Bangladesh Medical Res Counc Bull 2023; 49: 81-82

DOI: 10.3329/bmrcb.v49i2.68514

EDITORIAL

Dengue Outbreak in Bangladesh: A Public Health Challenge

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Dengue- a viral disease found in tropical and sub-tropical climates worldwide including Bnagladesh, mostly in urban and semi-urban areas. It is transmitted to humans through the bite of infected mosquitoes, primarily by *Aedes aegypti* and, to a lesser extent, *Aedes albopictus.*[1,2]

Dengue is endemic in Bangladesh, though the risk of dengue is present throughout the year, however infections typically high during May to September, with a sharp peak in August and September. It appears to coincide with the monsoon and higher temperatures. A hot and wet climate is perfect conditions for dengue. El Nino, which is associated with increased temperature in Southeast Asia including Bangladesh, started in June 2023. The unusual episodic rainfall coupled with high temperature and increased humidity facilitate the growth of the Aedes population[3]. Climate change also causing the unusual shifts traditional seasons in Bangladesh.

Dengue was first recorded in the 1960s in Bangladesh and was known as “Dacca fever”. Sometime around 2000, dengue became established in Bangladesh. Dengue virus (DENV) has four serotypes viz DENV-1, DENV-2, DENV-3, DENV-4). Importantly, infection with one serotype provides long-term immunity to the homologous serotype but not to the other serotypes. Sequential infections with a different serotype put people at greater risk for severe dengue[1,2].

A study in Dhaka from 2018 to 2022, serotyping of 495 cases and sequencing of 179 cases showed that the dominant serotype of DENV shifted from DENV2 in 2017 and 2018 to DENV3 in 2019, and DENV3 remained as the only representative serotype till 2022 [4].Of the 66 serotyped samples in the month of June 2023, DENV2 (51.5%) and DENV3 (43.9%) were identified as the circulating serotypes.

However, DENV2 has been identified as the primary circulating serotype in this outbreak[2].

Dengue virus (DENV) infections have unpredictable clinical outcomes, ranging from asymptomatic (over 80% cases) or minor flu-like illness to severe and fatal disease. In 2023, the usual signs and symptoms of the dengue infections have been changed, which included vomiting, diarrhea, pleural and peritoneal effusion, oedema, encephalitis etc. making it more unpredictable and riskier to deal with. Unusual or additional features and high hospitalization may be due to second or third-time infection with a heterologous serotype of DENV.

In 2023, and as of 27 July, over three million cases and over 1500 dengue-related deaths have been reported globally [5]. In Bangladesh, till 31 July this year, a total of 51832 cases infected with dengue so far reported; highest number of dengue cases with a total of 43854 and 204 deaths were recorded in July alone [6]. Cases were distributed all 64 districts of the country but concentrated particularly in the large cities including Dhaka, Chattogram, Khulna and Barishal. A modeling study in 2019, estimated that around 80-90% of residents of Chattogram and Dhaka, had been infected with dengue virus during their life time[7]. A recent study estimated that 24% of the Bangladesh population has been infected by dengue in their lifetime[8]. In 2023, the transition of Bangladesh to dengue endemicity with outbreak is alarming, and already registered record number of cases, hospitalisation and deaths.

Unplanned urbanization, water collection in buckets and plastic containers in the households to mitigate water scarcity, improper waste disposal, water logging at the constructions, or in the basement of the multistoried buildings etc. and inadequate vector control are also facilitating the flourishment of dengue.

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A cost-effective vaccine may also be opted for Bangladesh, in addition to integrated, effective and sustainable prevention and control of dengue. Further studies including whole-genome sequencing are recommended to identify determinants of high pathogenicity of the virus. Concerted efforts of concerned ministries, along with social mobilisation and community engagement with social and behavioural change through risk communication are thus suggested for better health as well as to mitigate the social and economic impact of morbidity and mortality of the disease.

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