ABSTRACT

**Background**: Diphtheria is an acute infectious disease caused by the bacteria is easily transmitted *Corynebacterium diphtheriae*. Diphtheria still a public health problem because they often lead to extraordinary events (outbreaks) and death cause. **Objective**: analyze the spatial distribution of diphtheria patients and determine the strongest risk factors associated with the incidence of diphtheria in Blitar. **Methods**: this type of research is observational analytic study using case control group were 42 respondents case and control groups were 84 respondents. **Results**: The pattern of the spread of the incidence of diphtheria in Blitar in 2015 in terms of areal form three clusters significantly according to the time of transmission with a density of population per district. The results of the bivariate analysis using chi square test, immunization status (0.001), humidity of the room (0.000), lighting (0.000), ventilation (0.000), the presence of health services (0.000). Multivariate analysis using logistic regression there are only two variables that are risk factors on the incidence of diphtheria is humidity room (OR = 29,983) and lighting (OR = 5,115). **Conclusion**: The pattern of spread to form four clusters, there is a relationship between population factors (immunization status), environmental factors (room humidity, lighting and ventilation) and the presence of health-care facilities with the incident diphtheria. The risk factors most influence on the incidence of diphtheria is room humidity and lighting. **Suggestion**: the socialization and counseling as well as monitoring the local area so that cases of diphtheria can be reduced.

Key word: spatial, diphtheria, population, environment, health care.