

# STUDY OF SERO-PREVALENCE OF DENGUE FEVER AND KNOWLEDGE ON DENGUE INFECTION IN CHALMEDA ANAND RAO INSTITUTE OF MEDICAL SCIENCES (CAIMS) TEACHING HOSPITAL KARIMNAGAR, TELANGANA STATE

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## ABSTRACT

### BACKGROUND

Dengue virus infection has emerged as a notable public health problem in recent decades in terms of the mortality and morbidity associated with it. Dengue is endemic in many parts of India and epidemics are frequently reported from various parts of India and abroad. This study aimed for finding out the frequency and distribution of dengue fever and its case fatality based on the variables such as age and sex during a time period of monsoon. The present study report communicates us the Sero-prevalence of dengue fever and the knowledge on dengue infection in the study subjects of Chalmeda Anand Rao Institute of Medical Sciences (CAIMS) teaching hospital Karimnagar, Telangana, India.

### AIMS AND OBJECTIVES

1. The present hospital study aims to describe the frequency, distribution and case fatality of dengue fever based on the variables such as age, sex and period of one month in CAIMS Teaching Hospital.
2. To assess the Sero-positive cases among all admitted fever cases.

### MATERIALS AND METHODS

The total number 185 patients were admitted in medical ward and screened for Sero-positive dengue infection. It is across sectional study which is conducted by pre tested & structured questioner to assess knowledge and subjected for study to know the Sero-prevalence of dengue infection from 16<sup>th</sup> October 2015 to 15<sup>th</sup> November 2015 (period of 1 month). Blood samples were collected from 185 fever cases, Sera were separated and subjected for (Dengue check) anti-dengue IgM and IgG antibody testing by the solid phase immune-chromatographic assay, (a commercial dengue virus rapid test kit) manufactured by Standard Diagnostics, J. Mitra & Co. Pvt. Ltd A 180 -181 Okla. Ind. in the Department of Microbiology CAIMS, Karimnagar.

### RESULTS

Out of 185 admitted fever cases, 97(52.43%) were found to be dengue positive for IgM or IgG or for both the antibodies. In 2015, the highest number of suspected dengue patients admitted was in the month of 16<sup>th</sup> October 2015 to 15<sup>th</sup> November 2015. Among 97 sero-positive cases one male patient died with dengue hemorrhagic shock. The case fatality rate is 1.03% in males. Among 185 patients 14 were refused to undergo the test. The highest number of dengue patients admitted was in the month of October 2015. This epidemic made us to take up study on dengue fevers.

### KEYWORDS

Dengue hemorrhagic fever, Dengue shock syndrome, Epidemic.

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**INTRODUCTION:** Dengue fever is an infectious mosquito-borne disease caused by dengue virus. Its symptoms include

fever, head ache, muscle and joint pains and rash resembles measles. The presence of muscle and joint pains gives an alternative name to the dengue fever as break bone fever.<sup>1</sup>

Classical dengue fever cases sometimes develop to more severe life-threatening stage of Dengue Hemorrhagic Fever (DHF) or dengue hemorrhagic fever with shock (DSS). In India highest numbers of dengue cases were reported in 2010 with maximum cases were reported from Delhi followed by Punjab, Kerala, Gujarat and Karnataka. All the four serotypes have been isolated in India.<sup>2</sup> Dengue illness is often confused with other viral febrile states especially

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during the early phase of illness, where nonspecific clinical symptoms and signs accompany the febrile illness.<sup>3</sup>

The disease is transmitted by the bite of certain species of female Aedes mosquito. Subsequent infection with different serotypes increases the severity of this fatal infection. This study aimed for finding out the frequency and distribution of dengue fever and its case fatality based on the variables such as age and sex during a time period of monsoon, i.e. from September to November only, which is similar to most of the previous outbreaks in India.<sup>4</sup> It may be because this season is very favorable for high breeding of the vector, i.e., Aedes aegypti. This seasonal outbreak of disease transmission is very important at local level for effective control measures. In CAIMS Hospital, the dengue fever cases were turned out more in medical outpatient during month of October and November 2015 insisted me to go for study on dengue fever. Dengue is endemic in many parts of India and epidemics are frequently reported from various parts of India<sup>4</sup> and abroad.<sup>5,6</sup> The case fatality rate in patients with Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS) can be as high as 44%.<sup>(7)</sup> Hence early and rapid laboratory diagnosis of dengue is crucial. Appropriate clinical management can save the lives of DHF and DSS patients and mortality can be reduced to less than 1%.<sup>8</sup> The present communication reports the sero-prevalence of dengue infections occurred in Chalmeda Anand Rao Institute of Medical Sciences (CAIMS) teaching hospital Karimnagar, the worthwhile planning and appropriate control strategies could able to limit the mortality one (C/F 1.0%).

## MATERIALS AND METHODS:

**Study Design & duration:** This is a cross sectional study conducted in CAIMS Teaching Hospital. Duration is one month, from 16<sup>th</sup> October 2015 to 15<sup>th</sup> November 2015.

**Setting:** The patients attending with all types of fever had admitted and screened for dengue sero-positives.

**Participants:** Patients from all the villages surrounding teaching hospital of CAIMS, and admitted cases (185) of various fever cases.

**Methods:** An interview was conducted by pre tested & structured questioner for admitted patients of CAIMS teaching Hospital in the period of 16<sup>th</sup> October 2015 to 15<sup>th</sup> November 2015. Blood samples were collected from 185 fever cases from medical ward and screened for Dengue infection during study period. Sera were separated and subjected for anti-dengue IgM and IgG antibody testing (Dengue check) by the solid phase immune-

chromatographic assay (a commercial dengue virus rapid test kit), manufactured by Standard Diagnostics, J. Mitra and Co. Pvt. Ltd. A 180-181 Okla. Ind., in the Department of Microbiology, CAIMS, Karimnagar Telangana State.

## RESULTS:

| Age Years    | Dengue Check |             |           |             |
|--------------|--------------|-------------|-----------|-------------|
|              | Positive     | %           | Negative  | %           |
| 1-16         | 9            | 9.3         | 5         | 5.7         |
| 17-33        | 44           | 45.4        | 31        | 35.2        |
| 34-50        | 26           | 26.8        | 27        | 30.7        |
| 51-67        | 15           | 15.5        | 20        | 22.7        |
| 68-84        | 3            | 3.1         | 5         | 5.7         |
| <b>Total</b> | <b>97</b>    | <b>52.4</b> | <b>88</b> | <b>47.6</b> |

**Table 1: Age wise distribution  
Dengue check positives**

Table shows majority (45.4%) of the people suffering with dengue in 17-33 years of age group.

Below 16 year's age group out of 14 children 9.3% children are positive.

| Dengue check | Age in years & % |               |               |               |             |                      |
|--------------|------------------|---------------|---------------|---------------|-------------|----------------------|
|              | 1-16 Yrs         | 17-33         | 34-50         | 51-67         | 68-84       | Total                |
| Male         | 9<br>(9.2%)      | 25<br>(25.7%) | 19<br>(19.5%) | 10<br>(10.4%) | 1<br>(1.0%) | 64<br>(65.9%)        |
| Female       | 0<br>(0.0%)      | 19<br>(19.5%) | 7<br>(7.2%)   | 5<br>(5.1%)   | 2<br>(2.0%) | 33<br>(34.1%)        |
| <b>Total</b> | <b>9</b>         | <b>44</b>     | <b>26</b>     | <b>15</b>     | <b>3</b>    | <b>97<br/>(100%)</b> |

**Table 2: Gender wise distribution  
in dengue positives**

The table shows male are majority (65.9%) sufferers of dengue infection and majority (25.7%) in 17-33 year age groups.

| Confirmative test   | Residence       |                 | Total      |
|---------------------|-----------------|-----------------|------------|
|                     | Urban %         | Rural %         |            |
| Dengue Reactive     | 58(59.8)        | 39(40.2)        | 97         |
| Dengue Non-Reactive | 38(39.1)        | 50(51.5)        | 88         |
| <b>Total</b>        | <b>96(51.8)</b> | <b>89(48.2)</b> | <b>185</b> |

**Table 3: Comparison of dengue test reactive  
between Urban and Rural residents**

Majority (59.8%) of Dengue cases are in Urban residents as compared with Rural residents.

| Knowledge on                       | Positive Group (%) | Non Positive Group (%) |
|------------------------------------|--------------------|------------------------|
| <b>Disease transmission vector</b> |                    |                        |
| 1. Aedes Mosquito                  | 41(22.1)           | 46(24.8)               |
| 2. Anopheles Mosquito              | 1(0.5)             | 1(0.5)                 |
| 3. Culex Mosquito                  | 0(-)               | 1(0.5)                 |
| 4. Don't know                      | 55(29.7)           | 40(21.6)               |

|                                                             |          |          |
|-------------------------------------------------------------|----------|----------|
| <b>Breeding places of vector</b>                            |          |          |
| 1. In the flower pot & In the abandoned tires               | 90(48.6) | 81(43.7) |
| 2. On the roof gutter                                       | 3(1.6)   | 3(1.6)   |
| 3. In the garbage                                           | 2(1.0)   | 2(1.0)   |
| 4. Others                                                   | 2(1.0)   | 2(1.0)   |
| <b>Mosquito Biting pattern</b>                              |          |          |
| 1. Day time.                                                | 58(31.3) | 57(30.8) |
| 2. Night time.                                              | 0        | 2(1.6)   |
| 3. Don't know.                                              | 39(21.0) | 29(15.7) |
| <b>Fever symptoms</b>                                       |          |          |
| 1. High fever, Chills, Headache & Retro-orbital pain.       | 97(52.4) | 87(47.0) |
| 2. Fever & Enlarge lymph nodes Deep muscle & joint pains.   | 0        | 1(0.5)   |
| 3. No fever, Loss of appetite & Nausea & vomiting, Diarrhea | 1(0.5)   | 0        |
| <b>Treatment</b>                                            |          |          |
| 1. Seek immediate medical attention & treatment             | 89(48.1) | 86(17.7) |

**Table 4: Assessment of knowledge in study subjects regarding dengue fever cases**

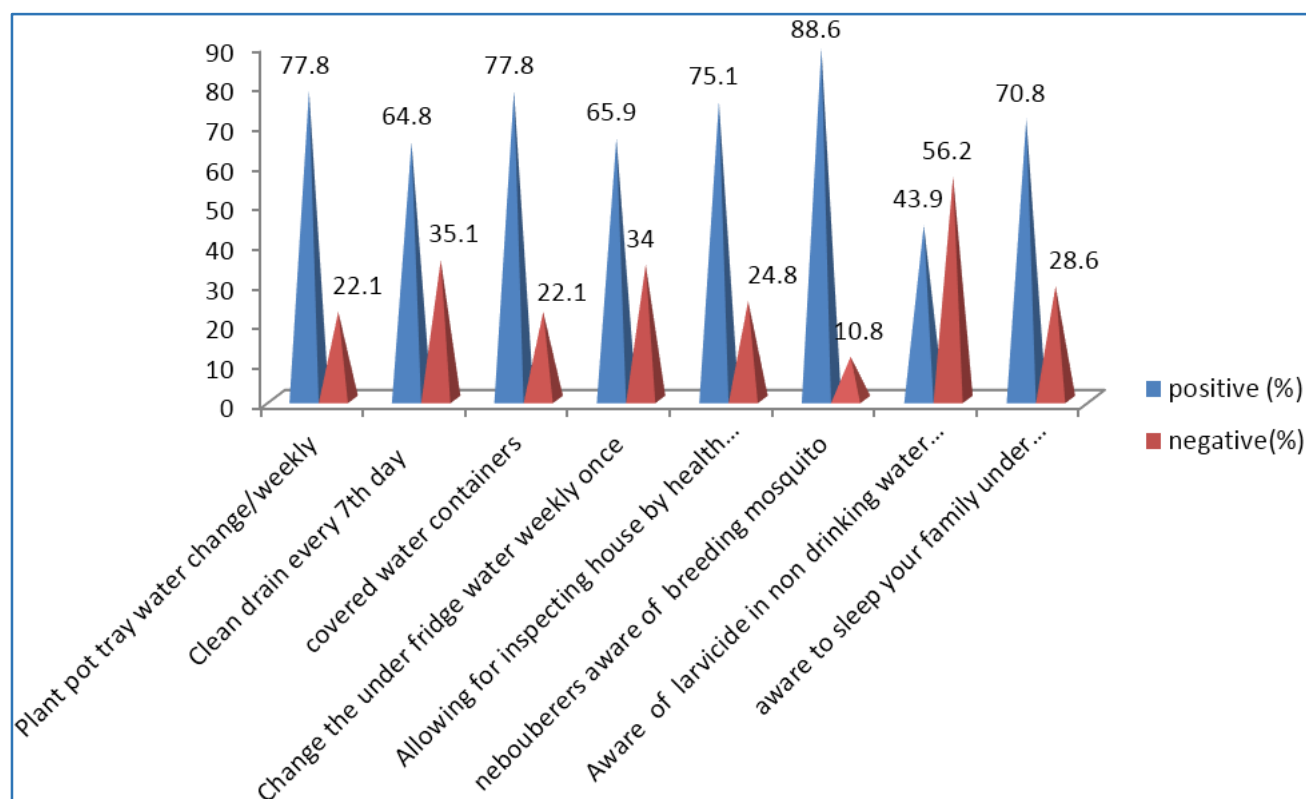
Table shows that 29.7% dengue positives among study group don't know the transmitting vector.

31.3% positives know about day time biting mosquito causes dengue fever.

52.4% positive group knows about typical features of dengue fever.

48.1% positives know about seeking immediate medical treatment for dengue.

Majority (48.6%) Dengue positive group knows the breeding places of Aedes mosquito.



**Table 5: Awareness and practices among Dengue fevers in study subjects**

Table shows that 77.8% of the study group practicing covering water containers and change of plant pot water weekly once.

65.9% of study group knows the breeding places of mosquito and changing clean under fridge water.

88.6% of study group having awareness about breeding places of dengue mosquito.

70.8% of study group knows about use of mosquito net to avoid the biting.

56.2% of study group not aware of application of larvicide in non-drinking water places.

**DISCUSSION:** In the present study from 16<sup>th</sup> October 2015 to 15<sup>th</sup> November 2015, the total number 185 fever cases were admitted (118 males and 67 females) and screened for dengue fever in the CAIMS teaching hospital; 52.43% (97) patients were serologically positive for dengue infection. The present dengue cases occurred during the post monsoon season, i.e. from September to November only, which is similar to most of the previous outbreaks in India.<sup>4</sup> Similar study was conducted in November 2015 M.O.S.C Medical College, Kolenchery, Ernakulam District, Kerala State, India. Out of 341 reported cases of dengue, 60.70% were males and 39.29% were females. In both males and females, the high proportion of cases were reported in adult age groups (>20 years).<sup>9</sup> In India highest numbers of dengue cases were reported in 2010 with maximum cases were reported from Delhi followed by Punjab, Kerala, Gujarat and Karnataka. All the four serotypes have been isolated in India.<sup>2</sup> Dengue illness is often confused with other viral febrile states especially during the early phase of illness, where nonspecific clinical symptoms and signs accompany the febrile illness.<sup>3</sup>

In our study 17-33 age group of people were highly affected among them (65.9%) males. The comparative study also tells us the age group of 15-30 years was highly affected with dengue which is consistent with the outbreak in Delhi in 2003<sup>4</sup> The higher prevalence of dengue infection was noted among male patients than female patients unlike other reports in which both the sexes were equally affected.<sup>10,11</sup> Male preponderance and the age group of 15-30 years indicate more transmission of dengue infections at work sites. From the study group one patient died with dengue hemorrhagic fever among 97 positive patients in CAMS hospital. In our study the case fatality rate was 1.03% and the male to female ratio is 1.93:1, which was compared with similar study in Delhi<sup>4</sup> in which male-to-female ratio was 2.15:1. In other comparative studies, Dengue hemorrhagic fever reports high case fatality rate in the study area compared to the other regions, 0.76% in Jakarta,<sup>12</sup> 1.4% in Indonesia, 2.8% in West Java and 8.5% in West Bengal.<sup>13</sup>

In our Study below 16 year age group 9.3% are affected as compared with above 16 years age 52.4%. In some parts of the world, it is mainly a pediatric public health problem.<sup>14</sup> It is attributed to the changes in locations where disease transmission takes place.

In the present study, majority 59.8% of the dengue-positive patients were from the urban areas this suggests that dengue infection is no more an urban area infection but it is extending its arms to rural areas also, which may become a cause for concern to health authorities. The study also reveals that dengue infection is also prevalent in adjacent areas of Maharashtra like Chhindwara and Balaghat Districts of Madhya Pradesh as well as Adilabad district of Andhra Pradesh. In other similar study, majority of the dengue-positive patients were from the rural areas of Vidarbha (Maharashtra.<sup>10,11</sup>) although 14.63% were from Nagpur city alone.<sup>15</sup>

In our study group 77.83 people aware about breeding pattern of mosquito; 29.7% dengue positives among study

group don't know the transmitting vector; 31.3% positives know about day time biting mosquito causes dengue fever; 52.4% positive group knows about typical features of dengue fever; 48.1% positives know about seeking immediate medical treatment for dengue; 77.8% of the study group practicing putting the cover over water containers and change of plant pot water weekly once. 88.6% of study group having awareness about breeding places of dengue mosquito; 70.8% of study group knows about use of mosquito net to avoid the biting; 56.2% of study group not aware of application of larvicide in non-drinking water places.

**CONCLUSIONS:** As the prevention of dengue fever lacks proper vaccine, the main preventive strategy is the awareness building in the community regarding the source reduction process by emptying the man-made containers or dispose those in a systematic or in a proper way. Dengue cases were more during September to November in the post-monsoon season, which is useful to plan special preventive strategies. The study draws attention toward the male, young adult age group. Dengue infection is more an urban area infection, but it has penetrated in rural areas also. Much efforts to be taken to promote the participation of the community in the action program for eliminating vector-breeding sites.

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