

EDITORIAL

Dengue: Bangladesh ContextRahman SMM^{1*}, Hossain SM², Jahan M³¹*Institute of Public Health, Dhaka, Bangladesh;* ²*Directorate General of Health Services, Dhaka, Bangladesh;* ³*Bangladesh Medical Research Council, Dhaka, Bangladesh*

Dengue is the most common mosquito-borne, viral disease in the world. Dengue virus is a single stranded positive polarity RNA virus, belongs to the family Flaviviridae. It is transmitted through the bite of an infected female mosquito of *Aedes* species - mainly the species *Aedes aegypti* and, to a lesser extent, *Aedes albopictus*. This mosquito also transmits Chikungunya, Zika and Yellow fever viruses.¹⁻⁴

There are 4 distinct, but closely related, serotypes of the virus (DEN-1, DEN-2, DEN-3 and DEN-4). Recovery from infection by one serotype provides heterotypic or cross-immunity to the other serotypes. This is only partial and temporary, lasts only a few months, but homotype immunity is lifelong. For this reason, a person can be infected with a dengue virus as many as four times in his or her lifetime. Subsequent infections (secondary infection) by other serotypes increase the risk of developing severe dengue.¹⁻⁵ The fifth variant DENV-5 has been isolated in October 2013. DENV-5 has been detected during screening of viral samples taken from a 37 year old farmer admitted in a hospital in Sarawak state of Malaysia in the year 2007.⁶

The first record of a case of probable dengue fever reported in a Chinese medical encyclopedia from the Jin Dynasty (265-420AD). The first recognized dengue epidemics occurred almost simultaneously in Asia, Africa, and North America in the 1780s, shortly after the identification and naming of the disease in 1779. The first confirmed case report dates from 1789 and is by Benjamin Rush, who coined the term "breakbone fever" because of the symptoms of myalgia and arthralgia.⁷ Haemorrhagic dengue was first recognised in the 1950s during dengue epidemics in the Philippines and Thailand.⁸

The incidence of dengue has grown dramatically around the world in recent decades. A vast majority of the cases are asymptomatic and hence the actual numbers of dengue cases are underreported and many cases are misclassified. Dengue is common in more than 100 countries around the globe, with its endemicity in Asia, the Pacific, Africa and the Latin American countries. Forty percent of the world's population, about 3 billion people live in the areas

with a risk of dengue. Annually, some 400 million people get infected with dengue, with an occurrence of 100 million clinically apparent infections, and 22,000 die from severe dengue across the globe. The increasing incidence, severity and frequency of dengue epidemics are linked to trends in human ecology, demography and globalisation, and may have been influenced by climate change.^{8,9}

In Bangladesh, dengue occurred sporadically since 1964.¹⁰ Literature shows, the first documented case of dengue like fever occurred in 1964, popularly known as "Dacca fever" which later on serologically proved as dengue fever.¹¹

Bangladesh has been experiencing episodes of dengue fever in every year since 2000. All four serotypes have been detected, with DENV-3 predominance until 2002.^{12,13}

After that, no DENV-3 or DENV-4 was reported from Bangladesh. During 2013-2016, DEN2 was predominant followed by DEN-1 in circulation. Institute of Epidemiology, Disease Control & Research (IEDCR) predicted that as the serotypes DENV-3 and DENV-4 are in circulation in the neighbouring countries, they may create epidemics of secondary dengue in the near future in Bangladesh.¹⁴ In 2017, reemergence of DENV-3 was identified; subsequently there was a sharp rise in dengue cases from the beginning of the monsoon season in 2018.¹⁵

In 2000, dengue attacked 5,551 individuals and the number of deaths was 93. Since 2003, the death rate has declined gradually, with zero fatalities in subsequent couple of years, but a devastating turn with 10,148 cases and 26 deaths in 2018. In 2019, during January to July, number total cases were 18,484, with 57 deaths.¹⁶

Directorate General of Health Services conducts periodical (Pre-monsoon, Monsoon and Post-monsoon) *Aedes* survey to estimate the vector density of the mosquito. The monsoon survey (18-27 July 2019) of 100 sites of 98 wards in Dhaka city both North and South revealed that the number of adult *aedes* mosquito was increased by 13.52 folds, in compare to the pre-monsoon (3-12 March 2019) survey.¹⁷

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The aedes larvae were also increased by 12.5 folds in this period. Breteau Index (BI) was considered in the study. Report shows that the BI was more than 20 in 57% and 64% of total wards in Dhaka North and Dhaka South respectively. Furthermore, in terms of House Index (HI) or percentage of houses infested, 75% and 83% of total wards in North and South city respectively having HI more than 5.¹⁷ Furthermore, recent studies show that mosquitoes have grown resistant, and how certain insecticides are completely ineffective against them.¹⁸

Considering the situation, the Ministry of Health and Family Welfare, has taken commendable steps including training on case management for nurses and doctors across the country, review of the national guidelines on case management, expansion of dengue services along with increasing bed capacities in hospitals, strengthened mass awareness with special attention to the school children and the community people, ensuring availability of dengue diagnostic kits, diagnostic services at free of cost in public health facilities and fixed and reduced rate in private sectors, strengthening collaboration with city corporations, municipalities and other agencies both in public and private sectors and development partners.

Prevention and control of dengue in Bangladesh, is not a sole responsibility for any single ministry and or its agencies. It needs effective and timely coordination, collaboration and partnership, among all the concerned ministries and their agencies, led by the Ministry of Health and Family Welfare. Furthermore, strengthening of the existing efforts including capacity building and resource mobilisation, and integrated surveillance, sustainable vector control, optimum and active community participation, and adequate monitoring and periodic evaluation throughout the year across the country, considering it an endemic disease, are strongly recommended.

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