



An epidemiological study of dengue in Kamrup Metropolitan district, Assam, India

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Abstract

Dengue fever is a mosquito borne viral disease and rapidly occurring in many parts of world affecting in all age groups [1]. Data was collected from National Vector Borne Disease Control Program, Kamrup Metropolitan District and analyzed statistically. The outcome of this study shows impending epidemics by timely analyzing various data to reduce disease burden. It has been observed that dengue infection is associated with time, place and person. The major preventive measure is mass awareness, disease surveillance, source reductions activities. Prevalence of these diseases is found prominently in the urban areas.

Keywords: epidemiological, prevalence, source reduction

Introduction

Dengue is an urban disease with more than half of the world's population living in areas of risk [8]. In tropical areas, dengue transmission occurs year-round but has a seasonal peak, in most countries months with high rainfall and humidity [6]. Due to population growth, rapid urbanization, lack of effective mosquito control, waste management are main cause of dengue fever [5]. Dengue is transmitted to humans by Aedes mosquitoes carrying four different types of virus. Infection by any single type apparently produces permanent immunity to it, but only temporary cross-immunity to the others. Kamrup Metro district is reporting since 2010 to till date which was causing epidemic situation in 2013. Due to preventive measures and awareness programs it is thought to drastic changes till 2020.

Prevention and control activities of National Vector Borne Control Programs have been introduced in during the course of time to reduce burden of dengue. The major intervention strategies that are being applied in Kamrup Metro district to combat malaria are- early diagnosis and prompt treatment, selective vector control that involves use of Fogging, Larvacidal spray, insecticide-treated mosquito nets (ITNs), Long Lasting Insecticidal Nets (LLIN), public awareness programs and most importantly source reduction activities. For controlling ongoing dengue epidemic in the city, the interpersonal communication, entomological survey, awareness for source reduction, Area Sabha meetings at wards, community/school awareness programs, fogging activity, biological and chemical control of larvae have been going on by district vector borne control program and Guwahati Municipality Corporation.

The study will provide current trends of dengue and envisages that it might strengthen the information so far for scaling up and to design effective communication strategies to combat these diseases in the study area.

Method

Study area

Dengue

Dengue is quite new to the city. First case was reported in

2010. Originally it has migratory history but dengue is now prevalent in Guwahati and last year it was reported 4121 cases in the city. Here the comparative study will be done from 2010 to 2020 of Metro district mininucipality area.

Study design

A retrospective study is conducted to determine the trend of malaria and dengue by reviewing blood samples and dengue prevalence is done at Guwahati city.

Data collection

Dengue

Blood samples collected in health centre are sent to the designated sentinel sites. Samples are tested by recommended MAC-ELISA. Kits are provided by National Vector Borne disease Control Program (NVBDCP), Govt. of India. A format is provided to the sentinel sites for line listing of patients. Data entry operators appointed by programs send to the district malaria office, Kamrup Metro. A detailed line listing of dengue from 2010 to 2020 is analysed.

Factors affecting dengue trends

Due to rapid migration of population, urbanization, construction sites, waste management and lack of awareness of people trend is increasing since 2010 to 2016. Same time due intervention is taking by the government departments; a change has been noticed in 2020.

Data management and processing

The data on malaria and dengue case records collected from health institution of the study site is then transferred to Microsoft excel sheets and analyzed by statically. Results were summarized using tables and figures to show the distribution of prevalence.

Result

Annual trends of dengue prevalence

2010 reported 168 cases with 1 death. Whereas no cases reported in 2011. Highest nos. of dengue cases reported in 2016 with 5530 cases with 3 deaths. In 2020 only 2 cases have been reported (Fig 1, A & B).

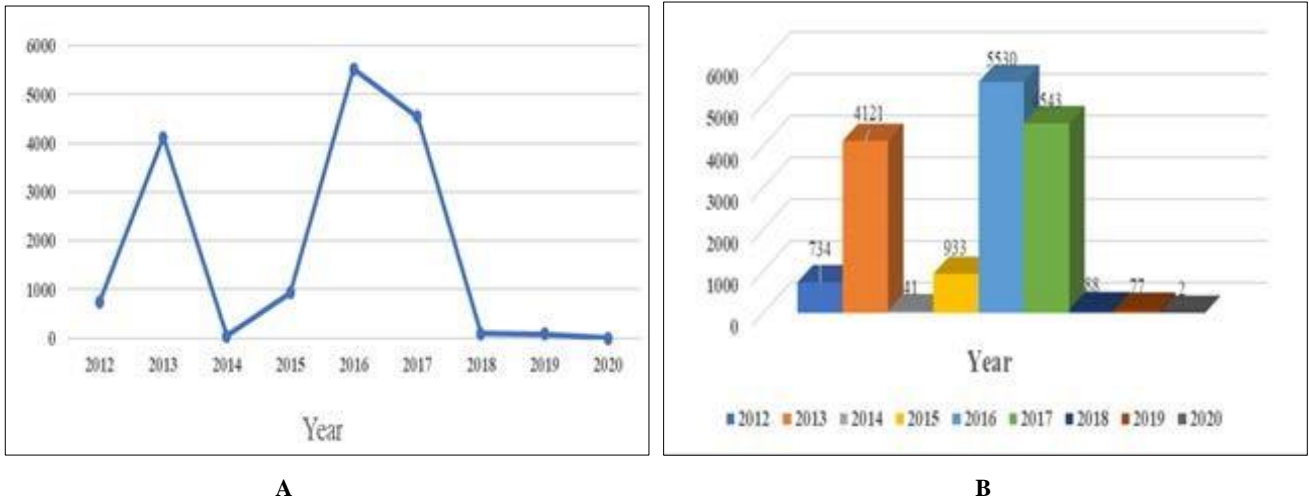


Fig 1: Year wise dengue case from 2012-2020 (A and B)

Month wise distribution of cases shows that dengue is prevalent very less in all moths. Highest numbers are

observed after summer, i.e. September to December, after the rainfall to winter (Fig 2).

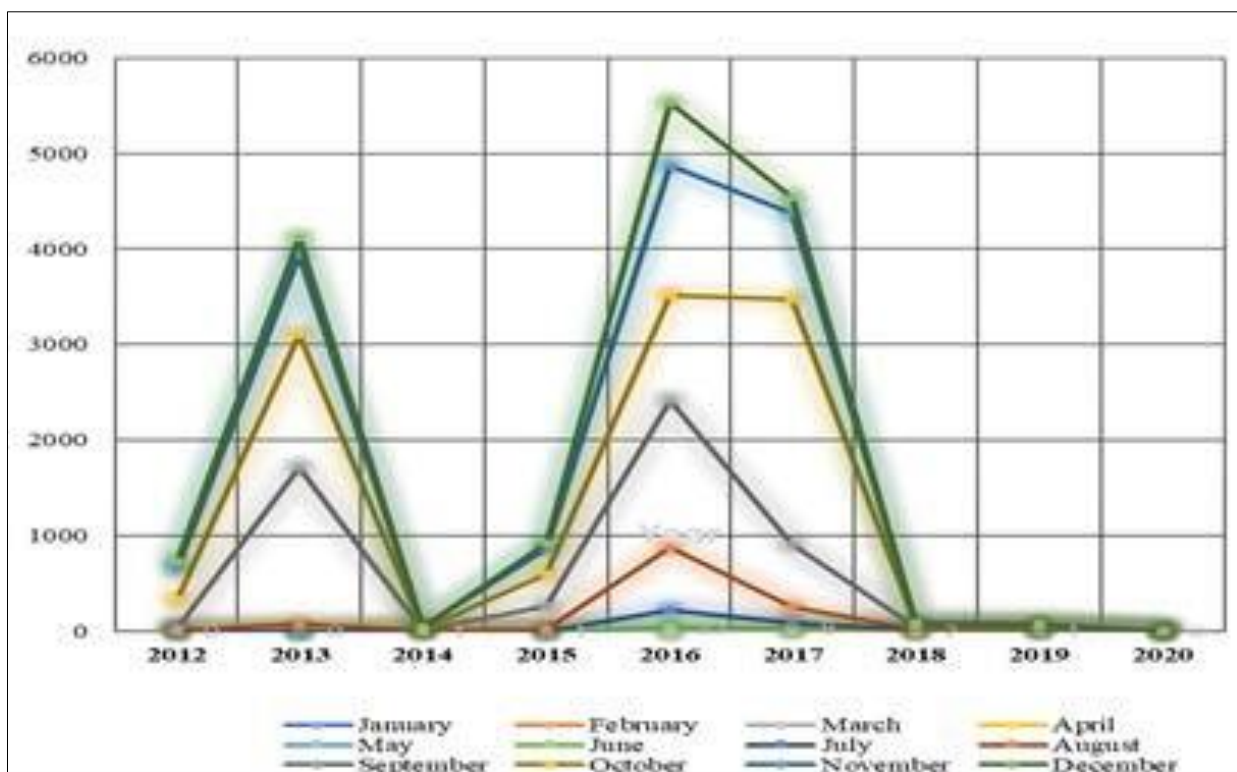


Fig 2: Monthwise distribution of cases from 2012-2020

Age distribution of cases from 2012-2020 shows that all the age groups are affected and highest numsrers age groups are 15 to 34 years (Fig 3).

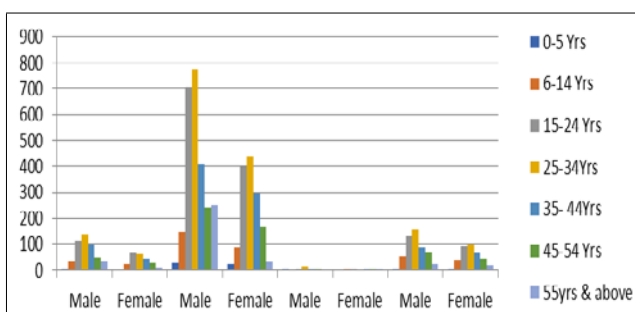


Fig 3: Age distribution of dengue positive cases of Kamrup Metro

Discussion

Seasonal variation reveals that after the rainy season dengue transmission increases. Cases reported throughout the year but increasing trend has been seen September to November. In 2018 remarkable changes in cases has been seen. This might be intervention programs by inter-sectoral departments and public awareness programs and also waste management by municipality compared to last year [2, 3, 4]. Dengue affects all age groups. Maximum numbers of cases between 15-34 years and compared to female males are more affected. This reason might be males are exposed by means of working behaviour or living behaviour [7]. This study reveals prevalence of indigenous dengue cases in city area and due to interventions fluctuation of cases has been noticed.

Conclusions

Comparatively, after introduction of current control strategies, the morbidity and mortality dengue is decreasing but still prevalent. Highest peak of cases was observed in seasonal trend. So, intervention programs should be in strengthen manner in the study area for dengue and seasonal occurrence of these diseases.

References

1. Adriano Mondini *et al.* Spatial analysis of dengue transmission in a medium-sized city in Brazil. *Rev Saúde Pública*, 2005, 39(3).
2. Basurko C *et al.* Estimating the Risk of Vertical Transmission of Dengue: A Prospective Study. *American Journal of Tropical Medicine and Hygiene*, 2018;98(6):1826-1832.
3. Ekta Gupta *et al.* The changing epidemiology of dengue in Delhi, India. *Virology Journal*, 2006, 92.
4. José Luis San Mar *et al.* The epidemiology of dengue in the americas over the last three decades: a worrisome reality, *American Journal of Tropical Medicine & Hygiene*, 2010;82(1):128-35.
5. Kyle JL, Harris S. Global Spread and Persistence of Dengue. *Annual Review Of Microbiology*, 2008;62(1):71-92
6. Polwiang S. The seasonal reproduction number of dengue fever: impacts of climate on transmission. *Retracted in: Peer J Peer J*, 2016, 4:3.
7. R kumar *et al.* Prevalence and Clinical Differentiation of Dengue Fever in Children in Northern India, 2008.
8. World Health O. Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control. *Dengue: Guidelines for Diagnosis, Treatment, Prevention and Control*. Geneva: World Health Organization, 2009, 1-147.
9. Kathiriya JB, Shah NM, Patel JS, Javia BB, Tajpara MM, Ghodasara SN, Barad DB. Epidemiological surveillance of Dengue fever: An overview. *Int J Vet Sci Amin Hasb*. 2020;5(6):1-0.