Analysis of the spatial-temporal risk of dengue occurrence in the Metropolitan Region of Belo Horizonte in Minas Gerais, Brazil, 2007-2022

Lucas Matos Oliveira[1], Fabrício Thomaz de Oliveiria Ker[1],Juliana Maria Trindade Bezerra Bezerra[2 3], David Soeiro Barbosa[1]

1 - Postgraduate Program in Parasitology, Department of Parasitology, Institute of Biological Sciences, Federal University of Minas Gerais, Belo Horizonte, Minas Gerais, Brazil. 2 - Postgraduate Program in Animal Science, Center for Agricultural Sciences, Maranhão State University, São Luís, Maranhão, Brazil. 3 - Undergraduate Program in Biological Sciences, Lago da Pedra Campus, Maranhão State University, Lago da Pedra, Maranhão, Brazil.

Dengue is one of the most important arboviruses for global public health. The pathogen is mainly transmitted by female *Aedes aegypti* mosquitoes, and the incidence of the disease is linked to environmental and socioeconomic variables. It is widespread in countries with tropical and subtropical climates, in regions where the lack of adequate waste disposal in urban areas provides a favorable environment for the development of the vector. In the Americas, Brazil is one of the countries with the highest rates of the disease. The metropolitan region of Belo Horizonte - RMBH (Núcleo e Colar), the third largest urban agglomeration in the country and with a large number of dengue cases in the past, was defined as the scenario for conducting the dengue occurrence risk analysis. The objective of this study was to assess the risk of dengue occurrence in the RMBH (Núcleo e Colar) in Minas Gerais, Brazil, from 2007 to 2022. The spatial, temporal and spatiotemporal scan statistics software SatScan™ version 9.4.4 was used. A discrete Poisson model ($p < 0.05$) was used to define the spatio-temporal clusters. It was found that the clusters with a high relative risk (RR) occurred mainly in the first half of each year (January to May). The clusters that had a low RR for dengue occurrence of dengue mainly started in the months of May, June and July. The year 2013 was the year in which the highest RR values occurred: Cluster 02 (RR: 20.72), Cluster 06 (RR: 16.49) and Cluster 11 (RR: 15.89). The years 2013, 2016 and 2019 were the years with the highest number of municipalities with high RRs for dengue, with all 50 municipalities of the RMBH (Núcleo and colar)

having high RRs during this period. The data presented shows the patterns of occurrence of the dengue epidemic in the study area.

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