Original Article

Clinical-epidemiological profile of people with leprosy in the state of Pará between the years 2017-2021

Perfil clínico-epidemiológico de pessoas com hanseníase no estado do Pará entre os anos de 2017-2021

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ABSTRACT | OBJECTIVE: To know the clinical and epidemiological characteristics of people diagnosed with leprosy in the state of Pará. **METHODOLOGY:** This is an exploratory and descriptive ecological study with a cross-sectional approach. Data were collected in the Notifiable Diseases Information System, referring to the period from 2017 to 2021 and related to the state of Pará, Brazil. The parameters explored were the number of confirmed cases by year of notification, municipality of notification, gender, age group, race/color, education, operational classification, bacilloscopy notification, clinical form, degree of physical disability, number of lesions, and therapeutic scheme. **RESULTS:** During the study period, 14.339 cases were reported, with a higher occurrence in 2019. The most recurrent diagnoses were in individuals over 15 years old (92,1%), male (62,3%), brown (74,1%), with incomplete primary education (48,2%). There was a prevalence of degree zero of disability (56,2%) during diagnosis, and more than five nerves affected in each individual (43,6%). **CONCLUSION:** The frequency of cases detected in adults, brown individuals, and individuals with low education levels suggests evidence of undiagnosed active transmission foci and reinforces the importance of control actions to prevent the progression of functional disabilities from the disease.

KEYWORDS: Leprosy. Epidemiology. Public health. Prevalence. Endemic diseases.

RESUMO | OBJETIVO: Conhecer as características clínicas e epidemiológicas de pessoas diagnosticados com hanseníase no estado do Pará. **METODOLOGIA:** Trata-se de um estudo ecológico exploratório e descritivo, com abordagem transversal. Os dados foram coletados no Sistema de Informações de Agravos de Notificação, referentes ao período de 2017 a 2021 e relativos ao estado do Pará, Brasil. Os parâmetros explorados foram o número de casos confirmados por ano de notificação, município de notificação, sexo, faixa etária, raça/cor, escolaridade, classificação operacional, notificação de baciloscopia, forma clínica, grau de incapacidade física, número de lesões e esquema terapêutico. **RESULTADOS:** No período do estudo, foram notificados 14.339 caos, com maior ocorrência no ano de 2019. Os diagnósticos mais recorrentes foram em indivíduos com mais de 15 anos (92,1%), sexo masculino (62,3%), cor parda (74,1%), com ensino fundamental incompleto (48,2%). Preponderou grau zero de incapacidade (56,2%) durante o diagnóstico e mais de cinco nervos afetados em cada indivíduo (43,6%). **CONCLUSÃO:** A frequência de casos detectados em indivíduos adultos, pardos e com baixa escolaridade sugerem evidências de focos ativos de transmissão não diagnosticados e reforçam a importância de ações de controle para evitar a progressão de incapacidades funcionais da doença.

PALAVRAS-CHAVE: Hanseníase. Epidemiologia. Saúde Pública. Prevalência. Doenças endêmicas.

Introduction

Leprosy or Hansen's Disease (HD) was discovered in 1874 by the Norwegian physician Gerhard Armauer Hansen. Currently, it is known that it is an infectious and contagious disease with a chronic and curable evolution, which is mainly manifested by cutaneous lesions with a decrease in pain and thermal and tactile sensitivity caused by the acid-resistant bacillus, obligate intracellular, called Mycobacterium leprae, which infects peripheral nerves, especially Schwann cells.[1] The disease affects people of any sex and age group, and, if not treated early, the pathology evolves, becoming transmissible and can cause deformities, injuries, and functional disabilities, in which these physical disabilities bring with them feelings of exclusion, prejudice, and stigmas that reflect in the individual's social relationships.[1,2]

Although the disease has been eradicated as a public health problem in several countries (prevalence <1 case per 10,000 inhabitants), Brazil stands out as the second country with the most absolute confirmed cases.[3,4] According to the Sistema de Informação de Agravos de Notificação – SINAN (Notifiable Disease Information System), from 2013 to 2016, 145,093 new cases were reported throughout Brazil, and 27,825 new cases in the northern region of the country, making leprosy one of the main epidemiological health problems public.[5]

Leprosy, in addition to peripheral neurological impairment, manifests itself through dermato-neurological signs and symptoms, evolving to changes in the face and the upper and lower limbs, especially the eyes, hands, and feet.[6] Regarding the neural system, the nerves frequently affected by Mycobacterium leprae are: facial, median, ulnar, radial, trigeminal, tibial, auricular, and common fibular. Neural impairment can occur even with early diagnosis of the disease, altering the person's sensitivity and may or may not be reversible, depending on the degree diagnosed.[7,8]

In view of the magnitude of leprosy as a public health problem in Brazil, the pathology in question is curable and affected individuals have rehabilitation and treatment offered by the Sistema Único de Saúde - SUS (Unified Health System).[1] The National Leprosy Control Program of the Ministry of Health advocates actions to control the disease through decentralization to Atenção Primária à Saúde – APS (Primary Health Care) coordinated by the Estratégia Saúde da Família - ESF (Family Health Strategy), with the objective of guaranteeing the quality of care and facilitate access to health services to reduce endemic levels of the disease.[1,9] Despite these guidelines, it is verified in clinical practice the difficulty of carrying out an early diagnosis, prevention, and treatment of physical disabilities, leading to motor and neurological sequelae in individuals.[10]

According to the World Health Organization (WHO), leprosy individuals are classified as Paucibacillary (PB), with the presence of up to five skin lesions and negative intradermal smear bacilloscopy and/or Multibacillary (MB), with six or more skin lesions and positive intradermal scrape smear microscopy.[1,11] Multidrug therapy (MDT) stands out as a form of treatment for individuals classified as PB and/or MB, the latter being the most severe form of the disease and the cause of the highest transmissibility of the Mycobacterium leprae.[12]

Thus, clinical-epidemiological studies are necessary, as they allow for a greater understanding of associated factors, management, planning, and strategies for conducting treatment, with a view to monitoring, evaluating, and preventing cases through control actions that combat leprosy and provide subsidies of more effective health interventions in the reality found.

Thus, this study aims to know the clinical and epidemiological characteristics of people diagnosed with leprosy in the state of Pará from 2017 to 2021.

Methodology

This is an ecological, cross-sectional, exploratory, descriptive study based on secondary data on the incidence rate of leprosy in the state of Pará, collected in the SINAN, from the Departamento de Informática do Sistema Único de Saúde – DATASUS (Department of Informatics of the Unified Health System), at the electronic address (https://datasus.saude.gov.br/), which were accessed on 12/09/2022, 13/09/2022 and 15/09/2022.

The access to DATASUS data followed the corresponding search order: health information, epidemiological information and morbidity, diseases and notifiable injuries - 2007 onwards (SINAN), in which leprosy pathology and the state of Pará were selected.

The data collection date took place in September 2022, and the established period corresponded to the years 2017 to 2021, considering as variables the number of confirmed cases by year of notification, municipality of notification, sex, age group, race /color, education, operational classification, bacilloscopy notification, clinical form, degree of physical disability, number of lesions and therapeutic scheme.

Descriptive statistical analyzes of relative and absolute frequency were performed. The incidence (n° of new cases/n° of people at risk x per 100.000 inhabitants) of leprosy was calculated according to the annual notification of cases. For the age variable, the sum was performed, and the percentage was calculated. The age variable was also categorized into two intervals (0 to 14 years and 15 years and/or more).

Data were tabulated in Microsoft Office Excel® 2020 spreadsheets and subsequently analyzed. Because it is public domain data, there was no identification of people, obeying the ethical principles of resolution 466/2012 of the National Health Council, justifying the absence of the opinion of the Research Ethics Committee.[13]

Results

Between 2017 and 2021, in Pará, 14.339 cases of leprosy were diagnosed, with an annual record of 3.417, 3.467, 3.567, 2.304, and 1.581 cases, respectively (Figure 1).

Figure 1. Total cases of leprosy in the state of Pará, 2017 to 2021
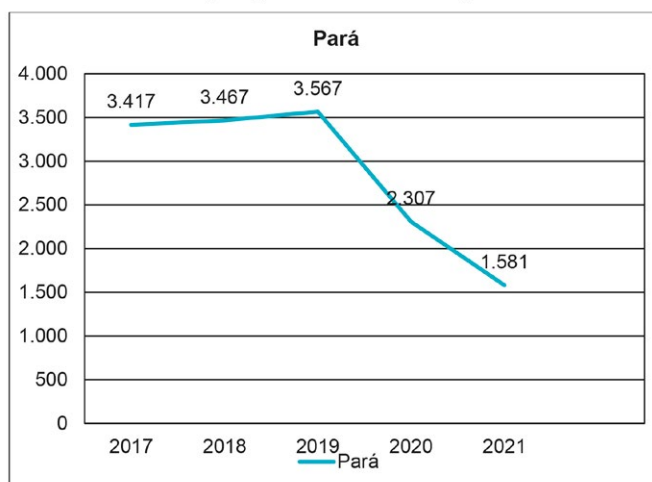
Source: Sistema de Agravos de Notificação - SINAN (Notifiable Disease Information System), 2022.

In 2019, the incidence of the pathology had the highest rate, with 41,3 cases/100.000 living inhabitants. The city with the highest number of notified cases corresponded to the municipality of Marituba, with 14,3% (2.057) of cases (Figure 2).

Figure 2. Major numbers of cases in municipalities in Pará between 2017 and 2021
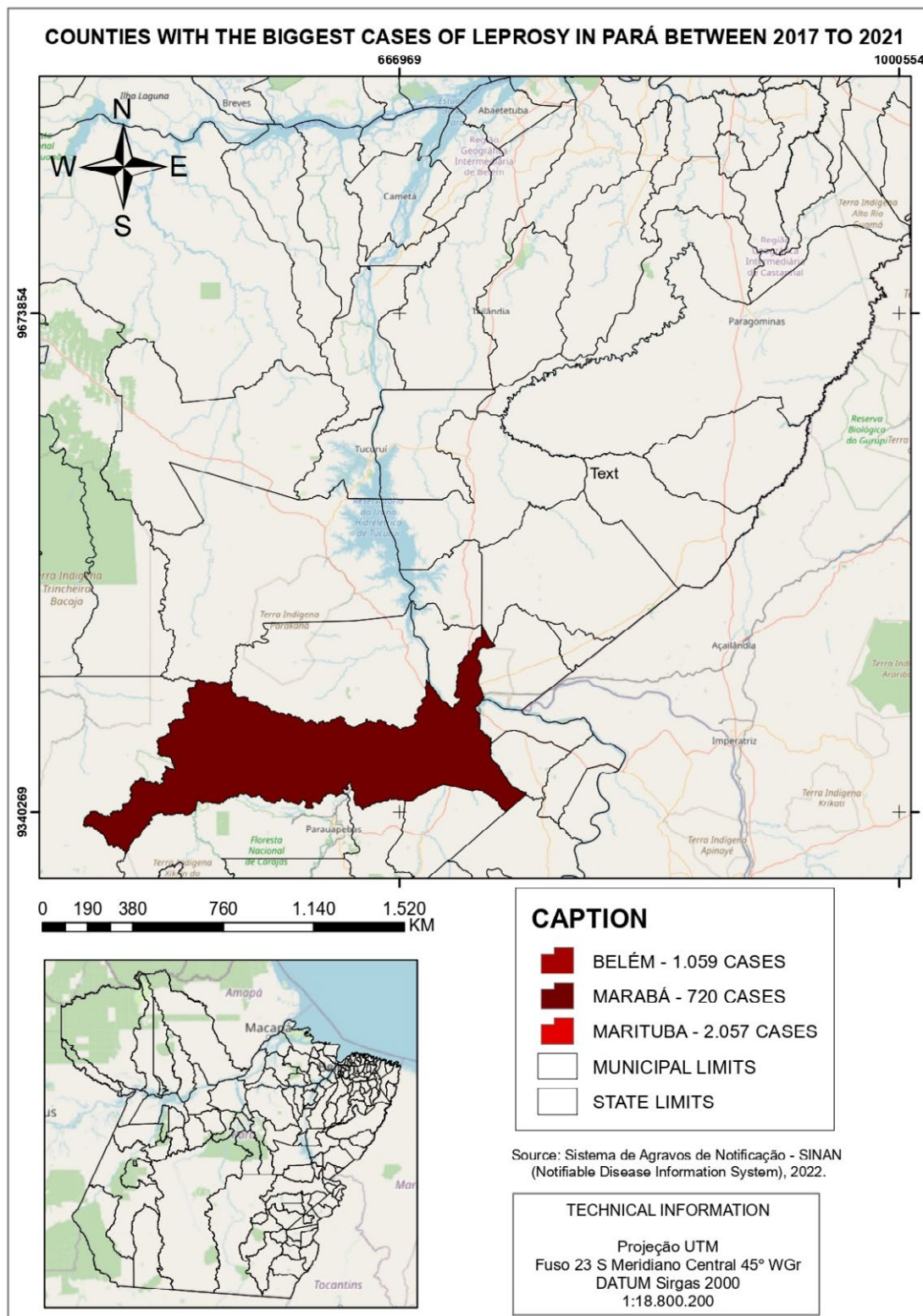
Source: Sistema de Agravos de Notificação - SINAN (Notifiable Disease Information System), 2022.

Table 1 presents the sociodemographic and clinical characteristics of the 14.339 people with leprosy records. There is a higher frequency of males (8.964; 62,3%), age group of 15 years or older (13.208; 92,1%), brown race/color (10.636; 74,1%), and incomplete primary education level (6.918; 48,2%). As for the clinical characteristics, the dimorphic clinical form predominated (8.026; 55,9%), followed by virchowian (2. 415; 16,8%). Concerning the degree of physical disability, 8.071 (56,2%) of people diagnosed were registered in grade zero.

Table 1. Epidemiological characterization of leprosy cases in Pará, 2017 to 2021

VARIABLES	n	%
SEX		
Male	8.964	62,3%
Female	5.375	37,7%
AGE GROUP		
Under 15 years old	1.131	7,8%
Greater than 15 years	13.208	92,1%
RACE/COLOR		
Brown	10.636	74,1%
Black	1.756	12,2%
White	1.526	10,6%
Yellow	113	0,7%
Indigenous	48	0,3%
Ignored	260	1,8%
EDUCATION		
Illiterate	1.292	9,0%
1st to 4th grade of elementary school incomplete	3.361	23,4%
4th grade of elementary school complete	957	6,6%
5th to 8th grade of elementary school incomplete	2.600	18,1%
Complete primary education and incomplete secondary education	1.804	12,5%
Complete high school and incomplete higher education	2.059	14,3%
Complete higher education	385	2,6%
Not applicable	83	0,5%
Ignored	1.798	12,5%
CLINICAL FORM		
Unclassified	572	3,9%
Tuberculoide	1.287	8,9%
Dimorphic	8.026	55,9%
Virchowiana	2.415	16,8%
Indeterminate	1.722	12,0%
Ignored	317	2,2%
Unclassified	572	3,9%
DISABILITY ASSESSMENT		
In blank	340	2,3%
Zero degree	8.071	56,2%
Degree I	3.985	27,7%
Degree II	1.342	9,3%
Not rated	601	4,1%

Source: Sistema de Agravos de Notificação - SINAN (Notifiable Disease Information System), 2022.

Figure 3 presents the operational classification with a predominance of 80,5% (11.547) of multibacillary cases, compared to cases classified as paucibacillary with 19,4% (2.790). Bacilloscopy was positive in 31,5% (4.521) of the cases. Bacilloscopy was not performed in 38,2% (5.480) of the cases in the defined period.

Figure 3. Characterization according to the operational classification of leprosy in Pará, 2017 to 2021
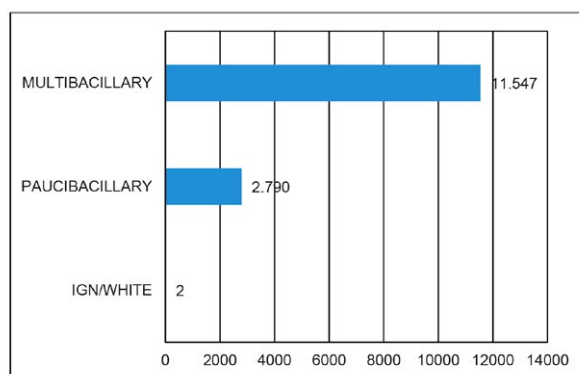
Source: Sistema de Agravos de Notificação - SINAN (Notifiable Disease Information System), 2022.

Regarding the number of skin lesions, it was observed that 19,6% (2.822) of the cases had single lesions, 28,1% (4.041) had 2 to 5 lesions and 43,6% (6.265) of individuals with more than 5 lesions (figure 4). The therapeutic scheme that stood out was MDT/MB/12 doses with 79,5% (11.407) and MDT/PB/6 doses with 19,3% (2.780).

Figure 4. Characterization of leprosy skin lesions in Pará from 2017 to 2021
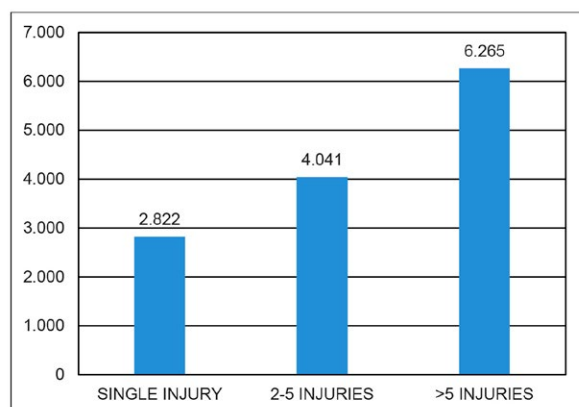
Source: Sistema de Agravos de Notificação - SINAN (Notifiable Disease Information System), 2022.

Discussion

The endemic disease is associated with neglected populations, with less Human Development Index, evidenced by the number of confirmed cases in the North region, in which leprosy is supported by the magnitude of its transmission, morbidity, and late diagnosis focused on the incubation period of the disease, highlighting the pathology in question as a public health relevance in Brazil.[14]

In Brazil, 148.458 cases of leprosy were diagnosed, highlighting the highest prevalence rates of the disease in the North, Northeast, and Midwest regions, which are considered socioeconomically backward regions; a factor that contributes to the historical relationship of the epidemiology of the infectious disease.[5,14]

In this study, the year 2019 had the highest number of reported cases, in which the municipality of Marituba had the highest rate, and the majority of people diagnosed with leprosy were men, relative to the age group of 15 years or older, with a preponderance of the brown race and low level of schooling.

The percentage of cases in males does not differ from those recorded in other epidemiological studies, and the findings of other studies show a slight predominance of males in the economically active age group.[7,12] Some authors claim that the frequent social contact of men with the risk environment contributes to the increase in cases of males, a population group that has a lower frequency of entry into health units.[15]

In the state of Pará, regarding the age group, patients aged 15 years or older had the highest number of cases of the disease. In line with this study, in the state of Mato Grosso, from 2014, there was a significant increase in the number of cases for the age groups of 15 years and older.[7] Concerning the prevalence of the disease in children, some studies highlighted that, from 2005 onwards, the North, Northeast, and Midwest regions showed a decrease in the number of cases in children under 15 years of age.[15]

There was a predominance of brown individuals with a low level of education, associated with the fact of low quality of life of these people who, for the most part, are residents of peripheral areas with poor sanitation and education.[16]

The prevailing operational classification was multibacillary cases, with 80,5%. This high number is due to the low diagnosis by bacilloscopy, in addition to showing an intense proliferation of leprosy. Thus, there is an impairment in the quality of life of individuals, as this form increases the chances of possible physical disability.[1,7,17]

The dimorphic clinical form and degree zero of functional disability of the disease were the most common. Thus, the dimorphic form can also be correlated with the chances of disabilities and physical deformities in the individual. Grade zero infers that most people had no neural impairment. However, this neural non-involvement does not imply the absence of symptoms of pain and peripheral nerve thickening that the pathology can cause.[3,12]

The results showed involvement with more than five skin lesions or more than one nerve in 43,6% of the individuals, which shows that most of this public is composed of multibacillary patients. Thus, studies indicate that such individuals are at greater risk of having nerve damage.[16]

In the therapeutic regimen, the most used was MDT/MB/12 doses (79,5%). In order to identify the therapeutic regimen, there is a need for the type of operational classification of the case, making use of bactericidal and bacteriostatic antibiotics. In paucibacillary cases, the regimen is based on cure after treatment with 6 monthly doses, and in multibacillary cases, the duration is 12 monthly doses.[7]

It was observed that the year 2020 and 2021 had the lowest rates of notification of the disease; however, it should be considered that the COVID-19 pandemic had a negative influence on the diagnosis and follow-up of leprosy cases in Pará due to the restructuring of the attendance of health services in the pandemic and to people not seeking for care.[18]

In addition, it is noteworthy that the health services in the state of Pará have difficulties in carrying out disease control actions recommended by the Ministry of Health in the early detection of new cases, since most of the diagnosed cases were multibacillary and with a predominance of dimorphic. Such evidence demonstrates a high circulation of the bacillus, making it a challenge to control leprosy.[1,3]

Thus, it is important to expand the diagnosis and monitoring of the disease by the Family Health Strategy teams in line with the reference center of each location, which should develop improvements in services through support from human resources, the definition of flows service, qualification of professionals based on the epidemiological reality of the region, among others. In this way, there will be an improvement in the quality of care offered to users and will minimize the existing gap in the treatment of the individual with leprosy.[3,10]

In this bias, the actions developed by nurses in the prevention and control of leprosy are of great relevance within the leprosy care services, as it is an assistance that is related to the search and diagnosis of cases and treatments, in addition to the prevention of disabilities, control management, and epidemiological surveillance registration system.

Thus, this research has great scientific and social implications for nursing.[3,10]

Among the limitations of this study, the use of secondary data stands out, making it possible for failures to be filled in or incomplete data in the notification forms, with the possibility of underreporting and underreported cases.

Conclusion

Through this study, it was possible to know the clinical and epidemiological profile of leprosy in the state of Pará in recent years. In addition, the data identified in the research facilitated the knowledge of this disease and the way it behaved in Pará between 2017 and 2021.

Regarding the clinical profile of leprosy, the operational multibacillary classification was observed more frequently, with the presence of five or more lesions, related to late diagnosis, leading, in most cases, to disability and physical deformities, which does not differ much from recent research in Brazil.

An important aspect that needs to be highlighted is the fact that the prevalence of the disease will occur among individuals with a low level of education, which reinforces the need to work on prevention strategically among the specific social group, with the aim of minimizing this setback. Thus, this study enables reflection on the part of health professionals, especially nurses, who are responsible for designing strategies with their team, for the development of disease prevention and control actions.

Therefore, the data obtained in this study demonstrated that leprosy is still considered a public health problem due to its high occurrence in the Brazilian population, especially in the state of Pará, with active outbreaks of disease transmission. Thus, there is a need to strengthen educational actions of health promotion and prevention in order to reduce the reality experienced by the state of Pará.

Authors' contributions

Damasceno PR, Gomes VAS participated in the conception, design, search and statistical analysis of research data, interpretation of results, writing and review of the scientific article. Souza AJS participated in the conception, design, structuring of the introduction and methodology, and formatting of the scientific article. Laet AL participated in the conception, design, search and statistical analysis of research data and interpretation of the results of the scientific article. Silveira MC participated in the conception, design, structuring of the introduction and methodology, and writing and review of the scientific article. Santos GNV participated in the guidance of all stages of construction of the scientific article. All authors reviewed and approved the final version and are in agreement with its publication.

Conflicts of interest

No financial, legal or political conflicts involving third parties (government, companies and private foundations, etc.) have been declared for any aspect of the submitted work (including, but not limited to, grants and funding, participation in advisory boards, study design, preparation manuscript, statistical analysis, etc.).

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References

1. Ministério da Saúde (Brasil), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Guia prático sobre a hanseníase [Internet]. Brasília: Ministério da Saúde; 2017. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/guia_pratico_hanseniase.pdf

2. Pinheiro MGC, Simpson CA. Prejudice, stigma and exclusion: relatives' lives affected by asylum-based treatment of leprosy. Rev Enferm UERJ. 2017;25:e13332. https://doi.org/10.12957/reuerj.2017.13332

3. Lopes FC, Ramos ACV, Pascoal LM, Santos FS, Rolim ILTP, Serra MAAO, et al. Leprosy in the context of the Family Health Strategy in an endemic scenario in Maranhão: prevalence and associated factors. Ciênc. Saúde Coletiva. 2021;26(5):1805-16. https://doi.org/10.1590/1413-81232021265.04032021

4. Ministério da Saúde (Brasil), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Diretrizes para vigilância, atenção e eliminação da hanseníase como problema de saúde pública: manual técnico-operacional [Internet]. Brasília: Ministério da Saúde; 2016. Available from: http://www.credesh.ufu.br/sites/credesh.hc.ufu.br/arquivos/diretrizes-eliminacao-hanseniase-4fev16-web.pdf

5. Ministério da Saúde (Brasil). Banco de dados do Sistema Único de Saúde-DATASUS [Internet]. Brasília: Ministério da Saúde. Available from: http://tabnet.datasus.gov.br/cgi/tabcgi.exe?sinannet/cnv/hanswbr.def

6. Ministério da Saúde (Brasil), Secretaria de Políticas de Saúde, Departamento de Atenção Básica, Área Técnica de Dermatologia Sanitária. Manual de prevenção de incapacidades [Internet]. 2a ed. Brasília: Ministério da Saúde; 2001. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/MANPREV2000.pdf

7. Tavares AMR. Epidemiological profile of leprosy in the state of Mato Grosso: descriptive study. Einstein (São Paulo). 2021;19:eAO5622. https://doi.org/10.31744/einstein_journal/2021AO5622

8. Alves ED, Ferreira TL, Ferreira IN, editors. Hanseníase: avanços e desafios [Internet]. Brasília: NESPROM; 2014. Available from: http://www.morhan.org.br/views/upload/hanseniaseavancoes.pdf

9. Savassi LCM, Modena CM. Leprosy and primary care: educational and healthcare challenges from the perspective of medical residents. Repositório Institucional da UFOP [Internet]. 2015;40(2):2-16. Available from: http://www.repositorio.ufop.br/handle/123456789/11100

10. Girão Neta OA, Arruda GMMS, Carvalho MMB, Gadelha RRM. Health professionals' and managers' perception of leprosy care within the Family Health Strategy. Rev Bras Promoc Saúde. 2017;30(2):239-248. https://doi.org/10.5020/18061230.2017.p239

11. World Health Organization. Guidelines for the diagnosis, treatment and prevention of leprosy [Internet]. Geneva: WHO; 2018. Available from: https://apps.who.int/iris/handle/10665/274127

12. Espíndola MF, Nascimento JLM, Gomes ACM, Costa ALX, Garcia FN, Rodrigues MC, et al. Epidemiological profile of leprosy in the period from 2015 to 2018 in the city of Goianésia (GO). Braz J Hea Rev. 2020;3(2):2600-11. https://doi.org/10.34119/bjhrv3n2-107

13. Resolução n° 466, de 12 de dezembro de 2012 (Brasil). Aprova normas regulamentadoras de pesquisas envolvendo seres humanos [Internet]. Conselho Nacional de Saúde. Available from: https://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf

14. Ribeiro MDA, Silva JCA, Oliveira SB. Epidemiologic study of leprosy in Brazil: reflections on elimination goals. Rev Panam Salud Pública. 2018;42:e42. https://doi.org/10.26633/RPSP.2018.42

15. Ribeiro Júnior AF, Vieira MA, Caldeira AP. Epidemiological profile of leprosy in na edemic city in the North of Minas Gerais. Rev Soc Bras Clin Med [Internet]. 2012;10(4):272-7. Available from: https://pesquisa.bvsalud.org/portal/resource/pt/lil-646048

16. Martins BC, Nascimento ES, Coelho VA, Souza CG, Bigatello CS, Sobral LT. Characterization of Physical Disabilities in Patients Diagnosed With Multibacillary Hansen's Disease in Almenara-MG. Id on Line Rev. Mult. Psic. 2020;14(52):924-935. https://doi.org/10.14295/idonline.v14i52.2770

17. Silva MDP, Oliveira PT, Queiroz AAR, Alvarenga WA. Leprosy in Brazil: an integrative review on sociodemographic and clinical characteristics. Res., Soc. Dev. 2020;9(11):e82491110745. https://doi.org/10.33448/rsd-v9i11.10745

18. Silva RA, Freitas DKP, Souza RV. Impacto da COVID-19 em pacientes com hanseníase. Rev Mult Saúde. 2021;2(4):122. https://doi.org/10.51161/rems/2748