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Clinical profile of leprosy in elderly people in the state of Pará: notifications made between 2019 and 2023.

Clinical profile of leprosy in the elderly in the state of Pará: notifications made between the years 2019 and 2023.

Clinical profile of leprosy among people in the state of Pará: notifications made between 2019 and 2023.

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Summary

INTRODUCTION AND OBJECTIVES: This study analyzes leprosy in elderly people in the state of Pará.
This study examines the history of leprosy in Brazil between 2019 and 2023, focusing on the description of epidemiological indicators and the characteristics of reported cases. Leprosy is an infectious disease caused by Mycobacterium leprae, which affects the peripheral nerves and can be transmitted through the respiratory tract. The prevalence of the disease is higher among individuals with low immunity, such as the elderly. In Brazil, the high rate of leprosy notification places the country second in the number of cases reported globally. Between 2013 and 2023, 66,852 cases were registered in elderly people aged 60 or older, with a particular concentration in the North region, especially in the state of [State Name - missing from original text].
Pará. MATERIALS AND METHODS: This study uses data from the Notifiable Diseases Information System (SINAN) to analyze the incidence of the disease. RESULTS AND DISCUSSION: The results show that the dimorphic clinical form predominates among the elderly in Pará, with a high rate of multibacillary cases (89.17%). The analysis also reveals a higher prevalence of leprosy among elderly men, who frequently present more severe forms of the disease. Comparisons with studies from other regions and periods highlight differences in prevalence and types of clinical form. CONCLUSION: This reinforces the need for early diagnosis and disease control strategies, especially for the elderly, who

They present a higher risk of complications due to low immunity. The study emphasizes the importance of the quality of epidemiological data for the effective management of leprosy and the need for continuous monitoring.

KEYWORDS: Leprosy; public health; elderly; mandatory reporting.

Abstract

INTRODUCTION AND OBJECTIVES: The study analyzes leprosy in elderly individuals in the state of Pará, Brazil, between 2019 and 2023, focusing on describing epidemiological
indicators and characteristics of reported cases. Leprosy is an infectious disease caused by Mycobacterium leprae, which affects peripheral nerves and can be transmitted through respiratory pathways. The prevalence of the disease is higher in individuals with low immunity, such as the elderly. In Brazil, the country has a high notification rate for leprosy, being the
second-highest globally in reported cases. Between 2013 and 2023, there were 66,852 cases reported in individuals over 60 years old, with a notable concentration in the North region, particularly in the state of Pará.
MATERIALS AND METHODS: This study uses data from the Notifiable Diseases Information System (SINAN) to analyze the incidence of the disease.
RESULTS AND DISCUSSION: The results show that the Dimorphic clinical form predominates among the elderly in Pará, with a high rate of multibacillary cases (89.17%).
The analysis also reveals a higher prevalence of leprosy in older men, who frequently present
with more severe forms of the disease. Comparisons with studies from other regions and periods highlight differences in prevalence and types of clinical forms. CONCLUSION: This reinforces the need for early diagnosis strategies and disease control, particularly for the elderly, who are at greater risk of complications due to low immunity. The study emphasizes the importance of high-quality epidemiological data for effective leprosy management and the necessity for continuous monitoring.

KEYWORDS: *Leprosy; public health; elderly; mandatory reporting.*

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Introduction

Leprosy is an infectious disease caused by the etiological agent.
Mycobacterium leprae, an acid-fast bacillus that infects the superficial nerves of the
It affects the skin and peripheral nerve trunks, and can also affect the eyes and internal organs.
Since the means of transmission is the respiratory tract, through nasal secretions and droplets of
speech, coughing and sneezing (BRAZIL, 2017; Alves *et al.,* 2024).

Transmission occurs when a person with leprosy, in the infectious form of the disease, is exposed to it.
If left untreated, the disease releases the bacillus into the external environment, infecting other people.
susceptible. The way the bacillus is eliminated by the patient is through the upper respiratory tract (by
The cause of death is through a sneeze or cough), and not by the objects used by the patient (Marciano *et al.,*
2019). Those infected with leprosy are divided into two groups according to its transmission:
paucibacillary bacteria, which do not exhibit significant levels of transmission due to low viral load.
Bacillary, and multibacillary, which, in turn, present a high level of bacilli. However, this
The fee will only be valid until the start of treatment (BRAZIL, 2016).

According to the 2020 Epidemiological Bulletin from the Ministry of Health, the following cases were reported:
The World Health Organization reported 127,396 new cases of disease worldwide. Of these, 19,195
of these occurred in the Americas region, and 17,979 were reported in Brazil, which corresponds to
93.6% of new cases in the Americas. Therefore, Brazil is the second largest reporting country.
of cases worldwide (BRAZIL, 2022).

Aging is defined as a multidimensional process, characterized by
a state of physiological decline. It presents three indicators of healthy aging:
Low risk of immune diseases and functional disabilities; excellent mental functioning.
and physical activity; and active involvement with life. Therefore, older adults experience immune regression.
physiological and, as a consequence, they are among the age groups with the highest number of cases.
multibacillary (Teles *et al.,* 2022).

When we talk about the national level, according to data from the Information System of
According to the Notifiable Diseases Information System (SINAN), from 2013 to 2023, approximately 66,852 new cases were registered.
Cases of leprosy in elderly people aged 60 or older. During the same period, in the Northern region, there were
10,197 new cases were registered, of which more than half – 5,161 – occurred in the state alone.
from Pará, which corresponds to 7.72% of the cases registered in the national territory.

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Studies on leprosy in the elderly can contribute to decision-making regarding...
The importance of this age group in the transmission of the disease and in physical disabilities. Furthermore...
Furthermore, they would provide an understanding of the complications, comorbidities, and interactions.
Medication-related side effects of the disease in elderly individuals. Therefore, the present study aims to...
The objective is to describe epidemiological indicators and characteristics of new leprosy cases.
in elderly people in the state of Pará, from 2019 to 2023, comparing them to the analyzed data.
by other authors using similar methodology.

Materials and methods

This is an ecological study, cross-sectional in nature, descriptive and exploratory.
based on secondary data on the incidence rate of leprosy in the state of
Pará, collected in SINAN and originating from the Informatics Department of the Unified System.
Health (DATASUS).

Access to DATASUS data followed the search order corresponding to:
health information, epidemiological information and morbidity, diseases and health problems
Notification – from 2007 onwards (SINAN), in which the pathology leprosy was selected.
and the state of Pará.

Data collection took place in August 2024, and the established period...
This corresponded to the years 2019 to 2023, with the number of confirmed cases as the variable.
by year of notification, sex, age group, operational classification, and clinical form.

Descriptive statistical analyses of absolute and relative frequencies were performed.
For the age variable, three intervals were selected (60 to 69 years, 70 to 79 years and 80 or
(more years), considering the target audience of the study, the elderly; the sum was performed and the
percentage. The age variable was also categorized according to clinical form (undetermined,
tuberculoid, dimorphic, vichowian, and unclassified/ignored). As for the sex variable,
The age groups were assessed based on the sum of years of schooling in the quantitative analysis.

To calculate the percentage of each type of leprosy within each age group,
We use formula 1:

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and

= ( ) × 100
the

The chi-square test of independence was used to check for association.

There is a significant correlation between age group and type of leprosy. The null hypothesis is that the distribution

The severity of leprosy types is independent of age group and sex. The calculation of the chi-square test...

The square is shown below:

$$_{2ÿ} = ÿ \frac{(O ÿ E)^2}{}$$

Where:

THE These are the observed values.

AND These are the expected values.

The data were tabulated in Microsoft Office Excel® 2020 spreadsheets and,

subsequently analyzed. Because the data is in the public domain, no identification was made.

of the people, in accordance with the ethical principles of Resolution 466/2012 of the National Health Council, which

justifies the absence of an opinion from the Research Ethics Committee.

Results and discussion

Table 1. Monitoring of leprosy data: clinical form by age group in elderly residents of the state of Pará - in the period between 2019 and 2023

Age Range	Indet	Tuberc	Dimorphic	Virchowiana	Unclassified or ignored	Total
60 to 69 years	32	21	772	292	78	1195
70 to 79 years	12	14	394	165	39	624
80 years and 7 more		2	111	53	12	185
Total	51	37	1277	510	129	2004

Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net

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Analysis of the clinical forms reported in the state of Pará revealed a predominance of
The dimorphic clinical form represents 63.72% of reported cases among the elderly, followed by the other forms.
Virchowian with 25.44%, indeterminate with 2.54%, and tuberculoid with 1.84%, that is,
predominance of multibacillary classification.

When considering the operational classification, it is observed that, among these exams, there is a greater
expressiveness of the Multibacillary operational classification, which represents 89.17% of the total of
reported cases in the age group, followed by the Paucibacillary operational classification, with
4.39%, while 6.43% of reported cases were either unclassified or left unrecorded.
white.

Teles *et al.* (2023), in a study of the same nature carried out in the state of Sergipe,
with reports referring to the period between 2007 and 2016, they evidenced the predominance
of the operational classification Paucibacillary, with 81.60%. These being the most common clinical forms.
Tuberculoid and indeterminate types were prevalent, with 49.81% and 25.29%, respectively.

Based on the contingency table with the distribution of leprosy cases in
Different clinical forms by age group (Table 1), we analyzed the association between age group
and the clinical form of leprosy, for this we use the chi-square test *(Chi-*
Square Test. The result of the test for the given data was ÿ² = 5.42 and p-value = 0.712, with
8 degrees of freedom.

Since the p-value is 0.712, greater than the typical significance level of 0.05, it does not
We reject the null hypothesis. This indicates that there is insufficient evidence to assert that it exists.
a significant association between age group and clinical form of leprosy

Sex	Indet	Tuberc	Dimorfa	Virchowiana	Não classified or ignored	Total
Male 34		26	926	399	96	1481
Feminine	17	11	351	111	31	523
Total	51	37	1277	510	129	2004

among the elderly in the state of Pará, in the period between 2019 and 2023.

Traúzola *et al.* (2022) describe leprosy as the leading cause of mortality.
in elderly people aged 60 to 69, with the most common clinical form in this age group being Virchowian.
which, along with the Dimorphic form, is operationally classified as Multibacillary. For these
According to the authors, mortality from this condition is corroborated by the fact that the elderly present
low cellular immunity.

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Regarding this, Rocha *et al.* (2020) demonstrate that studies on leprosy in the elderly
They favor decision-making regarding the importance of this age group in the transmission and in
prevention of physical disabilities. Thus, they would provide an understanding of the complications,
comorbidities and drug interactions resulting from the disease in the elderly, therefore,
Further investigation into the worsening of the condition in this age group is needed.

Table 2. Monitoring of leprosy data: clinical form by sex in the elderly.
residents of the state of Pará - in the period between the years 2019 and 2023
Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan
Net

Considering the gender reported on the SINAN notification form, the analysis
It also allowed for the identification of a higher prevalence of leprosy diagnosis among the elderly.
male sex, in all clinical forms analyzed, with the following distribution: 66.66%
for the indeterminate form; 70.27% for the tuberculoid clinical form; 72.51% for the form
dimorphic; and 78.23% for the virchowian form.

Analyzing the result of the chi-square test, $\ddot{y}^2 = 8.08$, the p-value was 0.0888;
It is observed that the p-value is greater than the commonly used significance level (0.05). This
This suggests that, based on the data analyzed, we cannot affirm that there is an association.
There was a statistically significant difference between sex and the clinical form of leprosy in elderly individuals during the period.
evaluated.

This finding is in line with the study by Oliveira *et al.* (2022), which, in an investigation
An epidemiological study conducted in the state of Paraíba also found that leprosy affects both
The sexes. However, the study indicated that men are more likely to develop the
more severe forms of the disease. Their research identified a prevalence of leprosy.
multibacillary in 66.79%, with a predominance of the dimorphic clinical classification (36.14%) and greater
Incidence of grade 2 physical disability among men. Although there is no association
The statistically significant correlation between sex and clinical forms in the analyzed sample is...
It is important to consider that biological and social factors can influence the manifestation and
disease prognosis.

Damasceno *et al.* (2023) demonstrate that, in the interval between 2017 and 2021, in the state of
In Pará, 14,339 cases were reported, with the highest occurrence in 2019. The diagnoses most
Recurrent cases were recorded in individuals over 15 years of age (92.1%), who were male.
(62.3%), of mixed race (74.1%), with incomplete primary education (48.2%). The predominant
Zero degree of disability (56.2%) at diagnosis and the presence of more than five nerves

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affected in each individual (43.6%).

Silva *et al.* (2021) clarify that the clinical characterization of the leprosy patient is
This is important because the clinical manifestation of the disease is directly related to the response.
The patient's immune system, which in turn may be associated with the risk of developing reactions.
leprosy cases and deaths. For these authors, the epidemiological results suggest evidence of
adolescent girls and women of reproductive age are more prone to forms
Tuberculoid syndrome is characterized by a predominance of the Th1 response; while individuals of the opposite sex
Males are more prone to developing more severe forms of the disease and are
associated with a predominance of the Th2 response.

Conclusion

The results from SINAN indicate that the leprosy detection rate in the elderly...
It presents a predominance of the multibacillary clinical form, especially in the 60-69 age group.
years between 2019 and 2023. This may be associated with a lower cellular immune response in that period.
age group, which contributes to the worsening of the disease and may be related to a
an increase in the mortality rate in this group.

Although cases classified as "unclassified or ignored" do not represent
In a significant portion of the data, the presence of this category points to the need for
Greater attention and investigation are needed. Underreporting or misclassification can have an impact.
negatively impacts both the treatment and prevention of physical disabilities, especially
Given the high prevalence of comorbidities and complications associated with leprosy in the elderly.
Epidemiology is a fundamental tool for controlling endemic diseases, such as
leprosy, and ensuring the quality of the data and information reported is crucial for the
planning public health policies.

Regarding the analysis by sex (Table 2), the data show a higher prevalence of
leprosy among elderly men, with a predominance of the most severe forms of
disease, which frequently results in grade 2 physical disability. This finding suggests
a Th2 cell-mediated immune response, which is less effective at controlling infection,
reinforcing the need for early diagnosis strategies. Early detection and
Accurate classification of clinical forms is fundamental for intervention and treatment.
adequate, preventing permanent disabilities.

Chi-square tests indicate that there is no significant association between the forms.

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clinical leprosy and age group (p = 0.712) nor between clinical forms and sex (p = 0.088). However, the p-value close to 0.05 in the analysis by sex suggests a possible This trend justifies further investigation to better understand it. distribution and its implications for clinical practice and health policies.

This analysis reinforces the importance of maintaining continuous epidemiological surveillance and of to improve the quality of recorded data to guide targeted interventions More vulnerable populations, such as elderly men.

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