SPATIAL ANALYSIS OF TOPOGRAPHY AND RIVER WATERSHED FACTORS FOR LEPTOSPIROSIS CASES IN KULON PROGO, YOGYAKARTA PROVINCE, INDONESIA

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This study, as being part of the ILRI/IDRC EcoZD project, was conducted to reveal epidemiological analysis of the spatial and temporal distribution of leptospirosis in Kulon Progo District, Yogyakarta Province based on the topography and river watershed in those areas to explore the geographical influences in the dissemination of leptospirosis and support disease modeling.

Materials and methods

The study was carried out by tracing back 54 positive results MAT cattle sera collected in a previous survey which focused on identification of risk factors. The distribution of Leptospira serovars were plotted using ArcGIS 9.3 map software. This tool allowed to analyze the dissemination of leptospira serovars in relation to the land altitude and river watershed.

Results & Discussion

Result showed that leptospira spp. were disseminated in 12 sub-districts of Kulon Progo with eight serovares finally identified. This bacterium was spread almost overall the low land altitude with stream tributary branches across the regions from the high land altitude. Leptospira serovars hardjo and icterohaemorragiae were widely spread and found across high to low land altitudes of the sub-villages in Kulon Progo District. Meanwhile, other serovars such as L. ser. pomona and rahmadie were predominantly identified in high land altitude areas. Conversely L. ser. tarassovi was only identified in the low land altitude area. The remaining identified serovars, celledoni, bataviae and javanicae varied less in their distribution, reported only for some sub-villages.

Key messages

- The use of a GIS provided a more beneficial mapping and modeling of the diseases.
- Spatial analysis based on topography and rivers watershed contributed to a better integrated understanding of disease emergence.
- It is the basis for a more effective control and efficient addressing of public health concerns.

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