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EPIDEMIOLOGICAL PROFILE OF LEPROSY IN THE STATE OF PERNAMBUCO, FROM 2015 TO 2020

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Abstract: Leprosy is a chronic, infectious, contagious and granulomatous disease caused by a bacterium called Mycobacterium leprae or Hansen's bacillus, which has a predilection for skin cells and peripheral neurons. It is a disease that, when treated, has high cure rates, but if left untreated, it can leave the affected individual with sequelae. This article is an epidemiological study of a quantitative descriptive type, using primary data, collected from government databases, and aims to analyze the epidemiological profile of leprosy in the state of Pernambuco, Brazil, and compare it to the profile. of this disease in the country, through the indicators sex, age, education, pregnancy, race, age group, number of skin lesions, number of sputum smears performed, mode of entry, clinical form, assessment of the degree of physical disability at diagnosis, current operational classification and notified therapeutic scheme. There is a high prevalence of endemic diseases in Pernambuco, as well as in the Northeast region as a whole, which is attributed to low levels of human development and sociocultural production. There is a high discrepancy in the number of notifications of leprosy among the municipalities of Pernambuco, which stems from the underreporting of cases and the weakness in the municipalities' control strategy. A higher percentage of leprosy cases was observed in men, brown, over 15 years old, with incomplete primary education and with entry mode as new cases, characterizing the disease not only as a public health problem, but also a socioeconomic one.
Keywords: Leprosy, epidemiology, sub-registration, health policy, health profile.

INTRODUCTION

According to the Brazilian Society of Dermatology, leprosy is a chronic, contagious and granulomatous disease caused by a bacterium called: *Mycobacterium leprae* or Hansen's bacillus, which has a predilection for skin cells and peripheral neurons. It is one of the oldest diseases described in the literature, with case records for over 4000 years.

Leprosy is a disease that, when treated, has high cure rates, but if left untreated it can leave the affected individual with sequelae. It is important to note that the incubation period of the *Mycobacterium leprae* can vary from 2 to 5 years, which demonstrates an insidious evolution, when the patient is already affected, he may present clinical situations of incapacity, which demonstrates the great importance of early diagnosis. Clinically, leprosy can be classified according to the appearance, severity and number of lesions in: Tuberculoid, Borderline, Indeterminate and Virchowian. (VELÔSO et al. 2018).

Being classified as Paucibacillary (with few or no bacilli in the exams) the clinical forms tuberculoid and indeterminate and multibacillary (with many bacilli in the exams) the Virchowiana and Dimorphous forms. Therefore, evaluating the incidence and prevalence of the operational classification and the clinical form are extremely important for the establishment of measures to prevent the worsening of the disease in people who already have it (MINISTÉRIO DA SAÚDE, 2017).

According to Veloso et al. (2018) describe: For the diagnosis of leprosy, it is essential to retain the clinical and epidemiological knowledge of this disease, verifying the historical analysis and the life situations of the affected individuals, as well as the performance of the dermato-neurological examination in order to observe the lesions or possible skin regions that have altered sensitivities and/or implications for peripheral nerves and laboratory examination through bacilloscopy.

This article, therefore, aims to analyze the epidemiological profile of leprosy in the state of Pernambuco and compare it to the profile of

this disease in Brazil. Analyzing the indicators sex, age, education, pregnancy, race, age, number of skin lesions, number of sputum smears performed, mode of entry, clinical form, assessment of the degree of physical disability at diagnosis, current operational classification and notified therapeutic scheme, as well as the comparison between Brazil, Northeast and Pernambuco in the number of reported cases, through data provided by DATASUS.

METHODOLOGY

The present work is an epidemiological study of a quantitative descriptive type, using primary data collected in government databases. This study was carried out between May and June 2021, having as study site the state of Pernambuco.

Seeking to achieve the proposed objective, the study was divided into stages. The first stage consisted of bibliographical research on the subject, with the aim of supporting the study and increasing the authors' knowledge on the subject. For bibliographical research, aiming at the theoretical basis of the study, the following platforms were used: Google Scholar, SciELO, PubMed and the following descriptors were used: Leprosy, Leprosy in Brazil, Forms of Leprosy. We selected articles related to the topic, using their respective abstracts to select scientific works that were in accordance with the objective of our study. After the articles were selected, their reading and the making of files were the next steps, aiming at a better use of the content acquired in the articles found.

In the second stage, research was carried out in the government database DATASUS, with the purpose of acquiring the digitized data from the compulsory notification forms for the disease Leprosy (CID 10: A30.9). Thus, the numerical data collected were found on the DATASUS website Tabnet. According to Saldanha, Bastos and Barcellos (2019), the SUS Informatics Department (DATASUS) was created in 1991 with the objective of collecting and organizing data related to the Unified Health System. The system covers numerous aspects of the health of the Brazilian population, among them aspects of an epidemiological nature.

Data propagation is performed by DATASUS through two interfaces made available to users: TabNet and TabWin. TabNet, which was the interaction area used in this work, is an interface for producing data tables compiled by accessing microdata contained in its data servers. It also makes it possible to search for data and indicators from various health information systems aggregated in time units or geographic units.

The years from 2015 to 2020 were selected, so that there were records of the last six years, therefore, the most current in the state of Pernambuco, aiming, this way, to obtain a real and current scenario of the disease in the state. To complete the research, we selected the following variables in the column: sex, pregnancy, race, age group, education, Health Unit by municipality of notification, health region, number of skin lesions, bacilloscopy, current operational classification, mode of entry, form clinical, assessment of the degree of physical disability at diagnosis, notified therapeutic scheme. These variables are evaluated according to the year of notification and its frequency.

The database was organized with the help of SPSS for Windows 14.0 software. The computerized statistical platform allowed an analysis of the studied variables, through absolute and percentage frequencies. Finally, the discussion was based on the analysis and interpretation of the data, as well as on the theoretical basis acquired in the bibliographical research.

RESULTS

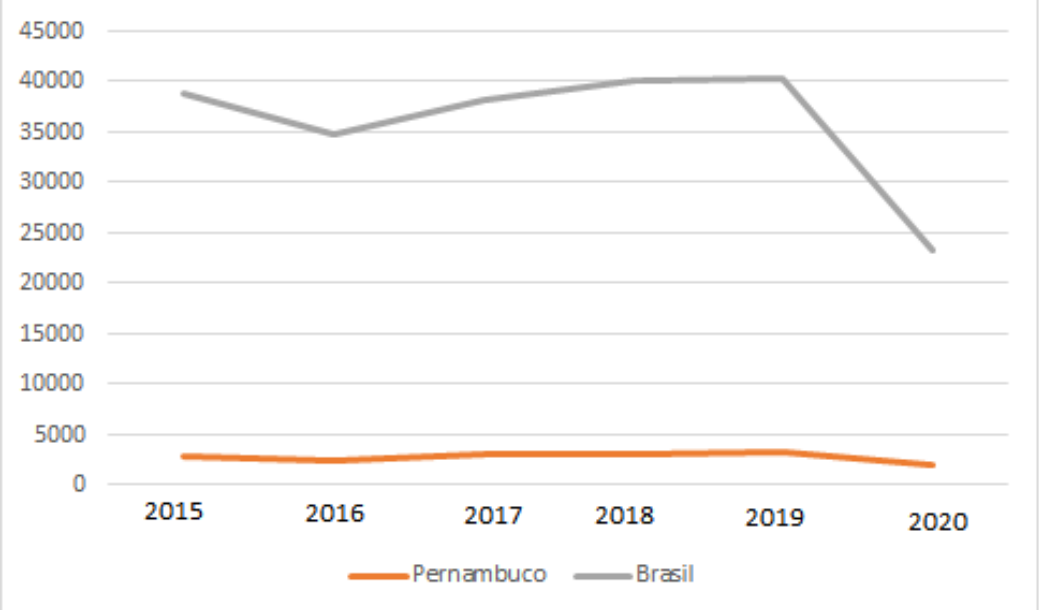
In the period chosen for data collection, that is, from 2015 to 2020, a total of 198,479 cases were reported in Brazil, with 84,126 (42.38%) only in the Northeast Region. Of these, 16,902 occurred in Pernambuco, with 8.51% of cases in Brazil and 20.09% in the Northeast region.

The table and graph with the frequencies of notifications from 2015 to 2020 in the state of Pernambuco and in Brazil are presented below (Graphy 1).

Regarding race in the cases reported in Brazil, 46,749 (23.55%) were white, 24,760 (12.47%) were black, 1,975 (0.99%) were yellow, 117,275 (59.08%) of the brown race, 900 (0.45%) were indigenous and 6,820 (3.43%) were ignored or left blank. In the state of Pernambuco, 3,134 (18.54%) were white; 2,258 (13.35%) of the black race; 124 (0.73%) of the yellow race; 9,749 (57.67%) of the brown race; 68 (0.40%) were indigenous and 1,569 (9.28%) were ignored or left blank.

Regarding the age group of those notified in the period in Brazil, 11,234 (5.66%) were from 0 to 14 years old and 187,237 (94.33%) were 15 years old or more, 8 (0.004%) being ignored. In Pernambuco, the findings were that 1,195 (7.07%) were between 0 and 14 years old and 15,707 (92.92%) were 15 years old or more. Both in the country and in Pernambuco, it can be seen that the vast majority of notified cases are of people over 15 years of age, a justification for this would be the greater number of Brazilians in this age group.

Regarding the variable gender in the cases notified in Brazil, it was found that the highest percentage 56.89%, that is, 112,922 cases were male, whereas for females, there was a notification of 85,543 cases, 43.09%; 13, however, corresponding to 0.006% had their sex ignored. In the state of Pernambuco, it was shown that 8,803 (52.08%) were male, thus also presenting a greater number of notifications for males as in the country, and 8096 (47.89%) were male. female, in addition



Graph 1: Frequency of notifications from 2015 to 2020 in the state of Pernambuco and in Brazil

to 3, that is, 0.01% had their gender ignored in the compulsory notification form.

Regarding education in Brazil and the state of Pernambuco, the data were organized in the following table (Table 2).

As for the clinical form reported in Brazil, 22,470 (11.32%) had an undetermined form, 23,523 (11.85%) had the tuberculoid; clinical presentation of leprosy in the country where there was more notification, people had the borderline form 98,968 (49.86%); with the Virchowian form, 34,772 cases were reported in Brazil (17.51%); 11,549 (5.81%) were not classified and 7,197 (3.62%) were ignored. In the state of Pernambuco, 2,849 (16.85%) had indeterminate form; 2,566 (15.18%) had the tuberculoid form; 6,643 (39.30%) had the borderline form; 2,428 (14.36%) had the Virchowian form; 1507 (8.91%) were not classified and 909 (5.37%) were ignored.

The numbers of cutaneous lesions in the cases were notified, thus in our country the numbers found were as follows: 40,268 had a single lesion (20.28%); 58,957 (29.70%) had between 2 and 5 injuries; 73,337 (36.94%) had more than 5 lesions and 25,917 of them a percentage of 13.06% of cases reported 0 or 99 lesions. In the state of Pernambuco, 4,543 (26.87%) had a single lesion; 5,123 (30.31%) had between 2 and 5 injuries; 4,858 (28.74%) had more than 5 injuries and 2,378 (14.07%) reported 0 or 99. It is noted that in the country the highest percentage of cases had more than 5 injuries and in the state of Pernambuco the highest percentage, for the categories of number of injuries, was from 2 to 5 injuries.

Regarding the exam recommended in Brazil a Bacilloscopy, 71,546 (36.04%) of the Brazilians notified did not undergo the exam; 60,512 (30.48%) had a negative result; 50,981 (25.68%) were positive and 15,440 (7.78%) were ignored / blank. In the state of Pernambuco, 8,076 (47.78%) of the cases did not undergo the exam, a higher percentage when compared to the number in the country; 3,894 (23.03%) showed a negative result; 2,874 (17%) were positive and 2,058 (12.17%) were ignored/blank. In this variable, the fact of the high number of notified cases that had this item on the record or ignored or not having

	Analfabeto	EFI	EFC	EMI	EMC	ESI	ESC	Ignorados	Não se aplica
Pernambuco	1.286 (7,60%)	5807 (34,35%)	730 (4,31%)	870 (5,14%)	1.913 (11,31%)	187 (1,10%)	511 (3,02%)	5.377 (31,81%)	221 (1,30%)
Brasil	17.612 (8,87%)	82.843 (41,73%)	12.061 (6,07%)	12.763 (6,43%)	25.579 (12,88%)	2.876 (1,45%)	6.668 (3,36%)	36.783(18,53%)	1.294 (0,65%)

Analfabeto = Illiterate

Pessoas ignoradas = people ignored

Não se aplica = not applicable

Table 2: Frequency of notifications, from 2015 to 2020, regarding education, in the state of Pernambuco and in Brazil. Caption: EFI = Incomplete Elementary School; EFC = Complete Elementary School; EMI = Incomplete High School; EMC = Complete High School; ESI = Incomplete Higher Education; ESC= Complete Higher Education.

the exam is noteworthy.

The current operational classification of those notified in Brazil was 155,282 (78.23%) with the multibacillary classification; 42,940, that is, 21.63% of those notified had the disease with a paucibacillary classification; and 257 (0.12%) cases were ignored or blank for this variable in the country. In Pernambuco, we found 11,799 (69.80%) of the cases with the multibacillary classification; 5,098 (30.16%) had the paucibacillary classification, revealing a higher percentage than the country in this regard; furthermore, we found that 5 (0.02%) of the cases were ignored or were blank.

As for the therapeutic scheme notified in Brazil, 43,188 (21.75%) reported MDT/PB/6 doses; 151,146 of the total Brazilian cases (76.15%) reported MDT/MB/12 doses; in 3,601 (1.81%) in the country, other surrogate schemes were used, 44 (0.27%) were ignored/blank. As for the therapeutic scheme notified in Pernambuco, 5,081 (30.06%) reported MDT/PB/6 doses; 11,364 (67.23%) reported MDT/MB/12 doses; and 414 (2.44) used other substitute schemes and 43 (0.25%) were ignored/blank, thus, a percentage similar to that found in the country.

DISCUSSION

The epidemiological distribution profile of leprosy in the state of Pernambuco is described based on the analysis of several indicators, which enable a joint or isolated assessment of the spread of the disease. Thus, it is possible to ascertain whether the epidemiological pattern of leprosy in Pernambuco is in line with the Brazilian pattern. Furthermore, the presentation of the temporal evolution of each indicator within the state itself is an important comparative factor made possible by the evaluation of the data presented.

The notification of leprosy cases is a variable that depends on the effectiveness of the management of health management in the municipalities, which can often alter the real representation of these assumptions. Ferreira (2018) highlights that a high discrepancy in the number of notifications of leprosy among the municipalities of Pernambuco comes from the underreporting of cases and the weakness in the municipalities' control strategy. This finding is one of the factors that allow us to verify that the prevalence of leprosy in Pernambuco still lacks a critical analysis, as well as the adoption of more effective notification strategies.

Even though this weakness is pointed out in the literature, it is possible to see, given the data analyzed, that the State still maintains the relative number of cases, while the Brazilian population shows a progressive decline between 2015 and 2020. According to Ribeiro et al. (2018): "the prevalence coefficient of leprosy cases remained at an average level [...] with a decreasing national trend. However, this behavior was not observed in the Northeast, North and Center-West regions".

This high prevalence of endemic diseases in Pernambuco, as well as in the Northeast region as a whole, is attributed to the low levels of human development and sociocultural production. All this situation contributes for the state to be considered an endemic region and that a series of prevention measures need to be maintained (SCHNEIDER and FREITAS, 2018).

The prevalence of leprosy today is largely due to the difficulties faced by primary care to track affected individuals and the inability to provide adequate access to the health system (RESENDE et al. 2009). With regard to the form of entry to the health service, the data analyzed showed that there is consonance between Brazil and the State of Pernambuco, with the majority of entries relating to new cases of infection.

This can be explained by the Ministry of Health's efforts to detect the disease and

the greater effectiveness of policies aimed at eliminating the disease, such as the National Program for the Control of Leprosy. This program is aimed at primary care and seeks to carry out the early detection of leprosy cases, as well as monitoring and assisted treatment, consequently leading to a reduction in relapses, as described by Sousa, Silva and Xavier (2017). However, despite the advances obtained with the decrease in the prevalence of the disease in the last 20 years, the country remains facing challenges, mainly related to controlling the transmissibility of the disease (VELÔSO et al. 2018).

Regarding the clinical aspects of leprosy, data analysis showed a dissonance between the State of Pernambuco and Brazil, given that the State reported a relatively smaller percentage of cases of multibacillary leprosy, however a higher percentage of paucibacillary cases. Such divergences must be analyzed considering the environment in which the State of Pernambuco is inserted, Ribeiro, Silva and Oliveira (2018) describe that the Northeast region presents marked economic and social development inequalities, leading it to present higher and discrete rates of prevalence. advances in the detection of leprosy.

Another factor that can influence the divergence found is the performance of the sputum smear exam, since the number of exams performed was considerably lower in the State of Pernambuco, and as described by Lastória (2012), positive sputum smear microscopy classifies cases as multibacillary, regardless of number of skin lesions presented. The complexity of interactions that lead to different forms of clinical presentation of leprosy in the State of Pernambuco and in Brazil is directly linked to socioeconomic, epidemiological and operational differences and the difficulty in accessing the health service.

The operational classification in relation to the amount of bacilli found implies the divergence between the Pernambuco and Brazilian patterns found regarding the therapeutic scheme, after all, the established therapy for both forms is different, with the 6-dose scheme being preferable to the paucibacillary and the 12 doses to be multibacillary, as described by Schneider and Freitas (2018). The higher percentage of the 6-dose MDT/WHO scheme is justifiable, therefore, by the higher prevalence of the paucibacillary form in the state.

As mentioned earlier, Veloso et al. (2018) describe that individuals with the tuberculoid and indeterminate clinical form have the paucibacillary classification of the disease. On the other hand, individuals with the Dimorphous and Virchowian form present the multibacillary form.

As polychemotherapy (MDT/WHO) is based on the number of the number of skin lesions presented, individuals with up to 5 skin lesions are treated as pacibacillary forms, and individuals with more than 5 patches are classified as multibacillary. It is noteworthy that positive bacilloscopy classifies cases as multibacillary, regardless of the number of lesions. This operational classification is essential to establish the therapeutic scheme, with the 6-month scheme being adopted in paucibacillary and the 12-month scheme in the multibacillary form.

It is also worth mentioning the large number of cases of ignored detection, as described by Ribeiro, Silva and Oliveira (2018), a situation that reflects the existence of failures in the notification of the disease and makes tracking and targeting difficult. Despite referring to the period between 2005 and 2015, we can see that the same gaps in the quality of filling in the notification forms remain until 2017, showing that there are still points to be improved in primary health care.

CONCLUSIONS

The results found in this study show that, unlike what happens in the country in general, in Pernambuco and in the Northeast there was an increase in leprosy cases in the period from 2015 to 2020, requiring actions aimed at increasing the population's knowledge about the disease, mainly with regard to prevention, diagnosis and treatment, aiming even to eliminate the stigmas of the disease. There is a higher percentage of leprosy cases in men, brown, over 15 years old, with incomplete primary education and with entry mode as new cases, characterizing the disease not only as a public health problem, but also a socioeconomic one. Policies such as the National Program for the Prevention of Leprosy must continue to be encouraged by the Ministry of Health, as they are essential for the early detection of the disease, contributing to the development of a more adequate therapeutic plan. Diagnosis and notification must always be encouraged, aiming to reduce underreporting of the disease and provide more concrete epidemiological data, through easy access to health services. In addition, the continuity of treatment must be reinforced, breaking down prejudice and guaranteeing the confidentiality of the results, since, as they are still stigmatized diseases, there may be resistance to seeking help.

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