

**UNIVERSITI TEKNOLOGI MARA**

**ASSESSING THE RISK OF DENGUE FEVER  
BASED ON THE ENVIRONMENTAL  
ATTRIBUTE IN BALING, KEDAH**

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## ABSTRACT

Dengue Fever is an endemic disease that occurs throughout the year. The transmissions of Dengue disease is through the bite of an infected female aedes mosquitoes. There are two species aedes mosquitoes that transmits the disease are *Ae. aegypti* and *Ae. albopictus*. Weather factors such as temperature, rainfall, and humidity are the optimal conditions for mosquitoes to breed. The study of relationship between dengue fever with weather factors (temperature, rainfall, and humidity) in Baling District in Kedah from the year 2015 – 2019 is the main purpose of this research. This research is descriptive with ecological study design. The data source is secondary data from District Health Office of Baling for Dengue Hemorrhagic Fever case and Malaysia Meteorological Department for climate data. Correlation test is used to know the strength and direction of the relationship between independent variable and dependent variable. The results shows there is significant relationship between dengue cases and temperature at level of significant 0.05, where the  $R^2$  value indicate low positive correlation between this ( $p = 0.026$ ;  $R^2 = 0.287$ ). Otherwise, there is no significant relationship between dengue cases with rainfall distribution and temperature because dengue disease is a multifactorial disease. There are many factors affected the incidents of dengue case which is environmental factors, human factors, and virus factors. Besides that, due to the small number of size sample (dengue cases) reported affected the accuracy of interpretation of the data. The possibility this situation happen because of asymptomatic infection cases and did not go to hospital for the treatment. So, the actual dengue incidence in Baling area unknown.

Keywords: Dengue fever, temperature, rainfall, and humidity

# CHAPTER 1

## INTRODUCTION

### 1.1 Study Background

*Aedes* mosquitoes are synonymous with dengue fever. The transmission of Dengue disease is through the bite of an infected female *aedes* mosquitoes. There are two species *Aedes* mosquito that transmits the disease are *Ae. aegypti* and *Ae. albopictus*. *Ae. aegypti* is known as the primary mosquito vector and *Ae. albopictus* known as the secondary mosquito vector. According to World Health Organization, there are 4 serotypes of dengue virus can cause dengue fever are DENV – 1, DENV – 2, DENV – 3 and DENV – 4. The dengue outbreak is caused by the increasing number of breeding mosquitoes at a certain area. This disease is now growing rapidly in Malaysia and directly affected the quality of life (Anis et al., 2016).

Urbanization, globalization and weaken mosquito control have led to the rapid spread of dengue fever (Gubler DJ, 2011). Currently, there is still no effective vaccine to prevent the rapid spread of dengue fever worldwide. There are many risk factors such as environment, geography, and socioeconomic status associated with the heterogeneity of dengue fever (Xaiopeng Qi, 2013). There are several studies associated with dengue fever factors. Some studies have emphasized the correlation between socioeconomic factors and Dengue fever. Besides that, another studies focus on spatial temporal clustering patterns of dengue fever by using mapping techniques. Addition, other studies have analyzed the association between these patterns and relevant factors such as climatic factor (temperature, humidity and rainfall).

The effective vector surveillance and control system needed in order to ensure the elimination of the possible breeding sites and the transmission of dengue infections is successful. Environmental management is the most effective vector control. There are 4 components in environmental management for the modification