

Ecological Analysis of Five Years Dengue Cases and Outbreaks in Keningau, Sabah, Malaysia

ABSTRACT

Introduction: Dengue fever is caused by the dengue virus that is transmitted via *Aedes* mosquitoes. The lifecycle of *Aedes* mosquitoes is affected by the local climate (rainfall) which influences dengue transmission. Sabah is one of the states that is laden with a high incidence rate of dengue in Malaysia and the condition seems to have worsened with sudden, multiple outbreaks occurring in the year 2016. **Methods:** An ecological analysis was conducted in Keningau, Sabah to analyse dengue case patterns and distribution over a 5-year period and to exhibit the correlation between rainfall, larval indices, dengue incidences, and outbreaks. **Results:** Significant cross-correlation analysis (CCF) was discovered between rainfall and *Aedes* index at lag number 5 with a correlation coefficient of 0.151 (± 0.063) as well as between rainfall and Breteau Index at lag number 5 with a correlation coefficient of 0.143 (± 0.063). However, no significant cross-correlation analysis was found between *Aedes* index and dengue incidences. Associations were also seen between larval indices and outbreak cases. **Conclusion:** This study showed an increase of *Aedes* and Breteau Indices to susceptibility level five weeks after rainfall which increases the risk of dengue transmission.