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ANALYSIS OF THE PROPORTION OF HOMELESS INDIVIDUALS DIAGNOSED WITH PULMONARY TUBERCULOSIS AMONG THE TOTAL CASES, BY BRAZILIAN REGION, IN THE PERIOD FROM 2019 TO 2021

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Abstract: Pulmonary tuberculosis is a bacterial disease caused mainly by the bacillus *Mycobacterium tuberculosis* and presents the airways as the entry point for the microorganism. Tuberculosis control in the country presents obstacles that include socioeconomic factors associated with the unequal distribution of health, sanitary conditions and increased social vulnerability. Homeless people are constantly exposed to different pathogens due to social exclusion and poor quality of life, corroborating their increased risk of pulmonary tuberculosis infection. A quantitative study was carried out from 2019 to 2021 by Brazilian regions with the objective of analyzing the proportion of the homeless population with pulmonary tuberculosis among the total resident population diagnosed with this disease in Brazil. Secondary epidemiological data were obtained from the Department of Informatics of the SUS (DATASUS), from the National Notifiable Diseases System (SINAN). The percentage rate of diagnoses for pulmonary tuberculosis was considered the ratio between the diagnoses in the homeless population and the number of cases in the total Brazilian population. Data were tabulated and analyzed using basic statistical operations in an Excel spreadsheet. In the 3 years analyzed, the North region maintained the lowest proportion of pulmonary TB in homeless individuals, while the South region was the leader in this rate. Although the South region has gained prominence in this research, the other regions also have high proportions and need special attention in combating underreporting. Furthermore, the insufficient number of Community Health Agents (CHA) results in an increase in the treatment abandonment rate, which may reflect in the recurrence of the disease. In this context, the implementation of greater access to Primary Health Care and the fight against underreporting are essential actions that can change the current epidemiological scenario of pulmonary TB among homeless individuals in Brazil.

Keywords: Pulmonary Tuberculosis; Homeless Population; underreporting

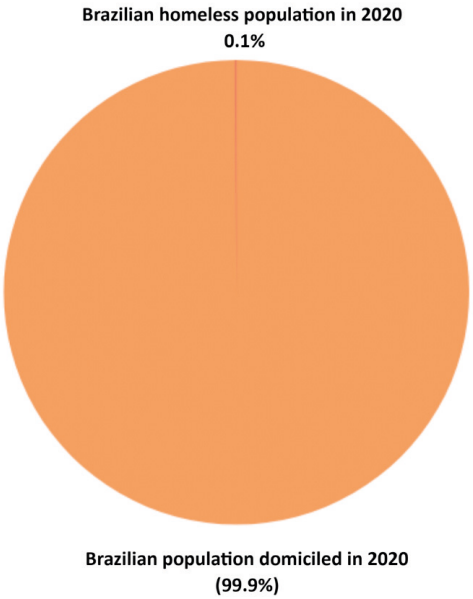
INTRODUCTION

Pulmonary tuberculosis is an infectious bacterial disease mainly caused by the *Mycobacterium tuberculosis* bacillus, divided into primary and secondary. The tuberculosis bacillus installs an infection located on the periphery of the lung, where it was deposited by inhalation, and therefore this organ is the most common gateway for the disease. The first contact with the organism results in few or no symptoms or clinical signs, since the human body's immune defense is in charge of defending it against the pathogen. However, unlike primary tuberculosis, the reactivation of the bacillus, previously latent in a granuloma formed by the first contact, or reinfection, trigger pulmonary and/or systemic clinical manifestations that can lead to death. Immunosuppressed individuals, such as HIV carriers, the population deprived of liberty (PPL) and homeless people - the target of this study - are the most vulnerable in relation to this condition of compulsory Brazilian notification (LYON and ROSSMAN, 2017).

In Brazil, according to IBGE data, the total resident population in 2020 consisted of 211,755,692 individuals (IBGE, 2022). Within this cutout, it was estimated that the homeless population, in the same year in question, was 221,869 people, constituting approximately 0.10% of the Brazilian population (NATALINO, 2020). (Graphics 1 and 2)

Tuberculosis control in the country presents obstacles that include socioeconomic factors associated with the unequal distribution of health, sanitary and urban

conditions, and increased social vulnerability. Homeless population was defined in 2009, by the Federal Government, as a group of people who have extreme poverty as characteristics in common, who receive up to 85 reais per month, and have ties with their weakened family members or even even finished. In addition, this population class does not have conventional housing and uses places such as sidewalks, squares, viaducts, vacant lots, bathrooms and public hostels and shelters as a place of temporary and/or provisional housing (NATALINO, 2020). Homeless people are constantly exposed to different pathogens due to social exclusion and precarious quality of life and access to health. This fact corroborates the greater risk of pulmonary tuberculosis infection (SANTOS et al, 2021).



Graph 1: Estimate of the homeless population among the total Brazilian population in 2020

Source: Own authorship with data taken from IBGE

OBJECTIVE

To analyze the proportion of the homeless population with pulmonary tuberculosis among the total resident population diagnosed with this disease in Brazil from 2019 to 2021.

METHODOLOGY

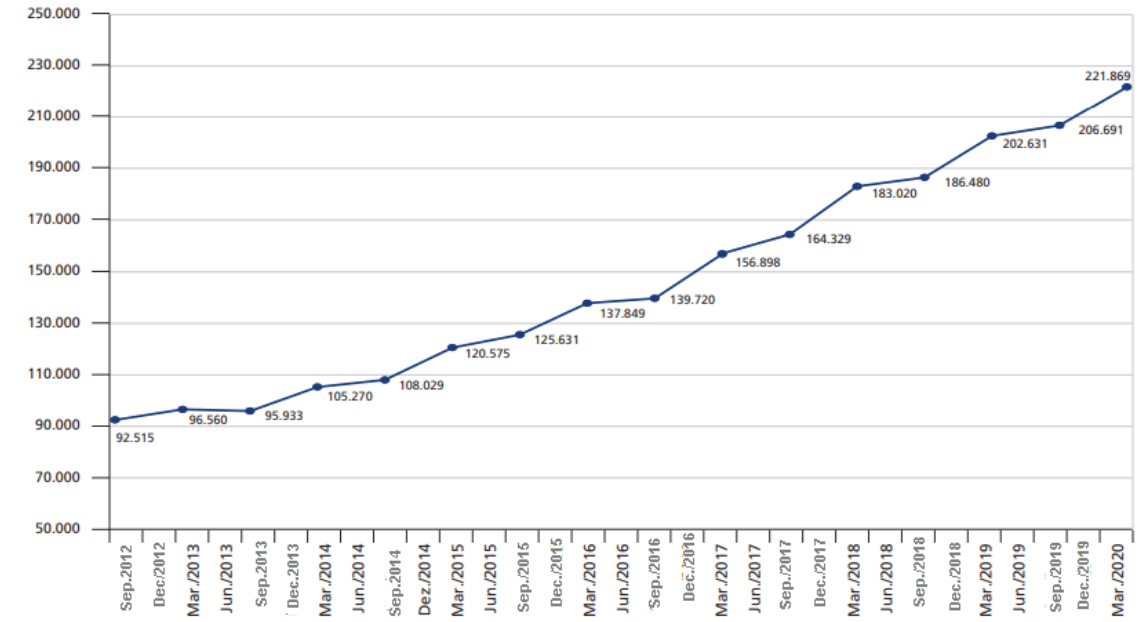
Quantitative study carried out from 2019 to 2021 by Brazilian regions. Secondary epidemiological data were obtained from the database of the Department of Informatics of the SUS (DATASUS), from the National System of Notifiable Diseases (SINAN). Data referring to individuals diagnosed with pulmonary tuberculosis were included, in addition to the quantitative population living on the streets in the country with this disease. The percentage rate of diagnoses for pulmonary tuberculosis was considered the ratio between the diagnoses in the homeless population and the number of cases in the total Brazilian population. Data were tabulated and analyzed using basic statistical operations in an Excel spreadsheet.

RESULTS

In 2019, 80,995 cases of pulmonary tuberculosis were recorded in the total Brazilian population. Among them, 3317 individuals were homeless, thus representing 4.09% of the diagnoses. The South region had the highest proportion (ratio between the number of homeless individuals with pulmonary tuberculosis and the total population diagnosed) among those analyzed, corresponding to 6.14%. (Graphic 3)

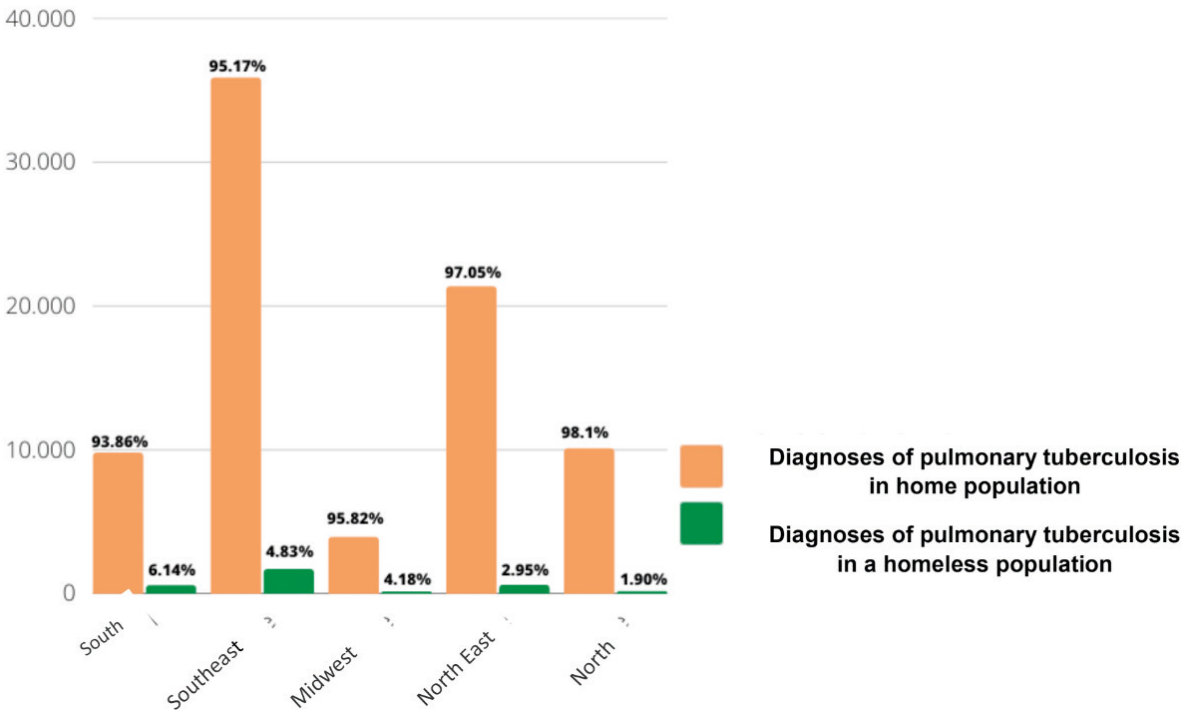
In the months of 2020, there was a reduction of 7,810 notifications in the total population of Brazil and also of 85 cases in the street population, constituting 4.41% of cases. However, the proportion of the South region remained high when compared to the others and increased in relation to the previous year, representing 7.19%. (Graphic 4)

The year 2021, in turn, even keeping the South region as the leader in prevalence (6.98%), had the lowest rate of notification of the condition. There was a total of 72766 occurrences, representing 5.6% less than the average of the previous 2 years, and 3055



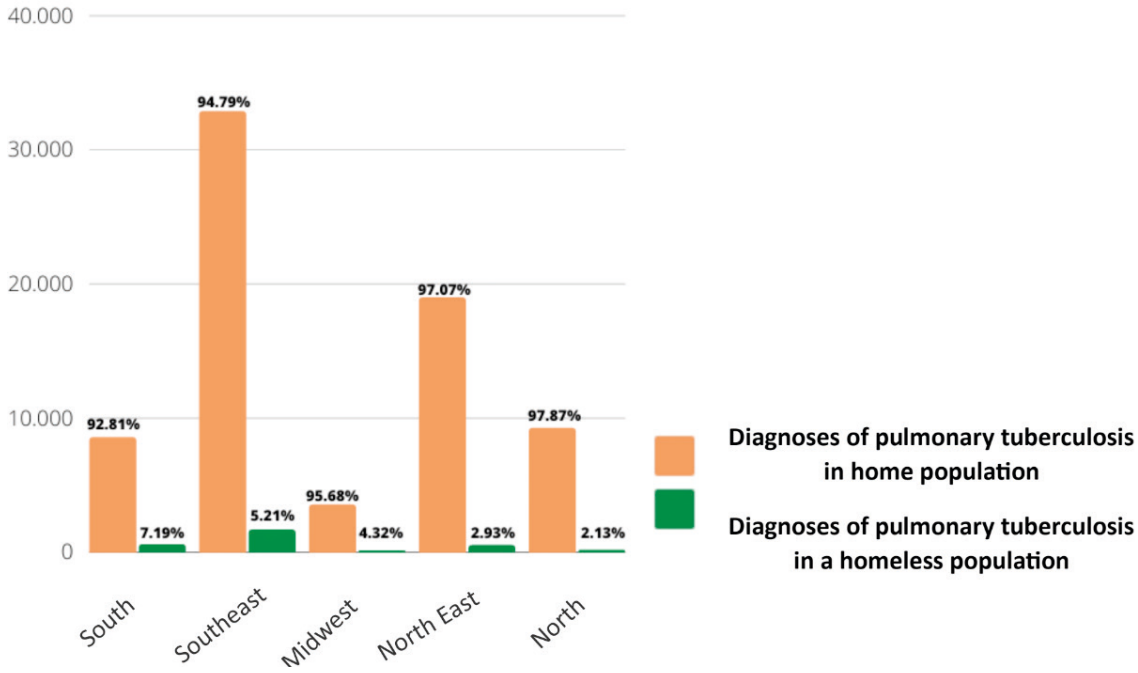
Graph 2: Estimated number of homeless people in Brazil (Sep/2012-Mar/2020)

Source: Censo Suas; Cadastro Único; RMA; Ipea (2015); IBGE (2015).



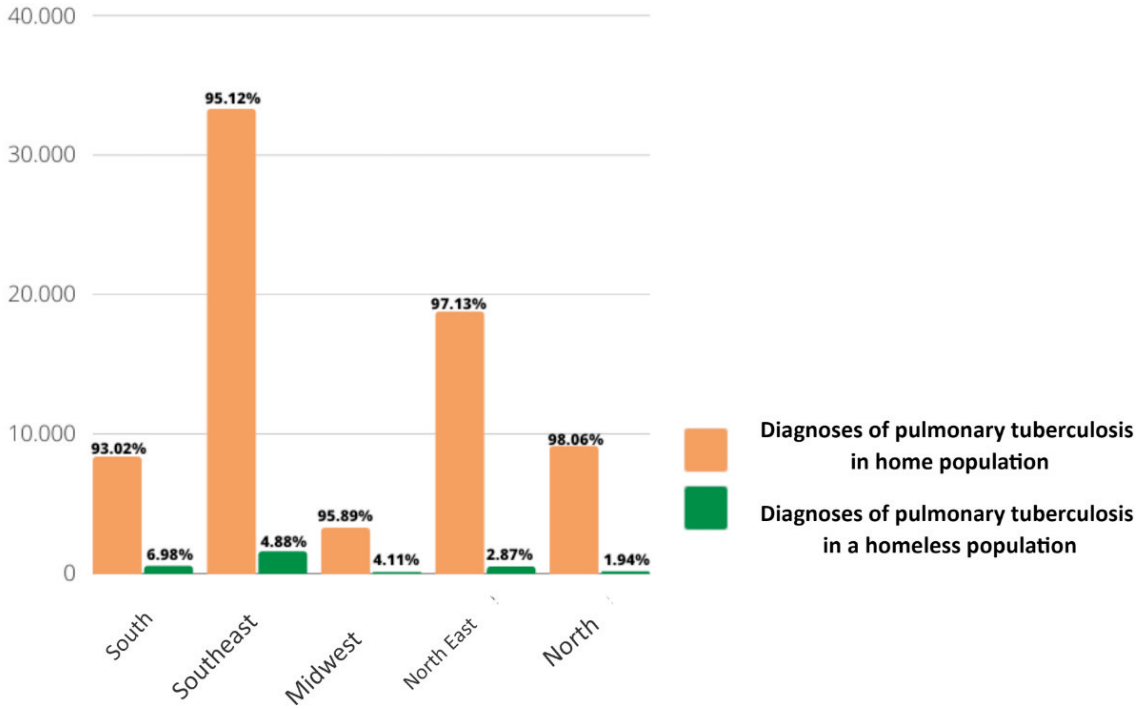
Graph 3: Pulmonary tuberculosis diagnoses by region in 2019

Source: Own authorship with data taken from SINAN and DATASUS



Graph 4: Diagnosis of pulmonary tuberculosis in the region in 2020

Source: Own authorship with data taken from SINAN and DATASUS



Graph 5: Diagnosis of pulmonary tuberculosis by region in 2021

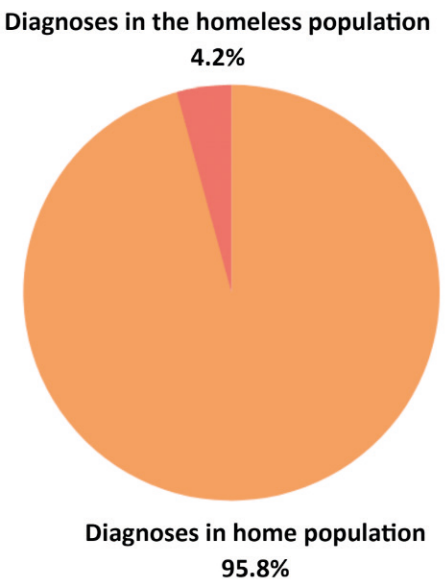
Source: Own authorship with data taken from SINAN and DATASUS

cases were present in homeless individuals. (Graphic 5)

Based on the proportion calculated in the 3 years analyzed, it is observed that there was an increase in all regions, with the exception of the Northeast, from 2019 to 2020. On the other hand, there was a reduction from 2020 to 2021.

The Southeast region – belonging to the 3 largest Brazilian states in terms of population – has the second highest regional prevalence, followed by the Midwest and Northeast. Furthermore, the North region maintained the lowest proportion of homeless individuals among all diagnoses of pulmonary tuberculosis in the total Brazilian population, with an average of 1.99%.

In short, it appears that in the period from 2019 to 2021, cases in the homeless population represented 4.2% of total pulmonary tuberculosis in the 5 Brazilian political-administrative regions. (Graphic 6)



Graph 6: Proportion of diagnoses for pulmonary tuberculosis in the period between 2019-2021

Source: Own authorship with data taken from SINAN and DATASUS

DISCUSSION

There are several factors that contribute to the increase in the proportion of homeless people among all patients diagnosed with Pulmonary TB in Brazil. Corroborating with Cortez Andreza et al. (2021), the incidence rate of tuberculosis was lower in the Midwest region, which also agreed with a lower prevalence of the pulmonary form in homeless people in this region, found in this present study. However, even though the highest incidence was found in the North Region in the aforementioned article, based solely on the pulmonary form studied here and in relation to homeless individuals among all Brazilian residents, the South remains the leading region of proportionality and this fact can be explained by underreported data and by the number of Community Health Agents (ACS) in Primary Care.

In the current scenario of registration of epidemiological data about notifiable diseases in information systems, the constant underreporting of cases in SINAN can influence the performance in controlling pulmonary tuberculosis. Factors related to the management of health services and the quality of disease surveillance intrinsically interfere with the epidemiological situation of Pulmonary TB (CORDOVIL et al, 2022).

According to Pinheiro et al (2012), the proportion of cure and the proportion of treatment abandonment correspond to indicators that directly assess the propagation of this disease. With the inclusion of unreported cases, there was a decrease in the proportionality of cure, while that of abandonment increased, confirming the hypothesis that unreported TB cases are related to a deficit in monitoring results.

For Silva, G et al (2020), underreporting of pulmonary tuberculosis may be associated with adversities at three different levels of care: access to the health system, diagnosis of TB

and notification in the computerized system. This fact corroborates the contribution of the fragmentation of health services in the implementation of geographic, financial or cultural barriers in accessing care, configuring a set of unfinished interdependent actions that are not integrated.

Mitchell, E et al (2021) point out the lack of priority given by health professionals in the habit of notifying injuries and the absence of specialists in carrying out diagnoses as intrinsic problems in the detection of tuberculosis. In addition, the insufficient dissemination of the promotion of the recognition of TB as a notifiable disease contributes to a higher rate of negligence on the part of the population.

In regions that do not have Offices on the Street – multidisciplinary teams that develop comprehensive health actions to meet the needs of the homeless population – access to health is the responsibility of the Primary Health Care teams in the area in which the CHAs are part (MINISTRY OF HEALTH, 2012). Data from January 2019 extracted from e-Gestor, the Ministry of Health platform, show that only 56.58% of families residing in the southern states of the country were covered by Community Health Agents, which is a possible cause of the large proportion of cases of pulmonary tuberculosis in the homeless population among all diagnoses in this region. In summary, this population group loses its main gateway to the public health service, reducing monitoring, follow-up and preventive measures against Pulmonary TB. In addition, as a result of the deficiency in monitoring homeless individuals due to the low number of Community Health Agents, the treatment abandonment rate increases and may reflect in the proportions of the Brazilian regions, since the disease can recur.

CONCLUSION

Among the 211,755,692 individuals residing in Brazil, 0.1% are homeless. With regard to diagnoses of Pulmonary Tuberculosis, in the analyzed period, 4.2% were represented by this population, which reflects the vulnerability of the target group of the study in terms of access to health care.

Although the South region has gained prominence in this research for having the highest proportion of homeless people among all Pulmonary TB diagnoses in Brazil, the other regions also have high prevalence of this condition in the target group of study and need special attention in combating to underreporting.

In this context, the implementation of a larger number of ACS, Street Clinics and Primary Health Care units configure essential actions that can change the current epidemiological scenario of pulmonary TB of individuals living on the streets in Brazil.

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