

## Clinical Profile and Pattern of Dengue Fever among Hospitalized Patients: A Prospective Study

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### Abstract:

**Background:** The dengue virus, which causes dengue fever, is spread by mosquitoes and has emerged as a significant public health concern in tropical and subtropical territories. Clinical manifestations range from mild feverish illness to more serious conditions including dengue shock syndrome (DSS) and dengue hemorrhagic fever (DHF).

**Methods:** An observational study was carried out in Department of General Medicine, Katihar Medical College and Hospital, Katihar, Bihar, India on 90 patients who were hospitalized with a confirmed case of dengue fever. Demographic information, clinical symptoms, vital signs, and laboratory parameters (complete blood count and liver function tests) were documented. The data were examined with the help of descriptive statistics and the correlation between clinical and laboratory parameters and the severity of the disease was assessed.

**Results:** The most typical symptom was fever (100%), then myalgia (85%), headache (78%), and rash (45%). Laboratory results showed that 72 and 60 % of patients had thrombocytopenia and leukopenia respectively. In 12 patients (13.3%), severe dengue (DHF/DSS) was observed. The length of stay in the hospital was 3-10 days and complete recovery was achieved in 95 % of the patients.

**Conclusion:** Dengue fever presents with a wide spectrum of clinical and laboratory features. Early recognition of warning signs and supportive management are essential to prevent complications and reduce morbidity in hospitalized patients.

**Keywords:** Dengue Fever, Clinical Profile, Thrombocytopenia, Hospitalized Patients, DHF, DSS.

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### Introduction

Acute dengue fever is a virus that is transmitted by the *Aedes aegypti* mosquito and is caused by the dengue virus (DENV), a member of the Flaviviridae family [1]. One of the most serious viral diseases spread by vectors is dengue, which has caused serious public health issues in recent decades, including the emergence of serious and potentially lethal diseases like dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) [2].

Dengue has emerged as a major global health concern in recent decades. The World Health Organization (WHO) estimates that between 50 and 100 million people catch the disease each year, with 500,000 of them becoming very ill and needing to be hospitalized in urban and semi-urban areas. High-grade fever, severe myalgia, headache, retro-orbital discomfort, rash, nausea, vomiting, and in certain cases, bleeding or plasma leakage are some of the symptoms that make up dengue's diverse clinical presentation. Patients with dengue

frequently have laboratory abnormalities, such as thrombocytopenia, leukopenia, and elevated liver enzymes, which are indicative of the disease's severity and surveillance. [3].

There are a number of risk factors that lead to the development of dengue to its severe forms. A heterologous dengue serotype secondary infection is a well-established risk factor because it may result in antibody-dependent enhancement, which causes more severe immune responses. Other risk factors are young age, the presence of comorbidities (diabetes or cardiovascular disease), and the lack of timely access to appropriate medical care [4]. In order to avoid complications and decrease mortality, it is essential to identify warning signs at an early stage, i.e., persistent vomiting, severe pain in the abdomen, mucosal bleeding, rapid platelet count decrease, or plasma leakage signs.

In-hospital research in India and other dengue-prone nations have played an important role in the field of

clinical and laboratory features of dengue patients. These researches give vital information about the typical symptoms, the course of the disease, and laboratory deviations, which are vital in the early diagnosis and treatment. Indicatively, Wattanasri et al. (2002) noted that thrombocytopenia and leukopenia were some of the most predictable laboratory results in patients with dengue, and they could be used in monitoring the disease [5]. Moreover, their research also found that severe dengue, such as dengue hemorrhagic fever and dengue shock syndrome, were observed in about 10-15 percent of hospitalized cases, which underscores the need to closely observe the platelet count, hematocrit, and other laboratory parameters in clinical practice to avoid complications.

Although these are important insights, regional disparities have been noted in the presentation, severity and laboratory findings of dengue. Such differences may be explained by several factors, such as the types of dengue serotypes circulating in a specific region, the degree of existing immunity in the population, the density of vectors, environmental factors, and the quality and availability of the healthcare infrastructure. In certain areas, patients can manifest themselves mostly with mild febrile disease, and in others, more severe cases and complications are noted. This heterogeneity highlights the fact that the results of a single area or group cannot be immediately transferred to other areas and that localized research and data are required [6].

Local research is especially significant in informing hospital management practices and enhancing patient outcomes. Knowing the local epidemiology and clinical trends of a particular area, healthcare providers are able to come up with specific screening strategies, focus on high-risk patients and take early intervention measures [7]. Laboratory monitoring protocols are also informed by such studies so that key parameters, including platelet count trends and hematocrit levels, are highly monitored to identify warning signs of severe disease at an early stage. Furthermore, local research helps the local health authorities to develop effective dengue control measures such as controlling the vectors, community awareness, and resource allocation during outbreaks.

In general, it is evident that region-specific studies are required, as they allow healthcare systems to predict the clinical range of dengue, customize treatment strategies, and minimize morbidity and mortality due to the disease [8]. Localized studies enable the provision of a comprehensive picture of the dengue dynamics by integrating the clinical observations conducted in the hospital with the larger epidemiological data, which contributes to enhancing the patient care and preventive measures

in the endemic regions related to the population health.

## Materials and Methods

**Study Design:** This observational prospective study, which was conducted in Department of General Medicine, Katihar Medical College and Hospital, Katihar, Bihar, India from January 2006 to December 2006, was designed to evaluate the clinical presentation, laboratory results, and the outcome of patients hospitalized with dengue fever. Symptoms, signs of severe disease, and laboratory abnormalities were systematically assessed and patients were divided based on the severity of the disease (DF, DHF, DSS). Hospital outcomes such as duration of stay, recovery and complications were also studied to give a complete picture of dengue presentation and progression in a hospital.

**Study Period and Setting:** The study was conducted in the Department of General Medicine, Katihar Medical College and Hospital, Katihar, Bihar, India, over a period of one year. The hospital serves both urban and semi-urban populations and provides a representative sample of hospitalized dengue cases.

**Sample Size:** This hospital-based study involved 90 patients with dengue fever. The sample size was calculated considering the number of patients who are admitted with laboratory-confirmed dengue in the specified study period, so that the data gathered would be manageable as well as representative of the patients in the hospital setting. The choice of this sample size was also informed by feasibility factors such as availability of resources, time, and the fact that this study required elaborate clinical and laboratory evaluations. The study was designed to offer a holistic view of the clinical spectrum, laboratory abnormalities, and outcomes of dengue infection in hospitalized patients, but without compromising the methodological rigor and practical applicability, by incorporating all eligible patients within the study period.

**Inclusion and Exclusion Criteria:** The study population consisted of all patients admitted with a fever with laboratory-proven dengue infection (either a positive Dengue IgM antibody (ELISA) or NS1 antigen test (rapid test or ELISA)). Participants gave written informed consent, and the case of minors was accompanied by the guardian consent. Patients were not allowed when they had co-infections like malaria, typhoid or leptospirosis which may confound clinical evidence, had chronic liver disease, chronic renal disease or hematological conditions, or when they were left out of hospital without providing medical advice before full examination. These criteria provided a representative study population of dengue cases as well as minimizing confounding variables that may influence clinical or laboratory measurements.

**Data Collection Procedure:** In the current study, demographic and clinical data were collected using a structured proforma. The patient was asked about their age, gender, presenting symptoms, vital signs, and history of comorbidities. Fever, myalgia, headache, rash, retro-orbital discomfort, nausea, vomiting, abdominal pain, and bleeding symptoms were all carefully examined as part of the clinical assessment (with particular emphasis to the indicators of severe dengue, i.e., mucosal bleeding, hepatomegaly, hypotension, and shock). Laboratory tests were performed on each patient, including liver functional tests (LFTs) for bilirubin, AST, and ALT, as well as complete blood counts (CBCs) to measure hematocrit hemoglobin, total leukocyte count, and platelet count. Other tests, such as coagulation studies and renal tests, were conducted as clinical indications, and hematocrit was monitored in an effort to detect hemoconcentration suggestive of dengue hemorrhagic fever (DHF). Patients were divided into three groups according to the severity of their illness: dengue hemorrhagic fever (DHF), which is characterized by fever, thrombocytopenia ( $<100,000/\text{mm}^3$ ), hemorrhagic manifestations, and the absence of plasma leakage; dengue shock syndrome (DSS), a consequence of DHF; and dengue fever (DF), a mild febrile illness with potential warning signs.

#### Management Protocol

All patients received supportive care as per standard hospital guidelines:

- Intravenous fluids for dehydration or shock
- Symptomatic treatment with antipyretics (acetaminophen)
- Blood transfusions or platelet transfusions for severe thrombocytopenia if indicated

**Statistical Analysis:** Descriptive statistics were utilized to analyze the data collected for the study. The mean, standard deviation, frequency, and percentage were used to describe the patients' clinical, laboratory, and demographic characteristics. In order to determine the relationship between clinical and laboratory data and dengue severity, inferential statistical procedures such the Fisher exact test and the Chi-square test were conducted. A statistically significant relationship between variables was defined as a p-value of less than 0.05.

#### Results

The current study compared the demographic, clinical, laboratory and outcome characteristics of 90 hospitalized patients with confirmed dengue fever on laboratory. The findings are reported in order to have a general impression of patient features, symptoms, lab deviations, severity of the disease, and hospital outcomes. The focus is on learning about the number of cases by age group and gender, the commonality of the most typical clinical manifestations, including fever, myalgia, headache, and bleeding, and the commonality of laboratory abnormalities, including thrombocytopenia, leukopenia, elevated liver enzymes, and hemoconcentration. The paper also examines the proportion of patients who have mild dengue fever, dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS) and length of stay, recovery and occurrence of complications. All this presentation of findings is intended to raise some patterns, which are related to clinical management, the early discovery of severe illness, and the overall outcome of patients in a hospital setting.

Age Group (years)	Number of Patients	(%)
0–10	8	8.9
11–20	15	16.7
21–30	41	45.6
31–40	12	13.3
41–50	10	11.1
>50	4	4.4

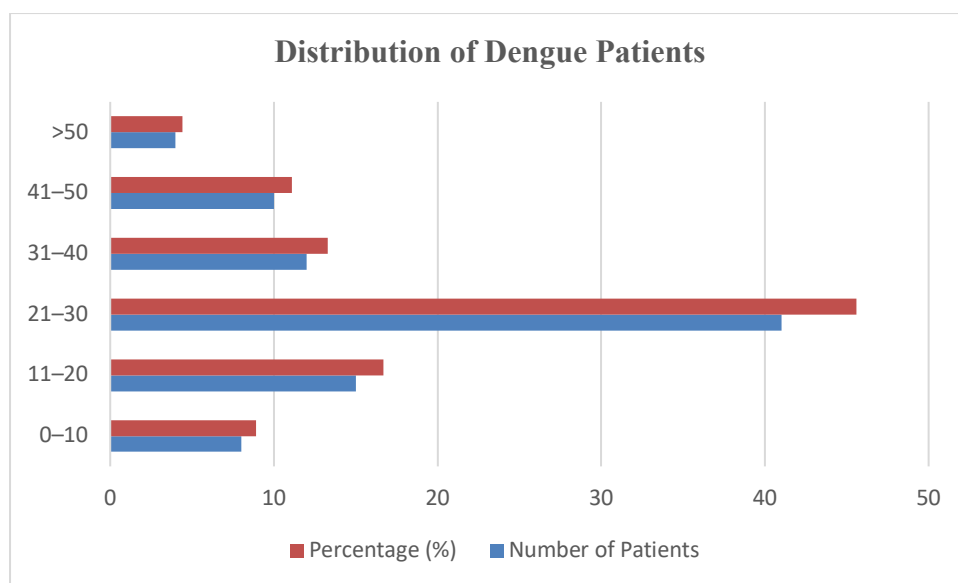


Figure 1: Distribution of Dengue Patients

The age distribution of the hospitalized patients of dengue. The age group of 21-30 years constituted the majority of patients (45.6) meaning that young adults are the most affected by dengue in this study population. Patients between the ages of 11 and 20 years (16.7) and 31 and 40 years (13.3) followed.

The cases were lower among children aged 0-10 years (8.9) and older adults with 41-50 years covering 11 and above years old (4.4 lower). These results indicate that dengue is more prevalent among the young adults, but it is less prevalent in children and the elderly.

Table 2: Distribution of Clinical Features Among Dengue Patients

Clinical Feature	Number of Patients	(%)
Fever	90	100
Myalgia	77	85.6
Headache	70	77.8
Rash	41	45.6
Nausea/Vomiting	59	65.6
Bleeding Manifestations	15	16.7
Abdominal Pain	12	13.3
Retro-orbital Pain	30	33.3

The prevalence of clinical presentation in the 90 dengue patients in the hospital. The most frequent was fever, as all patients (100%), then myalgia in 85.6, and headache in 77.8, providing evidence that these are the typical dengue infection symptoms. Nausea and vomiting were found in 65.6 percent of the cases and rash was found in 45.6 percent of the patients. Retro-orbital pain had occurred in 33.3

percent of the cases, with bleeding appearance and abdominal pains being less common with 16.7 and 13.3 percent, respectively. This distribution indicates that the majority of patients come on with classic febrile and musculoskeletal symptoms, but a lower percentage of patients exhibit warning signs or complications which need close attention.

Table 3: Laboratory Findings Among Dengue Patients

Laboratory Parameter	Number of Patients	(%)
Thrombocytopenia (<100k/mm <sup>3</sup> )	65	72.2
Leukopenia (<4000/mm <sup>3</sup> )	54	60
Elevated AST/ALT	28	31.1
Hemoconcentration	14	15.6

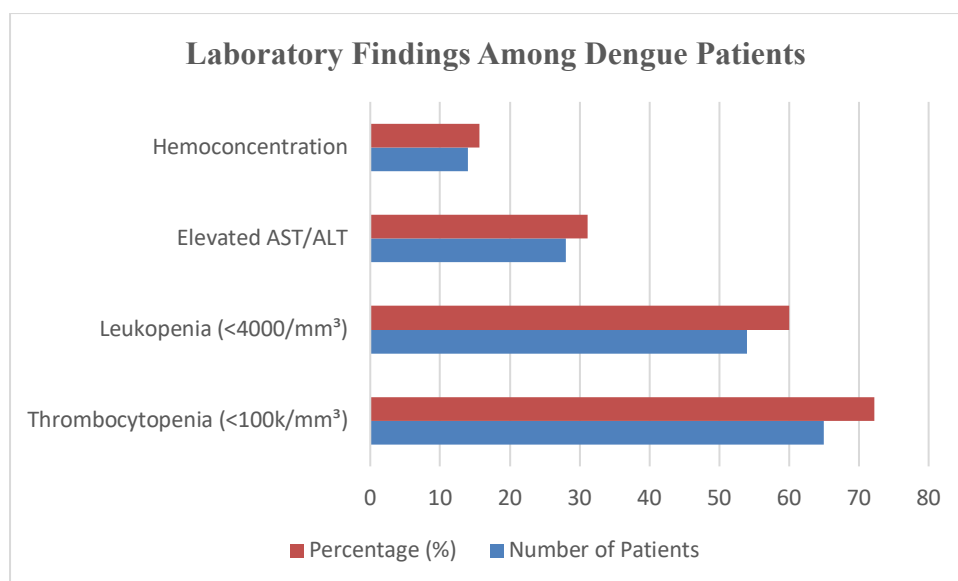


Figure 2: Laboratory Findings Among Dengue Patients

The commonality of the headline laboratory abnormality in the 90 hospitalized dengue patients. Most frequently seen (72.2% of patients) was thrombocytopenia (platelet count less than 100,000/mm<sup>3</sup>) and second was leukopenia (less than 4,000/mm<sup>3</sup>). It was found that 31.1% of patients had elevated liver enzymes (AST/ALT >40 IU/L), which suggests that in a proportion of

patients, it is hepatic involvement. Hemoconcentration, which is an increase in the hematocrit:20%, was evident in 15.6 percent of patients and was predominantly related to serious cases of dengue. These insights highlight the need to monitor the presence of complications and disease severity by means of laboratory monitoring early.

Table 4: Distribution of Dengue Patients by Disease Severity

Disease Category	Number of Patients	(%)
DF	78	86.7
DHF	10	11.1
DSS	2	2.2

The table indicates how the patients with dengue were distributed in the hospitals regarding the severity of the disease. Most of the patients, 78 (86.7%), were infected with dengue fever (DF) which is the mild type of the illness. A less significant percentage of 10 patients (11.1%) were found to develop the dengue hemorrhagic fever (DHF), and only 2 patients (2.2) to the most severe

type, dengue shock syndrome (DSS). This distribution shows that, despite the predominance of mild cases, a significant proportion of the cases resulted in severe complications, and close follow-up was necessary to detect and treat individuals who were at risk of the development of severe complications.

Table 5: Outcomes of Hospitalized Dengue Patients

Outcome	Number of Patients	(%)
Full Recovery	86	95.6
Severe Complications	4	4.4
Mortality	0	0

The table shows the clinical results of the 90 dengue patients who were hospitalized. Most of the patients 86 (95.6%) recovered completely and were discharged without any complications. Only a minor percentage, 4 patients (4.4%), were severely complicated and needed intensive care and there was no death recorded in the study period. These results suggest that under supportive care, and in time, dengue fever patients can reach positive results,

even though some of them can still develop severe complications, which require strict attention and specific treatment.

**Discussion**

Due to its high morbidity and the possibility of particularly serious sequelae, such as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS), dengue fever has emerged as one

of the most important social health concerns in tropical and subtropical regions, including India [9]. A comprehensive picture of the clinical spectrum, laboratory abnormalities, and outcome of dengue at our hospital is provided by the current study, which examined 90 hospitalized patients. The findings demonstrate the impact of dengue on young adults, with the majority of patients (45.6%) falling into the 21–30 age range and an average patient age of 28.4 years [10]. Young people's greater susceptibility to dengue infection is linked to this trend, most likely as a result of their exposure to outdoor activities and mosquito habitats. Similar to previous Indian data, the prevalence was found to be male dominant (57.80), which may be explained by the distinction between behavioral and occupational risk factors that increase the likelihood of mosquito bites for men [11].

The clinical presentation of patients in this study is in line with what has been reported about dengue presentation. Fever (100%), myalgia (85%), and rash (45%) were the most commonly reported symptoms, which is in line with the results of earlier studies done in the area. The manifestations of bleeding were observed in 16.7% of the patients, where the leading percentage of subjects was DHF or DSS, which indicated the value of close attention to hemorrhagic manifestations [12]. Symptoms like abdominal pain and retro-orbital pain were common but less prevalent but they were usually the early warning signs of serious disease. There were common laboratory changes that were useful as diagnostic and prognostic factors. Thrombocytopenia was seen in 72 % of patients, leukopenia in 60 percent and raised liver enzymes in 31.1 percent, which were similar to the results of both Indian and southeast Asian trials [13]. The evidence of plasma leakage in the form of hemoconcentration was reported in 15.6% of the patients and was mainly correlated with DHF and DSS, indicating its diagnostic usefulness in severe dengue [14].

In terms of severity of the disease, 86.7 percent of patients had mild dengue fever, with 13.3 percent developing severe disease, which is similar to prior hospital-based studies in India. The timely identification of warning signs and the early use of supportive management, such as fluid therapy, close attention to platelet counts and hematocrit, and timely complications treatment, probably played well to achieve positive results. The average length of stay was 5.2 1.8 days and an impressive 95.6 percent of patients were healed fully with no deaths being reported in the study duration. These findings demonstrate the usefulness of early supportive care in the prevention of serious complications and improved patient prognosis [15].

The findings of this research are further confirmed by comparison with the previous studies. The

clinical symptoms, including fever, myalgia, and headache are consistent with those reported by Wattanasri et al. (2002) and Chaturvedi et al. (1999), whereas laboratory parameters such as thrombocytopenia and leukopenia are compatible with those by Gupta et al. (2000) and Mohan et al. (2003) and as such, they are hallmark features in diagnosing early. The degree of severe dengue cases in this research (13.3) reflects the previous hospital-based experiences, which underscored that despite a high number of dengue cases turning out mild cases, development of DHF or DSS requires close monitoring [16].

In terms of the public health approach, the study highlights the importance of the timely detection of the warning signs and the strict control of the laboratory parameters to promptly intervene [17,18]. Prevention interventions such as proper management of the vectors, enlightenment of the people, and easy accessibility of hospital care are crucial in alleviating the burden of the dengue. The potential of acquiring a comprehensive and detailed clinical and laboratory data and thoroughly analyzing severity patterns and outcomes are also strong points of this study [19,20]. Limitations, however, are that it is hospital based in design, which might be not entirely representative of community prevalence, it has a fairly small sample of 90 patients and no long-term follow-up to assess possible sequelae. Nevertheless, the study nevertheless presents the useful information about the clinical and laboratory features of dengue that can be used to inform the work with patients and preventive measures in the endemic area.

### Conclusion

This hospital-based cohort study on 90 patients admitted to the hospital with dengue fever brings to the fore that the dengue illness is more prevalent among young adults with a slight preponderance of males. The most frequent clinical manifestations were fever, myalgia and headache, whereas the most frequently reported laboratory abnormalities were thrombocytopenia and leukopenia. Even though most patients had mild dengue fever (86.7%), a significant percentage (13.3) had severe dengue fever manifested in DHF and DSS, thus the necessity to identify warning signs and supportive care at an early stage. There was no fatality that was ever witnessed indicating effectiveness of timely hospital care. The findings highlight the need to conduct regular review of vital signs and laboratory parameters in hospitalized patients, timely identify the manifestations of hemorrhagic or shock, and introduce measures to control vectors and educate people about their role in preventing outbreaks. To sum up, systematic hospital-based treatment is capable of guaranteeing positive results and drastically decreasing morbidity rates in case of the dengue fever.

## References

1. Hoque MS, Sarkar PK, Ahmed AN. Clinical Characteristics & Observation of Hospitalized Cases of Dengue Fever: A Study in Tertiary Care Hospital, Dhaka, Bangladesh. *infection*. 1780;2(3).
2. Espinoza-Gómez F, Díaz-Dueñas P, Torres-Lepe C, Cedillo-Nakay RA, Newton-Sánchez OA. Clinical pattern of hospitalized patients during a dengue epidemic in Colima, Mexico.
3. Horvath R, McBride WJ, Hanna JN. Clinical Features of Hospitalized Patients During Dengue-3 Epidemic in Far North Queensland, 1997-1999.
4. Narayanan M, Aravind MA, Ambikapathy P, Prema R, Jeyapaul MP. Dengue Fever-Clinical and Laboratory Parameters Associated with Complications.
5. Itha S, Kashyap R, Krishnani N, Saraswat VA, Choudhuri G, Aggarwal R. Profile of liver involvement in dengue virus infection. *National Medical Journal of India*. 2005 May 1;18(3):127.
6. Walid SF, Sanusi S, Zawawi MM, Ali RA. A comparison of the pattern of liver involvement in dengue hemorrhagic fever with classic dengue fever. *Southeast Asian Journal of Tropical Medicine and Public Health*. 2000 Jun 1;31(2):259-63.
7. Qureshi JA, Notta NJ, Salahuddin N, Zaman V, Khan JA. An epidemic of Dengue fever in Karachi--associated clinical manifestations. *Journal of Pakistan Medical Association*. 1997;47(7):178.
8. Carlos CC, Oishi K, Cinco MT, Mapua CA, Inoue S, Cruz DJ, Pancho MA, Tanig CZ, Matias RR, Morita K, Natividad FF. Comparison of clinical features and hematologic abnormalities between dengue fever and dengue hemorrhagic fever among children in the Philippines. *American Journal of Tropical Medicine and Hygiene*. 2005;73(2):435-40.
9. Chan PW, Muridan R, Debruyne JA. Bronchiolitis obliterans in children: clinical profile and diagnosis. *Respirology*. 2000 Dec;5(4):369-75.
10. Hung NT, Lei HY, Lan NT, Lin YS, Huang KJ, Lien LB, Lin CF, Yeh TM, Ha DQ, Huong VT, Chen LC. Dengue hemorrhagic fever in infants: a study of clinical and cytokine profiles. *The Journal of infectious diseases*. 2004 Jan 15;189(2):221-32.
11. Siqueira Jr JB, Martelli CM, Coelho GE, da Rocha Simplicio AC, Hatch DL. Dengue and dengue hemorrhagic fever, Brazil, 1981-2002. *Emerging infectious diseases*. 2005 Jan;11(1):48.
12. Guha-Sapir D, Schimmer B. Dengue fever: new paradigms for a changing epidemiology. *Emerging themes in epidemiology*. 2005 Mar 2;2(1):1.
13. Chaudhuri M, Pahari A. Dengue: clinical issues in management. *Apollo Medicine*. 2005 Dec 1;2(4):364-73.
14. Malavige GN, Fernando S, Fernando DJ, Seneviratne SL. Dengue viral infections. *Postgraduate medical journal*. 2004 Oct;80(948):588-601.
15. Hammond SN, Balmaseda A, Perez L, Tellez Y, Saborío SI, Mercado JC, Videá E, Rodríguez Y, Perez MA, Cuadra R, Solano S. Differences in dengue severity in infants, children, and adults in a 3-year hospital-based study in Nicaragua. *The American journal of tropical medicine and hygiene*. 2005 Dec 1;73(6):1063-70.
16. Cobra C, Rigau-Pérez JG, Kuno G, Vomdam V. Symptoms of dengue fever in relation to host immunologic response and virus serotype, Puerto Rico, 1990-1991. *American journal of epidemiology*. 1995 Dec 1;142(11):1204-11.
17. Lum LC, Lam SK, George R, Devi S. Fulminant hepatitis in dengue infection. *Southeast Asian J Trop Med Public Health*. 1993;24(3).
18. Rigau-Pérez JG. Clinical manifestations of dengue hemorrhagic fever in Puerto Rico, 1990-1991. *Revista Panamericana de Salud Publica*. 1997;1:381-8.
19. Prasittisuk C, Andjaparidze AG, Kumar V. Current status of dengue/dengue haemorrhagic fever in WHO South-East Asia Region. *Dengue Bulletin*. 1998;22:1-1.
20. Mohan B, Patwari AK, Anand VK. Brief report. Hepatic dysfunction in childhood dengue infection. *Journal of tropical pediatrics*. 2000 Feb 1;46(1):40-3.