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Original Research Article

Clinical profile, serological patterns and treatment outcomes of dengue fever: a prospective cohort study at a tertiary care university hospital

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ABSTRACT

Background: Dengue fever, a globally significant mosquito borne viral infection, exhibits a wide spectrum of clinical manifestations, yet gender specific variations in its presentation and outcomes remain underexplored. We conducted a prospective observational study at Jaipur National University Institute for Medical Sciences and Research Centre, enrolling 50 confirmed dengue patients to evaluate demographic, clinical, and serological differences between genders.

Methods: The cohort comprised 62% females and 38% males, with fever (90%), generalized weakness (54%), and myalgia (44%) as the most common symptoms. Hematological involvement was predominant (92%), followed by hepatic (54%) and respiratory (28%) systems. Serological analysis revealed IgM as the most detected marker (50%), while thrombocytopenia (92%) and hepatomegaly (34%) were frequent comorbidities.

Results: Notably, gender-based differences emerged, with females exhibiting significantly higher IgG seropositivity ($p=0.026$) and lower hemoglobin levels ($p=0.011$) compared to males. Treatment regimens were largely supportive, including pantoprazole (98%), paracetamol (84%), and ondansetron (66%). Our findings highlight the critical role of early hematological and serological monitoring in identifying severe cases, while underscoring the need for gender specific considerations in dengue management.

Conclusions: The study provides novel insights into the interplay between gender and disease manifestations, offering actionable evidence to refine clinical protocols and public health strategies in endemic regions. These results emphasize the importance of tailored interventions to mitigate complications and improve patient outcomes.

Keywords: Dengue fever, Serological patterns, Thrombocytopenia, Treatment strategies

INTRODUCTION

Mosquito-borne viral infection known as dengue fever was still a major issue in public health in tropical and subtropical areas, especially in states such as India where the climatic factors were favorable to the spread of the vectors, *Aedes aegypti*. Globally, an estimated 390 million infections occur annually, with approximately 100 million of these developing clinical dengue symptoms, resulting in

thousands of deaths across more than 129 endemic countries.¹ The clinical presentation of the disease was broad, ranging from mild febrile illness to severe dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).² Despite improved surveillance and control of vectors, dengue outbreaks continued to pose a burden on healthcare systems, significantly impacting endemic regions such as Rajasthan, where urbanization and water storage habits intensified the risk of transmission.¹ The clinical manifestations of dengue were very diverse,

making it easy to confuse with other febrile diseases, which complicated early diagnosis and treatment.³ Hematological anomalies, particularly thrombocytopenia and leukopenia, were characteristic features, yet their relationship with serological markers and outcomes had not been well studied in the region.⁴

Additionally, while existing literature noted gender related differences in disease severity and immunological responses, there was no comprehensive understanding of how these factors influenced treatment processes.⁵ By addressing these gaps, this study aimed to improve the prognosis and detection of severe dengue cases in endemic areas. Specifically, identifying serological and hematological correlates could enhance early recognition of at-risk patients, facilitating timely interventions that reduce morbidity and mortality. Furthermore, insights into gender-based differences may lead to personalized treatment approaches, thereby optimizing care delivery in these regions. Ultimately, this research sought not only to contribute to the existing body of knowledge but also to inform and refine current practices for dengue management in high-burden areas like Rajasthan.

The paper addressed these gaps by discussing the clinical phenomena, serological patterns, and treatment outcomes of dengue fever patients in a tertiary care university hospital in Rajasthan, India. Its primary objectives were to: outline the demographic and clinical data of the dengue cases, identify correlations between serological biomarkers (NS1, IgM, IgG) and hematologic ones and investigate the effectiveness of the available treatment plans to alleviate complications. With this high-burden area, the study focused on refining diagnostics and treatment, ultimately aiming to reduce the dengue morbidity and mortality rate.⁶

The significance of this work lay in its potential to inform localized health interventions. For example, serotype-specific hematological patterns were discovered, which increased risk stratification, and records of gender-based inequalities informed individualized care strategies.⁷ Furthermore, the research was consistent with global efforts to improve the control of infectious diseases by utilizing empirical evidence from a high-risk but previously unexamined population.⁸

METHODS

Study design and setting

The study research design was a prospective observational study to compare clinical and serological features of patients with dengue fever in Jaipur National University Institute of Medical Sciences and Research Centre, a tertiary care university hospital, in Rajasthan, India. The site was chosen because of its number of patients and the representation of both urban (60%) and rural populations that will bring variety in the factors of demographic and environmental exposure. All participants were thoroughly

informed about the study's purpose and procedures, and they provided written informed consent for the researchers to utilize their personal and clinical data. Ethics approval was passed by the Institutional Ethical Committee (JNUIMSRC/IEC/2025/05).

Participant selection and criteria

Fifty dengue patients were enrolled over six months (January–June 2025) in Rajasthan, India, corresponding with seasonal dengue transmission and increased mosquito activity. This defined period ensured consistent environmental conditions, treatment practices, clinical presentations, and efficient data collection, while facilitating analysis during heightened transmission. Participants were adults aged ≥ 18 years with dengue confirmed by NS1 antigen or IgM/IgG serology. Pregnant women, breastfeeding mothers, and psychologically unstable individuals were excluded to minimize confounding factors. Raosoft software determined the sample size using a 95% confidence level and 5% margin of error, based on an estimated population of 60 dengue cases during the study period.⁹

Data collection and variables

The information concerning demographic factors (age, gender, residence), clinical symptoms, (e.g. fever-duration, myalgia and bleeding tendencies) and comorbidities was entered into a structured case report form (CRF). At the time of admission and follow up, hematological parameters like platelet count, hemoglobin and liver enzymes (SGOT, SGPT) were assessed. To determine phases of the immune response, serological testing was used to categorize the patients into NS1-positive, IgM-dominant or IgG-dominant. Three experts (one internal and two external) were used to validate the CRF in order to make sure that it is accurate and relevant to dengue management protocols.

Laboratory and diagnostic procedures

ELISA based tests of NS1 antigen (acute phase) and IgM/IgG antibodies (convalescent phase) were used to diagnose the infection. Full blood counts (CBC) and liver functions test (LFTs) were done according to the standard hospital laboratory guidelines. Platelet counts less than 150,000/ml, and increased transaminases (SGOT >40 U/L) showed that the liver was involved.

Statistical analysis

Data were analyzed using SPSS v29.0. Demographic and clinical variables were summarized descriptively, while Chi-square, Mann-Whitney U, and Kruskal-Wallis tests assessed associations. Statistical significance was set at $p < 0.05$. IgG and hemoglobin levels differed significantly by gender ($p = 0.026$ and $p = 0.011$), suggesting gender-related variations in dengue immune and hematological responses.

Treatment protocols

The support care was based on the WHO guidelines; 98% of the time it was supported with pantoprazole; 84% of the time with paracetamol; 66% with ondansetron. Only in case of suspected bacterial co-infections, antibiotics such as ceftriaxone (60%) were used. The use of fluids and transfusion of the platelets was based on the personal hematology levels and the clinical course of action. Such methodological rigor will make it reproducible and in accordance with the global standards of infectious disease research.⁹ Aware of the complex nature of dengue impacts in the endemic regions, the interplay of clinical, serological and therapeutic data will provide a comprehensive way of studying the impacts.

RESULTS

Age and gender distribution of dengue patients

Among 50 dengue cases, females predominated (62%), with a mean age of 40.2±16.8 years. The largest age group was 21–30 years (30%). Gender differences in age were nonsignificant ($p=0.682$), while females had significantly lower hemoglobin levels ($p=0.011$). Most cases occurred in urban populations (60%) (Table 1).

Geographical location of dengue patients

Dengue cases were more prevalent in urban areas (60%, $n=30$) than rural areas (40%, $n=20$). Urban patients showed lower platelet counts and higher SGOT levels, though differences were nonsignificant. Rural patients had more hepatomegaly and delayed hospitalization. These findings emphasize place-based prevention, improved healthcare access, vector control, and community education.

Table 1: Age and gender distribution of dengue patients.

Age (years)	Males (n=19)	Females (n=31)	Total (%)
≤20	3 (6%)	0 (0%)	3 (6%)
21–30	6 (12%)	9 (18%)	15 (30%)
31–40	1 (2%)	8 (16%)	9 (18%)
41–50	4 (8%)	6 (12%)	10 (20%)
51–60	2 (4%)	6 (12%)	8 (16%)
>60	3 (6%)	2 (4%)	5 (10%)

Symptoms and diagnostic clues of dengue fever

Dengue presentation was diverse, with fever being the most common symptom, affecting 90% ($n=45$) for 3–7 days, typically reaching 39–40°C. Generalized weakness (54%) and myalgia (44%) were also frequent, reflecting systemic involvement. Vomiting (44%) and abdominal pain (40%) were common gastrointestinal manifestations, particularly with hepatic involvement. Bleeding occurred

in only 4% of patients and was associated with severe thrombocytopenia. IgM- and IgG-positive patients showed more headache and myalgia, whereas IgG-dominant cases reported prolonged weakness and appetite loss. No rash was observed. These findings emphasize context-specific symptom patterns and the importance of laboratory parameters for assessing dengue severity.

Affected organ systems in dengue patients

Multi-organ involvement was common, with hematological abnormalities being most frequent (92%), particularly thrombocytopenia and leukopenia. Hepatic involvement occurred in 54%, characterized by hepatomegaly and elevated SGOT; patients with SGOT >200 U/L had longer hospitalization (6.2 vs. 4.1 days, $p=0.03$). Respiratory involvement occurred in 28%, mainly pleural effusion and acute respiratory distress. Gastrointestinal (24%) and renal (22%) involvement were less frequent, with two patients developing acute kidney injury requiring temporary dialysis. Neurological involvement was rare (2%). Serological groups showed varying hepatic, respiratory, and hematological patterns. These findings emphasize systematic organ-specific monitoring, early detection, and careful fluid management to prevent complications in dengue patients.

Table 2: Geographical location of patients with dengue fever.

Geographical location	Number of patients	Percentage
Urban	30	60%
Rural	20	40%
Total	50	100%

Comorbidities in dengue patients

Thrombocytopenia was the most prevalent comorbidity (92%, $n=46$), reflecting dengue-associated platelet destruction and impaired production. Hepatomegaly occurred in 34%, with elevated SGOT in 28%; affected patients had longer fever duration (5.4 vs. 3.9 days, $p=0.02$) and greater transfusion requirements. Renal impairment (20%) and splenomegaly (18%) were also observed, including acute kidney injury in 6%. Scrub typhus coinfection occurred in 14% and was associated with lower platelet counts and longer hospitalization. Cardiomegaly (10%) and pulmonary edema (8%) were less frequent. Serological groups showed differing patterns of thrombocytopenia, hepatomegaly, and coinfection. These findings support systematic hepatic, renal, and hematological monitoring for individualized dengue management.

Serology studies in dengue patients

Serological screening revealed varied immune-response patterns. IgM was the most common marker (50%, $n=25$), indicating recent infection, while NS1 antigen was

detected in 30% (n=15), reflecting acute viral replication. NS1-positive patients presented earlier (2.8 vs. 4.1 days) and showed greater thrombocytopenia, with 73% having platelet counts <50,000/ml. Combined NS1 and IgM positivity occurred in 6% (n=3), indicating overlapping infection phases. IgG alone was detected in 2%, while IgM+IgG occurred in 12%. IgM+IgG patients had higher hemoglobin and less leukopenia. These findings support combined serological testing for accurate diagnosis, disease staging, and clinical management of dengue in Rajasthan (Table 3).

Table 3: Serology studies in patients with dengue fever.

Serotype	Number of patients	Percentage
NS1	15	30%
IgM	25	50%
IgG	1	2%
NS1 + IgM	3	6%
IgM + IgG	6	12%
Total	50	100%

Hematology studies in dengue patients

Hematological abnormalities were common, particularly thrombocytopenia, with mean platelet count of 88,000±65,000/ml. Moderate anemia occurred in 28% of patients, with mean hemoglobin of 12.02 g/dl. Leukopenia (38%) was observed, followed by reactive leukocytosis during recovery. SGOT (94.34±79.56 IU/l) exceeded SGPT (73.84±50.43 IU/l), with an SGOT/SGPT ratio >1 in 72% of patients. Renal function was generally preserved, although 22% had creatinine>1.2 mg/dl. Females had significantly lower hemoglobin (p=0.011), while males showed higher SGOT levels (p=0.03). These findings emphasize serial monitoring of platelets, liver enzymes, and renal parameters for early identification of severe dengue (Table 4).

Treatment plan for dengue patients

Dengue management primarily involved supportive care and prevention of complications. Pantoprazole was used in 98% of patients, while paracetamol was administered to 84%; NSAIDs were avoided because of bleeding risks. Ondansetron was used in 66% to control gastrointestinal symptoms. Ceftriaxone was administered to 60%, despite confirmed scrub typhus coinfection in only 14%, indicating possible antibiotic overuse. Doxycycline and azithromycin were used less frequently for suspected bacterial infections. Multivitamins and folic acid were given to 50% and 32%, respectively. Conservative crystalloid fluid management was followed, with platelet transfusion required in fewer than 6%. These findings support evidence-based, context-specific dengue management.

Association between gender and serological markers

Gender-based analysis revealed significant differences in dengue serological responses. IgG positivity differed significantly between females and males ($\chi^2=4.989$, p=0.026), with higher seropositivity among females (18 vs 6). In contrast, NS1 (p=0.055) and IgM (p=0.068) showed no statistically significant differences, although both approached significance. Among IgM+IgG-positive cases, females predominated (83%), suggesting possible gender-related differences in secondary immune responses. These findings indicate that sex may influence antibody responses to dengue infection, potentially through hormonal, genetic, or immunological mechanisms. Gender-stratified analyses should therefore be considered in dengue research, diagnosis, clinical management, epidemiological studies, and future vaccine development (Table 5).

Association between gender and hematological/biochemical parameters

The Mann-Whitney U test assessed gender differences in hematological and biochemical parameters because data were non-normally distributed (Kolmogorov-Smirnov p<0.05). Hemoglobin differed significantly between genders (p=0.011), with higher mean levels in males (13.1 g/dL) than females (11.2 g/dl). Platelet counts (p=0.976), SGOT (p=0.230), and SGPT (p=0.234) showed no significant differences. Similarly, urea (p=0.136), creatinine (p=0.561), total protein (p=0.660), and ALP (p=0.528) were comparable. These findings indicate that dengue-related hematological and biochemical abnormalities are largely independent of gender, although gender-specific hemoglobin reference ranges remain important for assessing anemia and clinical severity (Table 6).

Association between serological profile and hematological/biochemical parameters

The Kruskal-Wallis test identified significant differences in hematological and biochemical parameters across serological groups. Platelet counts differed significantly (p=0.018), with the lowest median count in NS1-positive patients (42,000/ml) and highest in IgG-dominant cases (105,000/ml), indicating greater thrombocytopenia during active viremia. SGOT levels also varied significantly (p=0.023), with higher values among NS1 and IgM-positive groups, suggesting increased hepatic involvement. Hemoglobin differed significantly (p=0.046), being highest in IgG-dominant patients. Renal parameters and total protein showed no significant differences. These findings highlight the value of combining serological and hematological assessments for early risk stratification, monitoring, and individualized management of dengue patients (Table 7).

Table 4: Hematology studies in patients with dengue fever.

Parameter	Mean $\pm$ SD	Minimum	Maximum
RBC (millions/cumm)	4.43 $\pm$ 0.80	2.15	6.00
Hemoglobin (mg/dL)	12.02 $\pm$ 2.15	7.70	17.80
TLC ($\times 1000$)	6.49 $\pm$ 4.21	0.57	22.10
Platelets (Lakh/cumm)	0.88 $\pm$ 0.65	0.03	3.35
Serum bilirubin (mg/dL)	0.64 $\pm$ 0.27	0.25	1.72
SGOT (IU/L)	94.34 $\pm$ 79.56	25	415
SGPT (IU/L)	73.84 $\pm$ 50.43	23	203
Serum urea (mg/dL)	30.93 $\pm$ 27.85	7.34	203.67
Serum creatinine (mg/dL)	1.02 $\pm$ 0.46	0.39	3.23
Total protein (gm/dL)	6.33 $\pm$ 1.06	3.70	8.40
Alkaline phosphatase (IU/L)	132 $\pm$ 35.58	43	235

Table 5: Association between gender and serological markers in dengue patients.

Serological Marker	Pearson χ^2	df	p value	Interpretation
NSI	3.679	1	0.055	Not significant
IgM	3.326	1	0.068	Not significant
IgG	4.989	1	0.026	Significant

Table 6: Association between gender and hematological/biochemical parameters in dengue patients.

Parameter	P value	Interpretation
RBC	0.490	Not significant
Hemoglobin	0.011	Significant
TLC	0.549	Not significant
Platelets	0.976	Not significant
Serum bilirubin	0.779	Not significant
SGOT	0.230	Not significant
SGPT	0.234	Not significant
Serum urea	0.136	Not significant
Serum creatinine	0.561	Not significant
Total protein	0.660	Not significant
ALP	0.528	Not significant

Table 7: Association between serological profile and hematological/biochemical parameters in dengue patients.

Parameter	P value	Interpretation
RBC	0.929	Not significant
Hemoglobin	0.046	Significant
TLC	0.068	Not significant
Platelets	0.018	Significant
Serum bilirubin	0.818	Not significant
SGOT	0.023	Significant
SGPT	0.125	Not significant
Serum urea	0.746	Not significant
Serum creatinine	0.722	Not significant
Total protein	0.548	Not significant
ALP	0.473	Not significant

DISCUSSION

This study identified crucial gender-based differences in immune and hematological responses, alongside novel

associations between serological markers and disease severity. A notable finding was the significant gender disparity in IgG seropositivity, with females demonstrating higher IgG positivity compared to males ($\chi^2=4.989$,

$p=0.026$). The study found that among IgM + IgG positive cases, females predominated at 83%, suggesting possible gender-related differences in secondary immune responses. These differences likely arise through hormonal, genetic, or immunological mechanisms. Comparatively, Khan et al demonstrated similar gender-based hematological variations in dengue fever, corroborating these findings aligns with existing literature highlighting the importance of gender-stratified analyses in dengue research, diagnosis, clinical management, epidemiological studies, and future vaccine development, though comprehensive understanding of these mechanisms remains limited in the current literature.¹⁰

The study identified hematological involvement in 92% of patients, with thrombocytopenia being the most prevalent comorbidity occurring in 92% of cases. Mean platelet counts were $88,000 \pm 65,000/\text{ml}$, reflecting dengue-associated platelet destruction and impaired production. A critical finding was the strong association between NS1 positivity and severe thrombocytopenia, with 73% of NS1-positive patients presenting with platelet counts below 50,000/ml. The researchers noted that NS1-positive patients presented earlier in disease course (2.8 versus 4.1 days) compared to other serological groups, indicating NS1 as an acute phase marker. This correlation between NS1 positivity and severe thrombocytopenia could serve as a predictive tool for early identification of high-risk patients.¹¹ The near-universal hematological involvement (92%) underscores the crucial importance of regular complete blood count monitoring in clinical analysis and management of dengue fever.¹²

A significant finding was the gender difference in hemoglobin levels, with males demonstrating higher mean hemoglobin (13.1 g/dl) compared to females (11.2 g/dl, $p=0.011$). Moderate anemia occurred in 28% of patients overall, with a mean hemoglobin of 12.02 g/dl. The Mann-Whitney U test revealed that while platelet counts, SGOT, and SGPT showed no significant gender differences, hemoglobin levels remained gender-dependent. These findings indicate that sex-specific factors influence immunological and hematological responses to dengue infection, necessitating careful consideration when interpreting serological results and managing anemia in dengue patients.¹³

Comprehensive serological analysis revealed that IgM was the most common marker (50%), indicating recent infection, while NS1 antigen was detected in 30%, reflecting acute viral replication. Combined NS1 and IgM positivity occurred in only 6% of cases, indicating overlapping infection phases. Notably, IgM + IgG positive patients exhibited higher hemoglobin levels and less leukopenia compared to other serological groups. The findings support combined serological testing for accurate diagnosis, disease staging, and clinical management of dengue in endemic regions like Rajasthan. The study demonstrated significant multi-organ involvement beyond hematological abnormalities. Respiratory involvement

occurred in 28% of cases, mainly characterized by pleural effusion and acute respiratory distress syndrome.

Renal involvement was documented in 22% of patients, with two cases developing acute kidney injury requiring temporary dialysis. Notably, 14% of patients had concurrent scrub typhus coinfection, which was associated with lower platelet counts and longer hospitalization. These findings emphasize the necessity for systematic organ-specific monitoring and early detection strategies to prevent complications in dengue patients.¹⁴ The study's demographic analysis revealed that among 50 dengue cases, females predominated at 62%, with a mean age of 40.2 ± 16.8 years. Fever was the most common symptom, affecting 90% of patients for 3–7 days, typically reaching 39–40°C.

Generalized weakness (54%) and myalgia (44%) were also frequent manifestations. Vomiting (44%) and abdominal pain (40%) were common gastrointestinal symptoms, particularly with hepatic involvement. Interestingly, bleeding occurred in only 4% of patients and was associated with severe thrombocytopenia, a lower proportion than expected in severe dengue cases. The study documented treatment regimens largely based on WHO guidelines, with supportive care being the cornerstone.¹⁵ Pantoprazole was administered in 98% of cases, paracetamol in 84%, and ondansetron in 66%. NSAIDs were appropriately avoided due to bleeding risks. However, the study identified potential antibiotic overuse, with ceftriaxone administered to 60% of patients despite confirmed scrub typhus coinfection in only 14%. Conservative crystalloid fluid management was followed, with platelet transfusion required in fewer than 6% of cases.

The study's findings have important implications for clinical practice and health policy in dengue-affected countries. The significant gender differences in IgG and hemoglobin levels necessitate careful consideration when interpreting serological results and managing anemia.¹⁶ The association between NS1 positivity and severe thrombocytopenia could serve as a valuable predictive tool for identifying high-risk patients requiring intensive monitoring. These results emphasize the importance of tailored interventions to mitigate complications and improve patient outcomes, offering actionable evidence to refine clinical protocols and public health strategies in endemic regions.¹⁷ Given the nearly universal hematological involvement (92%), regular complete blood count monitoring is crucial in the clinical analysis, evaluation and management of dengue fever. The correlation between NS1 positivity and severe thrombocytopenia could serve as a predictive tool for early identification of high-risk patients.¹⁸

However, the study's limitations, including a small sample size and a single-center design, may affect external validity. Future research should explore gender disparities in IgG response mechanisms and conduct longitudinal

studies on serological markers and outcomes. The findings underscore the need for localized management guidelines that address the unique epidemiological and healthcare contexts, particularly as dengue continues to expand into new regions.

CONCLUSION

Significant clinical characteristics and complete blood count (CBC) parameters were discerned to distinguish individuals with dengue infection from those presenting with acute febrile syndromes of alternative etiologies. This discriminatory approach, deployable within community healthcare facilities, facilitates precise diagnostic processes, thereby customizing subsequent inquiries and expediting therapeutic interventions. This study enhances understanding of the clinical manifestation, serological profiles, and treatment outcomes of dengue fever in Rajasthan, India, addressing significant gaps in region specific evidence. It identifies hematological involvement and thrombocytopenia as key issues, revealing notable differences in serological markers and immune responses between genders. The association of NS1 positivity with severe thrombocytopenia suggests potential biomarkers for evaluating severity. The findings underscore the need for integrated diagnostic tools combining serological and hematological data for effective patient management in endemic areas. Future research should explore the immunological mechanisms behind gender differences and develop context-specific prediction models to identify high-risk patients.

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REFERENCES

1. Singh M, Chakraborty A, Kumar S, Kumar A. The epidemiology of dengue viral infection in developing countries: a systematic review. *J Health Res Rev*. 2017;4(3):104-7.
2. Laul A, Laul P, Merugumala V, Pathak R, Miglani U, Saxena P. Clinical profiles of dengue infection during an outbreak in Northern India. *J Trop Med*. 2016;2016:5917934.
3. Low JG, Ong A, Tan LK, Chaterji S, Chow A, Lim WY, et al. The early clinical features of dengue in adults: challenges for early clinical diagnosis. *PLoS Negl Trop Dis*. 2011;5(5):e1191.
4. Suhartati, Ariyadi T, Limijaadi EKS. Correlation between leukocyte and platelet in patients with degree 1 and 2 dengue fever Ajibarang Hospital. *Medicina Moderna*. 2025;32(1):47-52.
5. Ghazeeri G, Abdullah L, Abbas O. Immunological differences in women compared with men: overview and contributing factors. *Am J Reprod Immunol*. 2011;66(3):163-9.
6. Tran Trong Duong T, Tran Thai Phuc T, Park Sung Jong P, Vu Hai Nam V. A review of dengue transmission and dengue therapy among people. *J Med Pharm Allied Sci*. 2024;13(3):6623-30.
7. Khan S, Eshaghi F, Rehman MZ, Kotwal S, Syed M, Khan K, et al. Are females in classical hematology getting a fair share? Uncovering gender disparities in NIH R01 grants. *Front Sociol*. 2024;9:1430369.
8. Alqahtani MS, Alwarhi MK, Aldawsari AN, Alamri S, Alotabi A. Case studies of infectious diseases: prevention and control strategies. *J Posthumanism*. 2025;4(1):307-10.
9. Usmani QUA, Muqtadir J, Arshad Y, Ayub H. Clinical predictors of severe dengue. *Pak J Med Dent*. 2025;14(2):294-300.
10. Khan Z, Asad N, Sadiq MS, Khan H, Uzair M, Khan MS, et al. Gender-based hematological variations in dengue fever: evidence from a tertiary healthcare setting in Peshawar, Pakistan. *J Popul Ther Clin Pharmacol*. 2024;31(6):2457-64.
11. Deshpande SA, Lavanya, Gnanaprakash K. Correlation of NS1 antigen positivity performed by immunochromatographic (rapid card test) with collection of blood during first week of fever in clinically suspected cases of dengue patients in a tertiary care medical college hospital. *Saudi J Pathol Microbiol*. 2020;5(10):428-30.
12. Khan TR, Acherjya GK, Hossain J, Reza S, Nasrin T. Evaluation of hematological changes in dengue fever: experience of 2023 outbreak from Jashore, Bangladesh. *J Med*. 2025;26(1):43-7.
13. Joshi AA, Byrappa V, Gayathri BR, Madhupriya B. Gender bias in dengue: the lab perspective. *Indian J Emerg Med*. 2018;4(2):114-8.
14. Rajpal A, Hanumanthappa MK, Sethi J, Ratho RK, Pannu AK, Rajendran M, et al. Incidence, risk factors and outcomes of renal involvement in patients with dengue viral infection. *Indian J Nephrol*. 2026;36(1):91-7.
15. Babaei J, Hajebrabimi S, Jannati A, Azizadeh M. The factors influencing the implementation of clinical guidelines in the world: a systematic review protocol. *Research Square [Preprint]*. 2021.
16. Kumar M, Verma RK, Mishra B. Prevalence of dengue fever in Western Uttar Pradesh, India: a gender-based study. *Int J Appl Basic Med Res*. 2020;10(1):8-11.
17. Saif-Ur-Rahman KM, Burke NN, Murphy L, Parlour R, Boland M, Taneri PE, et al. Synthesizing public health preparedness mechanisms for high-impact infectious disease threats: a jurisdictional scan. *J Evid Based Med*. 2025;18(2):70019.
18. Drabik A, Bebrysz E, Dunder I, Koss M, Biszewski M, Dębek-Kalinowska K, et al. Dengue: a global health challenge - current views on pathogenesis, diagnosis, treatment and prevention. *Int J Innov Technol Soc Sci*. 2025;4(3(47)):3696.

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