

## A STUDY ON DEMOGRAPHIC PROFILE CORRELATING THE CLINICAL SPECTRUM OF DENGUE FEVER IN CHILDREN ADMITTED TO TERTIARY CARE CENTRE.

### Paediatrics

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### ABSTRACT

**Background:** Dengue virus categorized under flavivirus is a single stranded RNA virus. Codes for structural proteins - C (core protein), M (membrane protein), E (envelop protein) and Non structural proteins - NS1, NS2a, NS2b, NS3, NS4a, NS4b. Immunity to one serotype will not afford protection from other serotype. **Objectives:** To study demographic profile correlating the clinical spectrum of dengue fever in children admitted to tertiary care centre, VIMS, Bellary. **Methods:** A retrospective cohort study is done on 520 patients with lab confirmed serologically positive patients of dengue fever admitted in vims Bellary during the period of October 2019 to October 2021 were included in this study. Statistical analysis was done by using relevant statistical methods. **Results:** In study 70% cases of dengue fever correlated with rural, 20 % semi urban area, 10% cases urban area. In rural area 19% cases are only dengue fever, 54 % cases dengue haemorrhagic, 27 % cases are dengue shock syndrome. The most common age group among this is 1-6 years. 39 % of these are from rural area. Most of these patient had dengue hemorrhagic fever and dengue shock syndrome at presentation. The common were males. (56%). And more male patients were from rural area. And male patients from rural area presented with dengue hemorrhagic fever and dengue shock syndrome. The mean day of illness of presentation was 6th day in rural area, 4th day in semi urban and 3rd in urban area. The mortality and morbidity was proportionately more with late presentation. The study has mortality of major mortality of 91 % in rural, 36% in semi urban and 21 % in urban areas.

### KEYWORDS

dengue, demographic profile, rural, semiurban, urban

### INTRODUCTION:

Dengue virus was first isolated in 1945. There is 75 % burden of disease due to dengue. Around 1.8 billion population is at risk of developing dengue fever worldwide. Dengue virus belonging to flaviviridae family is a single stranded positive-sense RNA viruses with genome of about 11000 bases that codes for three structural proteins C(Core protein), M(membrane protein), E(envelope protein) and 7 Non structural proteins.

There are 4 serotypes DEN 1, DEN 2, DEN 3, DEN 4. All these serotypes cause dengue epidemics. Asian serotypes DEN-2 and DEN-3 are associated with severe dengue.

Aedes aegypti is a mosquito that can spread Dengue, chikungunya, yellow fever. The mosquito is small, with typical white markings on the legs and thorax and it is day biter. Females are larger than males. When seen under microscope, male mouth parts are modified for nectar feeding and female mouth parts are modified for blood feeding. Feeding on humans generally occurs at one to two hour intervals.

According to WHO 2015 guidelines, clinical spectrum of disease includes

- 1) Dengue fever (Break bone fever)
- 2) Dengue fever with warning signs
- 3) Dengue shock syndrome

In addition to this distribution, the WHO recognizes three phases in the clinical course of dengue infection. i.e., febrile phase, critical phase and recovery phase.

### METHODOLOGY:

- a) This is a retrospective study done on 520 patients with dengue fever, admitted in the pediatric emergency ward.
- b) Investigations such as complete blood count, serology for dengue fever, urine routine, serum electrolytes, random blood sugar, WIDAL/blood culture, liver enzymes, chest x ray, ultrasound abdomen, PT, APTT, INR were did based on clinical scenario.
- c) And if necessary, blood urea, serum creatinine, CSF analysis, 2DECHO, CT SCAN brain /MRI was also done.
- d) Since this study is a time bound study, these cases of dengue fever enrolled during study period 2years, i.e., October 2019 to October 2021.

### Inclusion Criteria :

Children between age 1 month to 15years tested positive for dengue NS1 and/or IgM in the serum and those patients fulfilling the WHO dengue fever criteria.

### Exclusion Criteria;

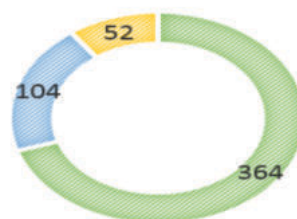
- 1) Neonates.
- 2) Children having other co infections like malaria, typhoid or infective hepatitis, interfering with interpretation of laboratory data.
- 3) Patient discharged against medical advice.
- 4) Patient not fulfilling the WHO dengue fever criteria

### RESULTS:

Demographic Wise Distribution Of Cases (N=520).

| AREA      | NUMBER | PERCENTAGE |
|-----------|--------|------------|
| Rural     | 364    | 70 %       |
| Semiurban | 104    | 20%        |
| Urban     | 52     | 10%        |

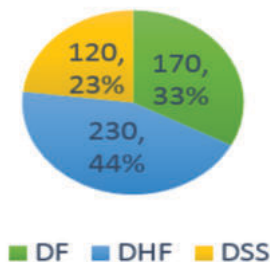
■ Rural ■ Semiurban ■ urban



The cases from rural area accompanied more i.e., 364 cases (70%), followed by 104 cases (20%) semiurban and 52 cases (10%) urban area.

Distribution Based On Mode Of Presentation Of Dengue Fever.(n=520)

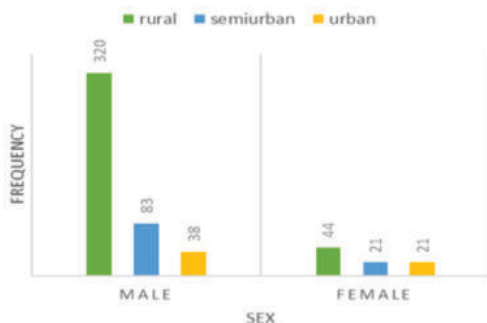
| Presentation | number | percentage |
|--------------|--------|------------|
| DF           | 170    | 32.6%      |
| DHF          | 230    | 44.4%      |
| DSS          | 120    | 23.0%      |
| Total        | 520    | 100%       |



In 520 cases 170 cases (32.6%) only dengue fever, 44.4% dengue haemorrhagic and 23 % cases dengue shock syndrome.

#### Sex And Demographic Correlation(n=520)

| sex    | Rural | percent | Semiurban | Percent | urban | Percent |
|--------|-------|---------|-----------|---------|-------|---------|
| Male   | 320   | 87%     | 83        | 80%     | 38    | 70%     |
| Female | 44    | 13%     | 21        | 20%     | 14    | 30%     |
| Total  | 364   | 100%    | 104       | 100%    | 52    | 100%    |



- Majority of affected males are from rural area. Total 320 rural cases, 320 (87%) males, 44 (13%) females.
- Semiurban area 83 cases (80%) males, 21 cases (20%) females, 38 (70%) males, 14 cases (30%) female affected from urban area.

#### DISCUSSION

We conducted this study based on WHO classification of dengue fever, to know which factors can predict severity so as to facilitate timely intervention. In our study out of 520 patients with dengue, 367 patients with dengue fever, 83 cases as dengue fever with warning signs and 70 children as severe dengue. However, Prasad D et al. found 82.1 % as severe dengue and Sahana et al. found 24.7 %.(3) The mean age of presentation in our study was  $6.59 \pm 3.96$  years with 42.3 % of the children in the 1 – 6 yr years age group a finding similar to that by Gomber S et al. and Rasul et al.

Involvement of younger age group and increase in the frequency of epidemics are indicators of higher incidence of infection. Ira Shah found that 3 – 6 year age group affected more in their study. In our study 5-10 year affected more.(5)

The mortality among severe dengue fever in our study was 14.8% which was more than those reported by Sahana et al. where it was 2%. The overall mortality of dengue fever in our study was 0.02 %.(6)

In the present study the overall mortality was 14.8% and all patients belonged to dengue shock syndrome. which is comparable with other Indian studies.

The most probable reason for this is 5 – 10 year age group prone for frequent mosquito bites due to their outdoor activities, but our study does not prove any significant association between age and the severity of dengue fever. Studies done by Shah I et al. found younger age as one of the predictive markers for Dengue shock Syndrome and dengue hemorrhagic fever. The male to female ratio in our study was 1.5 : 1 similar to study by Rasul et al. our study did not have a significant statistical association similar to studies by Pongpan S and Ahmed FU et al.(7)

There was no significant association found between nutritional status and the severity of dengue fever. Pinchainarong stated that severe dengue is rarely seen in children with protein energy malnutrition.(8)

#### CONCLUSION

The presence of bleeding manifestations was having a statistically significant association with the severity of dengue fever like many other studies.

Recovery time and mortality rate in dengue shock syndrome is high as compared with dengue hemorrhagic fever.

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