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Epidemiological and demographic characteristics of dengue at a tertiary care centre in Gujarat

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Madam,

The work on epidemiological and demographic characteristics of dengue at a tertiary care centre in Saurashtra region by Mistry *et al*[1] during the year 2013, is timely and useful from the surveillance point of view and appears very much relevant for dengue containment programmes. The epidemiological records by the National Vector Borne Disease Control Programme (NVBDCP), India for dengue cases and deaths in Gujarat was a matter of great concern in comparison to other states of India[2]. The authors reported that the total number of hospital-based suspected cases attending tertiary care OPD with dengue viral (DENV) infection during January 1 to December 31, 2013 was 4366, but as per NVBDCP record, the total number of suspected dengue cases and deaths in the state of Gujarat in 2013 was 6272 and 15, respectively (spread over different parts of the state including other seven Saurashtra districts, *i.e.* Kutch, Surendranagar, Jamnagar, Bhavnagar, Porbandar, Amreli, and Junagarh), and this was not incorporated while reconciling the work.

Also, the reported district-wise percentages of suspected dengue cases were very much inconsistent with national level data (as reported by NVBDCP 2016)[2].Besides, in Fig. 2, the percentage of dengue cases shown was 43.5% which was different from 61.8% mentioned in the text which is very much confusing. Percentage-wise, there was high discrepancy in reported cases of dengue from the Sentinel Surveillance Hospital (SSH) OPDs, for example, Rajkot district reported 2563 cases while other seven Saurashtra districts showed 1803 cases with respect to the total cases of 6272 reported by NVBDCP. It indicates that the rest dengue cases (only 1906) were spread over to the remaining districts of Gujarat which includes 24 SSH OPDs, out of total 32. The authors may disclose such inconsistencies of epidemiological data from the surveillance point of view. The results revealed that no patient was admitted with dengue haemorrhagic fever (DHF) or shock syndrome (DSS) either in Rajkot SSH or other seven Saurashtra hospitals, although suspected dengue patients in Saurashtra districts constituted 69.61% (4366/6272) of national average; but NVBDCP's record showed 15 such patients died from the dengue virus infection in districts of Gujarat. The authors may describe such surveillance incongruities, when they mention about developing capacity building in primary health centres (PHCs) level in the study area.

In the article, Mistry *et al*[1] mentioned reducing density of vector breeding sites in selected foci of dengue positive cases in residential areas, *i.e.* both in urban (76.2%) and rural (23.8%) settings of the Saurashtra districts,but it has not been undertaken in selected epidemic sites with reports of any nearby critically ill patients, *i.e.* DHS or DSS, attended OPD(s), nor shown in the text, as it is one of the primary and principal measures of *point-of-care* hospital-based capacity building. The authors may refer such integrated approach to achieve study objectives. Since the primary vector of dengue in India is *Aedes aegypti*[3], an entomological and demographic investigation of larval density in and around the endemic foci of study sites of Saurashtra districts was essential to explore correlating demographic characteristics for containment purposes. Further, the recent epidemiological data on dengue, revealed the existence of repeated transmission cycles in greater way and culminated an out-burst of vector densities with the presence of primary vector *Ae. aegypti* in the area. Since, Gujarat is an ideal state for autochthonous dengue cases, originating from the irregular settlements outside the urban perimeters with a recent record of viral lineages characteristics of the circulation of strains, poor sanitation with higher infestation levels, accidental transport of working class people in numerous construction project sites, easy dispersion distances of mosquitoes *vis-à-vis* their contacts to human-being for co-circulating dengue lineages (15–800 m), overwarming and cold waves with cryptic maintenance of viral strains (trans-ovarian transmission–TOT) for >3–4 months favour stud-

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ies related to dengue virus(DENV) genetic diversity in the area[4].

Besides, other factors seem to be specific to the territory implying geographical situation and the eco-biological and "local context", *i.e*. climate[5] endemic mosquito species, demography and population flow in genetic evolution of dengue viruses. In such situation, the study protocol need to be envisaged to make an in-depth entomological follow-up of site-specific vector control measures[6] with an assessment of DENV sero types 1–5 in DSH/DSS patients, in a *point-of-care* mode, to establish correlation of multiple virulent sero type circulation[7], to avoid further outbreak and to facilitate establishing containment measures as per WHO Guidelines[8], as therapeutic regimens[9] and vaccines[10] are yet to be introduced in South-East Asian and Western Pacific countries including India as the authors intended to undertake in the areas mentioned.

In usual practice, the surveillance in an area requires proactive monitoring. The occurrence of initial low levels of transmission during post-transmission (November–February) and during dry seasons (March–June) would be helpful in identifying early cryptic circulation of new sero types and mapping where infected patients are circulating preferably at the lag phase of the outbreak. Such guidelines, as recommended by WHO[7], are being implemented in India by the NVBDCP[2], Ministry of Health & Family Welfare, Govt. of India, for containing dengue epidemic.

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Author's reply

Thank you for reading our article with such a keen interest. We would like to reply with our possible explanations for the queries raised.

As we have stated in our methodology section, only the samples received by the Microbiology Department at PDU Government Medical College, Rajkot were included in the study. These also included the samples from patients of other PHCs, CHCs of Rajkot as well as other districts of Saurashtra region. Hence, it may be noted that the total number of samples (4366) which we have quoted is not representative of the NVBDCP data, since it does not include all the samples tested in Rajkot and other quoted districts in the study. The NVBDCP data include all the districts of Gujarat, which was not the case in our study. Hence, the data available at national level for the mentioned districts were different from our study.

Additionally, the case reporting was higher from Rajkot, because it was the sample collection site, hence, number of the samples received from the parent district would naturally be more compared to other districts. There are also other sentinel sites for dengue sample collection in Saurashtra region which were not included in this study. So, the final number and percentage of dengue cases were different from the one reported by NVBDCP. It was very clearly written in the text that 61.8% dengue cases were reported from Rajkot district (1114/1802) and the remaining included other districts as shown in Table 2 also. The Figure 2 indicates district-wise reporting of percentage positivity distribution of dengue cases in Saurashtra region which corresponds to 43.5% for the Rajkot district (1114/2563).