

## The sociodemographic profile of Leprosy cases in the elderly population

O perfil sociodemográfico dos casos de Hanseníase na população idosa

El perfil sociodemográfico de los casos de Lepra en la población anciana

### RESUMO

Objetivo: descrever o perfil sociodemográfico da ocorrência de hanseníase nos idosos. Método: O estudo trata-se de uma metodologia epidemiológica de caráter quantitativo e descritivo, realizado no município de Augustinópolis, estado do Tocantins, com a série temporal que correspondeu ao período de 2010 a 2020, sendo que a população alvo foram os idosos e a coleta de dados ocorreu por meio da disponibilização das fichas do Sistema de Informação de Agravos de Notificação (SINAN) pela Secretária Municipal de Saúde. Resultado: Foram notificados 76 casos, sendo que a predominância ocorreu no sexo masculino (63,2%), cor/raça parda (72,4%), escolaridade de 1ª a 4ª série incompleta do E.F (39,5%), trabalhador agropecuária (40,8%) e com maior número de casos na zona urbana (85,5%). Conclusão: A análise do perfil sociodemográfico torna-se essencial para colaborar como fonte de informações epidemiológicas que reflète nas ações direcionadas ao diagnóstico, tratamento, prevenção de incapacidades e reabilitação física e social.

**DESCRIPTORES:** Perfil Epidemiológico; Hanseníase; Idoso.

### ABSTRACT

Objective: to describe the sociodemographic profile of the occurrence of leprosy in the elderly. Method: The study is an epidemiological methodology of quantitative and descriptive character, conducted in the municipality of Augustinópolis, state of Tocantins, with the time series corresponding to the period from 2010 to 2020, and the target population were the elderly and data collection occurred through the availability of the forms of the Sistema de Informação de Agravos de Notificação (SINAN) by the Municipal Health Secretary. Result: 76 cases were reported, with a predominance of males (63.2%), mixed race (72.4%), schooling from 1st to 4th grade incomplete (39.5%), agricultural workers (40.8%) and with a greater number of cases in urban areas (85.5%). Conclusion: The analysis of the sociodemographic profile becomes essential to collaborate as a source of epidemiological information that reflects on the actions directed to diagnosis, treatment, prevention of disabilities and physical and social rehabilitation.

**DESCRIPTORS:** Epidemiological Profile; Leprosy; Aged.

### RESUMEN

Objetivo: describir el perfil sociodemográfico de la aparición de la lepra en los ancianos. Método: El estudio es una metodología epidemiológica de carácter cuantitativo y descriptivo, realizado en el municipio de Augustinópolis, estado de Tocantins, con la serie de tiempo correspondiente al período 2010 a 2020, y la población objetivo fueron los ancianos y la recolección de datos se produjo a través de la disponibilidad de los formularios del Sistema de Informação de Agravos de Notificação (SINAN) por la Secretaría Municipal de Salud. Resultados: Se notificaron 76 casos, siendo que el predominio se dio en el género masculino (63,2%), color/raza marrón (72,4%), educación de 1ª a 4ª serie incompleta de E.F (39,5%), trabajador agrícola (40,8%) y con un mayor número de casos en el área urbana (85,5%). Conclusión: El análisis del perfil sociodemográfico es esencial para colaborar como fuente de información epidemiológica que se refleja en las acciones dirigidas al diagnóstico, tratamiento, prevención de discapacidades y rehabilitación física y social.

**DESCRIPTORES:** Perfil epidemiológico; Lepra; Ancianos.

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## INTRODUCTION

Leprosy is a chronic, infectious, curable and notifiable disease whose etiological agent is the bacillus *Mycobacterium leprae* (*M. leprae*), also known as Hansen's bacillus, as it is an obligate intracellular parasite.<sup>1</sup>

Brazil had a 4% reduction in the prevalence rate, as it went from 1.56 per 10,000 inhabitants in 2009 to 1.50 per 10,000 inhabitants in 2019, thus the state of Tocantins ranks second with an incidence of 96.44 per 100,000 inhabitants, and its capital, Palmas, reported a rate of 226.99 cases per 100,000 inhabitants, the highest among

the country's capitals, and as a result, Tocantins is an endemic region for *M. leprae*.<sup>2</sup>

The mode of transmission occurs directly when a person with untreated pathology is an active carrier of Hansen's bacillus, in which the pathogen is eliminated to the external environment by means of aerosol droplets released in saliva, sneezes, droplets in general, and when it comes into contact with the respiratory tract and upper airways of the new host, *M. leprae* enters the organism and can infect it.<sup>1,2</sup> Thus, after the bacillus is installed in the body of an infected individual, it spreads and, when untreated, can lead to progressive and permanent damage to the nerves, skin, limbs and eyes,

that is, it can cause deformities and physical disabilities associated with its high immunogenic power.<sup>3,4</sup>

In this regard, among the pathologies that affect the functional decline of the elderly population, leprosy stands out because it is a chronic, infectious and dermatoneurological disease that compromises the peripheral nerves, which can cause physical deformities, when not properly treated, that potentiate functional difficulties<sup>5</sup>, because in the elderly, the pathology causes a greater impact, since Hansen's bacillus has disabling aspects, with this there is a compromise in the dynamics of the individual's life, mainly, the one in which there is already an impair-

ment of functional capacity as a result of the natural course of life.<sup>6</sup>

The diagnosis is made through clinical examination, epidemiological investigation and laboratory tests.<sup>7</sup> Thus, the clinical examination is through clinical anamnesis, general examination and dermato-neurological investigation to identify one or more cardinal signs of the disease<sup>8</sup>, while the epidemiological investigation is related to the geographic region, socioeconomic conditions and verification of prolonged contact with people who had the pathology<sup>9</sup>, and in addition, it includes carrying out examinations that can be used as auxiliary methods for confirming the disease, with histopathology and bacilloscopy to differentiate from other dermatoses.<sup>8</sup>

Thus, the treatment is offered by the Unified Health System (SUS) and is known as single multidrug therapy (MDT), since it presents an association of dapsona, rifampicin and clofazimine<sup>10</sup> and it is essential for the cure, the elimination of the source of infection and with that to obtain the interruption of the chain of transmission, being a strategy for the control of the disease.<sup>11,12</sup>

The elderly population has little knowledge about leprosy, and because of this, it can lead to a worsening of the clinical picture with the abandonment of treatment, not carrying out self-care to prevent disabilities and not calling household contacts for examination at the health unit, and besides, the disease in this period of life can present even more challenges in relation to early diagnosis, treatment, prevention of disabilities and relapses, due to the characteristics of being elderly.<sup>13</sup>

Finally, it is extremely important to have knowledge and understanding of the possible determinants and conditions of the disease in the region, so that it has epidemiological information and thereby develops the training and permanent education of the management and multidisciplinary teams linked to health and with this can develop actions for the promotion, prevention and control of the pathology, and, in addition, to achieve early diagnosis and adequate treatment. Therefore, the present study aims to describe the sociodemographic profile

of the occurrence of leprosy in the elderly, so that, in this way, it can improve the planning of actions and conduction of the treatment of diagnosed cases.

## METHOD

For this research, an epidemiological study of a quantitative and descriptive nature was carried out, since the epidemiological methodology is defined as the study of the distribution and determinants of diseases to allow examining the incidence and/or prevalence of the health condition related to certain characteristics of specified populations.<sup>14,15</sup> Thus, quantitative research is characterized by the use of quantification, both in the collection and in the treatment of information, using statistical techniques, as the quantitative approach seeks to report meanings that are considered peculiar to the objects, has the particularity of allowing an objective and structured approach through quantitative data.<sup>16,17</sup> Descriptive research aims to determine the distribution of diseases or health-related conditions, according to time, place and/or characteristics of the specific population, and, in addition, to discover the existence of associations between variables.<sup>14</sup>

The study in question was developed with the favorable opinion of the Research Ethics Committee of the State Unit of Tocantins, under number CAAE: 48144321.6.0000.8023, as it sought to protect the dignity and integrity of the human person participating in the research. Thus, the availability of the data occurred only after the appreciation of the Ethics and Research Committee (CEP - Comitê de Ética e Pesquisa), and its approval.

The research was carried out in the city of Augustinópolis, state of Tocantins and was limited to the period from 2010 to 2020 because it has records of data from the Notifiable Diseases Information System (SINAN). In this bias, the population consisted of all leprosy cases in the elderly population that were notified by the Health Department of the researched municipality and the sample was 100% of the data available in the period from 2010 to 2020.

Thus, elderly people with leprosy who live in the city of Augustinópolis and were notified in the period from 2010 to 2020 were included in the study. The study did not include carriers of the disease below 60 years of age, who do not live in the municipality and were notified outside the analyzed period of the research, and in addition, ethical guarantees to research participants involved not disclosing personal data (name, gender, address) and maintaining confidentiality regarding all personal information of the cases. Therefore, the study offered lower risks compared to other studies, since all information was acquired through secondary databases and all information was acquired ethically and in accordance with resolution No. 466/12 of the national health council and resolution No. 510 of April 7th, 2016.

In this sense, for the execution of this study, data on leprosy cases in the elderly were obtained through the SINAN notification forms that were made available by the Municipal Health Department of the municipality of Augustinópolis-TO and the data collected included the operational classification, clinical form, number of skin lesions, number of affected nerves, degree of inability to diagnose and degree of inability to cure.

Therefore, the results were analyzed through statistical analysis and the characterization of the sample's profile was carried out by means of absolute frequency (n) and relative frequency (%), and furthermore, the assessment of prevalence over the period from 2010 to 2020 was tested by applying Pearson's chi-square tests followed by the analysis of standardized residuals by the Posthoc test. In this sense, the data were analyzed with the aid of the statistical package SPSS (Statistical Package for Social Science) version 26.0 and the adopted significance level was 5% ( $p < 0.05$ ) and the results were presented in the form of tables and graphics, in addition to descriptions that will favor visualization and understanding.

## RESULTS

During the study period, 76 cases of le-

Table 1. Characterization of the sociodemographic profile of the occurrence of leprosy in the elderly in the city of Augustinópolis-TO, in the period 2010-2020.

	Year n (%)											Total	P*	
	2010 9 (5,9)	2011 6 (3,9)	2012 6 (3,9)	2013 9 (5,9)	2014 7 (4,6)	2015 8 (5,3)	2016 7 (4,6)	2017 8 (5,3)	2018 5 (3,3)	2019 7 (4,6)	2020 4 (2,6)			
Gender														
Female	6 (66,7)	2 (33,3)	3 (50,0)	3 (33,3)	3 (42,9)	2 (25,0)	3 (42,9)	4 (50,0)	0 (0,0)	2 (28,6)	0 (0,0)	28 (36,8)	0,46	
Male	3 (33,3)	4 (66,7)	3 (50,0)	6 (66,7)	4 (57,1)	6 (75,0)	4 (57,1)	4 (50,0)	5 (100,0)	5 (71,4)	4 (100,0)	48 (63,2)		
Color/Race														
Yellow	1 (11,1)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,3)	0,49	
White	2 (22,2)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	1 (12,5)	0 (0,0)	1 (14,3)	0 (0,0)	5 (6,6)		
Brown	5 (55,6)	2 (33,3)	6 (100,0)	8 (88,9)	4 (57,1)	6 (75,0)	5 (71,4)	7 (87,5)	3 (60,0)	6 (85,7)	3 (75,0)	55 (72,4)		
Black	1 (11,1)	4 (66,7)	0 (0,0)	0 (0,0)	3 (42,9)	2 (25,0)	1 (14,3)	0 (0,0)	2 (40,0)	0 (0,0)	1 (25,0)	14 (18,4)		
Ign/Blank	0 (0,0)	0 (0,0)	0 (0,0)	1 (11,1)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,3)		
Education														
Illiterate	0 (0,0)	3 (50,0)	0 (0,0)	2 (22,2)	4 (57,1)	1 (12,5)	2 (28,6)	2 (25,0)	3 (60,0)	0 (0,0)	2 (50,0)	19 (25,0)	0,54	
1st to 4th incomplete grade of Elementary School	5 (55,6)	3 (50,0)	5 (83,3)	5 (55,6)	0 (0,0)	2 (25,0)	3 (42,9)	2 (25,0)	2 (40,0)	2 (28,6)	1 (25,0)	30 (39,5)		
4th complete grade of Elementary School	1 (11,1)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	1 (25,0)	3 (3,9)		
5th to 8th incomplete grade of Elementary School	1 (11,1)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	1 (12,5)	0 (0,0)	1 (12,5)	0 (0,0)	1 (14,3)	0 (0,0)	5 (6,6)		
Complete Elementary School	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	1 (1,3)		
Incomplete High School	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,3)		
Ignored	2 (22,2)	0 (0,0)	1 (16,7)	2 (22,2)	1 (14,3)	4 (50,0)	2 (28,6)	3 (37,5)	0 (0,0)	2 (28,6)	0 (0,0)	17 (22,4)		

\*Chi-square; n = absolute frequency; % = relative frequency  
Source: Research data, 2022.

Tabela 2. Caracterização do perfil sociodemográfico da ocorrência de hanseníase nos idosos no município de Augustinópolis-TO, no período de 2010-2020, segundo a ocupação e zona.

	Year n (%)											Total	P*	
	2010 9 (5,9)	2011 6 (3,9)	2012 6 (3,9)	2013 9 (5,9)	2014 7 (4,6)	2015 8 (5,3)	2016 7 (4,6)	2017 8 (5,3)	2018 5 (3,3)	2019 7 (4,6)	2020 4 (2,6)			
Occupation														
Retired	2 (20,0)	0 (0,0)	0 (0,0)	3 (30,0)	3 (37,5)	1 (12,5)	5 (71,4)	4 (57,1)	3 (60,0)	1 (14,3)	2 (50,0)	24 (31,6)	0,52	
Merchant	0 (0,0)	0 (0,0)	0 (0,0)	1 (10,0)	0 (0,0)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	2 (2,6)		
Unemployed	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	2 (28,6)	0 (0,0)	2 (2,6)		
Housewife	1 (10,0)	0 (0,0)	2 (33,3)	1 (10,0)	1 (12,5)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	6 (7,9)		
Taxi driver	0 (0,0)	0 (0,0)	0 (0,0)	1 (10,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (1,3)		
Mason	0 (0,0)	0 (0,0)	1 (16,7)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	0 (0,0)	0 (0,0)	2 (2,6)		
Agricultural worker	5 (50,0)	3 (75,0)	2 (33,3)	3 (30,0)	3 (37,5)	4 (50,0)	2 (28,6)	2 (28,6)	2 (40,0)	4 (57,1)	1 (25,0)	31 (40,8)		
Ignored	2 (20,0)	1 (25,0)	1 (16,7)	1 (10,0)	1 (12,5)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (25,0)	8 (10,5)		
Zone														
Ign/Blank	1 (11,1)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	0 (0,0)	1 (12,5)	0 (0,0)	0 (0,0)	0 (0,0)	3 (3,9)	0,84	
Periurban	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	0 (0,0)	1 (14,3)	0 (0,0)	1 (1,3)		
Rural	1 (11,1)	1 (16,7)	0 (0,0)	0 (0,0)	2 (28,6)	0 (0,0)	1 (14,3)	1 (12,5)	0 (0,0)	1 (14,3)	0 (0,0)	7 (9,2)		
Urban	7 (77,8)	5 (83,3)	6 (100,0)	9 (100,0)	4 (57,1)	8 (100,0)	6 (85,7)	6 (75,0)	5 (100,0)	5 (71,4)	4 (100,0)	65 (85,5)		

\*Chi-square; n = absolute frequency; % = relative frequency  
Source: Research data, 2022.

prosy were reported in the elderly population in the municipality of Augustinópolis, state of Tocantins, and Table 1 presents the data for the sociodemographic characterization, because it had a prevalence in males (63.2%), compared to females (36.8%), the race with the highest frequency was brown (72.4%) and as far as education was concerned, individuals from the 1st to the 4th incomplete grade of elementary school (39.5%).

Thus, table 2, in relation to occupation, showed a prevalence in the activity of agricultural workers (40.8%) and the area, there was a predominance in the urban area with 85.5%.

## DISCUSSION

In table 1, it was found that, among the notified cases of leprosy, in relation to gender, there was a predominance of males (63.2%) and this result is in agreement with the study carried out in the municipality of Cajazeiras in the state of Paraíba (PB) in the period from 2011 to 2020, in which 379 leprosy cases were registered, 61% (232) were male.<sup>18</sup> The result of this research was also similar to studies that analyzed the epidemiological characteristics of leprosy.<sup>19, 20, 12</sup> The prevalence in males should be in accordance with the greater exposure to factors that trigger the disease in their workplaces; the low demand for health care compared to female individuals, since this is a population group that has less frequency in health units and allied to the lack of specific services that meet their needs; less access to information about the disease and less concern with self-care.<sup>21, 11</sup>

The predominance of brown race or color (72.4%) stands out and this finding is similar to the study carried out in the municipality of Porto Nacional-TO from January 2007 to August 2018, in which 546 cases of leprosy were notified, 71.2% (389) occurred in patients with mixed skin color.<sup>22</sup> Therefore, it is worth noting that this finding refers to the historical scenario of Brazil, as it is a highly mixed country due to the colonization process and, it can also emphasize, on the issue of self-identification of

the population, since the brown color soon predominates.<sup>23, 21</sup>

The level of education of the elderly population with leprosy in the city of Augustinópolis-TO is low, as it is observed that 39.5% are part of the 1st to 4th incomplete grade of elementary school, data observed in the study that aimed to outline the epidemiological profile of leprosy in Brazil between the years 2016 to 2020, in which 159,516 cases of leprosy were registered, and, of these, 19.22% were individuals who attended the incomplete 1st to 4th grade of elementary school.<sup>21</sup>

The finding of the present research was also in agreement with the study that presented the objective of describing the epidemiological profile of Leprosy in Bahia in the period from 2010 to 2020, since a total of 30,426 patients diagnosed with the disease were observed, 21.4% (6,530) of the total cases occurred in individuals from the 1st to 4th grade of elementary school incomplete.<sup>8</sup> It is due to the fact that the lower the level of education, the greater the probability of occurrence and reactivation of leprosy, since this class shows little knowledge, presents difficulty in understanding the guidelines on treatment, prevention and self-care related to the diagnosis and understanding and principle of the disease.<sup>24</sup> The pathology is directly linked to the vulnerability promoted by social determinants<sup>23</sup>, because high detection rates of leprosy are associated with precarious socioeconomic factors, such as low educational level and high level of social vulnerability.<sup>20</sup>

In this sense, in table 2, among the notified cases of leprosy in the elderly population, the predominant occupation was the agricultural worker (40.8%), similar data to the present research was found in the study carried out in municipalities in the health region of Bico do Papagaio, state of Tocantins (TO), between the years 2008 to 2018, in which 1257 new cases of leprosy were reported in the region studied, and, of these, 27.37% worked as rural workers.<sup>9</sup>

Therefore, as for the area, the one that presented the highest frequency was in the urban area, with a value of 85.5% of cases of leprosy in the elderly in the municipali-

ty studied and this data is observed in the study that carried out the research in the municipality of Marabá, state of Pará (PA), in the period from 2005 to 2017 and 2,643 cases of leprosy were reported, since the most expressive area of residence was the urban one with the percentage value of 77%.<sup>25</sup> Thus, a possible explanation would be that the disease occurs in urban centers due to the tendency of population agglomeration, generally associated with a low socioeconomic level (19) and population, such as migration, deficiency in public services and human crowding, facilitating contact with leprosy for long periods, since the incubation period of the disease is, on average, from 2 to 7 years.<sup>25</sup>

## CONCLUSION

According to the presented and discussed results of the sociodemographic profile of leprosy cases in the elderly population in the city of Augustinópolis, state of Tocantins in the period 2010-2020, it is concluded that there was a predominance of males, brown color/race, incomplete 1st to 4th grade education, agricultural worker and with a greater number of cases in the urban area.

In this way, the analysis of the sociodemographic profile of leprosy cases in the elderly becomes essential to collaborate as a source of local epidemiological information and, with this, investments can be made in the training and permanent education of management and multidisciplinary teams related to health, so that, in this way, health education should take place with the objective of clarifying and educating the elderly population about the pathology, since the lack of knowledge hinders acceptance, causes abandonment and refusal of treatment.

Therefore, an active and continuous search is suggested with the purpose of enhancing early detection and treatment, and in addition, providing holistic care to patients both at the basic level and at the high complexity level, contemplating actions aimed at diagnosis, treatment, disability prevention and physical and social rehabilitation, in order to minimize the consequences of

leprosy in the elderly.

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