

## EFFECT OF ADULT MOSQUITO CONTROL ON DENGUE PREVALENCE IN A MULTI-PATCH SETTING: A CASE STUDY IN KOLKATA (2014–2015)

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Dengue is one of the deadliest mosquito-borne disease prevalent mainly in tropical and sub-tropical regions. Controlling the spread of this disease becomes a major concern to the public health authority. World Health Organization (WHO) adopted several mosquito control strategies to reduce the disease prevalence. In this work, a general multi-patch non-autonomous dengue model is formulated to capture the temporal and spatial transmission mechanism of the disease and the effectiveness of different adult mosquito control strategies in reducing dengue prevalence is evaluated. During the period (201–2015) the dengue situation of Kolkata which is one of the most dengue affected city in India is considered in our study. Depending on geographical location, Kolkata is divided into five regions and our model is fitted to the monthly dengue cases of these five regions during the above-mentioned period. By considering control specific characteristics such as efficacy, environment persistence of the mosquito control strategies, we study the efficiency of three adult mosquito controls and their combined effect in reducing dengue prevalence. From our study, it is observed that control with higher environment persistence performs better in comparison to the controls having low environment persistence. It is also observed that, spatial coupling between the regions plays a key role in the effectiveness of the control strategies.