

SPATIAL CO-DISTRIBUTION AND COMMON PREDICTORS OF HIV AND TB INCIDENCE IN MOZAMBIQUE: BAYESIAN HIERARCHICAL MODELING FOR JOINT DISEASES

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Introduction: Mozambique is a high-burden country for HIV and tuberculosis (TB). However, little is known about the shared and specific geographic patterns of both diseases. Therefore, this study aimed to analyze the shared and specific geographic patterns of HIV and TB incidence across Mozambique districts and to identify common predictors and hotspot areas.

Methods: We performed a retrospective ecological study with the district as our unit of analysis. We included all cases of TB diagnosed in Mozambique from 2016 to 2020 and existing HIV cases in 2020. The data were obtained from the Mozambique Ministry of Health and other publicly available open sources. We analyzed the data using multivariable Bayesian modeling for joint disease with a shared component.

Results: A total of 512 877 tuberculosis and 2 074 654 HIV patients were reported during our study period. We found that the two diseases shared the same geographic pattern. However, the shared incidence rate was not homogeneous across the country. Higher shared incidence rates were observed in the south and center regions, and 31 districts were identified as common hotspot areas. The higher incidence area for each specific disease was scattered around the country. The predictors of the joint incidence rate were the illiteracy rate (RR: 1.626; 95%CrI 1.13 - 2.28) and the population density (RR 0.56; 95% CrI 0.33-0.88).

Conclusion: HIV and TB incidence in Mozambique share the same geographic pattern, and 31 districts were identified as joint hotspot areas. The shared incidence rate was associated with illiteracy and population density. Our study suggests that strengthening collaboration between HIV and TB programs through an integrated approach in shared geographic risk areas and tackling social determinants of health is needed to control both epidemics in Mozambique.

Keywords: HIV, Tuberculosis, Overlapping, Mozambique, Risk.

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