

Hospitalization for leprosy and its sequelae in the I Regional Health Management of the state of Pernambuco

Internação por hanseníase e suas sequelas na I Gerência Regional de Saúde do estado de Pernambuco

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Resumo

Introdução: A hanseníase é uma doença infectocontagiosa, crônica e de lenta evolução, ocasionada pela bactéria *Mycobacterium leprae*. O tratamento da hanseníase é realizado predominantemente de forma ambulatorial na Atenção Primária a Saúde. Casos de internamento indicam falhas do sistema de saúde no seu controle. **Objetivo:** Descrever as internações por hanseníase e sequelas de hanseníase em residentes de municípios da I Geres do estado de Pernambuco, no período de 2017 a 2023. **Materiais e Métodos:** Pesquisa descritiva, ecológica, retrospectiva e epidemiológica, de natureza quantitativa. Foram incluídos as internações por hanseníase e suas sequelas em residentes de municípios da I Geres de Pernambuco, notificados no Sistema de Informações Hospitalares. **Resultados:** Ocorreram 1.045 internações, 76.1% em residentes de municípios da I microrregião, principalmente Recife (41.9%) e Olinda (15.9%). Predominantes em homens (74.6%), pardos (54.3%), entre 30 e 39 anos (22.7%). Dos atendimentos, 75.0% foram eletivos, de regime ignorado (100%) no Hospital da Mirueira (64.1%), com média de 11 dias. Houve um gasto de R\$582.957,83, com média de R\$557,85 (0.4SM). **Conclusão** Apesar da baixa morbidade e custo essas internações se mostraram como um desafio para o sistema de saúde local.

Palavras-chave: hanseníase, hospitalização, saúde pública, sistemas de informação hospitalar.

Abstract

Introduction: Leprosy is an infectious, chronic and slowly evolving disease, caused by the bacterium *Mycobacterium leprae*. Leprosy treatment is predominantly carried out on an outpatient basis in Primary Health Care. Cases of hospitalization indicate failures of the health system in its control. **Objective:** To describe hospitalizations for leprosy and leprosy sequelae in residents of municipalities of I Geres in the state of Pernambuco, from 2017 to 2023. **Materials and Methods:** Descriptive, ecological, retrospective and epidemiological research, quantitative in nature. Hospitalizations for leprosy and its sequelae in residents of municipalities in the First Geres of Pernambuco, reported in the Hospital Information System, were included. **Results:** There were 1,045 hospitalizations, 76.1% in residents of municipalities in the I microregion, mainly Recife (41.9%) and Olinda (15.9%). Predominant in men (74.6%), mixed race (54.3%), between 30 and 39 years old (22.7%). Of the consultations, 75.0% were elective, with an ignored regime (100%) at Hospital da Mirueira (64.1%), with an average of 11 days. There was an expenditure of R\$582,957.83, with an average of R\$557.85 (0.4SM). **Conclusion:** Despite the low morbidity and cost, these hospitalizations proved to be a challenge for the local health system.

Keywords: leprosy, hospitalization, public health, hospital information systems.

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Introduction

Leprosy is a chronic and slow-developing infectious disease caused by the bacterium *Mycobacterium leprae*, or Hansen's Bacillus (HB)^{1,2}. The HB presents predilection to skin, peripheral nerves and cutaneous cells, which may lead to the appearance of spots, deformities and physical incapacity^{2,3}. It is still characterized by the high power to infect individuals (high infectivity), but due to natural immune barriers, few will present leprosy (low pathogenicity)².

Transmission occurs through the upper airway, when the HB is expelled by an infected person who has not yet begun treatment. The diagnosis of leprosy is carried out essentially through physical examination, clinical and epidemiological evaluation of the individual, if available, bacilloscopic examination may still be performed. The treatment is carried out by combining dapson, clofazimine and rifampin, known as Unified Polychemotherapy (PQT-U)⁴.

According to data from the World Health Organization (WHO), in 2022, 174,087 new cases of leprosy were diagnosed worldwide⁵. Brazil added about 19,635 new cases, representing about 91.8% of the notifications in the Americas, worldwide only behind India, being considered one of the priority countries for the disease⁵. From this perspective, Brazil is the only country in the world that does not reach the goal of eliminating leprosy, which has been established in less than one case per 10,000 inhabitants⁶.

In the Brazilian geographical reality, the regions of North, Northeast and Midwest have the highest detection rates^{2,7}. According to the Epidemiological Bulletin of Leprosy of the Ministry of Health (MH), in 2022, the Northeast presented the highest number of notifications, with 8,879 new cases, about 45.2% of the total country⁸. The state of Pernambuco presented the second largest notification in the region and

the third in the country, with 1,849 new cases⁸. The state still has the highest rate of hospitalization for leprosy and its sequelae in the Northeastern region⁹.

According to the National Strategy for Combating Leprosy 2024 - 2023, of the 185 municipalities in Pernambuco only 5 did not have cases in the period from 2015 to 2019, while another 94 are included in the most critical group to combat diseases¹⁰. The Sanar program, which combats neglected diseases in the state of Pernambuco, points out the concentration of cases in municipalities of the Metropolitan Region (MR), which are mostly part of the Regional Health Management (I Geres) of the State¹¹.

The implementation of Primary Health Care (PHC) actions is the most efficient strategy for leprosy control, being a facilitator instrument for dissemination of signs and symptoms, diagnosis and access to treatment until cures⁴. The treatment of leprosy is carried out predominantly on an outpatient basis in PHC^{4,12}. Adverse reactions to PQT-U, the need for clinical-laboratory research, hansenic reactions and the need for rehabilitation are the main reasons for hospitalization of patients with leprosy, conditions often linked to late diagnosis¹².

Thus, the analysis of hospitalization records is an important tool in the search for the main needs of individuals with leprosy^{9,12}. In this sense, despite being an important public health problem, studies that address different contexts on leprosy, with the cases of hospitalization, are little studied in the reality of Pernambuco. Given the above, the objective of this study was to describe hospitalizations due to leprosy and sequelae of leprosy in residents of municipalities of I Geres of the state of Pernambuco, from 2017 to 2023.

Materials and Methods

This is a descriptive, ecological, retrospective and epidemiological research




of quantitative nature, recommending the guidelines of the Reporting of Studies Conducted Using Observational Routinely-Collected Health Data (RECORD)^{13,14}. The epidemiological hypotheses were analyzed as follows: 1. identification of the research problem (hospitalization due to leprosy and leprosy sequela); 2. origin of the data (Hospital Information System); 3. reasoning (control failure); 4. variables and hypotheses (little studied condition); and 5. final formulation of the research¹⁴.

The data were derived from the Hospital Information System (SIH), a database subordinate to the Department of Informatics of the Unified Health System (DATASUS), which aims to group the data of hospitalizations in the high-complexity health units of the Brazilian Unified Health System (UHS)^{9,12}. The collection was carried out in the period from March to April 2024, through access to TabNet (<https://tabnet.datasus.gov.br/>), by a

researcher with prior experience of accessing and collecting data from SIH.

The population studied were all cases of hospitalization due to leprosy (A30) and sequelae of leprosy (B92) in individuals living in municipalities of I Geres of the state of Pernambuco, reported in the SIH, between 2017 and 2023. The Geres have the function of grouping the SUS operation in a given region with similar characteristics¹⁵. I Geres is made up of 20 municipalities (*Abreu e Lima, Araçoiaba, Cabo de Santo Agostinho, Camaragibe, Chã Grande, Chã de Alegria, Glória do Goitá, Fernando de Noronha, Igarassu, Ipojuca, Itamaracá, Itapissuma, Jaboatão dos Guararapes, Moreno, Olinda, Paulista, Pombos, Recife, São Lourenço da Mata and Vitória de Santo Antão*), with a population of 3,954,654 inhabitants, is the largest Geres in terms of population¹⁵. I Geres is further subdivided into three health microregions,¹⁵ as shown in Table 1.

Chart 1. Municipalities of I Geres and their location in the state of Pernambuco

MUNICIPALITIES	POPULATION	%	*
Abreu e Lima	98,462	2.5% ¹	
Araçoiaba	19,243	0.5% ¹	
Cabo de Santo Agostinho	203,440	5.1% ¹	
Camaragibe	147,771	3.7% ¹	
Chã Grande	20,546	0.5% ¹	
Chã de Alegria	12,984	0.3% ¹	
Glória do Goitá	29,347	0.7% ¹	
Fernando de Noronha	3,167	0.1% ¹	
Igarassu	115,196	2.9% ¹	
Ipojuca	98,932	2.5% ¹	
Ilha de Itamaracá	24,540	0.6% ¹	
Itapissuma	27,749	0.7% ¹	
Jaboatão dos Guararapes	644,037	16.3% ¹	
Moreno	55,292	1.4% ¹	
Olinda	349,976	8.8% ¹	
Paulista	342,167	8.7% ¹	
Pombos	27,552	0.7% ¹	
Recife	1,488,920	37.6% ¹	
São Lourenço da Mata	111,249	2.8% ¹	
Vitória de Santo Antão	134,084	3.4% ¹	
TOTAL	3,954,654	43.7%²	

SOURCE: Authors, 2024. According to data from the Brazilian Institute of Geography and Statistics. Caption: 1- Between the municipalities that make up Geres; 2- From the total State; *Excluding the municipality of Fernando de Noronha

Municipalities of I microregion

Municipalities of II microregion

Municipalities of III microregion



The variables were selected: year of hospitalization, deaths, health microregion, distribution by municipality, sex, race, age group, care (urgency and emergency), regime (public and private), total and average value of hospitalizations (R\$), average stay in hospital (days) and hospitalization institution, focusing on the reference hospitals for leprosy in the state (*Hospital da Mirueira Sanatório Padre Antonio Manoel, Hospital Otavio de Freitas and IMIP*).

Initially, the collected data were tabulated in the Microsoft Excel version 2019 software. After tabulation, the software BioEstat version 5.0 was used for simple descriptive analysis (absolute and relative frequencies, also the Chi-square test of Adhesion was used, adopting $p < 0.05$ as statistically significant. The hospital mortality rate was raised (1. numerator: number of deaths; 2. denominator: number of hospitalizations; 3. multiplier: 100). The academic research databases Google Academic, Scientific Electronic Library Online, Latin-American and Caribbean Health Sciences Literature and the Virtual Health Library were used for the bibliographic survey of the study, preferentially research and official documents published in the period from 2012 to 2024.

Because the data collected from SIH are in the public domain, freely accessible, where individuals were not identified,

resolution n°466/2012 of the National Health Council, guarantees its realization without the need for evaluation and approval of the Research Ethics Committee, still, all ethical standards for this type of study were respected, as provided in the resolution.

Results

In the studied period, there were 1,644 hospitalizations due to leprosy or sequelae of leprosy in the state of Pernambuco; of these, 1,045 (63.6%) were in residents of municipalities of I Geres, 967 (92.5%) for leprosy and 78 (7.5) for their sequels. There were also 6 (60.0%) of the 10 deaths in the state, with a mortality rate of 0.57. It is seen that in the period from 2017 to 2020 there was a constancy in the number of hospitalizations, with a considerable decrease between 2021 and 2023, the highest number occurred in 2018 (237/22.7%) and the lowest in 2022 (93/8.9%). In the occurrence by municipalities, Recife (438/41.9%), Olinda (166/15.9%), Jaboatão dos Guararapes (118/11.3%) and Paulista (107/10.2%) presented the highest numbers of residents hospitalized, while Chã de Alegria (1/0.1%), Chã Grande (2/0.2%) and Pombos (3/0.3%) were the smallest. The municipality of Fernando de Noronha did not have residents hospitalized for the condition studied.

Table 1. Hospital morbidity for leprosy at the I Regional Health Management of Pernambuco, from 2017 to 2023.

VARIABLES	CASES	%	DEATHS	%	P VALUE ^{1,2}	MORTALITY RATE
CONDITION						
Leprosy	967	92.5	4	66.7	<0.0001	0.41
Leprosy sequelae	78	7.5	2	33.3		2.56
YEAR						
2017	203	19.4	1	16.7	<0.0001	0.49
2018	237	22.7	2	33.3		0.84
2019	173	16.6	1	16.7		0.58
2020	141	13.5	1	16.7		0.71
2021	99	9.5	0	0.00		0.00
2022	93	8.9	1	16.7		1.08
2023	99	9.5	0	0.00		0.00
MICROREGION						
I	795	76.1	4	66.7	<0.0001	0.50
II	84	8.0	0	-		0.00
III	166	15.9	2	33.3		1.20
MUNICIPALITIES						
Abreu e Lima	37	3.5%	0	0.00	<0.0001	0.00
Araçoiaba	7	0.7%	0	0.00		0.00
Cabo de Santo Agostinho	31	3.0%	0	0.00		0.00
Camaragibe	18	1.7%	0	0.00		0.00
Chã Grande	2	0.2%	0	0.00		0.00
Chã de Alegria	1	0.1%	0	0.00		0.00
Glória de Goitá	9	0.9%	0	0.00		0.00
Fernado de Noronha	0	0.0%	0	0.00		0.00
Igarassu	30	2.9%	1	16.7		3.33
Ipojuca	7	0.7%	0	0.00		0.00
Ilha de Itamaracá	5	0.5%	0	0.00		0.00
Itapissuma	5	0.5%	0	0.00		0.00
Jaboatão dos Guararapes	118	11.3%	2	33.3		1.69
Moreno	10	0.1%	0	0.00		0.00
Olinda	166	15.9%	0	0.00		0.00
Paulista	107	10.2%	1	16.7		0.93
Pombos	3	0.3%	0	0.00		0.00
Recife	438	41.9%	2	33.3		0.46
São Lourenço da Mata	42	4.0%	0	0.00		0.00
Vitória de Santo Antão	9	0.9%	0	0.00		0.00
TOTAL	1,045	100	6	100	-	0.57

SOURCE: Authors, 2024. According to data from the Hospital Information System of the UHS (SIH/SUS). Caption: 1- Chi-square test of Adherence; 2- From the total of cases.

In relation to sex, the Table shows a higher prevalence in males, with 780 (74.6%) of hospitalizations, and the highest number of deaths were in women (66.7%). The brown race presented the majority in the numbers of hospitalizations and deaths, with 567 (54.3%) and 4 (66.7%), respectively, still in this variable there was a high number of notifications without information, with 239 (22.9%). The most frequent age group was in individuals of 30 – 39 years (237/22.7%), followed by 20 – 29 (203/19.4%) and 50 –

59 (181/17.3%), the majority of deaths were in individuals of 50 – 59 years, with 3 (50.0%) occurrences.

Table 2 still shows the type of care and hospital regime, most were elective with 784 (75.0%), already the majority of deaths were generated from emergency hospitalizations (4/66.7%) regarding the hospital regime, all numbers of hospitalizations and deaths were reported as ignored.

Table 2. Hospital for leprosy in the I Regional Health Management of Pernambuco, between 2017 and 2023, according to sociodemographic and hospital variables

VARIABLES	CASES	%	DEATHS	%	P VALUE ^{1,2}	MORTALITY RATE
SEX						
Male	780	74.6	2	33.3	<0.0001	0.26
Female	265	25.4	4	66.7		1.51
RACE						
White	27	2.6	0	-	<0.0001	0.00
Black	65	6.2	1	16.7		1.54
Brown	567	54.3	4	66.7		0.71
Yellow	146	14.0	1	16.7		0.68
Indigenous	1	0.1	0	-		0.00
Nor informed	239	22.9	0	-		0.00
AGE GROUP						
<1	4	0.4	0	-	<0.0001	0.00
1 – 4	5	0.5	0	-		0.00
5 – 9	8	0.8	0	-		0.00
10 – 14	20	1.9	0	-		0.00
15 – 19	54	5.2	0	-		0.00
20 – 29	203	19.4	0	-		0.00
30 – 39	237	22.7	0	-		0.00
40 – 49	164	15.7	0	-		0.00
50 – 59	181	17.3	3	50.0		1.66
60 – 69	91	8.7	1	16.7		1.10
70 – 79	59	5.6	2	33.3	3.39	
80<	19	1.8	0	-	0.00	
SERVICE						
Elective	784	75.0	2	33.3	<0.0001	0.26
Urgency	261	25.0	4	66.7		1.53
REGIME						
Public	0	-	0	-	<0.0001	0.00
Private	0	-	0	-		0.00
Ignored	1,045	100	6	100		0.57
TOTAL	1,045	100	6	100	-	0.57

SOURCE: Authors, 2024. According to data from the Hospital Information System of the UHS (SIH/SUS). Caption: 1- Chi-square test of Adherence; 2- From the total of cases

Table 3 shows the financial impact of hospitalizations, an impact of R\$582,957.83 was generated, with an average of 557.85 BRL (0.4MW) per hospitalization, the year 2018 was the one that presented the greatest financial impact, with a total expenditure of R\$190,881.16 (32.7%) and an average of 805.41 BRL (0.6MW), already 2023 presented the lowest impact with an average of 357.44 BRL (0.3MW) and a total of 35,386.87 BRL (6.1%). The municipalities of Recife (282,178.25 BRL/48.4%), Olinda (80,607.44 BRL/13.8%) and Jaboatão dos Guararapes (70,346.30 BRL/12.1%)

presented the highest total expenses, while Moreno (1,162.75 BRL/0.8MW), Vitória de Santo Antão (930.21 BRL/0.7MW), Chã Grande (887.06 BRL/0.6MW) and Pombos (871.54 BRL/0.6MW) the highest averages. The lowest total impacts were presented by the municipalities of Itamaracá Island (1,186.35 BRL/0.2%) and Itapissuma (1,329.88 BRL/0.2%), while the lowest average values were in residents of the municipalities of Araçoiaba (237.27 BRL/0.2MW), Itamaracá Island (237.27 BRL/0.2MW) and Itapissuma (264.18 BRL/0.2MW). Since Fernando de Noronha does not present hospitalizations of its

residents, no financial expenses were generated.

Still in Table 3 is evidenced the average stay in days, there was an average of 11.0 days of hospitalizations, with the years 2019 (13.0), 2017 (11.5) and 2018 (11.0) presented the highest internment

averages, already 2023 (8.9) and 2022 (9.4) the lowest averages. In relation to the municipalities, residents of Araçoiaba (18.6), Abreu and Lima (16.2) and Itapissuma (15.0) spent more time hospitalized, while those of Pombos and Chã Grande presented the minors, with an average of one day of hospitalization.

Table 3. Hospital morbidity for leprosy at the I Regional Health Management of Pernambuco, between 2017 and 2023, according to financial expenses and days of hospitalization

VARIABLE	TOTAL VALUE (\$)	%	MEAN VALUE (\$)	MW ^{1,2}	MEAN PERMANENCE (DAYS)
CONDITION					
Leprosy	458,522.68	78.7	474,17	0.3	11.4
Leprosy sequela	124,435.15	21.3	1.595,32	1.1	6.9
YEAR					
2017	117,107.20	20.1	576,88	0.4	11.5
2018	190,881.16	32.7	805,41	0.6	11.0
2019	90,592.37	15.5	523,66	0.4	13.0
2020	67,532.79	11.6	478,96	0.3	10.7
2021	43,522.06	7.5	439,62	0.3	10.9
2022	37,935.68	6.5	407,91	0.3	9.4
2023	35,386.57	6.1	357,44	0.3	8.9
MICROREGION					
I	426,979.40	73.2	537,08	0.4	11.2
II	52,399.88	9.0	623,81	0.4	8.9
III	103,578.55	17.8	623,97	0.4	11.3
MUNICIPALITIES					
Abreu e Lima	11,132.06	1.9	300,87	0.2	16.2
Araçoiaba	1,660.89	0.3	237,27	0.2	18.6
Cabo de Santo Agostinho	17,691.84	3.0	570,70	0.4	12.9
Camaragibe	13,609.35	2.3	756,08	0.5	7.7
Chã de Alegria	741.69	0.1	741,69	0.5	1.0
Chã Grande	1,744.13	0.3	887,06	0.6	3.0
Glória de Goitá	5,820.32	1.0	646,70	0.5	12.2
Fernando de Noronha	0.00	-	0,00	-	0.0
Igarassu	10,754.81	1.8	358,49	0.3	13.2
Ipojuca	3,912.92	0.7	558,99	0.4	8.1
Ilha de Itamaracá	1,186.35	0.2	237,27	0.2	8.2
Itapissuma	1,320.88	0.2	264,18	0.2	15.0
Jaboatão dos Guararapes	70,346.30	12.1	596,16	0.4	11.4
Moreno	11,627.49	2.0	1.162,75	0.8	7.2
Olinda	80,607.44	13.8	485,59	0.3	10.6
Paulista	38,138.72	6.5	356,44	0.2	11.4
Pombos	2,614.63	0.4	871,54	0.6	1.0
Recife	282,178.25	48.4	644,24	0.5	10.7
São Lourenço da Mata	19,467.89	3.3	463,52	0.3	10.7
Vitória de Santo Antão	8,371.87	1.4	930,21	0.7	4.1
TOTAL	582,957.83	100	557,85	0.4	11.0

SOURCE: Authors, 2024. According to data from the Hospital Information System of the UHS (SIH/SUS). Caption: 1- Value in minimum wage; 2- In 2024 minimum wage (1,412.00 BRL).

Table 4 shows the distribution of hospitalization by state references for leprosy, Hospital da Mirueira Sanatório

Padre Antonio Manoel (HMS), Hospital Otavio de Freiras (HOF) and Instituto de Medicina Integral Professor Fernando



Figueira (IMIP), also in other state hospital institutions. The largest number of hospitalizations were in HMS during the entire period, totaling 669 (64.1%) of the hospitalizations were in other institutions.

hospitalizations, the HOF and IMIP together accounted for less than 10% of the hospitalizations, with 25 (2.4%) and 37 (3.5%), respectively. The other 312 (29.9%)

Table 4. Hospital Morbimortality for leprosy at the I Regional Health Management of Pernambuco, between 2017 and 2023, hospitalization institution.

YEAR	HOSPITAL MIRUEIRA PADRE MANOEL	DA SANATÓRIO ANTONIO	%	HOSPITAL OTAVIO DE FREITAS	%	IMIP	%	OTHERS	%
2017	118		58.1	13	6.4	10	4.9	62	30.5
2018	122		51.5	9	3.8	8	3.4	98	41.4
2019	117		68.0	0	-	7	4.1	48	27.9
2020	103		73.0	1	0.7	7	5.0	30	21.3
2021	71		71.7	0	-	1	1.0	27	27.3
2022	64		68.8	2	2.2	0	-	27	29.0
2023	74		74.7	0	-	4	4.0	21	21.2
TOTAL¹	669		64.1	25	2.4	37	3.5	312	29.9

SOURCE: Authors, 2024. According to data from the Hospital Information System of the UHS (SIH/SUS). CAPTION: 1- 1,044 (excluded one case notified as ignored/blank)

Discussion

The present study aimed to analyze the profile of hospitalizations due to leprosy and its sequelae in residents of municipalities of I Geres of the state of Pernambuco. Being a disease of outpatient treatment, the occurrence of leprosy hospitalizations indicates possible failures of PHC in its control⁷. The problems of leprosy hospitalizations are associated with high power to cause disabilities, since it is a condition that generates low deaths compared to other causes of malingeries¹⁶.

A higher number of leprosy hospitalizations was observed compared to its sequels, as presented in another study¹². This characteristic is linked to the fact that the most serious complications that can lead to hospitalization, such as reaction states, adverse reactions to PQT-U and other interurrences occur mostly before diagnosis or during treatment¹².

The low number of hospitalizations due to sequelae may be a result of the success of PQT-U in controlling the disease and its sequelae⁴. Also to the fact that hospitalizations due to complications generated by leprosy, such as neuropathic pain and visible physical disabilities, are reported without their relationship with leprosy, leading to cases of errors in notifications and underreporting.

In the period studied, there were periods of decline and increase in hospitalizations, as presented in other studies^{9,12}. The peak of hospitalizations in the three-year period from 2017 to 2019 may be a result of late diagnosis, abandonment of treatment and lack of health education regarding leprosy, leading to greater cases of complications^{12,16}. The decrease observed in the four-year period from 2020 to 2023 should be viewed with caution, since the scientific literature points out the occurrence of a decrease in leprosy



hospitalizations during and immediately after the new coronavirus pandemic¹⁷.

As in other studies, a low mortality rate^{9,12,16} was observed. Leprosy deaths are often associated with disabilities, deformities, the occurrence of reaction episodes, treatment of reaction episodes, secondary infections and adverse reactions to PQT-U^{12,18}. Despite the high morbidity, leprosy has a low lethality^{12,16,18}, which may explain the low mortality rate presented in this study. A good part of the notifications of deaths due to leprosy may be related to inaccuracies in the completion of the Declaration of Morde¹². Still, the occurrence of deaths is a worrying fact, since leprosy is a condition sensitive to PHC⁴.

There was a greater occurrence in residents of municipalities of Recife (I microregion), Olinda (I microregion) and Jaboatão dos Guararapes (II microregion) that may be related to the high endemicity and prevalence of leprosy disease, since these are considered priorities, according to the Sanar¹¹. The metropolitan region of the state is highly endemic for leprosy, which influences the higher incidence of hospitalizations of individuals living in municipalities of the I and III microregion, since many of them are located in this region¹⁹.

As presented, studies point to a higher hospitalization in men^{9,12,16}, a condition already expected, since the literature points to a prevalence of leprosy cases in homes^{2,8,20}. Women have less resistance to accessing health services, especially in PHC, which leads to an early diagnosis and consequently a lower degree of pregnancy^{9,21}. Unlike men, they reach health services only when the appearance of more advanced conditions occurs, leading to a higher risk of hospitalization due to leprosy. In contrast to the present study, the literature points to higher deaths due to leprosy in males^{9,18}.

The highest incidence of hospitalizations and deaths in brown people is in line with the findings found in the literature^{9,12,16,18}. What may be the result of racial miscegenation and the large number of people who self-declare themselves as Brown, which according to data from the 2022 census of the Brazilian Institute of Geography and Statistics, account for 59.6% of the population of the Nordeste²². In addition, this population group is vulnerable to inequalities, mainly linked to sociodemographic problems²¹. The incompleteness of notifications with a considerable number of notifications performed as "no information" is also seen in other research^{9,12,16}, which may affect the efficient analysis of this variable³.

In relation to the age group, there was a higher frequency in individuals aged 30 – 39 years, as in other studies, however, unlike them, this study showed a slight increase in the younger population, mainly of 20 – 29 years^{9,16}, another survey presented a disagreement of the results presented, evidencing most cases in the population of 50 – 59 years¹². Due to the long incubation period of HB, which can take from 3 to 5 years, leprosy is a disease of the adult public, more precisely of economically active individuals²¹.

The higher proportion of hospitalization in younger individuals is worrying, due to the fact that leprosy is a chronic and potentially disabling disease that can affect social, psychological aspects and inclusion in the financial market^{9,16}. The highest number of deaths in individuals with a higher age group is contrary to other research^{9,18}, caused mainly by the decrease in the immune system's activity, making them more susceptible to the worsening of diseases⁹. Another factor of attention is the hospitalization in children under 20 years, indicating that they are being exposed to HB early, which may be a result of the high number of leprosy in the population of the municipalities of this Geres²¹.

The majority of hospitalizations were elective in nature, also presented in another research¹⁶, however, another study showed that urgent hospitalizations are more important¹². Because leprosy evolution is slow, cases of urgent and emergency hospitalizations do not present with prevalence in its natural history. The higher number of elective hospitalizations may also be related to the presence of physical disability and nerve involvement without the presence of skin lesions in the diagnosis, which requires the need for referral of PHC to hospital services²³.

Referrals for elective surgeries to rehabilitate neuritis are other important factors that influence the result presented^{4,23}. In this sense, for efficient health care it is important that hospitalized hospitals be a reference for the treatment of leprosy²³. Among the state references, HMS was the institution that had more hospitalization, a characteristic that may be associated with the historical aspects of this institution in the treatment of patients with leprosy in Pernambuco²⁴.

The low number of IMIP may be linked to the fact that it is a tertiary reference, receiving only the unsolved cases in HMS and HOF²⁵. The high number of hospitalizations in other institutions that are reference may be a problem, higher than the number presented by HOF, can provide worsening cases and insufficient health care, since many of the professionals who work in institutions that are not reference for leprosy have unpreparedness to act in these cases²⁶.

The literature points out that public hospitals are the main places of hospitalization for patients with leprosy¹⁶. Due to the fact that leprosy most often affects the population with low levels of socioeconomic development, SUS is configured as the only access door for these individuals to health services^{6,12,16,19,21}. Even if HMS and HOF are public hospitals, the filling of this variable showed a marked

incompleteness, with all cases reported as "ignored". This problem, in addition to indicating notification failures, affects the analysis of the real impact of leprosy hospitalizations on the health system in the studied area, affecting aspects such as the allocation of financial resources³.

The average number of hospitalization days was 11, higher than that presented in another studies¹². The diagnosis of leprosy generates an important psychosocial damage to individuals, mainly linked to historical factors associated with the term "leprosy" and the history of treatment^{6,7,20}. Hospitalization is a factor in the development of discomfort, anguish, increased anxiety and vulnerability,²⁷ so hospitalization tends to aggravate the psychological aspects of these patients, even from this perspective, the longer the duration of hospitalization, the greater the damage.

There are still few studies in the literature that address the financial impact of leprosy on SUS, which makes it difficult to analyze efficiently. Each hospitalization cost on average 0.4 minimum wages (MW), a value lower than that presented in other research^{12,28}. Compared to a study that evaluated the financial impact of hospitalizations due to neglected diseases in Piauí, Northeast Brazil, the average value presented was lower than the costs for Chagas disease (7.3MW), lymphatic filariasis (0.7MW) and leishmaniasis (0.5MW), presenting only similarity with the expenditure on schistosomiasis (0.4MW)²⁸.

Despite the low value, care for patients with leprosy in PHC would be less onerous^{4,9,12,23}. This fact evidences the importance of PHC in leprosy control, acting mainly in the early diagnosis and prevention of its complications^{9,29}. For a strong PHC in the fight against leprosy, it is important that the process of decentralization and financial support by managers occurs, as well as continuing



education actions for professionals, especially nurses.

The overload of PHC and lack of adherence to treatment are other factors that may hinder leprosy control, consequently increasing complications, hospitalizations and financial costs²⁹. Another important point is that the average value of hospitalizations due to sequelae was higher than those due to leprosy, which may be a result of the need for rehabilitative surgeries in patients with sequelae^{4,23}. For the effective control of socially determined conditions, such as leprosy, intersectoral action is necessary, taking into account the social determinants involved^{7,9,29}.

Conclusion

Due to the use of secondary source data, the main limitations of this study involve ecological fallacy, underreporting and deficiency in filling out the notification form and subsequent notification in the SIH. Another important limitation is the

lack of scientific studies that have proposed to analyze the profile of leprosy admissions and their sequelae, making it difficult to compare the results obtained with other locations. Despite this, it was possible to efficiently raise the impact of hospitalizations for leprosy and its sequelae in I Geres de Pernambuco.

It was evident the greatest event in men, brown, in the range of 30 to 39, most hospitalizations were elective. A greater concentration was seen in residents of municipalities of the Metropolitan region, mainly belonging to I and III health microregions. With the financial impact less than other conditions. Incompleteness of notifications is still observed, especially in the variables race and hospital regime.

It is hoped that the results presented will be used to support new studies on hospital morbidity of leprosy in Brazil, especially in endemic places, since it is still a poorly studied condition, as well as the main conditions that lead these individuals to hospitalization.

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