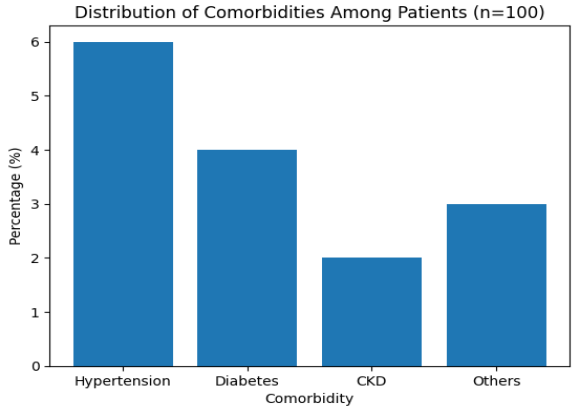

Figure 2 Distribution of Comorbidities Among Study Participants (*n* = 100).

Figure 2 shows the distribution of comorbidities among study participants.

DISCUSSION

This cross-sectional study evaluated the demographic and clinical characteristics of 100 adult dengue patients admitted to a teaching hospital and provides insights consistent with the epidemiological patterns observed in South Asian countries. The predominance of young adults, particularly those between 26 and 35 years of age reflects the well-documented trend that dengue disproportionately affects individuals in the most economically active age groups. This distribution may be attributable to increased outdoor activity, occupational exposure, and greater mobility all of which increase the likelihood of encountering Aedes mosquitoes the primary vectors of dengue virus.[8] Similar age-related patterns have been observed in previous surveillance studies from Bangladesh, India and Sri Lanka. A slight male predominance (53%) was noted which mirrors findings from several dengue-endemic regions.[9] This imbalance may stem from behavioral and social factors including a higher likelihood among men to work outdoors or engage in activities that expose them to mosquito bites. Additionally, cultural practices in some South Asian settings may lead males to seek hospital care more readily potentially contributing to the observed distribution. Regarding clinical presentation, fever was nearly universal (90%), followed by headache (81%). These features align closely with classical dengue symptoms described in WHO guidelines and multiple regional studies.[10] Retro-orbital pain, identified in 60% of patients is a hallmark clinical feature of dengue and falls within the range reported across South Asia, where frequencies vary between 40% and 70%.[11] Myalgia (38%) and arthralgia (26%) were less prevalent in this study than in some reports where musculoskeletal symptoms exceed 50%.[12] Such variability may reflect differences in dengue virus serotypes host immune responses or population-specific characteristics. Gastrointestinal manifestations were prominent among the study population. Nausea and vomiting (44%), abdominal pain (32%), and diarrhea (31%) were commonly reported. Increasing evidence suggests that gastrointestinal symptoms are becoming more frequently recognized in dengue and may serve as early warning indicators for progression to severe disease.[13] The high frequency of these symptoms in this cohort highlights the importance of vigilant clinical assessment, particularly in regions where dengue outbreaks are recurrent. Bleeding tendencies were observed in 20% of patients, consistent with earlier Asian studies reporting mild hemorrhagic manifestations in 15-30% of dengue cases.[14] Menorrhagia was the most common bleeding complaint among female patients, underscoring the need for clinicians to consider gender-specific presentations. Overall, most bleeding manifestations were mild, aligning with expectations for non-severe dengue cases. Severe clinical manifestations such as shortness of breath (4%), altered consciousness (2%) and seizures (3%) were relatively uncommon. This low incidence aligns with global data indicating that only a minority of dengue patients develop severe complications requiring intensive care.[15] These findings reaffirm that timely diagnosis, adequate hydration and close monitoring can prevent progression to severe dengue and reduce mortality. Comorbid conditions, including hypertension and diabetes were documented among a subset of patients. Chronic diseases have been identified as risk factors for severe dengue, potentially due to altered immune responses or endothelial dysfunction.[16] Although this study did not analyze severity outcomes based on comorbidity status, the presence of such conditions in dengue patients underscores the importance of individualized risk assessment during clinical evaluation. Overall, the present study demonstrates that most adult dengue patients exhibited classical clinical features whereas a smaller proportion developed warning signs or severe manifestations. The findings reinforce the importance of early recognition, appropriate triage, and supportive management to minimize morbidity and mortality. Moreover, understanding local epidemiological and clinical trends can help refine hospital preparedness, improve case detection and support public health planning during dengue outbreaks.

CONCLUSION

The study highlights that dengue in adults commonly presents with fever, headache, retro-orbital pain, and gastrointestinal symptoms. Although most patients had non-severe illness, bleeding and severe neurological or respiratory symptoms occurred in a notable minority. Strengthening early diagnosis, clinical

monitoring, and awareness can significantly improve outcomes.

FUNDING

This study received no external funding and was conducted using institutional resources of the Department of Medicine, Dhaka National Medical College.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this study.

ACKNOWLEDGMENT

The authors express their sincere gratitude to all patients who participated in the study and to the physicians, nurses, and staff of the Department of Medicine, Dhaka National Medical College, for their valuable support and cooperation during data collection and patient management

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