

## Vector Borne Disease Led by Dengue Adding Misery to Covid19 Pandemic Struck India?

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Delhi saw 163 dengue cases so far this year, 39 in past week ending 17 July 2023. Apart from dengue, 14 cases of chikungunya and 54 cases of malaria have also been reported. State and local health officials around the country are reporting the first cases of West Nile virus (New Mosquito borne disease) of the season in humans and urging people to take action to protect themselves from the mosquito-borne disease [1]. It is a matter of concern that due to the flood, water stagnation resulting in mosquito breeding places there is a big threat of more outbreaks of dengue, malaria and other VBDs in comparison to 2022. Heavy rains, water logging and mosquito breeding sites are the reason behind this outbreak of vector borne diseases (VBDs) [1].

Climate change is influencing the incidence of *Aedes aegypti* and *Aedes albopictus* mosquito-borne dengue illnesses. More than half of the world's population is in danger, with an annual estimate of 100–400 million infections, 196 million clinical symptoms, and 40,000 fatalities. The enhanced risk of dengue has been propelled by several factors, including Climate change, rising temperatures, urbanisation, vector suitability, and vulnerability of populations [2].

The ASEAN dengue day (15 June) theme for 2023 is "ASEAN commitment to fight against dengue." There is no specific treatment for dengue. So far only one dengue vaccine CYD-TDV has been licensed for use. It is currently in use in about 20 countries globally. As of end May 2023 2,162,214 cases and 974 dengue deaths have been reported globally. Though most of these cases have been reported from the region of the Americas led by Brazil (1,515,460) Bolivia (126,182) [3].

In India as of epidemiological week 21, (21-27 May) of 2023, the cumulative number of Dengue cases reported were 36,997 cases compared to 12,941 cases for the same period in 2022, (+185.9%). In the same period, 214 317 cases and 281 deaths of Chikungunya were reported. Dengue (and other VBDs) are no longer an Indian or regional health threat but a global health threat [4].

Dengue is a serious global burden. Unreported and unrecognised apparent dengue virus infections make it difficult to estimate the true extent of dengue and current estimates of the incidence and costs of dengue have substantial uncertainty.

In India our own country, despite a claim of a real time national disease surveillance program, we have data up to week 21 (27 May 2023) is 8 weeks old. Due to rains in the last 6-8 weeks across the country real situation is really a matter of concern!

I have seen myself 15 confirmed Dengue cases since the beginning of 30 June 2023. Body ache, sleep disturbances, fever have been the key symptoms. Watch out for body ache and headache for first 4-5 days followed by low fever, fatigue, nausea, vomiting, dizziness, itching and rashes and pain in abdomen. Decrease in platelet counts starts around 4<sup>th</sup> day and replacement is reported only in about 5-10 % cases. Cases with less than 10,000 platelets per cu mm of blood or any bleeding manifestation require transfusion. Fortunately, most cases are self-limiting recovering by 8-10 days. It is diagnosed using rapid card test or ELISA tests.

The global burden of dengue is estimated to be 18% admitted to hospital, 48% ambulatory, and 34% non-symptomatic.

India had about 53 million symptomatic dengue in India in 2016 which costed about US\$5.71 billion with 14.3% due to fatal cases and 85.7% to non-fatal cases. The cost shares of hospitalized cases was-63%, ambulatory-17%, and non-medical cases-5,8% of total costs [5].

In 2022, a total of 2 809 818 cases of dengue, including 1290 deaths, representing a two-fold increase in cases and almost three-fold increase in deaths compared with the cases reported in 2021. (23 March2023). One modelling estimates 390 million dengue virus infections per year of which 96 million manifests clinically (25%). Another study on the prevalence of dengue estimates that 3.9 billion people are at risk of infection with dengue viruses (17 March 2023).

### Situation in Karnataka and it's capital Bengaluru

The total number of cases till June 17 this year is 2,024 while 2,014 cases were reported in the corresponding period last year, according to data from the State Health Department. The State had reported a total of 9,889 dengue cases and nine deaths in 2022. Over half of the total tally in 2022 was added in the last quarter. An analysis of the week-wise dengue positivity from January this year has shown that 203 cases, the highest, were reported in the week

from January 30 to February 5. Subsequently, the weekly cases hovered around 130 and then fell below 100 from April. With over 36% of the State's total cases this year being reported in Bengaluru, the city continued to record the highest number of positive cases. From 388 cases in the January to June period in 2022, Bengaluru's dengue tally has seen over a two-fold rise to touch 732 this year [6].

### Limitations

- The initial surveillance data is indicative outbreaks increasing since week 18 of 2023.
- Despite the claim of real time data under IDSP, the data available is 8-10 weeks old.
- If IDSP can put up Realtime data in public domain will alert people in general

Last 6 years data indicates the states of West Bengal, UP, Bihar, Rajasthan, Karnataka, Delhi, and Punjab are contributing most of the burden of Dengue cases. In 2023 current outbreaks are mainly reported from Metropolitan cities and majority of cases seek treatment in private sector; the real burden of the cases is mis-leading. Even the poorly reported data is clearly showing increasing trend of cases since 2021.

Figure 1

The global economic burden of dengue: a systematic analysis - The Lancet Infectious Diseases 2016.

**Dengue/DHF situation in India**

In India, as of 13 May 2023, epidemiological week 19, a total of 48,109 cases have been reported as compared to 34,963 during same period of 2022, a 38% higher compared to the same period in 2022. As of epidemiological week 21, a total of 31 deaths due to dengue had been reported, compared to 10 death cases in 2022.

**Dengue cases and deaths in the country since 2017**

Variable	Frequency (n = 201)	Percent (%)
Gender		
Male	83	41.3
Female	118	58.7
School Age Group*		
Primary School age (6-12 Years)	72	35.8
Secondary School age (13-19 Years)	129	64.2
Parent Educational Status		
No Schooling	11	5.5
Primary Schooling	29	19.9
Secondary Schooling	87	43.3
Tertiary Schooling	72	35.8
Employment Status of Parent		
Unemployed	16	8.0
Employed	29	14.4
Self Employed	139	69.2
No Response	17	8.4
Income Per Month of Parent		
< 30,000	81	40.3
30,000 - 50,000	72	35.8
51,000 - 100,000	26	12.9
> 100,000	20	10.0
No Response	2	1.0

**Table 1:** Socio-demographic characteristics of the respondents.

\*Mean age ± standard deviation = 12.30 ± 3.14 years.

**No of Outbreaks Reported in 2023 by epidemiological Weeks**

**Prevention**

All four dengue viruses are spread primarily through the bite of an infected Aedes species (Ae. aegypti and Ae. albopictus) mosquito. Therefore, preventing dengue by avoiding mosquito bites is the key strategy! Search and destroy mosquito breeding places; Seek early consultation from health experts; Secure self-protection; and Support fogging/spraying. Personal protectives, use of mosquito nets and avoiding water stagnation around inhabitations are key actions required. During mosquito season it is advisable to sleep in rooms with air-conditioning and windows covered with mosquito nets. Also, wear clothing with long sleeves and long pants that cover the skin as much as possible, as less exposed skin we are, the lower our chances of getting bitten.

**Managing cases**

As there is no specific treatment, symptomatic management is the key approach. Alleviating symptoms, monitoring platelet count and blood transfusion must be adhered. Evaluation of the patient’s heart rate, temperature, and blood pressure. Monitoring of capillary refill, skin colour and pulse pressure are to be done regularly. Looking for evidence of bleeding in the skin and other sites and assessment of increased capillary permeability go a long way. Nurses or a learned member of the family must be responsible for recognizing patients’ symptoms, taking measures within their scope of practice to administer medications, providing other measures for symptom alleviation, and collaborating to optimize patients’ comfort and families’ understanding and adaptation.

**Environmental management of dengue mosquito populations**

Dengue is transmitted to humans through the bite of infected female Aedes mosquitos, which usually bite during the day. They lay their eggs on stagnant water. Making all out efforts for reducing mosquito populations is the key for long term outcomes.

## Bibliography

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