

A case control study on factors associated with leptospirosis infection among residents in flood-prone area, Kuantan: a geographical information system-based approach

ABSTRACT

Background: Leptospirosis, nicknamed "The Great Mimicker", is a zoonotic disease of public health importance, particularly in temperate climate such as Malaysia where seasonal floods occur. This study aims to determine factors associated with leptospirosis transmission such as sociodemographic characteristics, knowledge, attitude and environmental risk factors such as temperature, rainfall, humidity, flood-risk area, distance from waste accumulation sites, land elevation and soil type, as well as predictors of leptospirosis transmission among residents in Kuantan, Pahang by using a Geographical Information System (GIS)-based approach.

Materials and Methods: A population-based case-control study will be implemented in Kuantan, Pahang which utilizes 260 samples, where 130 confirmed cases of leptospirosis and 130 controls who will be randomly selected from neighbours living within 500 metre radius of the cases. A validated interviewer-guided questionnaire will be used to assess respondent's sociodemographic characteristics, leptospirosis status, knowledge, attitude and practice towards leptospirosis. Secondary data will be obtained from the respective departments.

Data Analysis: Descriptive and inferential statistics will be used for data analysis. Knowledge, attitude, practice, and environmental risk factors such temperature, rainfall, humidity mean values, flood risk areas, distance from waste accumulation sites, soil type and land elevation will be mapped by using GIS. Finally, the predictors of leptospirosis will be determined by logistic regression.

Expected Outcome: Due to the transmissibility of leptospirosis increases as the result of flooding, it is expected that the cumulative incidence of cases will come from the flood-prone areas in Kuantan. The majority of the cases could come from areas that have high risk of exposure to environmental factors such as high rainfall density, moderate temperature, high humidity, living in flood-risk areas, low land elevation, nearer to the waste accumulation sites, and moist soil type. It is also expected that even though the community might have heard of leptospirosis, the level of KAP might be low due to the increasing national incidence of the infection.

Keyword: Leptospirosis; Associated factors; Seasonal floods; Kuantan; GIS