Letter to Editor

Expected Under-Recorded Incidence of Dengue in Thailand–Myanmar Border Provinces

Dear Editor,

Dengue is an important mosquito-borne infection that is presently a big public health problem in several countries. This infection is very common in tropical Indo-China.[1] Owing to the developing nature of many tropical countries in this area, the control of disease is very difficult. In Myanmar and Thailand, the big outbreaks of dengue occur every year.[2] The problem is extremely serious in the remote and the border area where the access is usually difficult, and the problem is extremely common.[3] Here, the authors try to assess and estimate the expected recorded incidence of dengue in Thailand–Myanmar border provinces. On the basis of previous report by Yotthanooi and Choonpradub,[4] the under-recording of tropical disease incidence is common and can be reflected by outliner low-incidence record in the surveillance report from the same endemic area. Here, the authors summarize the official surveillance report by Center of Disease Control, Thailand on the dengue incidence in year 2017. The specific data on 10 Thailand–Myanmar border provinces of Thailand were analyzed. To estimate the under-recorded incidence of dengue, the method provided by Yotthanooi and Choonpradub was used.[4] The estimation is by mathematical model technique. The available epidemiology data of dengue in the focused provinces from Thai Ministry of Public Health are used as primary data for mathematical modeling [Table 1]. Because the geographical and geosocial background in the studied provinces are the same, the primary assumption is that there should be a similar incidence of dengue in all the provinces. The authors first constructed a prediction equation based on the data without outliners as the following process. First, the recorded incidence rate of the 10 provinces were analyzed to find the outliner low records. For the records without outliner problem, the regression analysis between incidence rate and population in each province was done to get the final prediction equation. On the basis of analysis, there are four outliners. The prediction equation is $Y = 178.96 - 2.17X$, where Y = expected incidence rate of dengue (/100,000) and X = number of population ($\times$100,000). Using this equation, the predicted incidence rate for the specific provinces with outliner problem can also be calculated. After the calculation, the authors then calculated for the difference between the predicted incidence and the recorded incidence in the provinces with outliners. It can be seen that the expected under-recorded incidence are between 18.58 and 146.78 per 100,000 population. This rate is considered a problem in surveillance system in this area. To find a new system by using the active case search might be a good mean for improving the reliability of the recording of dengue in this specific border area. Focusing on the limitation of the present report, the observation is by mathematical modeling study. A further verification by prospective observation is required.

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Conflicts of interest

There are no conflicts of interest.

Sora Yasri, Viroj Wiwanitkit[1]

KMT Primary Care Center, Bangkok, Thailand, [1]Department of Tropical Medicine, Hainan Medical University, Haikou, China

Address for correspondence:
Dr. Sora Yasri,
KMT Primary Care Center, Bangkok, Thailand.
E-mail: sorayasri@outlook.co.th

Table 1: Recorded incidence rate of dengue and the population in each studied Thailand-Myanmar provinces

Provinces	Incidence (/100,000)	Population
Chiangrai	140.36	1,280,247
Chiangmai	126.67	1,732,003
Maehongsorn	180.12	274,824
Tak	206.02	625,174
Kanchanaburi*	14.83	883,629
Ratchaburi*	68.25	868,853
Petchaburi	223.30	479,621
Prachaubkirikhan*	73.91	537,126
Chumporn*	66.31	506,718
Ranong	97.69	188,345

*provinces with outliner records

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