

Association between Incidence of dengue cases and rainfall precipitation in Perak Darul Ridzuan

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ABSTRACT

Introduction: Dengue is a significant global public health concern for many decades, especially in the tropical and sub-tropical regions. According to the World Health Organization (WHO), 390 million cases of dengue cases are reported each year, with Asia accounting for 70% of them. Statistically, Malaysia recorded 130,101 cases in 2019 with almost a 60% increase over 2018, with 182 mortalities. The ongoing hyperendemicity has called for an effective early warning system. **Objective:** The objective of this study is to determine the association between average rainfall precipitation and dengue incidence in Perak state. Subsequently, it aimed to serve as a preliminary study to further explore the use of weather forecast in predicting dengue incidences. **Materials and methods:** This is a correlational study on the association between rainfall precipitation and the number of dengue cases in Perak state between year 2014 and 2021. All confirmed dengue cases in Perak from 2014 to 2021 notified in the dengue surveillance database were included in this study. Data analysis was performed using Statistical Package for the Social Sciences (SPSS) version 25. To assess the relationship between dengue incidence/ month and rainfall precipitation/ month (mm/day) in 2014, a bivariate Pearson's correlation coefficient (r) analysis was performed. **Results and conclusion:** Based on the results, a strong positive correlation was observed between dengue incidence/ month with rainfall precipitation/ month (mm/day) in the year 2014 and 2015. Thereafter, a strong negative correlation was seen between both these variable from 2016 to 2021. However, this study did not adjust for other meteorological factors such as temperature and wind speed in this locality. The study has provided relatively strong statistical evidence of the association between rainfall and dengue outbreaks in Perak, thereby indicating that it is a factor worthy of careful surveillance and monitoring. Methodology and evidence observed from this study could serve as a strong preliminary baseline to further associate other meteorological factors to develop an efficacious spatio-temporal weather forecasting model in predicting dengue outbreaks in Malaysia. This could strengthen the control of dengue outbreaks by developing early warning systems.

Keywords: Dengue incidence, rainfall precipitation, increasing trend, hyperendemicity, public health concern