

Clinical Profile of Dengue Fever Patients: A Bangladeshi Perspective

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Abstract

Introduction: The clinical presentation of dengue fever had been observed to change with time since its first outbreak in 2000 in Bangladesh. Recently, another outbreak of dengue has been observed in Bangladesh. The present study was conducted to observe the clinical profile of dengue fever patients in recent years.

Aim of the study: The aim of the study was to observe the clinical profile of patients affected by dengue fever in the recent years.

Methods: This retrospective cross-sectional study was conducted at the Department of Medicine, Mymensingh Medical College Hospital, Mymensingh, Bangladesh. The study duration was 6 months, from June 2021 to December 2021. During this period, records from a total of 80 cases of dengue were admitted in the study.

Result: Among the total 80 dengue patients, majority (37.50%) had been between the ages of 21-30 years. The mean age of the participants was 26.21 ± 3.6 years, with a standard deviation of 3.6 years. The male: female ratio was 1.76:1. Among the presenting clinical characteristics, all 80 patients had high fever, while 62.50% had headache, 70% had nausea and vomiting, 41.25% had abdominal pain, 38.75% had retro-orbital pain and 37.50% had anorexia. Among the presenting signs and symptoms of the participants, tourniquet test was positive for the 87.50% of cases. 25% of the participants had hypotension, 22.50% had abnormal pulse rate. The mean platelet value had the most significant drop at $1,06,425.49$, compared to the normal range of $1,50,000-4,50,000$. At the time of admission, only 1 patient had been in critical condition, while the remaining 79 had been in stable condition. Among the participants, half had stayed at the hospital for 6-8 days.

Conclusion: The study observed that dengue prevalence is higher among active adult males, and fever was common among all participants. Nausea, vomiting, headache, abdominal pain, anorexia was some of the more common characteristics of dengue patients. Mean pulse and blood pressure was within normal range, and mean platelet count was below normal range, but had not dropped significantly. Only one patient of the present study was of critical condition, while all others had been of stable condition.

Keywords: Dengue, Viral, Platelet, Fever

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I. Introduction

Dengue fever (DF) is a viral disease spread by arthropods that affects approximately 100 million people globally.(1) ,(2) Bangladesh is a country that suffers the most from dengue practically every year.(3) The first official dengue outbreak was reported in 2000, with a total of 5551 cases and 93 deaths.(4) Several occurrences of the outbreak have been observed since then. According to estimates, there were 2430 documented dengue cases in 2001, 6232 in 2002, 3934 in 2004, 3162 in 2015, 6060 in 2016, and 10,148 in 2017 (in 2018).(3) The country experienced its greatest outbreak in history in 2019, with over 100,000 reported illnesses and 120 deaths.(5) During the pandemic in 2020, the Directorate General of Health in Bangladesh recorded a total of 1026 confirmed cases.(6) Dengue infection causes clinical symptoms ranging from moderate febrile fever (DF) to severe

hemorrhagic disease (DHF) and Dengue Shock Syndrome (DSS).(5,7) Fever, arthralgia, myalgia, retro-orbital discomfort, and rash are common symptoms of classic dengue. Dengue cases can also have hemorrhagic manifestations (e.g., subconjunctival hemorrhage, petechiae, epistaxis, and so on) with or without shock.(5) Respiratory problems, gastrointestinal difficulties, a low platelet count, and abnormal liver function tests are also common signs of dengue today.(8) A temporal variation in the frequency of different clinical manifestations can be noted over the decade since the first outbreak.(1,9–11) For example the outbreak of 2000 and 2002 were characterized by high-grade fever with typical purpuric rash, break-bone body ache, and thrombocytopenia,(10,12) whereas in 2010 and 2018 outbreaks, predominant manifestations were fever, gastrointestinal symptoms and bleeding manifestation with normal platelet counts.(9) Frequent transitions to plasma leakage leading to respiratory distress syndrome and organ dysfunction were more commonly observed and were considered a predicting factor of higher case fatality.(9,10) A few other reports agreed with the preceding result.(13,14) Severe dengue can become a major health problem and cause mortality. As such, any possible clinical factors that can help identify patients at risk of dengue fever can be of great help. Dengue is an emerging public health problem in Bangladesh. From the clinical point of view, identification of shifts in the clinical pattern can greatly improve case-finding and clinical management. The present study was conducted with the aim of observing the clinical profile of admitted dengue fever.

II. Objective

- To observe the clinical profile of dengue fever patients
- To observe the hospital stay duration among dengue fever patients

III. Methods

This retrospective cross-sectional study was conducted at the Department of Medicine, Mymensingh Medical College Hospital, Mymensingh, Bangladesh. The study duration was 7 months, from June 2021 to December 2021. During this period, records from a total of 80 cases of dengue were admitted in the study. The records were collected from the hospital archive after gaining proper permission and consent from the ethical review committee of the study hospital. All necessary variables needed for the study were collected using a pre-made questionnaire, and collected data was entered into an SPSS database. Some inclusion and exclusion criteria were followed for sample selection. All collected data was analyzed using SPSS software V.25.

Inclusion Criteria

- NS1 Positive patients
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Incomplete data
- Unable to answer the criteria question.
- Patients with history of other chronic diseases.

IV. Results

Table 1: Age distribution of the present study participants (n=80)

Age	n	%
<10	1	1.25%
11-20	25	31.25%
21-30	30	37.50%
31-40	15	18.75%
41-50	6	7.50%
51-60	2	2.50%
>50	3	3.75%
Mean ± SD	26.21 ± 3.6	
Range	6-64	

Among the total 80 dengue patients, majority (37.50%) had been between the ages of 21-30 years, while 31.25% had been from the age group of 11-20 years. The mean age of the participants was 26.21 years, with a standard deviation of 3.6 years. The age range of the participants was 6 years to 64 years. Only 1 patient was under 10 years of age, and about 3.75% were over 50 years of age.

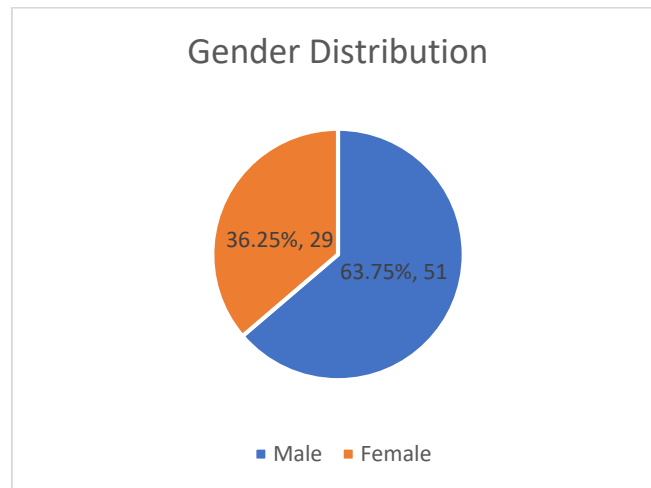


Figure 1: Gender distribution of the participants (n=80)

Among the participants, higher male prevalence was observed, with 63.75% male and 36.25% female. The male: female ratio was 1.76:1

Table 2: Distribution of the participants by presenting clinical characteristics (n=80)

Clinical Characteristics	n	%
Fever	80	100.00%
Shivering	10	12.50%
Sweating	18	22.50%
Headache	50	62.50%
Redness of eye	10	12.50%
Nausea and Vomiting	56	70.00%
Diarrhea	21	26.25%
Abdominal Pain	33	41.25%
Anorexia	30	37.50%
Retro-Orbital Pain	31	38.75%

Among the presenting clinical characteristics, all 80 patients had high fever, while 62.50% had headache, 70% had nausea and vomiting, 41.25% had abdominal pain, 38.75% had retro-orbital pain and 37.50% had anorexia. Diarrhea was also observed in 26.25% of the participants. Some of the less common clinical presentations were redness of the eye (12.50%), shivering (12.50%) and sweating (22.50%)

Table 3: Distribution of participants by signs and symptoms of dengue (n=80)

Signs of Dengue	n	%
Hypotension	20	25.00%
Abnormal Pulse rate	18	22.50%
Skin Rash	4	5.00%
Dehydration	6	7.50%
Anemia	4	5.00%
Tourniquet Test Positive	70	87.50%
Jaundice	12	15.00%
Hepatomegaly	1	1.25%

Among the presenting signs and symptoms of the participants, tourniquet test positive was the most common finding, observed in 87.50% of cases. 25% of the participants had hypotension, 22.50% had abnormal pulse rate, 15% had jaundice, and 7.50% had dehydration. Among the less common symptoms, anemia, skin rash and hepatomegaly were also observed in the present study participants.

Table 4: Mean operational findings of the participants (n=80)

Variables	Mean	SD	Normal Range
Pulse/min	80.1	11	60-100
Systolic BP	105.31	15	<120
Diastolic BP	68	12	<80
Respiratory rate/min	17.24	4	12-16
Temperature (F°)	101.1	1.2	97-99
Platelet	1,06,425.49	2782.91	1,50,000-4,50,000
WBC	5437.84	320.48	4500-11,000
Hb (g/dL)	13.56	3.28	14.2-16.8
RBS (mmol/L)	6.84	1.52	<7.8

Among the participants mean operational findings, pulse per min, systolic BP and diastolic BP was within normal range. Mean respiratory rate per min was higher (17.24) in our study participants compared to the normal range. Mean temperature of the participants was higher compared to normal, and mean white blood count (WBC) was within the normal range. The mean platelet value had the most significant drop at 1,06,425.49, compared to the normal range of 1,50,000-4,50,000. Mean hemoglobin (Hb) was also lower compared to the normal range, but random blood sugar test (RBS) was within normal range.

Table 5: Distribution of participants on admission findings (n=80)

On Admission Findings	n	%
Critical Condition	1	1.25%
Stable Condition	79	98.75%
Blood Group		
A+	30	37.50%
B+	36	45.00%
AB+	0	0.00%
O+	13	16.25%
A-	0	0.00%
B-	1	1.25%
AB-	0	0.00%
O-	0	0.00%

At the time of admission, only 1 patient had been in critical condition, while the remaining 79 had been in stable condition. Blood group analysis of the participants revealed that majority of the participants (45%) had been from the B+ blood group, while 37.50% had A+ blood group, and 16.25% had O+ blood group. Only 1 patient (1.25%) had been from the negative blood group, having O- negative blood.

Table 6: distribution of participants by duration of hospital stays before discharge (n=80)

Hospital Stay	n	%
01-05 days	9	11.25%
06-08 days	40	50.00%
09-11 days	27	33.75%
≥12 days	4	5.00%

Among the participants, half had stayed at the hospital for 6-8 days, while 33.75% had hospital stay for 9-11 days. 11.25% had recovered and left the hospital within 1-5 days, and only 5% of the participants had taken over 11 days to recover from their dengue fever.

V. Discussion

The present study was concluded with the retrospective data of a total 80 dengue patients. Dengue fever, caused by the dengue virus, was relatively uncommon in Bangladesh before the first outbreak occurred in 2000, and recently, there has been another sharp rise in the incidence of Dengue among Bangladeshi population. In the present study, the mean age of the participants was 26.71 years, with majority (37.50%) being from the age group of 21-30 years. It was observed that majority of the dengue affected population had been under 30 years of age. This high prevalence of young adults among the study participants was similar to the findings of other studies, that observed higher severity of dengue among the younger patients.(15,16) Some studies even observed patients of much younger age, especially children, being adversely affected by dengue fever.(17–19) Among the present study participants, over half (63.75%) the participants had been male, and only 36.25% were female. This high male prevalence among dengue patients is not uncommon, and can be observed in multiple other studies as well.(20–22) This high prevalence of male population among the dengue affected could be due to the higher amount of social and outdoor activities performed by the male population in a daily basis compared to their female counterparts. Some studies have reported the male gender to be a risk factor for dengue.(23,24) Among the observable clinical characteristics, fever was present in all 80 participants, while nausea and vomiting had the second highest prevalence at 70%. Fever is a primary symptom of dengue fever, and has been observed in many dengue related studies, along with body ache, nausea, vomiting, weakness etc.(15,25–27) The present study observed nausea, vomiting and headache to have the highest prevalence after fever. A positive tourniquet test has been recognized by WHO as a method of defining dengue.(28) Although the tourniquet test has low sensitivity, resulting in false negatives, a positive tourniquet test assures the diagnosis of dengue, and makes it possible that alternative diagnosis methods are not needed.(29,30) Among the present study participants, 87.50% of cases had tested positive for the tourniquet test, which was quite high compared to other studies with dengue patients.(29,31,32) The mentioned studies attest to the low sensitivity rate of tourniquet testing, but the present study findings had much better outcomes in terms of tourniquet test. The incidence of anemia among the present study participants was 5%, which was much lower than other studies.(33) However, these studies showed an association between anemia and severe dengue fever, whereas majority of the present study participants had been of stable condition. The mean values of pulse and blood pressure were within the normal range of the participants. As all participants had fever, the mean temperature was higher than the normal range, while the mean platelet value had significant drop among participants. However, the mean platelet was not extremely low, also due to the fact that severe dengue cases were almost nonexistent in the present study. It was observed that all but one of the patients had stable conditions. Blood group analysis of the patients showed that majority (45%) had B+ blood group, while only one patient had negative blood group, and all others had positive blood group. This is understandable as negative blood groups are extremely rare all over the world. 37.50% of the participants had A+ blood group, while only 16.25% had O+ blood group. In Bangladesh, among Rh positive patients, the highest prevalence is in B group, followed by O, A and AB.(34) This is also reflected among the findings of present study. Hospital stay duration was 6-8 days for majority of the population, while 11.25% had recovered and left the hospital within 1-5 days. This is also suggestive of the fact that majority of the present study participants had non-severe dengue. Studies have observed a negative correlation between hospital stay and platelet count.(35)

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

VI. Conclusion

The study observed that dengue prevalence is higher among active adult males, and fever was common among all participants. Nausea, vomiting, headache, abdominal pain, anorexia was some of the more common characteristics of dengue patients. Mean pulse and blood pressure was within normal range, and mean platelet count had been below normal range, but had not dropped significantly. Only one patient of the present study had been of critical condition, while all others had been of stable condition.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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