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**Investigation of Effect of temperature on the Transmission of Dengue Fever and Using Its
Result to Propose an Eradication Strategy**

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Dengue fever is a mosquito-borne viral disease. Dengue fever is a local epidemic in Colombo with the highest peak in June to August. It is believed that the temperature is an important factor for dengue transmission. The SIR mathematical model was used to evaluate the impact of temperature in the transmission of dengue infection. The secondary data of climatic condition and number of dengue incidences were derived from Colombo during 2010-2014. All calculations in this study were carried out using Matlab, with ODE45 function for solving differential equations. The simulations suggest that the optimal temperature range for the dengue transmission is 28-29°C. Increasing the yearly mean temperature by 0.1°C, the number of dengue incidences can be increased by 80-90% during the optimal temperature range. The study result has shown that the spread of dengue virus (DENV) depends on the seasonal variation of the temperature. The temperature is important for the life cycle and behavior of the mosquitoes. However, a very high or very low temperature reduced the number of dengue infection cases. The model simulation indicates that the peak of adult mosquito population is in May and peak of the infected mosquito population is in July, with two months lag according to the temperature. The study proposed eradication strategies to reduce dengue incidences in Colombo.

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