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Neglected tropical diseases and their relationship with the human development index in Northern Brazil

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ABSTRACT

This study looks at Neglected Tropical Diseases (NTDs), which are prevalent in regions with a low Human Development Index (HDI), such as the north of Brazil, due to poor sanitation and health conditions. These diseases include leprosy, chikungunya fever, schistosomiasis, among others, whose transmission often involves contaminated water and vectors such as mosquitoes. The analysis revealed that the average HDI of the Northern region in 2021 was 0.692, indicating significant socio-economic vulnerability. Municipalities such as Melgaço, in Pará, exemplify this vulnerability with critical development indices and unfavorable socioeconomic conditions, contributing to the high incidence of these diseases. The lack of investment in basic infrastructure exacerbates the situation, compromising the local population's right to health and basic sanitation.

Keywords: Neglected diseases, Development indicators, Brazil, Poverty.

INTRODUCTION

Neglected Tropical Diseases (NTDs) are those endemic to low-income populations, which are caused by parasites or infectious agents and have reduced investments in research, drug production, and control policies, which results in high indicators of involvement and about 200 thousand deaths per year in the world (FIOCRUZ, 2013) (Brasil, 2024). The main NTDs that occur in Brazil are: leprosy, chikungunya fever, schistosomiasis, lymphatic filariasis, geohelminthiasis, onchocercresis, trachoma, Chagas disease, leishmaniasis, rabies, hydatidosis, scabies (scabies), mycetoma, and chromoblastomycosis (Brazil, 2023). The Human Development Index (HDI) is a general and synthetic measure of the development of a population, ranging from 0 to 1, and the closer to 1 the better the human development. This index aims to provide a broader perspective and is based on three aspects: income, education, and health. NTDs are commonly present in regions of social vulnerability, where water security is compromised and basic sanitation and access to health are precarious or non-existent. In Brazil, regional differences, local economic and socio-environmental factors, which influence the HDI value, are closely linked to the higher occurrence of NTDs (Brasil, 2018) in locations such as the northern region of the country. This abstract aims to discuss the incidence of these diseases in the northern region of Brazil and their form of transmission, relating them to the HDI value.

MATERIALS AND METHODS

To write this work, a search for articles was carried out in the Ebsco and PubMed databases, using the following descriptors, found on the Health Sciences Descriptors platform (DeCS/MeSH): "Neglected Diseases", "Development Indicators", "Brazil" and "Poverty". The Boolean interpolator "and" was used for all descriptors. The selection criteria were: last 10 years and Portuguese language. In addition, data and concepts on the subject were searched in international websites such as the Pan American Health Organization (PAHO), the United Nations Development Program (UNDP) and official national websites such as FioCruz and the Ministry of Health. The collected information was analyzed and correlated with each other to clarify the relationship between the occurrence of NTDs in areas of social vulnerability.

FINDINGS

The most striking characteristic of NTDs that explains the high incidence in regions of vulnerability, with a low HDI, is the way in which the population is transmitted and contaminated by this group of diseases – mostly through contact with contaminated water and mosquito vectors (PAHO, 2024). In 2021, the HDI of the Northern Region of Brazil was 0.692, being classified as an average HDI and the second worst index by regions of the country, second only to the Northeast (UNDP, 2024). Analyzing the region in more detail, it is possible to find municipalities in a situation of extreme vulnerability, such as the case of Melgaço in the state of Pará, whose last HDI, recorded in 2010, was 0.418, classified as "very low" (UNDP, 2024) and the lowest HDI in the country (IBGE, 2010). Sociodemographic data of the municipality indicate that almost 40% of the citizens over 15 years of age are illiterate, 80% of the households do not have sewage treatment, almost 80% of the population lives in the rural area and more than 95% of the people live with a per capita income of less than half a minimum wage (IBGE, 2010). From this perspective, when analyzing the HDI, it is evident how vulnerable the north of Brazil is to NTDs, since their establishment and recurrence is closely related to the negative effects of the lack of basic sanitation (Martins-Melo *et al.*, 2016). In addition, this reality highlights the problem of the non-guarantee of the right to basic sanitation services such as water supply, sanitation, urban drainage and garbage collection guaranteed by Law No. 11,445/2007. This demonstrates how the ineffective work of managers to guarantee what is guaranteed in the Federal Constitution affects the underserved population.

FINAL CONSIDERATIONS

It is concluded, therefore, that there is a relationship between the HDI value and the incidence of NTDs in the northern region as a negative consequence of the non-guarantee of the social right to basic sanitation, which is directly related to the constitutional principle of human dignity. These diseases are responsible for several deaths in Brazil and in the world, and can only be controlled and combated with

the guarantee of basic rights. However, they have the barrier of the lack of interest and commitment of the competent bodies in the application of the necessary interventions to ensure the health of the population, reducing these diseases from the national and regional scenario.

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