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Physical disabilities due to leprosy: Epidemiological Profile of patients in the Belém Metropolitan Region, 2014-2017

Abstract

Hansen's disease is one of the oldest diseases in mankind, characterized as an infectious, chronic, granulomatous disease caused by Mycobacterium leprae (M. leprae). The objective of this article was to describe the epidemiological profile of physical disability cases due to Hansen's disease in Pará-Brazil. All cases of Hansen's disease evaluated in relation to the occurrence of physical incapacity were reported in the metropolitan area registered in the SUS electronic database (DATASUS). Based on the results obtained, it was concluded that the patients who were physically incapacitated in the region and in the period studied, are mostly men, aged between 15 and 49years, mainly living in the municipalities of Ananindeua and Belém. Dimorphic and Vischorwiana were the most frequent, being classified as multibacillary. In addition, the male gender, age greater than 60years and the multibacillary clinical form. The large number of physical disabilities found in grade II suggests passivity of health services, resulting in late diagnosis. This situation points to the need to intensify control measures, decentralizing them, reinforcing the role of primary care, promoting popular awareness and health professionals training.

Keywords: Hanseníase, Degree of physical disability, Health Profile

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Abbreviations: PB, paucibacillary; MB, multibacillary; MHI, Madrid classification, the clinic divides the forms of leprosy into indeterminate; MHT, tuberculoid, MHD, dimorphic; MHV, virchowian; DATASUS, SUS Electronic Database

Introduction

Leprosy is a chronic granulomatous disease of high disabling power, which has different forms of clinical presentation. It is caused by Mycobacterium leprae, an acid-resistant, intracellular bacillus that affects peripheral nerves; has a high capacity for infection (high infectivity), but few individuals develop the disease (low pathogenicity). Basically, the mechanisms that cause leprosy deficiencies and disabilities can occur through the neurogenic and inflammatory pathways. Sensory, motor and autonomic deficits are classified as primary causes, while traumatic injuries, retractions and post-traumatic infections are considered secondary because they occur due to the lack of preventive care after the primary process.[1]

The World Health Organization classifies leprosy as its presentation, in paucibacillary (PB) and multibacillary (MB), the latter being the infective form. According to the Madrid classification, the clinic divides the forms of leprosy into indeterminate (MHI), tuberculoid (MHT), dimorphic (MHD) and virchowian (MHV), the last two corresponding to the MB form and, consequently, infectious.[2]

Leprosy is a very relevant public health agenda, as it is directly associated with several cases of physical disabilities, affecting all ages, specifically the economically active population, between 15 and 40 years old, with cases throughout the Brazilian territory. Although the quest for worldwide elimination has been declared a public health problem by the year 2003, Brazil has not yet reached the goal of reducing the leprosy burden to less than 1 case / 10,000 inhabitants.[3]

Brazil represents the first place in prevalence (1.10 / 10,000 inhabitants) and the second largest worldwide in absolute leprosy case numbers, and is responsible for the highest occurrence in America, so that in 2016 it reported 25,218 new cases, and of these, 1,736 (6.9%) occurred in the age group from 0 to 14 years. Leprosy, when it occurs in childhood, can influence quality of life and interfere with school life, considering historically imposed social limitations, discrimination, low self-esteem and stigma.[4]

The distribution of the disease among Brazilians is heterogeneous in different geographical scales. While in the southern region of the country, the detection coefficient in 2016 was 2.84 cases / 100 thousand inhabitants, in the Midwest region it was 30.02 cases / 100 thousand inhabitants. In the second position was the North region (28.70 / 100 thousand inhabitants), followed by the Northeast region (19.30 / 100 thousand inhabitants).[5]

Even though the North region and Brazil are seeking to meet the World Health Organization's goal of maintaining prevalence below 1 / 10,000 inhabitants, leprosy is still a serious public health problem in the state of Pará. Even with all the work being done to control this condition, problems with proper treatment and follow-up, misdiagnosis, and problems with proper notification and filing of records prevent a fully accurate picture of the disease. to reality.[6]

Taking into consideration the year 2015, the State of Pará had an overall detection rate of 35.34 / 100 thousand inhabitants, considered very high, just behind Mato Grosso, Tocantins and Maranhão, in the national scenario. The state of Pará also had a high detection rate

of new cases in children under 15 years old (13.32 / 100 thousand inhabitants), indicating the existence of active transmission cycles. The spread of leprosy endemic is related to socioeconomic and cultural conditions, due to poor housing conditions, low education and migratory movements that facilitate the transmission of the disease. In endemic countries, there are differences in the prevalence of the disease between regions; In the case of large cities, these differences manifest themselves among intraurban spaces, concentrating in the places of greatest poverty.[7]

Patients with leprosy are classified according to the number of cutaneous lesions, bacillary load and level of peripheral nerve involvement. When there is no neural impairment, they are classified as grade 0 of physical disability; grade 1 disability occurs when there is a decrease or loss of sensation in the eyes, hands and feet; and grade 2 disability when there are more serious eye, hand and foot injuries. These complications may be responsible for permanent sequelae to the individual, as they can reach the nerve receptors responsible for pain, vision and tactile sensitivity, making them more susceptible to accidents, burns, wounds and even amputations, resulting in social and mental damage. that interfere with the quality of life.[8]

Thus, from the hyperendicity situation of this disease, it is relevant to know the profile related to the clinical and epidemiological conditions of leprosy patients with physical disability in the metropolitan region of Belém, in order to contribute to a better understanding of the behavior of the disease and its consequences and thus reorient health services in order to formulate new action strategies.

Thus, the purpose of the work is to describe the epidemiological profile of cases of physical disability due to leprosy in the metropolitan region of Belém and to test odds ratios of intervening factors in the emergence of physical disabilities due to leprosy in the metropolitan of Belém.

Method

This study was conducted according to the precepts of the Declaration of Helsinki and the Nuremberg Code, in accordance with the determinations of resolution 466/12 of the National Health Council and after the advisor's acceptance.

This research is characterized by being longitudinal, retrospective and ecological, based on SUS Electronic Database (DATASUS), which uses as source the files of the Notification Disease Information System (SINAN), which, in the context of leprosy, is fed by the leprosy notification form having as a center of interest leprosy physical disability in the various degrees. As this study was based on a public domain database, no review by the Research Ethics Committee was required.

It is worth mentioning that, during the data collection period, the last update of SINAN was dated 10/03/2018.

Inclusion criteria

All leprosy cases assessed for physical disability reported in the metropolitan region of Belém from January 2014 to December 2017, recorded in the SUS Electronic Database (DATASUS), were included in this study.

Exclusion criteria

Not applicable.

Data analysis methodology

According to the nature of the variables, descriptive statistical analysis of the variables age, gender, clinical form, operating class, municipality and degree of disability was applied, and the percentage values of the analyzed data were informed.

The Bioestat 5.3 Software was also used, which tested odds ratios for factors intervening in the onset of leprosy physical disabilities (risk factors or protection) using the Odds Ratio test. The test with $p<0.05$ was considered statistically relevant when the confidence level α 0.05=1.96. The test was applied to the variables: gender, age and operating class. As this test should be applied to dichotomized variables, the cases reported as ignored or not evaluated in relation to the physical disability assessment were included in the group without physical disability. The age variable was grouped into two age groups: 1) from 1 to 49 years and 2) equal to or greater than 50 years.

For the preparation of tables and graphs and the written work, the software Microsoft Office Excel 2007 and Microssoft Office Word 2007 were used.

Results and Discussion

Physical disability due to leprosy is a public health problem that causes financial, psychological and social damage. This is confirmed by Ribeiro et al,[9] who affirms the close relationship between the emergence of physical limitations triggered by leprosy and the decrease in productive capacity and, consequently, unemployment, impairment of self-esteem, disorders related to body image and social isolation (Figures 1-6).

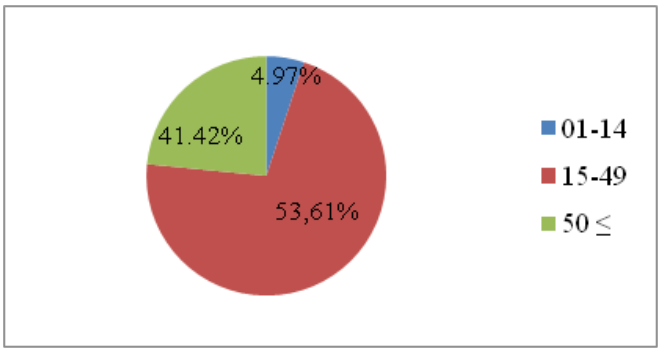

Figure 1 Age range of notified patients with physical disability.
SOURCE: SINAN, 2018

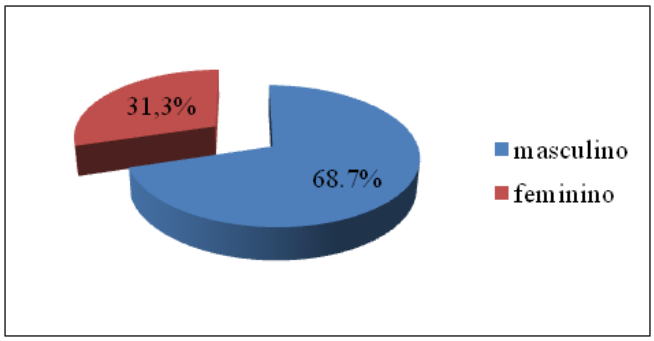

Figure 2 Gender of reported patients with physical disability due to leprosy.
SOURCE: SINAN, 2018

Citation: Dias RDS, Fróes AV, Silva RLD. Physical disabilities due to leprosy: Epidemiological Profile of patients in the Belém Metropolitan Region, 2014-2017. *Hos Pal Med Int Jnl.* 2019;3(5):152–156. DOI: 10.15406/hpmij.2019.03.00170

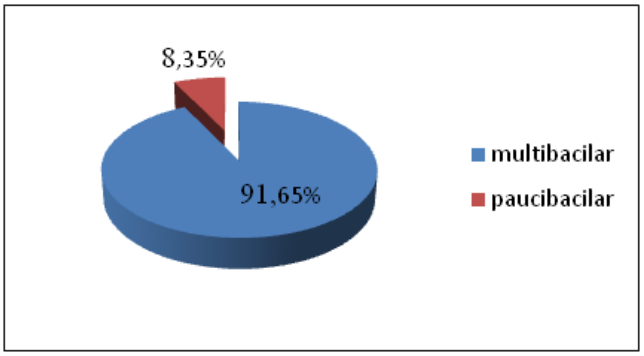

Figure 3 Operating class of notified patients with physical disability
SOURCE: SINAN, 2018

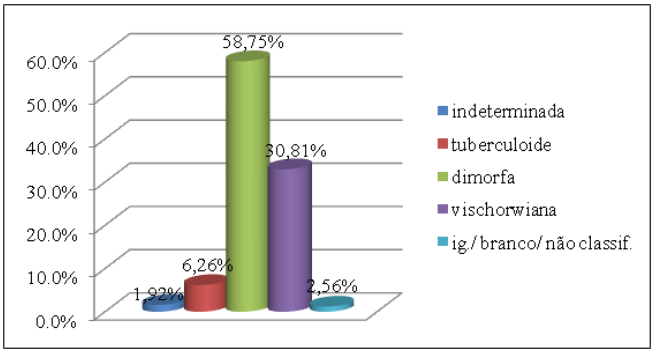

Figure 4 Clinical form of patients with physical disabilities.
SOURCE: SINAN ,2018

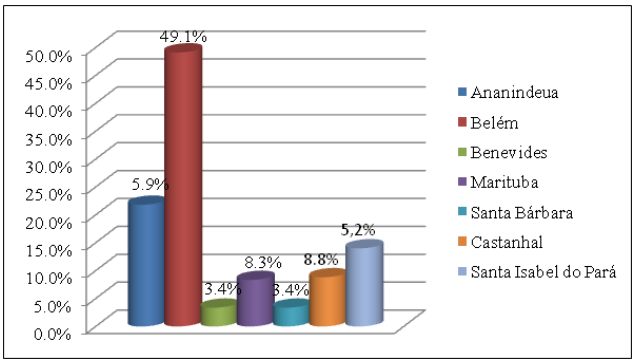

Figure 5 Municipality of notified patients with physical disabilities.
SOURCE: SINAN, 2018

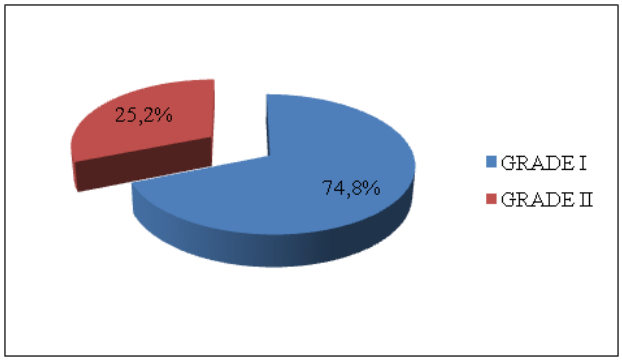

Figure 6 Distribution by grade of reported cases of physical disability.
SOURCE: SINAN, 2018

In general, leprosy physical disability mainly affects men, as verified by the study by Janete et al,[10] at the Specialized Reference Unit in Sanitary Dermatology - URE "Dr. Marcello Cândia ", located in the municipality of Marituba, in the metropolitan region of Belém, which found that, from 2015 to 2014, 58.5% of the patients with some degree of disability due to leprosy were male (Tables 1-6).

Table 1 Relationship between age group, sex and working class and the occurrence of physical disability in leprosy patients in the Belém Metropolitan Region, from 2014 to 2017

Factors	Physical disability		OR	IC95%	ARR	p
	Sim	Não				
AGE						
≤50	365	979	1.7698	1.45 a 2.15	12.60%	<0.0001
>50	258	388				
SEX						
Male	428	752	1.8038	1.47 a 2.20	12.99%	<0.0001
Female	195	618				
Class OP.						
Multibacilar	571	886	5.99	4.42 a 8.13	29.49%	<0.0001
Paucibacilar	52	484				

Source: SINAN, 2018
OR, Odds Ratio; CI,Confidence Index ;ARR, Relative Risk Increase

Table 2 Distribution by age group of reported cases of physical disability due to leprosy in the metropolitan region of Belém, from 2014 to 2017.

Age	White	Grade 0	Grade 1	Grade 2	Not evaluated	Total
14-Jan	0	150	18	13	4	185
15-49	10	829	257	77	71	1244
50 ≤	3	391	191	67	63	715
TOTAL	13	1370	466	157	138	2144

Source: SINAN 2018

Table 3 Distribution by sex of reported cases of physical disability due to leprosy in the metropolitan region of Belém, 2014-2017.

Sex	White	Grade 0	Grade 1	Grade 2	Not evaluated	Total
Male	8	752	304	124	79	1267
Female	5	618	162	33	59	877
Total	13	1370	466	157	138	2144

Source: SINAN, 2018

Table 4 Distribution, by operating class, of reported cases of physical disability due to leprosy in the metropolitan region of Belém, 2014-2017.

Operating class notified	White	Grade 0	Grade 1	Grade 2	Not evaluated	Total
White	0	0	0	0	0	0
PAUCIBACILAR	0	484	44	8	30	566
MULTIBACILAR	13	886	422	149	108	1578
Total	13	1370	466	157	138	2144

Source: SINAN, 2018

Citation: Dias RDS, Fróes AV, Silva RLD. Physical disabilities due to leprosy: Epidemiological Profile of patients in the Belém Metropolitan Region, 2014-2017. *Hos Pal Med Int Jnl.* 2019;3(5):152–156. DOI: 10.15406/hpmij.2019.03.00170

Table 5 Clinical distribution of reported cases of physical disability due to leprosy in the metropolitan region of Belém, from 2014 to 2017.

Clinical form	White	Grade 0	Grade I	Grade 2	Not evaluated	Total
White	0	5	1	1	0	7
Undetermined	0	194	11	1	4	210
Tuberculóide	1	291	31	8	22	353
Dimorfa	8	651	277	89	55	1080
Virchowiana	4	188	133	57	36	418
Not classified	0	41	13	1	21	76
TOTAL	13	1370	466	157	138	2144

Source: SINAN, 2018

Table 6 Distribution by municipality of reported cases of physical disability due to leprosy in the metropolitan region of Belém, 2014-2017.

Municipality	White	Grade 0	Grade I	Grade 2	Not evaluated	Total
Ananindeua	5	318	105	31	16	475
Belém	3	664	230	76	115	1088
Benevides	3	58	17	4	0	82
Castanhal	0	148	42	13	5	208
Marituba	2	136	37	15	0	190
Santa Bárbara do Pará	0	14	7	14	2	27
Santa Isabel do Pará	0	32	28	4	0	74
TOTAL	13	1370	466	157	138	2144

Source: SINAN, 2018

The data indicated by the statistical tests of the present study reveal that approximately 59% of the notified individuals with physical disability in the metropolitan region of Belém are male. Men presented a predominance of diagnoses of leprosy with complications in relation to women, due to a later detection. This fact can be explained, according to the work of Aráujo et al,[11] by the great attention given by women to body aesthetics and the predominance of programs focused on women's health.

Allied to this fact the tendency of men to seek health units for curative and rehabilitation actions only when they already have an installed disability, which entails greater physical, social and economic repercussion, in addition to requiring specialized attention and burdening the coffers public services.[12]

Moreover, it was found that the chance of physical disability due to leprosy in men is about twice as high as in women (OR=1.8), which is in agreement with those found by WHO,[13] which states that although leprosy affects both men and women, in most parts of the world, males are the most affected, with a ratio of 2: 1.

The clinical form correlates closely with the operational form, so that ideally the diagnosis should be made in the Paucibacillary forms, that is, in the Undetermined and Tuberculoid forms. However, in the metropolitan region of Belém this does not occur, since the present study found that the diagnosis is made predominantly in the Multibacillary phase, that is, in Dimorfa (58.75%) and Virchowiana (30.5%) forms. Thus, detection is occurring late, which leads to a greater possibility of the installation of physical disabilities, especially in the neediest and underserved areas of large cities.[14]

It is worth noting that among the multibacillary cases in the present study, a higher incidence was found in the dimorphic clinical form, a fact that was also found in the study by MITJA et al.[15] The high percentage of this clinical form serves as a warning, since it is one of the transmissible forms of the disease and has a disabling potential.

The long incubation period of the disease, allied to the operational deficiencies of the service, insidious clinical symptoms and lack of trained health professionals to make early diagnosis are factors that contribute to the hindrance of a more effective diagnosis.[16]

In this study it was found that regarding age, there was a predominance of physical disability due to leprosy in the age group between 15 and 49 years, corresponding to 53% of cases of disability, a fact that corroborates data from other studies, such as BUNA et al,[17] which identified a higher prevalence of leprosy in the age group between 32-38 years. This high frequency in adults is due to the long incubation period of the bacillus, which ranges from 2-7 years. These numbers also agree with the findings of VELOSO et al,[18] who found an incidence of physical disability of 45.27% in the age group between 20 and 49 years, which shows that the disease mainly affects citizens in their lifetime higher productivity. Therefore, it is evident that some aspects of leprosy development in some studies are similar and should be guiding factors of public policies.

Among the municipalities in the region studied, the one with the most cases of physical disability was Belém (49.1%). Thus, it can be inferred that there is a possible failure in the detection and early diagnosis of this condition in the municipality. In addition, the fact that Belém is a regional reference in diagnosis and treatment of this morbidity and has a higher population load are also factors that seem to influence this high prevalence.

Nevertheless, Palácios et al.,[6] related the large number of leprosy cases in the metropolitan region of Belém with the high and constant population influx caused by the region's economic development, in addition to the demand already directed to the search for specialized medical care and consequent coverage cases from other areas of the state.

The Ministry of Health determines as one of the indicators for the analysis of detection effectiveness and early diagnosis the proportion of leprosy cases with physical disability grade II at the time of diagnosis in relation to all leprosy cases reported with disability grade evaluated, being considered of high magnitude the value≥10%.[19] In this study, a proportion of 25.2% of cases with grade II disability was found, which suggests a high level of late diagnosis, which may be the result of an inefficiency in detecting this condition. Alves et al,[12] State that the degree of disability is related to the time of illness, thus, this indicator allows an indirect assessment of the effectiveness of early detection activities and appropriate treatment of cases.

Conclusion

Based on the results obtained, it was concluded that the patients who presented physical disability in the region and in the studied period are mostly men, aged between 15 and 49years old, residing mainly in the metropolitan region of Belém. dimorfa and virchorwiana were the most frequently found and classified as multibacillary. In addition, the

male gender, age over 50 years and the multibacillary clinical form were closely related to the increased chances for the development of physical disabilities, constituting risk factors for this condition.

The large number of cases of physical disability grade II found suggests passive health services and possible delay in seeking effective medical care, resulting in late diagnosis. This situation points to the need to intensify control measures, decentralizing them and reinforcing the role of Primary Care, promoting popular awareness and training of health professionals.

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Conflicts of interest

The authors declare that there is no conflict of interest.

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