TITLE: IMPACT OF SOCIOECONOMIC INDICATORS ON MULTIDRUG-RESISTANT TUBERCULOSIS RATES

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ABSTRACT:

Tuberculosis (TB) is caused by *Mycobacterium tuberculosis* complex and it is the deadliest infectious disease globally. Multidrug-resistant tuberculosis (MDR-TB) represents a major obstacle in the fight against this disease. There were an estimated 10.4 million cases of TB and more than 460,000 cases of MDR-TB globally in 2017. Brazil is among the countries with high number of TB cases in the world with several cases of MDR-TB in the last years. In this sense, the aim of this study was to identify the increase of MDR-TB rates based on social indicators in Rio de Janeiro State from 2013 to 2017. An ecological study was performed and data of MDR-TB cases were collected from *Sistema de Informação de Tratamentos Especiais da Tuberculose*. All patients with MDR-TB who started treatment during the period from January 2013 to December 2017 were included in the study. Data for social indicators (life expectancy at birth, expectation of years of study, illiteracy rate, per capita income, proportion of people vulnerable to poverty, and Human Development Index) was obtained from the Brazilian Census of 2010. TB rates were obtained from DATASUS. To verify associations between MDR-TB rates and social indicators, geographically weighted regression (GWR) was performed in GWR software (version 4.9). Variables with the highest value of Akaike information criterion (AIC) and $p<0.05$ were considered significantly. This study was approved by Research Ethics Committee Involving Human Being of the State University of Maringá (COPEP/UEM – nº 22/2018). Illiteracy rate (18 to 24 years old who cannot read and write), income (maximum per capita income of the 40% poorest) and percentage of people vulnerable to poverty (people with per capita incomes of $160.00 and who spend more than one hour traveling to the workplace) were found to be statistically significant associated to MDR-TB incidence in GWR model (AIC = 872.88 and adjusted R square = 0.21). Low-income people travel long distances to get to work, suggesting that they also may live in places far from health promotion centers, resulting in a difficulty in seeking, maintaining and adhering to treatment. In the same way, people with low schooling may not understand the disease and the importance of starting and ending treatment. Illiteracy rate, income and people vulnerable to poverty were associated to the incidence rate of MDR-TB in Rio de Janeiro. This demonstrates that the presence of MDR-TB also is influenced by social factors.

Keywords: *Mycobacterium tuberculosis*, multidrug-resistant, epidemiology, spatial analysis