10.18605/2175-7275/cereus.v16n4p66-74

<< Recebido em: 15/07/2024 Aceito em: 19/11/2024. >>

ARTIGO ORIGINAL

REVISTA CEREUS ISSN: 2175-7275

Clinical and epidemiological profile of leprosy in João Pessoa, Paraiba, Brazil, between the years 2018 and 2022.

Perfil clínico-epidemiológico da hanseníase em João Pessoa, Paraíba, Brasil, entre os anos de 2018 e 2022

Adrielly da Silva Santos[1], Rafael Gomes Firmino[2], José Artur de Paiva Veloso[3], Egberto Santos Carmo[4], Júlia Beatriz Pereira de Souza[4], Francisco Patricio de Andrade Júnior*[5]

[1] Pharmaceutical, School of Higher Education of Agreste Paraibano. Orcid: 0009-0006-0103-5637

[2] Master of Health Psychology, State University of Paraíba, Campina Grande, Paraíba, Brazil. Orcid: 0000-0002-6144-8445

[3] PhD in Nursing, Federal University of Paraíba, João Pessoa, Paraíba, Brazil. Orcid: 0000-0001-8606-5953

[4] Associate Professor, Federal University of Campina Grande, Cuité, Paraíba, Brazil. Orcid: 0000-0003-1396-4645

[5] Associate Professor, Federal University of Campina Grande, Cuité, Paraíba, Brazil. Orcid: 0000-0003-3850-3650

[6] PhD in Pharmacology, Medical Student, State University of Piauí, Teresina, Piauí, Brazil. Orcid: 0000-0003-0681-8439

E-mail:

juniorfarmcia.ufcg@outlook.com

RESUMO

Objetivo: Evidenciar o perfil epidemiológico de pessoas afetadas pela hanseníase em João Pessoa, Paraíba, nos anos de 2018 a 2022. **Metodologia**: Trata-se de uma pesquisa epidemiológica, quantitativa e descritiva, utilizando dados secundários do SINAN (Sistema de Informação de Agravos de Notificação). e DATASUS (Departamento de Informática do Sistema Único de Saúde). Houve o cálculo das frequências simples e relativa; o teste Qui-Quadrado de Independência foi aplicado, em que p<0,05 foi considerado estatisticamente significativo. **Resultados**: Durante o período de 2018 a 2022, foram registrados 1.195 casos de hanseníase, sendo 2019 o ano com o maior número de casos, representando 27,2% do total. O perfil epidemiológico foi composto majoritariamente por homens (57%), de 50 a 59 anos (35,73%), baixa escolaridade (35,73%) e etnia parda (74,14%). Não houve associação entre a faixa etária e o sexo (p=0,53). Quanto à classificação clínica, a multibacilar foi a mais comum (73,3%), enquanto que a forma clínica mais prevalente foi a dimorfa (43,10%). **Considerações finais**: A análise epidemiológica utilizando dados suplementares permitiu entender o perfil dos casos de hanseníase em João Pessoa, evidenciando a necessidade de estratégias de prevenção e tratamento direcionadas à população mais afetada.

Palavras-chave: Hanseníase. *Mycobacterium leprae*. Infectologia. Epidemiologia.

ABSTRACT

Objective: To highlight the epidemiological profile of individuals affected by leprosy in João Pessoa, Paraíba, from 2018 to 2022. **Methodology**: This is a quantitative and descriptive epidemiological study using secondary data from SINAN (Sistema de Informação de Agravos de Notificação) and DATASUS (Departamento de Informática do Sistema Único de Saúde). Simple and relative frequencies were calculated; the Chi-square test of Independence was applied, with p<0.05 considered statistically significant. **Results**: During the period from 2018 to 2022, 1,195 cases of leprosy were recorded, with 2019 having the highest number of cases, accounting for 27.2% of the total. The epidemiological profile predominantly consisted of males (57%), aged 50 to 59 years (35.73%), with low educational attainment (35.73%), and parda ethnicity (74.14%). There was no association between age group and sex (p=0.53). Regarding clinical classification, multibacillary leprosy was the most common (73.3%), with the dimorphic form being the most prevalent (43.10%). **Conclusion**: Epidemiological analysis using supplementary data provided insights into the profile of leprosy cases in João Pessoa, highlighting the need for prevention and treatment strategies targeted at the most affected population. The abstract should be logically ordered and succinct, although informative. It should be written in a single paragraph with complete and affirmative sentences. It is recommended that the abstract be written with 100 to 200 words.

Descriptor: Leprosy. *Mycobacterium leprae*. Infectious Disease Medicine. Epidemiology

1. INTRODUCTION

Leprosy is a chronic infectious disease caused by the bacterium *Mycobacterium leprae*, primarily transmitted through prolonged contact with respiratory droplets or nasal secretions from an infected person. It's important to note that close and prolonged contact with an untreated individual is required for transmission (SILVA *et al*., 2019).

This disease affects the peripheral nerves, potentially causing neurological changes that primarily affect the eyes, feet, and hands. It manifests with hypochromic lesions that may lead to loss of thermal, painful, and/or tactile sensitivity, along with psychosocial issues. Symptoms are often late and silent, contributing to delayed diagnosis. It commonly appears in adults and rarely in children (SILVA *et al*., 2020).

Brazil ranks second globally in leprosy cases, with India having a higher incidence due to its larger population. The highest number of cases in Brazil is concentrated in the Midwest, North, and Northeast regions (CARVALHO; GONÇALVES, 2022).

Leprosy affects all age groups and genders, with varying progression rates influenced by immunological, nutritional factors, and the initial bacterial load. Untreated cases can lead to irreversible disabilities, although approximately 90% of the population may have sufficient antibodies against *M. leprae*, reducing the number of cases (PERNAMBUCO *et al*., 2022).

The consequences of leprosy initially manifest as dermatological issues with subsequent nerve damage potentially leading to physical disabilities and irreversible deformities (YONEMOTO *et al*., 2022).

Pharmacological treatment involves multidrug therapy combining Rifampicin, Dapsone, and Clofazimine. Diagnosis relies on clinical, epidemiological, and laboratory methods such as the Ziehl-Neelsen staining technique (BRAZIL, 2017).

Epidemiology plays a crucial role in facilitating diagnosis, developing preventive public policies, and providing care. However, there's a notable lack of epidemiological studies on leprosy in many Brazilian capitals, including João Pessoa-PB, underscoring the need for further research.

Therefore, this study aimed to highlight the epidemiological profile of leprosy cases in João Pessoa-PB from 2018 to 2022.

2. MATERIALS AND METHODS

Study Design

This is a quantitative and descriptive epidemiological study that utilized secondary data from the Sistema Nacional de Agravos e Notificação (SINAN), accessed through the Departamento de Informática do Sistema Único de Saúde (DATASUS) database, available at http://www.datasus.gov.br (ANDRADE JÚNIOR *et al*., 2021).

Study Location

The city of João Pessoa-PB is located in the Northeast region of Brazil and serves as the capital of the state of Paraíba. The municipality covers an area of 210,044 km2 with a population of 883,932 people and a population density of 3,970.27 inhabitants/km2. In terms of the Municipal Human Development Index, it was 0.763 in 2010, and the infant mortality rate was 11.22 deaths per thousand live births in 2020 (IBGE, 2023).

Variables Analyzed

The study population consisted of leprosy cases reported in João Pessoa-PB between the years 2018 and 2022. The following sociodemographic variables were analyzed: year of notification, age group, sex, education level, classifications, and clinical forms of the disease. Data were collected and organized into a spreadsheet using Microsoft Office Excel and analyzed using simple descriptive statistics. Additionally, the Statistical Package for the Social Sciences (SPSS), version 13.0, was used. The Chi-square test of independence was applied, with p-values <0.05 considered statistically significant for rejecting the null hypothesis.

Ethical Considerations

Since this study utilized secondary data from publicly available computerized databases, it was not necessary to submit this work for review by an Ethics Committee, in accordance with Resolution CNS 466/2012, which regulates research involving human subjects.

3. RESULTS AND DISCUSSION

During the period from 2018 to 2022, a total of 1,195 cases of leprosy were reported in João Pessoa-PB. The year 2019 had the highest prevalence (27.2%), followed by 2018 (21.84%), 2021 (18.74%), 2022 (16.82%), and 2020 (15.4%).

This pattern indicates a reduction and slight variations in the number of cases after 2019. This decrease could be attributed to the occurrence of the pandemic during these periods, which hindered the monitoring and identification of new cases, in accordance with protocols established by the World Health Organization (WHO), which recommended social isolation (VIEIRA et al., 2020).

Regarding gender, males were more affected, accounting for 57% of the cases. In terms of age groups, the most affected age group was 50-59 years (20.25%), followed by 40-49 years (19.41%), 60-69 years and 30-39 years (both 15.48%), 20-29 years (10.04%), 70-79 years (7.88%), 15-19 years (4.6%), 10-14 years (2.59%), 80 years or older (2.01%), 5-9 years (1.76%), and 1-4 years (0.5%).

Below, Table 1 shows the association between age group and gender.

Table 1. Association of leprosy cases by sex according to age group, João Pessoa, Paraíba, Brazil, 2018 to 2022.

Age group	Male		Female		Total		P*
	N	%	n	%	N	%	
Less than 1 to 19 years	70	10.2%	43	8.4%	113	9.5%	
20 to 59 years	439	64.5%	340	66.1%	779	65.2%	0.531
60 years and older	172	25.3%	131	25.5%	303	25.4%	
Total	681	100%	514	100%	1,195	100%	

*P = Chi-square test of Independence; Source: Research data, 2024.

Despite men being more affected, there is no preference of the bacterium *M. leprae* based on biological sex. Similar data have been observed in the states of Piauí and Maranhão (ALENCAR; FERREIRA; SAMPAIO, 2022; BARROS *et al*., 2024).

In this context, the lower healthcare-seeking behavior among men compared to women contributes to the predominance of leprosy in males. Conversely, women tend to be more health-conscious and are more likely to seek medical care regularly, which can aid in

early detection and treatment of leprosy, reducing the risk of disease transmission (ALVES; RODRIGUES; CARVALHO, 2021).

Regarding age groups, it is common for individuals in adulthood, aged 20 to 59 years, to develop infectious diseases such as tuberculosis and leprosy, as this phase of life often involves exposure to large gatherings due to work and/or study obligations, facilitating contact with airborne pathogens (ANDRADE JÚNIOR, 2022). Moreover, the long incubation period of leprosy and its late clinical manifestations mean that symptoms often develop predominantly in adults (OLIVEIRA *et al.*, 2022).

Below, in Table 2, you will find the percentage of individuals affected by leprosy, considering their level of education and ethnicity.

Table 2. Leprosy cases according to education level and ethnicity in João Pessoa, Paraíba, Brazil, from 2018 to 2022.

Personal data	**N**	**%**
Education level		
Low education	427	35.73
Medium education	239	20
High education	55	4.6
No education	121	10.13
Ignored	345	28.87
Not applicable	8	0.67
Total	1,195	100
Ethnicity		
White	187	15.65
Black	99	8.28
Pardo (Mixed race)	886	74.14
Ignored	18	1.51
Yellow	2	0.25
Indigenous	3	0.17
Total	1,195	100

Source: Research data, 2024.

The data reveals that leprosy primarily affects individuals with low educational attainment, accounting for 35.73% of cases. Low educational attainment was also prevalent among affected individuals in other Brazilian locations, such as Porto Nacional-TO (AGUIAR *et al.*, 2020). Thus, it is pertinent to highlight that individuals with lower education levels may

be more exposed to unfavorable socio-economic conditions, contributing to the spread of the disease (FREITAS; XAVIER; LIMA, 2017).

The parda ethnicity was the most affected in this study, aligning with research conducted in Juazeiro do Norte – CE and Araguaína – TO (SOUZA *et al*., 2022; ANDRADE; PROPÉRCIO JÚNIOR, 2023). In general, the parda ethnicity is commonly associated with higher prevalence of infectious diseases, likely due to historical socioeconomic disparities and lesser access to effective social policies (CONCEIÇÃO *et al*., 2020).

In Table 3, the categories and clinical forms of leprosy can be observed.

Table 3. Percentages of clinical classifications and forms of leprosy in João Pessoa, Paraíba, Brazil, between 2018 and 2022.

	N	%
Clinical Classification		
Multibacillary	876	73.30
Paucibacillary	318	26.61
Ignored	01	0.09
Total	1,195	100
Clinical Forms		
Tuberculoid	257	21.51
Virchowian	268	22.43
Dimorphic	515	43.10
Intermediate	58	4.85
Not Classified	77	6.44
Ignored	20	1.67
Total	1,195	100

Source: Research data, 2024.

Based on SINAN data, the majority of leprosy cases in João Pessoa are classified as multibacillary, representing 71.31%, with the dimorphic clinical form being the most common at 43.10%.

Studies conducted in Pará and Maranhão show an even higher prevalence of multibacillary leprosy, with 79% and 89% of cases reported, respectively (n=200, n=265). These findings underscore the importance of targeted strategies for disease control and prevention (QUARESMA *et al*., 2019; ANJOS *et al*., 2021).

Unfortunately, multibacillary patients tend to have a high bacillary load in the skin and mucous membranes, increasing the risk of disease transmission to others (QUARESMA *et al*., 2019).

Regarding clinical forms, in Alagoas, the dimorphic form was also the most prevalent. Diagnosing dimorphic leprosy can be challenging due to its variable clinical presentation and may require careful evaluation by experienced healthcare professionals, potentially contributing to delayed initiation of appropriate treatment (PROPÉRCIO *et al*., 2021).

4. FINAL CONSIDERATIONS

The epidemiological profile of leprosy in João Pessoa-PB, between 2018 and 2022, revealed that the majority of cases occurred in men with low educational attainment, predominantly of mixed race, and aged 50 to 59 years. The prevalent clinical classification was multibacillary, with the dimorphic clinical form being the most common.

Therefore, the data from this research are crucial for guiding the development of public policies aimed at implementing effective strategies to reduce leprosy cases among the most susceptible population in the capital city of Paraíba.

REFERENCES

AGUIAR, Daniel Ximenes et al. Perfil epidemiológico dos casos de hanseníase em Porto Nacional-Tocantins de 2007 a 2018. **Health Sciences Journal**, v. 10, n. 2, p. 43-50, 2020.

ALENCAR, André Luiz Moreira; FERREIRA, Michelli Erica Souza; SAMPAIO, Karine Keila de Sousa Vieira. Epidemiologia da hanseníase no estado do maranhão entre os anos de 2016 A 2020. **The Brazilian Journal of Infectious Diseases**, v. 26, p. 101979, 2022.

ALVES, Jucileide Moreira; RODRIGUES, Roquenei da Purificação; CARVALHO, Monalisa Cristiany Santos. Perfil epidemiológico e espacial dos casos novos de hanseníase notificados em Feira de Santana no período de 2005-2015. **Revista Pesquisa em Fisioterapia**, v. 11, n. 2, p. 334-341, 2021.

ANDRADE JÚNIOR, F. P. de. et al. Epidemiological profile of people affected by tuberculosis in Campina Grande - PB, between 2014 and 2018. **Revista de Ciências Médicas e Biológica**, v.20, n.2, p.296-300, 2021.

ANDRADE, D. S.; PROPÉRCIO JUNIOR, E. A. Análise do Perfil Epidemiológico dos pacientes acometidos por Hanseníase em Araguaína-TO no período de 2015 a 2022. **Revista Cereus**, v. 15, n. 1, p. 270-284, 2023.

ANJOS, L. H. G. et al. Perfil epidemiológico da Hanseníase no estado do Maranhão de 2018 a 2020. **Research, Society and Development**, v. 10, n. 15, p. e272101523156-e272101523156, 2021.

BARROS, I. C. A. et al. Caracterização de casos e indicadores epidemiológicos e operacionais da hanseníase: análise de séries temporais e distribuição espacial, Piauí, 2007-2021. **Epidemiologia e Serviços de Saúde**, v. 33, p. e2023090, 2024.

BRASIL. Ministério da Saúde**. Secretaria de Vigilância em Saúde.** Departamento de Vigilância das Doenças Transmissíveis. Guia prático sobre a hanseníase. – Brasília : Ministério da Saúde, 2017

CARVALHO, K. A.; GONÇALVES, S. J. C. Perfil epidemiológico dos pacientes portadores de hanseníase no brasil, entre 2015 e 2019. **Revista Ibero-Americana de Humanidades, Ciências e Educação**, v. 8, n. 7, p. 821-833, 2022.

CONCEIÇÃO, J. R. et al. Doenças tropicais negligenciadas e racismo sistêmico especialmente no Brasil: dos aspectos de novos medicamentos. **Acta Trópica**, v. 235, p. 106654, 2022.

ANDRADE JÚNIOR, F. P. Tuberculose em profissionais da saúde no estado da Paraíba, entre os anos 2009 e 2019. **Almanaque multidisciplinar de pesquisa**, v. 9, p. 143-154, 2022.

FREITAS, D. V.; XAVIER, S. S.; LIMA, M. A. T. Perfil Epidemiológico da Hanseníase no Município de Ilhéus-BA, no Período de 2010 a 2014. **Journal of Health Sciences**, v. 19, n. 4, p. 274-277, 2017.

IBGE. Instituto Brasileiro de Geografia e Estatística. **João Pessoa**. 2023. Disponível em:< https://cidades.ibge.gov.br/brasil/pb/joao-pessoa/panorama>. Acesso em: 26 jul. 2023.

OLIVEIRA, L. et al. Perfil Epidemiológico da Hanseníase na Bahia no Período de 2010 a 2020. **Research, Society and Development**, v. 11, n. 4, p. e16911427228-e16911427228, 2022.

PERNAMBUCO, M.L et al. Hanseníase no Brasil: ainda mais negligenciada em tempos de pandemia do COVID–19?. **Revista de Saúde Pública do Paraná**, v. 5, n. 1, p. 2-18, 2022.

PROPÉRCIO, A. N. A. et al. O Tratamento da Hanseníase a partir de uma Revisão Integrativa. **Brazilian Journal of Health Review**, v. 4, n. 2, p. 8076-8101, 2021.

QUARESMA, M. S. M. et al. Perfil clínico e epidemiológico dos pacientes portadores de hanseníase em uma unidade de referência no estado do Pará. **Revista Eletrônica Acervo Saúde**, n. 18, p. e269-e269, 2019.

SILVA, C. M. F. et al. Perfil e epidemiologia da hanseníase em Alagoas nos anos 2016 e 2017. **Pubvet**, v. 13, p. 176, 2019.

SILVA, P. S. R. et al. Perfil clínico-epidemiológico de pacientes portadores de hanseníase em um município do Maranhão. **Revista Eletrônica Acervo Saúde**, v. 12, n. 8, p. e3468-e3468, 2020.

SOUZA, R. A. G. et al. Análise epidemiológica da hanseníase na região caririense em tempos de pandemia da Covid-19. **Revista Eletrônica Acervo Saúde**, v. 15, n. 2, p. e9710-e9710, 2022.

VIEIRA, S. M. S. et al. Perfil epidemiológico da Hanseníase entre os anos 2015 e 2020, no município de Lago da Pedra, estado do Maranhão. **Hansenologia Internationalis: hanseníase e outras doenças infecciosas**, v. 45, p. 1-20, 2020.

YONEMOTO, A. C. F. et al. Fisiopatologia da hanseníase: resposta imunológica relacionada às formas clínicas. **Research, Society and Development**, v. 11, n. 9, p. e42211932058-e42211932058, 2022.