



# Dengue Fever Outbreak In Noida North India: A Study

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## Abstract

## Background

Dengue virus single stranded positive polarity ribonucleic acid RNA viruses of the family Flaviviridae are the most common cause of arboviral disease transmitted by Aedes mosquito. We report a clinico epidemiological study of dengue fever outbreak 2022 from Noida hospitals north India.

## Objective

The study objective is to know the incidence of laboratory confirmed cases among the suspected patients in the hospitals in Noida. Dengue is also observed in different ages.

## Material and method

Was concerned with district hospital Gautam Buddha Nagar where 3,973 just have been conducted this year to check sample thank you of which 251 have been reported positive packet cases of dengue infection what subjected to new capture enzyme linked immunosorbent assay (ELISA) for detection of dengue virus specific IgM antibody.1

## Result

Out of 3,973 tests have been reported positive dengue virus specific IgM antibodies year 2022 dengue cases as the study has been done in the month of July to December 2022. Slite spike has been seen this year as compared to last 10 years.

## Conclusion

It is a common health problem in India with stereo prevalence. The study examined in present suggests that effort of mobilized community members are essential for the sustainability of vector control methods and generalizability of proven methods are recommended for the research.

**Keywords:** Dengue virus,  $\mu$ -capture ELISA, *Aedes* mosquitoes, dengue, DF/DHF.

## Introduction

Dengue viruses, single-stranded positive polarity ribonucleic acid (RNA) viruses of the family *Flaviviridae*, are the most common cause of arboviral disease in the world. Dengue viruses have four serotypes, designated dengue types 1-4; and are transmitted mainly by bite of *Aedes aegypti* mosquito and also by *Aedes albopictus*. More than two-fifths of the world's population (2.5 billion) live in areas potentially at risk for dengue. The global incidence of dengue fever (DF) and dengue haemorrhagic fever (DHF) has increased dramatically in recent decades, and has turned this disease into a serious public health problem (2)(3).

The first epidemic of clinical dengue-like illness was recorded in Madras (now Chennai) in 1780 and the first virologically proven epidemic of DF in India occurred in Calcutta and Eastern Coast of India in 1963-1964. The first major epidemic of the DHF occurred in 1953-1954 in the Philippines followed by a quick global spread of epidemics of DF/DHF. DHF was occurring in the adjoining countries but it was absent in India for unknown reasons as all the risk factors were present. The DHF started simmering in various parts of India since 1988.

In India, dengue fever is a potential differential in all cases of febrile illness, during the monsoon period (July to November) and is routine practice to include it for laboratory testing. Invariably, mixed infections are noted, resulting in diagnosis having overlapping symptoms, causing a diagnostic dilemma for treating physicians (5,6). The common co-infections detected/ overlapped with dengue are malaria, chikungunya. The usual presentation for all is usually flu like illness with high fever, generalized body ache, nausea, vomiting and peculiarity.

Dengue fever came into general use only after 1828. Dengue viruses (DV) belong to the family *Flaviviridae* and there are four serotypes of the virus referred to as DV-1, DV-2, DV-3 and DV-4. DV is a positive-stranded encapsulated RNA virus and is composed of three structural protein genes, which encode the nucleocapsid or core (C) protein, a membrane-associated (M) protein, an enveloped (E) glycoprotein and seven non-structural (NS) proteins. It is transmitted mainly by *Aedes aegypti* mosquitoes and also by *Ae. albopictus*. All four serotypes can cause the full spectrum of disease from a subclinical infection to a mild self-limiting disease, the dengue fever (DF) and a severe disease that may be fatal, the dengue haemorrhagic fever/dengue shock syndrome (DHF/DSS). (9,2).

## Material and Methods

The present study was conducted in the Gautam Buddha Nagar, District recorded 251 this year. The study has made clinical data of Hospitals in Noida.

The present study was conducted in the District Hospital and Post graduate institute of child Health. According to district medical officials 3,973 tests were conducted this year out of which 251 have been reported positive. The study has been done in the month of July to December. Out of which male were 81 (53.6) % and female patients were 70 (46.3) %.

The serum samples from patients having  $\geq 5$  days of fever ( $n = 3,973$ ) were tested for dengue-specific IgM antibodies.  $\mu$ -capture dengue IgM enzyme-linked immunosorbent assay (ELISA) kit was used (supplied by the National Institute of Virology, Pune; under the National Vector Borne Disease Control Program). (2,3,4) Manufacturer's instructions were strictly followed for performing the test and interpreting the results. Optical Density (O.D) was measured at 450 nm using ELISA reader (BioTek<sup>R</sup>, Winooski, United States).

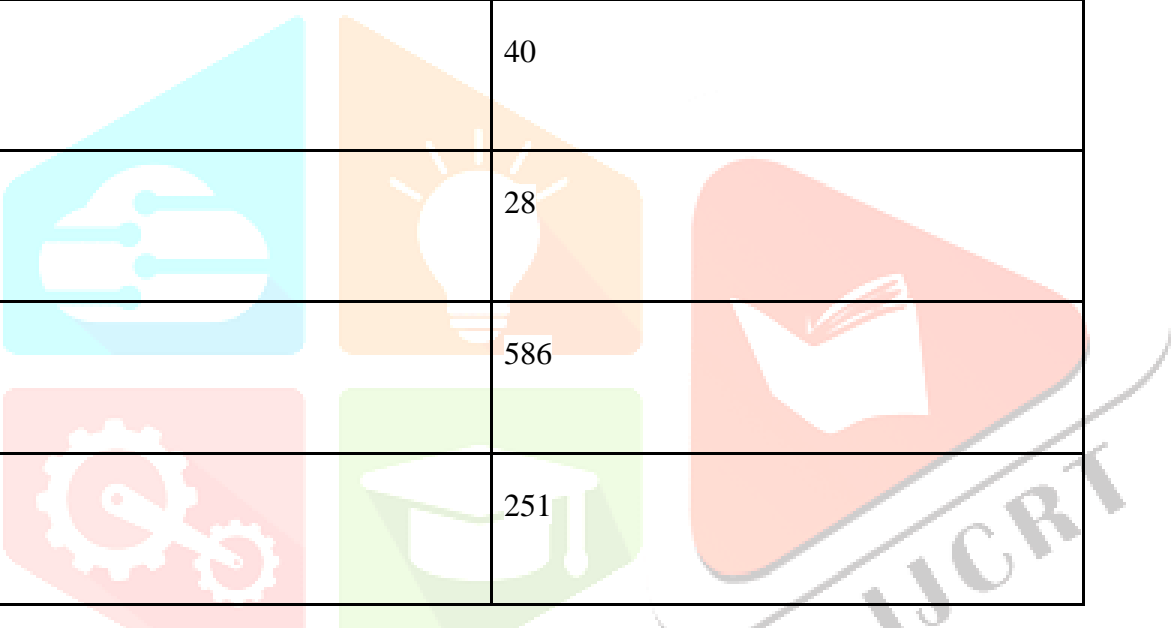
**Table 1 Demographic Variable n=151**

Age (Years)	Number (%)
0-5	51(33.7%)
10-20	48(31.7%)
21- Above	52(34.4%)
Male	81(53.6%)
Female	70(46.3%)

**Table 2 Last 10-year data of Dengue**

Years	Positive Cases
2012	14
2013	69
2014	10

2015	176
2016	17
2017	13
2018	28
2019	40
2020	28
2021	586
2022	251



**Monthly total Dengue patient warded at Noida Hospital 2022**

Total Dengue patient warded at hospital	July	August	September	October	November	December

**Result**

Out of 3,973 tests were conducted this year out of which 251 have been reported positive. The study has been done in the month of July to December. Out of which male were 81 (53.6) % and female patients were 70 (46.3) %. All age groups & both sexes are affected Deaths are more in children during DHF outbreak. Maximum infection has been observed in the month of September and lowest infection has been recorded in the month of November. Over the last 10-year data analysis shows that in 2021 and 2022 maximum infections (dengue infection) were observed.

**Conclusion**

We report our experience of the dengue fever outbreak of 2022. The event was of a large magnitude, but was comparatively less severe than 2021. The 2022 dengue outbreak at the district hospital and post graduate institute of child health affected patients and users severely and is probably a dengue outbreak. We also observed that dengue is the disease concerned with the dengue virus. Also, dengue Today, dengue control and prevention require thinking outside the tropical disease box. Several factors should be considered when interpreting these results. First, because dengue virus serotypes 1 and 2 were circulating in the population during the study period, some persons may have been infected with both serotypes during the 1-year period and, therefore, clinical signs may have resulted from a secondary infection. This proportion is probably small. Second, several factors other than age are thought to influence severity of classic dengue illness.

Despite the complexities of dengue epidemiology, these findings provide strong empirical evidence that age is an important factor in determining risk for disease severity after primary dengue virus infection. As such, these findings have important implications for initiatives aimed at controlling dengue. Interventions focused on reducing the number of *Aedes* mosquitoes are the mainstay of dengue control worldwide.

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