

Clinical and Laboratory Profile of Dengue Fever in Adult Patients: A Prospective Observational Study

Asif Equbal¹, Kundan Kumar², Ajay Kumar Sinha³, Ayush Prakash⁴, Abhishek Kumar⁵

¹Senior Resident, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India

²Senior Resident, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India

³Professor and HOD, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India

⁵PG Student, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India

⁶PG Student, Department of Medicine, Nalanda Medical College and Hospital, Patna, Bihar, India

Received: 08-02-2026 / Revised: 23-03-2026 / Accepted: 30-04-2026

Corresponding Author: Dr. Kundan Kumar

Conflict of interest: Nil

Abstract:

Background: Dengue fever is a quickly spreading viral illness transmitted by mosquitos that poses a substantial public health risk in India. It causes a wide range of clinical symptoms, from mild febrile sickness to severe sequelae including dengue hemorrhagic fever and dengue shock syndrome. Early diagnosis and management are difficult since there is no particular antiviral medication, and the clinical presentation is varied.

Aim: To assess the clinical and laboratory characteristics of dengue fever in adult patients admitted to a tertiary care hospital.

Method: This six-month prospective observational research was undertaken at the Department of Medicine at Nalanda Medical College and Hospital in Patna, Bihar. We enrolled 105 adult patients (≥ 12 years) with serologically confirmed dengue illness. Detailed demographic information, clinical symptoms, and laboratory data were collected and analyzed using descriptive statistical techniques.

Result: The majority of patients (62.9%) were between the ages of 21 and 40, with 73.3% being men. Fever was present in 100% of the patients, followed by headache (94.8%) and myalgia (90.7%). Other common clinical findings were conjunctival suffusion (39.4%), skin rash (37.9%), stomach discomfort (24.5%), pleural effusion (20%), and ascites (16.3%). Thrombocytopenia was the most prevalent hematological disorder, occurring in 69.5% of patients. Elevated liver transaminases were detected in 88.5% of patients, whereas leucopenia and increased hematocrit were detected in 20.2% and 20.8%, respectively.

Conclusion: Dengue fever primarily affects young adult males and is distinguished by fever, headache, myalgia, thrombocytopenia, and hepatic involvement. Early detection and frequent monitoring of clinical and laboratory indicators are critical to avoiding complications and lowering morbidity and mortality.

Keywords: Dengue Fever, Clinical Profile, Laboratory Profile, Thrombocytopenia, Adult Patients, Prospective Observational Study.

DOI: 10.25258/ijpqa.17.4.46

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

The term "dengue" is derived from the Swahili phrase kadinga pepo, which means "cramp-like seizure". Benjamin Rush in Philadelphia reported the first clinical case of dengue, describing it as "back born fever" due to symptoms of myalgia and arthritis [1].

Dengue fever is the world's fastest spreading mosquito-borne viral illness, with an incidence that has increased 30-fold in the last 50 years. An estimated 50 million illnesses occur each year, and around 2.5 billion people reside in dengue-endemic countries. According to statistics given by India's National Vector Borne Disease Control Programme [2], the

total number of cases recorded increased dramatically from 3306 in 2001 to 75,454 in 2013, with death increasing significantly from 53 in 2001 to 242 in 2012. The first major epidemic of dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) was reported in 1996, with four serotypes in circulation, followed by another in 2012, with three times the number of previous years reported [1], highlighting the importance of studying the disease's various characteristics and atypical presentations.

Dengue virus (DEN) is a tiny single-stranded RNA virus with four different serotypes (DEN 1-4). Various serotypes are transmitted to humans by the bites

of infected *Aedes* mosquitoes, primarily *Aedes aegypti*. Anoop et al. [3] found that dengue is hyperendemic in Kerala, with several serotypes and high rates of co-infection. Individual risk factors that influence the severity of the disease include secondary infection, age, ethnicity, and perhaps chronic disorders.

Dengue fever is presently the world's second most widespread vector-borne illness [4], threatening about half of the global population. Each year, there are up to 100 million cases of dengue fever, 500000 cases of DHF, and an estimated 22000 dengue-related fatalities. Annually in about 100 nations, including South America, Central America, the Caribbean, India, South-east Asia, and Africa [5].

The virus can be found in serum, plasma, circulating blood cells, and other organs for 4-5 days after the sickness begins. According to the diagnostic test criteria set by the dengue and control research, IgM positive in a single serum sample and IgG positivity in a single serum sample with a titer of 1280 or higher are strongly indicative of dengue fever.

The lack of a particular antiviral medication for the treatment of dengue and its diverse clinical presentation provide a significant challenge to doctors in preventing complications and mortality [6]. So, in order to limit morbidity and mortality from dengue infection, it is important to grasp the clinical profile of the disease as well as the laboratory characteristics of dengue fever.

Dengue virus was originally discovered in India in 1945; the first case of dengue fever was reported in 1956 from the Vellore area of Tamil Nadu; and the first dengue hemorrhagic fever epidemic occurred in Calcutta (West Bengal) in 1963. Outbreaks are now being reported frequently from various sections of the nation. In recent decades, large outbreaks and mortality have occurred in Northern India (Haryana, Punjab, Uttar Pradesh), Southern India (Andhra Pradesh, Tamil Nadu, Karnataka), Western India (Gujarat, Rajasthan), and Eastern India (West Bengal). The case fatality rate has risen to more than 1% in the previous ten years. Dengue is endemic in 31 states and union territories. In 2013, around 74168 cases were recorded, with 168 fatalities; Punjab reported the most instances, followed by Tamil Nadu, Gujarat, Kerala, and Andhra Pradesh [7].

Currently, there is no particular antiviral medication for dengue, and treatment is primarily supportive. The lack of focused therapy, along with unpredictable disease development, presents a substantial challenge for doctors in minimizing complications and lowering mortality. Effective patient treatment requires timely detection of warning symptoms, close monitoring of clinical parameters, and competent interpretation of test results. As a result, a thorough grasp of the changing clinical profile and laboratory abnormalities associated with dengue infection is

critical, especially in adult patients who may have uncommon or severe symptoms.

The current study seeks to prospectively assess the clinical and biochemical profiles of dengue fever in adult patients. This study aims to discover frequent and unusual signs of dengue by carefully analyzing presenting symptoms, physical findings, and laboratory markers and correlating them with illness severity. This study's findings are likely to help to early identification, risk stratification, and improved clinical care, eventually reducing dengue-related morbidity and mortality.

Methodology

Study Design: This prospective observational research was aimed at assessing the clinical presentation and laboratory profile of dengue fever in adult patients. Patients were monitored from the time of admission or presentation until clinical recovery or release.

Study Area: The study was conducted at the Department of Medicine, Nalanda Medical College and Hospital (NMCH), Patna, Bihar, India.

Sample Size: The study involved 105 adult individuals with dengue illness. The sample size was calculated based on the number of eligible dengue patients that were presented throughout the research period, as well as the feasibility of extensive clinical and laboratory follow-up.

Study Duration: The present prospective observational investigation lasted six months from August 2025 to January 2026.

Study Population: During the research period, adult patients (≥ 12 years old) with serologically confirmed dengue fever were presented to the Department of Medicine as inpatients or outpatients.

Inclusion Criteria

- Age ≥ 12 years.
- Clinical characteristics indicative of dengue fever
- Laboratory confirmation of dengue illness is provided by: Dengue NS1 antigen and/or Dengue IgM antibody positive.
- Willingness to provide informed consent

Exclusion Criteria

- Evidence of other concurrent infectious disorders, such as malaria, typhoid fever, leptospirosis, or viral hepatitis
- Preexisting hematological diseases
- Chronic kidney or liver disease
- Incomplete clinical or laboratory data.

Data Collection: Following informed permission, data were gathered prospectively using a pre-designed and organized proforma for each recruited

patient. Detailed demographic information, including age and gender, was collected. A complete clinical history was collected, with a focus on presenting symptoms such as fever, headache, myalgia, retroorbital pain, rash, bleeding manifestations, stomach discomfort, nausea, vomiting, shortness of breath, and neurological signs. Each patient underwent a thorough physical examination, which included documentation of vital signs as well as systemic symptoms such as conjunctival suffusion, hepatomegaly, splenomegaly, pleural effusion, ascites, and hemorrhage. All findings were recorded at presentation and tracked during the hospital stay or follow-up.

Study Procedure: All patients in the research received appropriate laboratory tests to determine the hematological and biochemical characteristics of dengue fever. The examinations included a complete blood count including hemoglobin, total leukocyte count, differential count, platelet count, and hematocrit, as well as liver function tests such as serum AST and ALT values. Additional investigations, such as chest radiography and abdominal ultrasonography, were conducted when clinically warranted to detect problems such as pleural effusion or ascites. Laboratory indicators, particularly platelet count and hematocrit, were evaluated on a regular basis to determine illness development and recovery. Patients were treated using regular institutional protocols, which included antipyretics, intravenous fluids, and constant monitoring. Platelet transfusions

were given exclusively to individuals with severe thrombocytopenia and active bleeding.

Statistical Analysis: The acquired data was imported into Microsoft Excel and analyzed with the relevant statistical tools. Descriptive statistical analysis was carried out, with categorical variables such as clinical characteristics and laboratory abnormalities represented as frequencies and percentages. Wherever possible, mean and standard deviation were used to summarize continuous data. The findings were collated and presented in tabular format to define the clinical and laboratory characteristics of dengue fever in adult patients. The study was observational and descriptive in nature; hence no inferential statistical tests were used.

Result

Table 1 shows a summary of the demographic information of the 105 adults who had dengue fever and had a test to prove it. The age distribution revealed that 66 patients (62.9%) were between the ages of 21 and 40. The 41–60-year age group came in second, with 21 patients (20%). Patients aged 12 to 20 years accounted for 13 instances (12.4%), whereas those above the age of 60 accounted for just 5 (4.7%). There was a significant male predominance in the sample population, with 77 men (73.3%) and 28 females (26.7%), yielding a male to female ratio of around 2.7:1. These data suggest that dengue fever primarily afflicted young adult men in the study group.

Table 1: Sex and age characteristics

Age (yrs)	Male	Female	Total
12–20	10	3	13
21–40	50	16	66
41–60	14	7	21
>60	3	2	5
Total	77	28	105

Table 2 summarizes the clinical symptoms found in the 105 dengue patients. Fever was the most constant clinical characteristic, affecting all patients (100%). Headaches were noted in 100 individuals (94.8%), with myalgia in 95 patients (90.7%). Conjunctival suffusion was found in 41 individuals (39.4%), as were skin rashes in 40 patients (37.9%). 26 patients (24.5%) experienced abdominal discomfort, whereas 19 patients (18.3%) claimed retro-orbital pain. Itching, primarily on the palms and soles, occurred in 14 individuals (13.4%). A positive tourniquet

test was recorded in 17 patients (16.5%), and 6 patients (5.4%) had bleeding symptoms. Plasma leakage in the form of pleural effusion and ascites was detected in 21 patients (20%) and 17 patients (16.3%), respectively. Hepatomegaly and splenomegaly were detected in 16 (14.8%) and 14 (13.2%) individuals, respectively. Less common abnormalities were bradycardia (8.3%), shortness of breath (5.2%), and seizures (1.6%). Fever, headache, and myalgia were the most common present symptoms, as indicated in Table 2.

Table 2: Clinical features (N=105)

Clinical Features	No. of Patients	Percentage (%)
Fever	105	100
Headache	100	94.8
Myalgia	95	90.7
Retro-orbital pain	19	18.3
Abdominal pain	26	24.5
Nausea/Vomiting	6	5.4
Diarrhoea	3	2.5
Conjunctival suffusion	41	39.4
Skin rashes	40	37.9
Itching	14	13.4
Bradycardia	9	8.3
Bleeding	6	5.4
Positive tourniquet test	17	16.5
Pleural effusion	21	20
Ascites	17	16.3
Breathlessness	5	5.2
Seizures	2	1.6
Hepatomegaly	16	14.8
Splenomegaly	14	13.2

Table 3 summarizes the laboratory abnormalities observed among the research subjects. Thrombocytopenia, defined as a platelet count less than 50,000/cumm, was the most prevalent laboratory anomaly, affecting 73 patients (69.5%). Leucopenia, defined as a total leukocyte count of less than 4,000/cumm, was found in 21 patients (20.2%). Elevated liver enzymes, with blood AST and/or ALT

values more than 45 IU/L, were seen in 93 individuals (88.5%), indicating severe hepatic involvement. 22 patients (20.8%) had raised hematocrit levels of more than 45%, indicating hemoconcentration. Table 3 summarizes these data, which emphasize the typical hematological and biochemical derangements observed in dengue illness.

Table 3: Lab parameters (N=105)

Parameter	No. of Patients	Percentage (%)
Thrombocytopenia (<50,000/cumm)	73	69.5
Leucopenia (<4,000/cumm)	21	20.2
Raised AST/ALT (>45 IU/L)	93	88.5
Raised hematocrit (>45%)	22	20.8

Discussion

The current prospective observational study looked at the clinical and laboratory characteristics of dengue fever in adult patients admitted to a tertiary care hospital in eastern India. Dengue mostly afflicted young people in the current investigation, with the majority of patients (62.9%) falling into the 21-40 age category, which is consistent with findings published by Deshwal et al. and Mandal et al., where young adults were the most affected demographic [8,9]. The prevalence of this age group might be due to increased outdoor activity and occupational exposure to mosquito bites. The current study found a significant male preponderance (73.3%), which is consistent with previous studies from various areas of India that have consistently revealed a greater frequency among men [10]. Male preponderance may be due to more exposure rather than biological vulnerability.

Fever was the most prevalent presenting symptom in all patients (100%), followed by headache (94.8%) and myalgia (90.7%), which is consistent with the traditional presentation of dengue fever. These findings are similar to those described by Deshwal et al. and Rachel et al., in which fever, headache, and myalgia were the predominant symptoms [11]. Retro orbital discomfort was reported in 18.3% of patients in the current research, which is comparable to findings by Mandal et al. and Kularatne et al., but lower than several South-east Asian studies that showed a greater incidence [12]. Conjunctival suffusion (39.4%) and skin rash (37.9%) were often reported and are considered key clinical indications of dengue infection. Itching occurs in 13.4% of cases, notably on the palms and soles, according to research from Kerala and Maharashtra, emphasising its importance as an associated symptom [6].

Bleeding symptoms were infrequent in the current investigation, occurring in 5.4% of patients, which

is consistent with previous studies by Deshwal et al. and Shabid et al., where bleeding was observed in a small number of instances [13]. Evidence of plasma leakage in the form of pleural effusion (20%) and ascites (16.3%) was found at rates equivalent to prior Indian investigations, indicating moderate disease severity within the study population. Hepatomegaly (14.8%) and splenomegaly (13.2%) were also seen, which might indicate hepatic involvement and systemic inflammation, as seen in dengue fever.

Haematological and biochemical abnormalities made up a large portion of the illness profile. Thrombocytopenia was the most prevalent laboratory abnormality, occurring in 69.5% of patients, which is consistent with results from Deshwal et al. (69.51%), Munde and Shetkar, and Patil et al. [14]. Leucopenia was identified in 20.2% of patients, which is consistent with rates reported in previous Indian investigations. Elevated liver transaminases were found in 88.5% of patients, demonstrating widespread hepatic involvement in dengue infection. Kularatne et al. and Mandal et al. also showed substantial rates of transaminase increase, emphasizing the dengue virus's hepatotropic nature. Raised hematocrit levels, indicating hemoconcentration, were detected in 20.8% of patients and are an important indicator of plasma leakage and disease severity.

The current study's findings support the notion that dengue fever in adult patients is characterized by a specific set of clinical symptoms and test abnormalities. Early detection of warning signals, as well as regular monitoring of hematological and biochemical indicators, is critical for prompt management and avoidance of serious consequences. The findings of this study are broadly comparable with prior Indian investigations, bolstering current knowledge on the clinical and laboratory profile of dengue fever and emphasizing the importance of ongoing monitoring and rapid care in endemic areas.

Conclusion

The current prospective observational study focuses on the developing clinical and laboratory profile of dengue fever in adult patients presenting to a tertiary care hospital in Eastern India. Dengue fever was discovered to mostly afflict young adult men, with fever, headache, and myalgia being the most prevalent symptoms. Other critical clinical symptoms, such as conjunctival suffusion, skin rash, stomach discomfort, and signs of plasma leakage, including pleural effusion and ascites, were detected in a considerable number of patients, illustrating the disease's diverse clinical spectrum. Hematological and biochemical abnormalities were prevalent, with thrombocytopenia being the most common laboratory result, followed by increased liver transaminases and leucopenia. Raised hematocrit values, indicating hemoconcentration and plasma leakage, were also observed

in a minority of patients, emphasizing the importance of continuous laboratory parameter monitoring throughout the illness. These findings highlight the significance of matching clinical characteristics with laboratory studies in the early detection and appropriate management of dengue fever.

In the absence of a particular antiviral drug, early detection of typical clinical signs, careful interpretation of test results, and adequate supportive care remain the cornerstones of dengue management. Timely diagnosis and attentive monitoring might help prevent serious complications including dengue hemorrhagic fever and dengue shock syndrome, lowering morbidity and death. The findings of this study supplement previous Indian data on dengue fever and may help doctors improve patient outcomes by early intervention and sensible care measures.

References

1. Gupta N, Srivastava S, Jain A, Chaturvedi UC. Dengue in India. *Indian Journal of Medical Research*. 2012 Sep 1;136(3):373-90.
2. Mariappan T. Current emerging situation of dengue in India. *Tropical Doctor*. 2013 Jul;43(3):116-9.
3. Anoop M, Issac A, Mathew T, Philip S, Abdul Kareem N, Unnikrishnan R, Sreekumar E. Genetic characterization of dengue virus serotypes causing concurrent infection in an outbreak in Ernakulam, Kerala, South India. *Indian journal of experimental biology*. 2010 Aug 1;48(8):849.
4. Jelinek T. Dengue fever in international travelers. *Clinical Infectious Diseases*. 2000 Jul 1;31(1):144-7.
5. Kim K, Gina S, Miriam R. Mosquito-borne dengue fever threat spreading in the Americas. *NRDC issue paper*. 2009.
6. Patil PS, Chandi DH, Damke S, Mahajan S, Ashok R, Basak S. A retrospective study of clinical and laboratory profile of dengue fever in tertiary care Hospital, Wardha, Maharashtra, India. *J Pure Appl Microbiol*. 2020 Sep 1;14(3):1935-39.
7. Selvaraj SK, Karan KA, Srivastava S, Bhan N, Mukhopadhyay I, World Health Organization. India: Health system review. *Health systems in transition*. 2022;11(1).
8. Deshwal R, Qureshi MI, Singh R. Clinical and laboratory profile of dengue fever. *J Assoc Physicians India*. 2015 Dec 1;63(12):30-2.
9. Mandal SK, Ganguly J, Sil K, Chatterjee S, Chatterjee K, Sarkar P, Hazra S, Sardar D. Clinical profiles of dengue fever in a teaching hospital of eastern India. *Headache*. 2013;40:62-16.
10. Kashinkunti MD, Shiddappa S, Dhananjaya M. A study of clinical profile of dengue fever in a tertiary care teaching hospital.

11. Daniel R, Philip AZ. A study of clinical profile of dengue fever in Kollam, Kerala, India.
12. Kularatne SA, Gawarammana IB, Kumarasiri PR. Epidemiology, clinical features, laboratory investigations and early diagnosis of dengue fever in adults: a descriptive study in Sri Lanka. Southeast Asian Journal of Tropical Medicine and Public Health. 2005 May 1;36(3):686.
13. Shahid Ahmed SA, Nadir Ali NA, Shahzad Ashraf SA, Mohammad Ilyas MI, Waheed-uz-Zaman Tariq WU, Chotani RA. Dengue fever outbreak: a clinical management experience.
14. Munde DD, Shetkar UB. Clinical features and haematological profile of dengue fever. Indian J Appl Res. 2013 Jan;3(1):131-2.