International Journal of **Health Science**

EPIDEMIOLOGICAL PROFILE OF THE ELDERLY POPULATION ADMITTED WITH LEPROSY IN THE STATE OF MATO GROSSO, FROM 2012 TO 2021

Elizandra Hertel Lenhardt
Universidade de Cuiabá, medicine course, Cuiabá - MT
http://lattes.cnpq.br/7247953917565088

Alexandra Borges de Oliveira
Universidade de Cuiabá, medicine course, Cuiabá - MT
http://lattes.cnpq.br/6095375464155758

Camila Metelo Duarte
Universidade de Cuiabá, medicine course, Cuiabá - MT
http://lattes.cnpq.br/1021845526614313

Karolayne Guimarães Horodenski Lopes
Universidade de Cuiabá, medicine course, Cuiabá - MT
http://lattes.cnpq.br/3919475211012263

Lennon Rodrigues Silva
Universidade de Cuiabá, medicine course, Cuiabá - MT
https://lattes.cnpq.br/1151066990301060

Letícia de Melo Cerqueira
Universidade de Cuiabá, medicine course, Cuiabá - MT
https://lattes.cnpq.br/4533306172457316

Livian Medeiros Bertoni
Universidade de Cuiabá, medicine course,
Cuiabá - MT
https://lattes.cnpq.br/74960580208441

Maria Clara Galvão Murilho
Universidade de Cuiabá, medicine course,
Cuiabá - MT
http://lattes.cnpq.br/4999773642380344

Tiago Rodrigues Viana
Universidade de Cuiabá, docente na
medicine course, Cuiabá - MT
http://lattes.cnpq.br/6059628045320426

Abstract: Leprosy is an infectious disease, caused by the bacteria *Mycobacterium leprae*. Brazil ranks second in the number of cases detected in the world, with 13% of new global cases and an annual incidence of approximately 12 per 100,000 inhabitants. The central-west region has high rates of the disease, with rates of 33.84/100,000 inhabitants. The objective of this work was to describe the epidemiological profile of elderly people with leprosy who were hospitalized in the state of Mato Grosso, between 2012 and 2021. This is a retrospective, descriptive cross-sectional study with data from the hospital information system (SIH). The variables gender, age group, number of hospitalizations, year of hospitalization, character of hospitalization, main diagnosis, municipality of occurrence, group procedure, procedure performed and hospital stay were evaluated. It was demonstrated that the gender with the highest occurrence was male, 139 cases (78.98%), the main diagnosis was unspecified leprosy with 85 cases (48.30%). The study showed that records of hospitalizations for leprosy predominate in the age group between 60-69 years old, with a greater incidence of males. Most hospitalization cases were diagnosed with unspecified leprosy/other forms, on an urgent/emergency basis, public regime, with the medical clinic being the most requested specialty in the treatment of leprosy followed by amputations. There was a need to strengthen specific strategies for the elderly, especially in primary care, so that the diagnosis is made early and the treatment is timely.

Keywords: Leprosy, elderly, Mato Grosso, hospitalization.

2

INTRODUCTION

Leprosy is a neglected, infectious and chronic tropical disease caused by *Mycobacterium leprae* or Hansen's bacillus. It is an obligatory intracellular bacterium that has affinity for skin and peripheral nerve cells, which can lead to deformities (BRUGGER et al., 2023*).*

Regarding the clinical course, it presents in indeterminate, tuberculoid, dimorphic or lepromatous forms, the host's immunological response contributed to the severity of the disease and its manifestations (AZEVEDO et al., 2023). Its transmission occurs through the upper airways through direct and prolonged contact with users who have the multibacillary form. Furthermore, the disease has a long incubation period, taking an average of two to five years to manifest (SILVA et al., 2018; CHAVES et al., 2015).

It is a notifiable disease, that is, after confirming the diagnosis, the notification form of the notifiable disease information system (SINAN) must be completed and the cases notified (COSTA et al., 2023).

The pharmacological treatment of leprosy in the single health system (SUS) is carried out with single polychemotherapy (MDT-U), which combines three drugs: rifampicin, dapsone and clofazimine. The therapeutic regimen has high rates of resolution of the condition when done properly and must be used for a period that can last up to 12 months. Furthermore, a multidisciplinary approach is associated with better results, such as physical rehabilitation with physiotherapists and psychosocial support (BRAZIL, 2022).

Brazil is an endemic country for leprosy and epidemiological data reveal that it ranks second in the number of cases detected in the world, with 13% of new global cases. It is estimated that the annual incidence is approximately 12 per 100,000 inhabitants, configuring a relevant public health problem that requires greater attention from health professionals (BRAZIL, 2015; MIRANDA et al., 2022).

It is noted that in Brazilian locations, there are high rates of the disease in the central-west, north and northeast regions, with rates of 33.84/100,000 inhabitants, 24.95/100,000 inhabitants. and 17.08/100,000 inhabitants respectively. In relation to the elderly, the states with the highest rates of detection of the disease were Mato Grosso, Pará, Maranhão, Rondônia, Roraima, Pernambuco, Piauí and Acre, which remain hyperendemic (ROCHA et al., 2020; MIRANDA et al., 2022).

Currently, the increase in population aging has become a fact not only in Brazil, but throughout the world, causing challenges in biological, psychological and social aspects. This way, the demographic growth of the elderly population intervenes in the organization of health services and also reconsiders public policies in order to provide equality and access for these populations (SILVA et al., 2018).

In this scenario, Brazilians are in the process of transitioning the age pyramid, in which the most significant changes will occur in the elderly. Young people, under 15 years of age, will lose representation, while older people will increase. The demographic census registered 22,590,599 elderly people, 11.8% of the population. Postulations from the Brazilian Institute of Geography and Statistics (IBGE) predict that this group will increase to 66,457,570, which will correspond to 29.3% of the population in 2050 and will exceed the number of children under 15 years of age (ROCHA et al., 2020).

It is estimated that Brazil, in 2025, will occupy sixth place on a global scale when it comes to population aging. Elderly people naturally have a decline in their immune system and functionality, substantially increasing the risk of developing illnesses, among which we

can mention leprosy (FONSECA et al., 2015; SILVA et al., 2018).

The immune system's response to *Mycobacterium leprae* influences the course and manifestations of leprosy, as it correlates with neural impairment with physical disability when diagnosed late, as symptoms can appear within 20 years. The subcutaneous tissue is probably a site of infection and persistence of the bacillus in the body, participating in the modulation of the innate immune response, through the release of cholesterol and adiponectin (DOS REIS et al.2023).

Complications resulting from this disease, such as neuritis, ulcers and sensory and motor changes, expose the elderly to a greater risk of developing physical disabilities that compromise performance in carrying out daily activities and social participation (BRUGGER et al., 2023*).

There are also factors related to the difficulty in patients adhering to treatment, whether due to adverse drug events, prolonged treatment time and resistance to rifampicin (WANG et al., 2022*).

The development of physical disabilities resulting from leprosy is due to the delay in diagnosis and treatment of the disease, which must be carried out early. This fact correlates with the patient's self-discrimination, as, even today, this pathology is linked to a huge load of prejudice, intensifying the vulnerability of the elderly (SIMAN *et al.,* 2021).

Therefore, considering the risks posed by leprosy in the elderly, it is essential to study the record of hospitalizations, in order to understand the needs in care for people with leprosy, to know the epidemiological profile and hospitalization data of this population in the state of Mato Grosso in the period of 2012 to 2021.

The present study aims to describe the epidemiological profile of elderly people with leprosy who were hospitalized in the state of Mato Grosso, between 2012 and 2021.

METHODOLOGY

This is a retrospective, descriptive cross-sectional study, which analyzed the epidemiological situation of hospitalization cases of 176 elderly people affected by leprosy in the state of Mato Grosso, from 2012 to 2021. Data referring to leprosy cases were obtained from the hospital information system (SIH), attached to the data repository of the information systems of the state health department of Mato Grosso (DeWebSES-MT).

The variables analyzed were: gender (female/male), age group (over 60 years old), number of hospitalizations, year of hospitalization (2012 to 2021), nature of hospitalization (elective/urgency/emergency), main diagnosis (dimorphous leprosy, undetermined, lepromatous, borderline, unspecified and other forms), municipality of occurrence (Cuiabá, Várzea Grande and others), group procedure (surgical/clinical), procedure performed (amputation, diagnosis and/or emergency care in a medical clinic, surgical fixation of tendon, removal of part of the long bones, treatment of Leprosy, treatment of other conditions of the skin and subcutaneous tissue, treatment of patients under long-term care), hospitalization regime (public/private).

The data were included in a Microsoft Excel 2016® spreadsheet and the epidemiological indicators were analyzed using the EPI-INFO version 7.0 program. The variables were described in two tables made in Microsoft Office Word 2016®, containing the absolute frequency (n) and relative frequency (%) for descriptive statistical analysis.

To carry out this study, it was not necessary to use a free informed consent form (Res. CNS 466\2 in its chapter IV.8), as these were

public database analyzes with free access without data exposure. personal. According to resolution 510\2016, Law 12,527\2011, it was not necessary to submit the work to the CEP-CONEP system.

RESULTS AND DISCUSSION

In the period from 2012 to 2021, 176 elderly people hospitalized for leprosy were reported in the state of Mato Grosso. Of these, 2013 was the year with the highest incidence, with 23 elderly people hospitalized (13.07%), the most affected age group was 60-64 years old, with 67 hospitalizations (38.07%), the gender with the highest occurrence was male, with 139 (78.98%), with Cuiabá and Várzea Grande as the study focus, with 23 hospitalizations (13.07%), as shown in table 1.

Likewise, among the 176 elderly people hospitalized for leprosy in the state of Mato Grosso, the main diagnosis was unspecified leprosy with 85 cases (48.30%), urgent and emergency hospitalization with 167 (94.89%), public regime presenting 124 cases (70.45%), clinical procedures with 166 hospitalized patients (94.32%) and higher amputation rates totaling 7 cases (3.98%), as shown in table 2.

The results of the study demonstrated that the predominant age group was 60-64 years old followed by 65-69 years old, in addition to a significant difference between the genders, with males having a higher prevalence compared to females, data also observed in a survey carried out with 896 elderly people diagnosed with leprosy in Alagoas, during the years 2005 to 2015, among whom (60.5%) were in the age group of 60 to 69 years old and (50.5%) were male (CHAVES *et al.*, 2015).

The higher percentage of cases related to men is due to less health-related concerns on the part of this population group, however, it is also worth investigating the factors associated with genetic susceptibility and possible hormonal interference in the immune response to *Mycobacterium leprae*. Regardless of the causes associated with this epidemiological pattern, these results demonstrate a challenge for leprosy control in the state of Mato Grosso (FONSECA *et al.*, 2015).

Furthermore, most cases were diagnosed with unspecified leprosy/other forms, demonstrating a limitation in the study by not classifying the disease adequately within the existing clinical forms (indeterminate, borderline or dimorphic, tuberculoid and lepromatous), either due to the lack of correct identification by the responsible doctor or failure when notifying the case, thus, it is estimated that the number of people affected by the disease is greater than the notification reports demonstrate (SILVA JUNIOR.; SANTOS, 2022).

It was observed in other studies that the multibacillary operational classification, which represents the dimorphic and lepromatous clinical forms, were more frequent in the elderly, as they have less cellular immunity against the bacillus due to senescence (DOS REIS et al., 2023).

The majority of hospitalizations occurred on an urgent/emergency basis, under the public regime, with the medical clinic being the most requested specialty in the treatment of leprosy, followed by amputations.

It is observed that the frequency of physical disabilities in the elderly is high when compared to other age groups and may mean late diagnosis, resulting in permanent sequelae resulting from injuries to the peripheral nerves, responsible for the sensation of pain, touch and heat, in addition to impairment of structures responsible for vision. Individuals become more susceptible to accidents, burns, wounds, infections and amputations, which corroborates the need for urgent and emergency care, in addition to promoting social and psychological damage

Variables	N	(%)
Year of hospitalization		
2012	20	11,36
2013	23	13,07
2014	11	6,25
2015	22	12,50
2016	18	10,23
2017	21	11,93
2018	18	10,23
2019	20	11,36
2020	10	5,68
2021	13	7,39
Age range		
60 to 64 years old	67	38,07
65 to 69 years old	43	24,43
70 to 74 years old	22	12,50
75 to 79 years old	17	9,66
Over 80 years old	27	15,34
Gender		
Feminine	37	21,02
Masculine	139	78,98
Municipality of occurrence		
Cuiabá and Várzea Grande	23	13,07
Others	153	86,93

Table 1 - Sociodemographic aspects of leprosy patients admitted to the Mato Grosso inpatient service during the period from 2012 to 2021.

Source: SIH/DATASUS.

Variables	N	(%)
Main diagnosis		
Leprosy	1	0,57
Dimorphous leprosy	7	3,98
Undetermined leprosy	24	13,64
Lepromatous leprosy	7	3,98
Borderline lepromatous leprosy	1	0,57
Unspecified leprosy	85	48,30
Other forms of leprosy	51	28,98
Character of hospitalization		
Elective	9	5,11
Urgency/Emergency	167	94,89
Regime		
Private	52	29,55
Public	124	70,45
Group procedure		
Surgical procedures	10	5,68
Clinical procedures	166	94,32

Procedure performed		
Amputation	7	3,98
Diagnosis and/or emergency care in a medical clinic	1	0,57
Surgical tendon fixation	2	1,14
Removal of part of the long bones	1	0,57
Leprosy treatment	162	92,05
Treatment of other skin and subcutaneous tissue conditions	2	1,14
Treatment of patients under long-term leprosy care	1	0,57

Table 2 – Clinical and hospitalization data of leprosy patients admitted to the Mato Grosso hospitalization service during the period from 2012 to 2021.

Source: SIH/DATASUS.

that interferes with quality of life (FONSECA et al., 2015).

In addition to the greater susceptibility to infectious diseases, it is worth noting that the elderly population generally has comorbidities that end up adding to the problem of the disease, among which we can mention diabetes mellitus, high blood pressure, smoking, as aggravating factors and which have a high prevalence in the studied population (LIMA et al., 2022).

The elderly population is more vulnerable to the illness process, whether due to infections, chronic illnesses and mental illnesses. Considering health as physical, mental and social well-being, public policies must address the issue as a whole, investing resources in different areas, considering the doctrinal principles of the SUS: universality, comprehensiveness and especially, when it comes to the elderly, equity, allowing the identification of vulnerabilities and the resolution of problems (LENHARDT et al., 2023).

Among the limitations of this study, those mentioned above stand out, as well as possible underreporting of cases and the scarcity of data in the literature in this regard. This demonstrates the need for more research involving the topic to better understand the factors associated with hospitalizations of diagnosed elderly people. with leprosy,

allowing the development of more effective health strategies on this topic.

CONCLUSIONS

In view of the above, the study demonstrated important differences in the epidemiological and clinical profile of leprosy in the elderly, with the age group comprising 60-69 years being most affected, with a predominance of males. Most of the hospitalization cases were diagnosed with unspecified leprosy/other forms, on an urgent/emergency basis, public regime, with the medical clinic being the most requested specialty in the treatment of leprosy followed by amputations.

In this sense, addressing this disease in the elderly population is extremely important, as they are people more susceptible to hospitalizations due to complications from leprosy and still face many challenges related to access to health services.

Thus, the need to adopt specific strategies for the elderly is evident, which include strengthening primary care and integration between the technical areas of leprosy and elderly health in the three spheres of SUS management, in order to that the diagnosis is made early and the treatment is timely, avoiding the sequelae and complications of the disease, as well as controlling the transmission of the disease.

REFERENCES

AZEVEDO, M. C. S. *et al.* B lymphocytes deficiency results in altered immune response and increased susceptibility to *Mycobacterium leprae* in a murine leprosy model. **Cytokine**. 156184, vol. 165, 2023.

BRASIL. Ministério da saúde. **Protocolo clínico e diretrizes terapêuticas da hanseníase**. Brasília, 2022. Disponível em: https://www.gov.br/conitec/pt-br/midias/protocolos/20220818_pcdt_hanseniase.pdf/view. Acesso em: 21 jan. 2024.

BRASIL. Ministério da saúde. **Casos novos de hanseníase:** número, coeficiente e percentual, faixa etária, classificação operacional, sexo, grau de incapacidade, contatos examinados, por estados e regiões. Brasília: SINAN, 2015. Disponível em: http://portalarquivos.saude.gov.br/images/pdf/2016/julho/07/tabela-geral-2015.pdf. Acesso em: 08 fev. 2023.

BRUGGER, L. M. O. *et al.* What happens when Schwann cells are exposed to Mycobacterium leprae – A systematic review. **IBRO Neuroscience Reports** 15 (2023) 11–16, 2023.

CHAVES, A. E. P. *et al.* Hanseníase em idosos no nordeste do Brasil. **Anais CIEH**, v. 2, n. 1, p. 1-11, 2015.

COSTA, H. D. *et al.* Hanseníase na região norte do Brasil: epidemiologia das internações nos últimos 10 anos (2013-2022). **Brazilian journal of health review**, v. 6, n. 3, p. 10916-10924, 2023.

DOS REIS, S. A. *et al.* Mycobacterium leprae is able to infect adipocytes, inducing lipolysis and modulating the immune response. **Microbes and Infection**, 2023.

FONSECA, J. M. A. *et al.* Contribuições da fisioterapia para educação em saúde e grupo de autocuidado em hanseníase: relato de experiência. **Revista eletrônica gestão & saúde**, v. 6, n. Supl. 1, p. 770-777, 2015.

LENHARDT, E. H. *et al.*, 2023. Analysis of suicide cases between the years from 2018 to 2021 as a comparison between the pre-pandemic years and the initial years of the covid-19 pandemic. **International journal of health science**, v. 3, n. 88, 2023.

LIMA, Y. M. M. *et al.* Time trend of diabetes mellitus in adults and elderly people in Rio Branco, Acre, Western Brazilian Amazon (2006–2020). **Diabetes Epidemiology and Management**, v. 7, 100093, 2022.

MIRANDA, P. I. G. *et al.* Aspectos clínicos e epidemiológicos da hanseníase em idosos. **Revista prevenção de infecção e saúde**, v. 8, p. 3106, 2022.

ROCHA, M. C. N. *et al.* Características epidemiológicas da hanseníase nos idosos e comparação com outros grupos etários, Brasil (2016-2018). **Cadernos de saúde pública**, v. 36, n. 9, 2020.

SILVA, D. D. B. *et al.* A hanseníase na população idosa de Alagoas. **Revista brasileira de geriatria e gerontologia**, v. 21, n. 5, p. 573-581, 2018.

SILA JUNIOR, F. M. R.; SANTOS, M. Haff's disease in Brazil - the need for scientific follow-up and case notification. **The lancet regional health – americas**, v. 5, 100100, 2022.

SIMAN, J. B. *et al.* Internação por hanseníase e suas sequelas: um estudo descritivo. **Revista brasileira em promoção da saúde**, v. 34, 11213, 2021.

WANG, C. *et al.* Global prevalence of resistance to rifampicin in *Mycobacterium leprae*: A meta-analysis. **Journal of global antimicrobial resistance**, v. 31, p. 119–127, 2022.