

***Geospatial Analysis of Pulmonary Tuberculosis Cases in the Patrang
Community Health Center Working Area using Quantum Geographic
Information System (QGIS)***

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ABSTRACT

Tuberculosis remains an infectious disease that poses a global health challenge and is a leading cause of mortality. Jember Regency ranks second in East Java Province for the highest number of tuberculosis cases. This study was conducted within the service area of the Patrang Community Health Center (Puskesmas), covering the urban villages of Gebang, Jember Lor, and Patrang. The study aimed to conduct a geospatial analysis of pulmonary tuberculosis cases based on population density, age, gender, HIV status, diabetes mellitus, and medication adherence in the Patrang Puskesmas service area in 2025. A quantitative descriptive design with a spatial approach was employed. Data collection utilized the GPS MAP Camera application, and the data were subsequently processed using Quantum Geographic Information System (QGIS) software. The results indicated that pulmonary tuberculosis patients in the Patrang Puskesmas service area were predominantly elderly, with a slightly higher proportion of females. Cases of pulmonary tuberculosis among HIV patients were found exclusively in Jember Lor—the area with the highest population density—while the highest prevalence of pulmonary tuberculosis among patients with diabetes mellitus was observed in Patrang. The study concludes that Gebang is a "red zone" characterized by the highest number of cases, a clustered distribution pattern, and the highest rate of medication non-adherence. Consequently, control measures are required, specifically through the monitoring of medication adherence and patient education.

Keywords: Disease Mapping, Pulmonary Tuberculosis, Spatial Analysis.