ORIGINAL ARTICLE

Assessment of the Degree of Neurofunctional Disability in Leprosy Patients in a Municipality in Bahia, Brazil

Avaliação do grau de incapacidade neurofuncional em pacientes com hanseníase em um município da Bahia, Brasil

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Abstract

Introduction: *Mycobacterium leprae* is an intracellular bacillus with a specific affinity for Schwann cells. The inflammatory process caused by the bacillus leads to demyelination, axonal degeneration, and loss of neural function, resulting in leprosy neuropathy, which manifests as deformities and physical disabilities. This study aimed to evaluate the degree of physical disability and neurological impairment in leprosy cases in an endemic region of Bahia, Brazil.

Methods: This retrospective descriptive study utilized secondary data from patients with leprosy treated at a specialized reference center in Paulo Afonso, Bahia, between 2009 and 2020. Data were collected from patient notification records and medical files, tabulated, and analyzed.

Results: A total of 194 leprosy cases were analyzed. Among these, 39.7% exhibited some degree of physical disability, and 49.5% were classified as multibacillary. A statistical association was found between physical disability and factors such as low education (illiteracy or incomplete elementary education), male gender, age of 60 years or older, multibacillary cases, dimorphic or virchowian clinical forms, more than five skin lesions, at least one affected nerve, and positive bacilloscopy. The ulnar nerve was the most commonly affected nerve trunk, although physical disabilities were predominantly located in the lower limbs.

Conclusion: The high prevalence of physical disabilities and neurological impairment among leprosy patients in this endemic region underscores the need for improved health education, early diagnosis, and strategies to prevent deformities and disabilities. Enhanced understanding of risk factors and preventive measures could help mitigate the impact of leprosy neuropathy on patients' lives.

Keywords: Leprosy, Neuropathy, Degree of physical disability, Deformities.

Resumo

Introdução: *Mycobacterium leprae* é um bacilo intracelular com tropismo pelas células de *Schwann*. O processo inflamatório, decorrente da invasão do bacilo, promove desmielinização, degeneração axonal e perda da função neural, condição conhecida como neuropatia hansênica e que repercute no paciente por meio de deformidades e incapacidades físicas. Assim, o objetivo desse estudo foi avaliar o grau de incapacidade física e o comprometimento neurológico dos pacientes acometidos pela hanseníase em uma região endêmica da Bahia, Brasil. **Métodos:** Trata-se de um estudo descritivo retrospectivo baseado em dados secundários obtidos de pacientes com hanseníase tratados em um centro de referência em Paulo Afonso, Bahia, entre 2009 e

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2020. Os dados foram obtidos mediante consulta às fichas de notificação e prontuários médicos, tabulados e analisados. **Resultados:** Foram analisados 194 casos de hanseníase, sendo que 39,7% apresentaram algum grau de incapacidade física e 49,5% foram classificados como multibacilares. Houve uma associação estatística entre o desenvolvimento de incapacidade física e os pacientes acometidos pela hanseníase com baixa escolaridade (analfabetos ou com ensino fundamental incompleto), sexo masculino, idade igual ou superior aos 60 anos, casos multibacilares, com forma clínica dimorfa ou virchowiana, com mais de cinco lesões de pele, pelo menos um nervo afetado e baciloscopia positiva. Além disso, o nervo ulnar foi o principal tronco nervoso afetado, embora o principal local de incapacidades físicas tenha ocorrido nos membros inferiores. **Conclusão:** A alta prevalência de incapacidades físicas e o comprometimento neurológico entre pacientes com hanseníase nesta região endêmica destaca a necessidade de melhorar a educação em saúde, o diagnóstico precoce e estratégias para prevenir deformidades e incapacidades. Uma melhor compreensão dos fatores de risco e das medidas preventivas pode ajudar a reduzir o impacto da neuropatia hansênica na vida dos pacientes.

Palavras-chave: Hanseníase, Neuropatia, Grau de incapacidade física, Deformidades.

INTRODUCTION

Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* (*M. leprae*) and *Mycobacterium lepromatosis*. These are obligate intracellular bacilli with a predilection for skin cells and peripheral nerves, particularly Schwann cells[1]. In 2021, a total of 140,594 new cases were reported worldwide, with 19,826 (14.1%) in the Americas, of which 18,318 (92.4%) were in Brazil. Among the 22 countries with a high disease burden, Brazil ranks second in total number of cases worldwide, behind only India. However, it has the highest number of new cases per 100,000 inhabitants[2]. This highlights the urgent need for effective public health interventions and increase investment in research and technology.

Schwann cell infection promotes demyelination, inflammation, and degeneration of peripheral nerves through mechanisms that are not yet fully understood. This process compromise sensory, motor, and autonomic nerve fibers, leading to a variety of symptoms[3]. As the bacillus prefers colder regions of the host, it tends to affect the ulnar, median, radial cutaneous, common fibular, posterior tibial, and auricular magnus nerves, as well as the cranial nerves, facial and trigeminal nerves[4].

The main complaints reported by patients with hansen's neuropathy include cramps, tingling, numbness, weakness in the extremities, ulcers, and deformities, which may appear at diagnosis, during, or even after treatment[4]. Furthermore, depending on the affected nerve, physical deformities and disabilities of the ocular, facial, upper and lower limbs can be observed, often irreversibly[5].

The high potential for disability in leprosy is directly related to the immunogenicity of the bacillus. This immunogenicity triggers various immune responses upon interaction with the host, resulting in distinct clinical and histopathological manifestations of the disease. In indeterminate leprosy, the initial clinical form, changes in thermal, tactile, and painful sensitivity are observed, without necessarily involving nerve trunks[1,6].

The indeterminate leprosy can either disappear spontaneously or progress into one of the three clinical forms, namely

tuberculoid (TT), borderline, or lepromatous (LL), depending on the host's immune response. The TT form, characterized by a Th1-type cellular response, indicates resistance to *M. leprae*. Patients with this clinical form exhibit asymmetric and acute neurological changes, along with hypoesthesia and anhidrosis, predominantly in the central region of the lesion[1,3,6]. The LL form is characterized by a high susceptibility to the bacillus, resulting from a deficient cellular immune response and excessive production of antibodies. This hot immune response leads to the multiplication and dissemination of the bacilli to various tissues, ultimately causing a more extensive and diffuse neurological impairment that typically manifests as polyneuropathy[1,3,6].

In a large number of cases, neural damage can result from an acute episode of exacerbation of the inflammatory response, which can occur at any stage of the disease progression, even after completion of treatment. This damage can present as neuritis leading to pain and disability. Moreover, neural involvement and physical disabilities can occur in any of the clinical forms, even in the absence of skin lesions, a condition known as pure neural or primarily neural leprosy[7,8].

A study conducted by Oliveira et al.[9] showed that 48.5% of patients sought medical attention more than six months after the first signs of the disease. Of these, 58.1% developed grade-2 disabilities (G2D), resulting in decreased work capacity, social participation restrictions, stigma, and discrimination. Therefore, the longer the disease progresses without proper treatment, the more severe the neurological symptoms and the number of affected nerves, highlighting the importance of early diagnosis for a better quality of life for the patient. The World Health Organization (WHO) has established four strategic pillars for the elimination and control leprosy, with the third pillar emphasizing the need for early and accurate diagnosis and effective treatment to prevent the onset and progression of permanent disabilities. The WHO's goal is to reduce the number of newly diagnosed cases of leprosy with G2D to less than one per million inhabitants[10].

Due to the significant epidemiological impact of leprosy and the high risk of developing deformities and physical disabilities that may perpetuate social exclusion, stigma, and prejudice related to the disease, there is a need for studies that can expand knowledge, identify at-risk groups and vulnerable situations. Hence, the objective of this study is to assess the degree of physical disability and neurological involvement in patients affected by leprosy in an endemic region of Bahia, Brazil.

METHODS

Study design and setting

The present study is a retrospective descriptive study based on secondary data obtained by reviewing the medical records and notification forms of leprosy patients attended in a reference center specialized in the municipality of Paulo Afonso, Bahia, between 2009 and 2020. Paulo Afonso,a municipality situated in the Northern region of the state of Bahia, is bathed by the São Francisco River and covers an area of 1,544.38 km² with an estimated population of 119,213 in 2021[11]. Previous studies have identified it as an endemic area for leprosy, making it a priority region for investigation of the disease[12,13].

Study population

The study included leprosy cases diagnosed or referred to the Dermatology and Sanitary Pneumology Service (SEDERPAS), Paulo Afonso, Bahia, between 2009 and 2020. Diagnosis was based on the case definition criteria adopted by the Brazilian Ministry of Health (MS) that includes general physical examination, dermatoneurological examination, epidemiological history, and intradermal smear bacilloscopy (when available). After evaluation, leprosy cases were classified as paucibacillary (PB) or multibacillary (MB) for treatment purposes and were followed up for at least 6 and 12 months, respectively[14].

The study was approved by the Research Ethics Committee of the Federal University of Vale do São Francisco (UNIVASF), as provided for in Resolution 466/12, opinion no. 3,387,607.

Data collection

The data were collected by consulting notification forms and medical records containing the "Form for simplified neurological evaluation and classification of degree of physical disability". The variables of interest were age, sex, race/ethnicity, education, residence area, type of entry, mode of detection, number of skin lesions, clinical form, operational classification, degree of physical disability before and after treatment, affected nerves, reactional state, time of symptom onset and bacilloscopy results. Cases of patients transferred, under 15 years of age, and those cases where the notification forms and medical records had illegible data and/or not available at reference center were excluded from the study.

Statistical analysis

The variables of interest were entered into an electronic spreadsheet using Excel software. Then, the data were analyzed using SPSS Statistic software, version 22.0 (IBM Corporation, Amonk, NY, USA) and GraphPad Prism v.8.0 (GraphPad Software, San Diego, CA, USA). Categorical variables were described as absolute (n) and relative frequency (%). The chi-square test and Fisher's exact test were used to evaluate the association between categorical variables. Differences were considered statistically significant when the p-value less than 0.05.

RESULTS

During the period of study, SEDERPAS recorded a total of 553 patients diagnosed with leprosy. However, 359 (64.9%) of them were excluded from the study due to unavailability of medical records at the reference center (n=305), age below 15 years (n=24), transfer cases (n=6), or incomplete and/or illegible data (n=24). Thus, the final population consisted of 194 (35.1%) cases of leprosy. Of these, 109 (56.2%) were female, with a mean age of 46.2 ± 17.3 years, and 138 (71.1%) self-declared as brown-skinned. Regarding education, 96 (51.3%) cases did not complete elementary school, and 36 (19.3%) declared themselves illiterate. In terms of housing area, approximately 89.7% of the described cases resided in urban areas, demonstrating an urbanization process of the disease. The main type of entry was as a new case, with 181 (93.3%) cases, most of which were detected through referrals (62.6%).

The distribution of leprosy types according to operational classification was similar, with 98 cases (50.5%) classified as

PB and 96 cases (49.5%) as MB. The clinical forms TT (n=83, 43.2%) and LL (n=84, 43.8%) had the highest prevalence among PB and MB cases, respectively. In 114 cases (58.8%), the number of lesions ranged from one to five. Moreover, the great majority of cases (n=186, 96.4%) had less than three affected nerve trunks.

Out of 140 cases who underwent bacilloscopy, the most cases (85.7%) had a negative result (n=120). The predominant time interval between the onset of symptoms and diagnosis was less than six months, accounting for 61 cases (48.8%). Out of the total cases, 31 (16.8%) presented leprosy reactions, with an equal distribution between type 1 and type 2 reactions. Additionally, only one case presented both types of reaction. The sociodemographic and clinical characteristics are presented in Table 1.

Table 1
Sociodemographic and clinical characteristics of leprosy cases according to the degree of physical disability. Paulo Afonso, BA, Brazil, 2009-2021

Variables	Degree of physical disability, n (%)			Total, N=194	p-value
	G0D, N=117	G1D, N=58	G2D, N=19		
Gender					
Female	73 (62.4)	31 (53.4)	5 (26.3)	109 (56.2)	**0.039**
Male	44 (37.6)	27 (46.6)	14 (73.7)	85 (43.8)	
Age					
15-29 years	28 (23.9)	9 (15.5)	2 (10.5)	39 (20.1)	**<0.0001**
30-59 years	73 (62.4)	24 (41.4)	7 (36.8)	104 (53.6)	
≥ 60 years	16 (13.7)	25 (43.1)	10 (52.6)	51 (26.3)	
Race (self-declared)					
White	25 (21.4)	21 (36.2)	3 (15.8)	49 (25.3)	0.293
Brown	88 (75.2)	35 (60.3)	15 (78.9)	138 (71.1)	
Black	3 (2.6)	1 (1.7)	1 (5.3)	5 (2.6)	
Yellow	1 (0.9)	1 (1.7)	-	2 (1)	
Education (N=187)					
Illiterate	13 (11.1)	17 (29.8)	6 (31.6)	36 (19.3)	**0.019**
Incomplete primary education	59 (53.2)	26 (45.6)	11 (57.9)	96 (51.3)	
Complete primary and incomplete secondary education	14 (12.6)	7 (12.3)	1 (5.3)	22 (11.8)	
Complete secondary and incomplete higher education	21 (18.9)	7 (12,3)	1 (5.3)	29 (15.5)	
Complete higher education	4 (3.6)	-	-	4 (2.1)	
Residential area (N=117)					
Rural	4 (6.3)	6 (15)	2 (15.4)	12 (10.3)	0.178
Urban	60 (93.8)	34 (85)	11 (84.6)	105 (89.7)	
Type of entry					

New case	110 (94)	52 (89.7)	19 (100)	181 (93.3)	0.585
Relapse	3 (2.6)	4 (6.9)	-	7 (3.6)	
Other readmissions	4 (3.4)	2 (3.4)	-	6 (3.1)	
Detection mode (N=190)					
Referral	71 (62.3)	32 (56.1)	16 (84.2)	119 (62.6)	0.770
Spontaneous demand	36 (31,6)	20 (35.1)	1 (5.3)	57 (30)	
Community screening	1 (0.9)	1 (1.8)	-	2 (1.1)	
Contact screening	6 (5.3)	3 (5.3)	1 (5.3)	10 (5.3)	
Other modes	-	1 (1.8)	1 (5.3)	2 (1.1)	
Operational Classification					
PB	75 (64.1)	23 (39.7)	-	98 (50.5)	**<0.0001**
MB	42 (35.9)	35 (60.3)	19 (100)	96 (49.5)	
Clinical form (N=192)					
Indeterminate	12 (10.3)	1 (1.7)	-	13 (6.8)	**<0.0001**
Tuberculoid	62 (53.4)	21 (36.2)	-	83 (43.2)	
Borderline	39 (33.6)	30 (51.7)	15 (83.3)	84 (43.8)	
Lepromatous	3 (2.6)	6 (10.3)	3 (16.7)	12 (6.3)	
Number of lesions					
1-5 lesions	81 (69.2)	30 (51.7)	3 (15.8)	114 (58.8)	**0.009**
≥ 6 lesions	36 (30.8)	28 (48.3)	14 (73.7)	78 (40.2)	
Pure neural	-	-	2 (10.5)	2 (1)	
Number of affected nerves (N=193)					
< 3	115 (99.1)	54 (93.1)	17 (89.5)	186 (96.4)	**0.017**
≥ 3	1 (0.9)	4 (6.9)	2 (10.5)	7 (3.6)	
Bacilloscopy (N=140)					
Negative	83 (93.3)	28 (80)	9 (56.3)	120 (85.7)	**0.002**
Positive	6 (6.7)	7 (20)	7 (43.8)	20 (14.3)	
Time of symptoms (n=125)					
< 6 months	39 (48.1)	19 (55.9)	3 (30)	61 (48.8)	0.290
6-12 months	14 (17.3)	8 (23.5)	3 (30)	25 (20)	
13-24 months	15 (18.5)	4 (11.8)	3 (30)	22 (17.6)	
≥ 25 months	13 (16)	3 (8.8)	1 (10)	17 (13.6)	
Reactions episodes (N=185)					
No	95 (85.6)	46 (82.1)	13 (72.2)	154 (83.2)	0.320
Yes	16 (14.4)	10 (17.9)	5 (27.8)	31 (16.8)	
Types of reaction (N=31)					
RR (Type 1)	10 (62.5)	5 (50)	-	15 (48.4)	0.143
ENL (Type 2)	5 (31.2)	5 (50)	5 (100)	15 (48.4)	
RR + ENL	1 (6.2)	-	-	1 (3.2)	

PB = paucibacillary; MB = multibacillary; RR = reversal reaction; ENL = erythema nodosum leprosum.
Source: Research data.

Table 1 shows significant differences in gender, age, education, operational classification, clinical form, number of skin lesions, number of affected nerves, and bacilloscopy results between cases with no disability (G0D) and those with any degree of disability (G1D+G2D). Cases of G2D was more prevalent among male patients aged 60 years or older, with incomplete elementary education or illiteracy, MB operational classification (which accounted for 100% of G2D cases), dimorphic clinical form, and over five skin lesions. Moreover, a high percentage of cases with more than three affected nerve trunks (85.7%) and positive bacilloscopy results (70%) had some degree of disability.

Deformities and disabilities in the lower and upper limbs accounted for 28.3% (n=53) and 17.6% (n=33) of cases, respectively, making them the main regions affected. However, the upper limbs showed a higher degree of disability, with 11 out of 15 G2Dcases exhibiting G2D in these limbs. The association between the degree of physical disabilityand the affected location is shown in Table 2.

Table 2
Degree of physical disability according to the location (N=187*)

	Degree of physical disability, n (%)		
	G0D, N=120	**G1D, N= 52**	**G2D, N= 15**
Eyes	184 (98.4)	2 (1.0)	1 (0.5)
Hands	154 (82.4)	22 (11.7)	11 (5.9)
Feet	134 (71.6)	46 (24.6)	7 (3.7)

G0D = without any disability; G1D = grade 1 disability; G2D = grade 2 disability.
*Seven cases unavailable.
Source: Research data.

Out of the 194 cases evaluated, 185 (95.4%) had their physical disability degree assessed after and before treatment, as shown in Figure 1. Of these, 7,6% (14/185) cases experienced worsening of the grade of physical disability, with nine G0D cases (8%) progressing to G1D and five G1D cases (8.9%) progressing to G2D. Conversely, 29 cases showed regression of the grade of physical disability, with 24 G1D cases (42.9%) improving to G0D, three G2D cases (18.8%) improving to G1D, and two G2D cases (12.5%) improving to G0D. Overall, 57.1% (32/56) of leprosy cases diagnosed with G1D still had some degree of physical disability after treatment, while 87.5% (14/16) of cases with G2D still had physical disability after discharge.

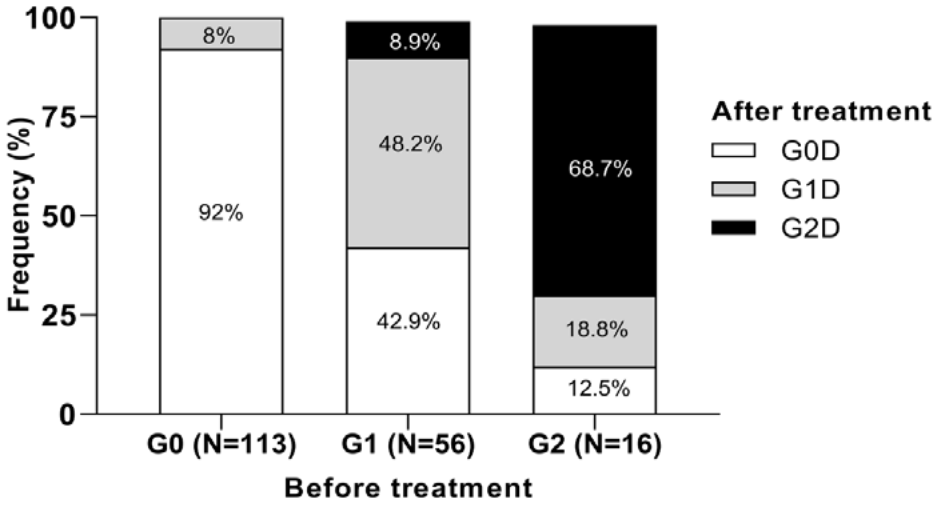

Figure 1: Frequency of individuals according to the degree of physical disability before and after treatment. Paulo Afonso, BA, Brazil, 2009-2021. G0D = without any disability; G1D = grade 1 disability; G2D = grade 2 disability. Chi-square test, p<0.0001.
Source: Research data.

Figure 2 highlights an important association between the degree of physical disability and the presence of affected nerve trunks (Chi-square test for trend, p<0.0001). Neural damage was observed in 11, 17, and 12 cases diagnosed with G0D, G1D, and G2D, respectively.

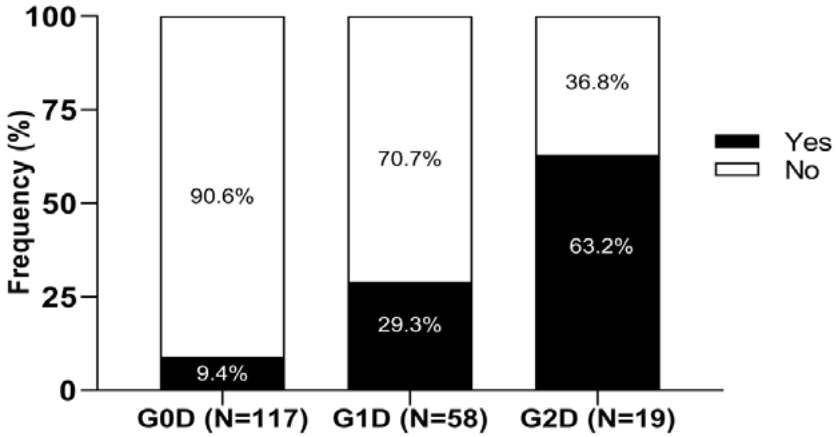

Figure 2: The frequency distribution of leprosy casescategorized as either with neural damage or without neural damage, according to the degree of physical disability. G0D = without any disability; G1D = grade 1 disability; G2D = grade 2 disability. Chi-square test for trend, p<0.0001.
Source: Research data.

In terms of affected nerve trunks, as reported in Table 3, the ulnar nerve was the most affected, with 24 patients, accounting for around 60% of the total with at least one affected nerve trunk, and showing some degree of impairment, either due to thickening or dysfunction. The second most affected nerve trunk was the common fibular nerve, with 13 patients (32.5%). The consequence was the development of deformities known as “claw hand” (Figure 3A) and “foot drop” (Figure 3B), caused by the ulnar and common fibular nerves, respectively.

Table 3
Frequency of the main affected nerves

Nerve	Degree of physical disability, n (%)			Total, N=40 n (%)
	G0D, N=11	G1D, N=17	G2D, N=12	
Ulnar	7 (63.6)	10 (58.8)	7 (58.3)	24 (60)
Median	2 (18.2)	2 (11.8)	3 (25)	7 (17.5)
Radial	1 (9.1)	1 (5.9)	1 (8.3)	3 (7.5)
Fibular	1 (9.1)	8 (47.1)	4 (33.3)	13 (32.5)
Tibial	-	3 (17.6)	2 (16.7)	5 (12.5)

G0D = without any disability; G1D = grade 1 disability; G2D = grade 2 disability.

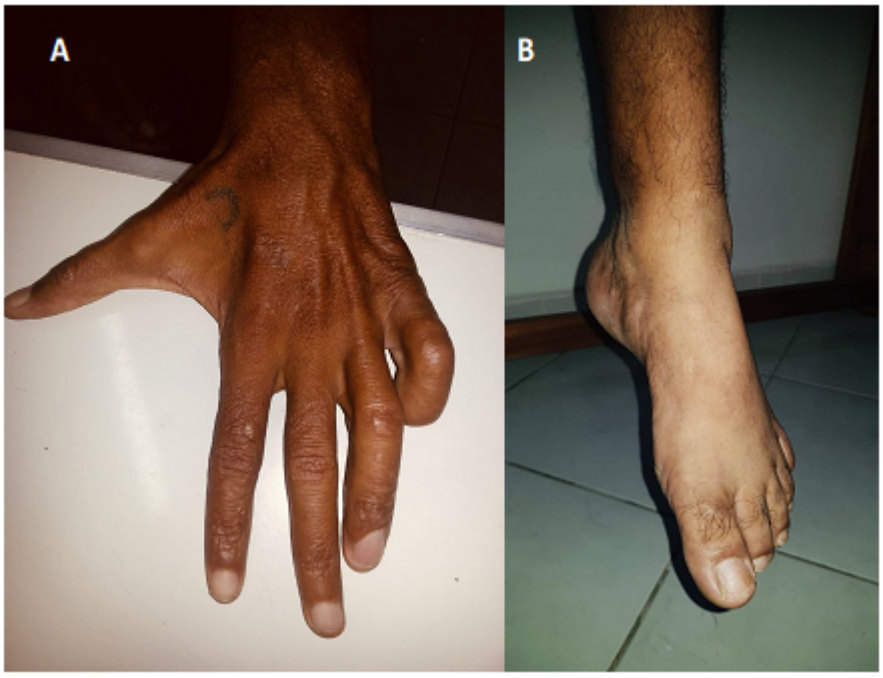

Figure 3: Presence of installed capacities, claw hand and foot drop among leprosy patients in a municipality of Bahia, Brazil.

DISCUSSION

In recent years, the MS and the Global Strategy 2021-2030 have focused on preventing deformities and physical disabilities. This is because these conditions not only limit an individual's ability to work, but also have social and psychological impacts[10,14]. To effectively prevent these outcomes, it is crucial to identify the groups at higher risk and vulnerable situations. This knowledge can help decision-makers to develop and implement prevention strategies that are more targeted and effective. Thus, improving our understanding of these risk factors is essential for achieving the goal of interrupting transmission of leprosy.

This study aimed to examine the profile of 194 individuals affected by leprosy and their disability status. In contrast to previous studies such as Bandeira, Pires e Quaresma[15] and Sanches et al.[16], which reported a higher prevalence of leprosy diagnosis in males, our study found that the proportion of females diagnosed with leprosy was much higher than that of males (56.2% *vs.* 43.8%). Furthermore, 66.9% of females were diagnosed with G0D, compared to 51.7% of males diagnosed with G0D. On the other hand, male individuals accounted for approximately 73.7% of all diagnoses with G2D. This finding suggests the possibility of underdiagnosis of leprosy in the male population of Paulo Afonso, which is concerning as men often delay seeking healthcare services, leading to a higher degree of disability at the time of diagnosis[17].

Based on other studies, it has been confirmed that the average age of patients affected by leprosy is 46.2 ± 17.3 years old, which is attributed to the longer incubation period of the bacillus[15,16,18]. Moreover, there is significant concern since this age group corresponds to the economically active population, and when diagnosed with a stigmatizing disease and/or suffering from functional limitations, they become marginalized by the labor market[19].

In terms of self-declared race, brown-skinned individuals are the most frequent, mainly because self-declared brown people are the predominant majority in the country, especially in the Northeast region. However, social vulnerability conditions predispose the black and/or brown-skinned population to greater exposure to the bacillus and limited access to healthcare. Education is another sociodemographic characteristic directly impacted by social vulnerability. This study shows that illiterate individuals and those with incomplete primary education are more likely to be affected by leprosy and some degree of physical disability. These findings indicate that lower levels of education, combined with social vulnerability contexts, contribute to neglecting the identification of signs and symptoms, as well as preventing and providing necessary care during treatment[17].

As expected, there is a strong correlation between patients with MB operational classification, borderline and lepromatous clinical forms, more than five skin lesions, and positive bacilloscopy with some degree of physical disability, which is linked to a more severe form of the disease. These results reveal that these characteristics are directly linked to an increased dissemination of the bacillus throughout the body, resulting from an inefficient immune response that is unable to contain the propagation of the bacillus and the neurological damage in the host[1,3,6,7,20].

Consistent with findings from other studies, neurological involvement precedes or accompanies the onset of deformities and disabilities. Of patients diagnosed as G2D, 63.2% present at least one affected nerve, while only 9.4% of those with G0D exhibit some degree of neural damage. The ulnar nerve was identified as the main nerve trunk affected, which is in line with previous research by Barroso-Freitas et al.[7] and Oliveira et al.[9]. However, physical disabilities were mainly observed in the lower limbs, possibly due to the common fibular nerve being the second most affected trunk, along with the high incidence of plantar ulcers in patients with leprosy. These factors could contribute to changes in sensitivity and the development of deformities, particularly in the feet[7,9,21].

Regardless of the presence of physical disability, the vast majority of cases (51.2%) experience a delay of over six months between symptom onset and diagnosis, a result that exceeds that found by Oliveira et al.[9] (48.5%). Conversely, 70% of patients diagnosed with G2D took more than six months from symptom onset to evaluation[9]. While this study did not find an association between the delay in diagnosis and the severity of the disease (G1D or G2D), it is well-established that the longer the delay, the greater the likelihood of the patient experiencing some degree of disability. However, when considering the population of Paulo Afonso and the 19 cases detected with G2D, an average rate of 13.28 new G2D cases per 1 million inhabitants per year is obtained, a value that is over 1,200% higher than the WHO's target for leprosy eradication.

Therefore, these results may be related to delayed diagnosis, lack of confidence among primary healthcare professionals who refer patients for diagnosis and monitoring in secondary care units, the lack of a reliable test, failures in the active case-finding program and contact examination, as well as the population's low knowledge and the stigma associated with the disease[10,17]. According with these possible causes identified by the WHO, 62.6% of new leprosy cases were detected through referrals, revealing a centralized approach to diagnosis and management of the disease by the medium-complexity referral center. Taken together, these findings suggest a need for greater attention to the role of primary healthcare, promoting detection of new cases through spontaneous demand, contact examination, and community screening.

One of the limitations of the study refers to the fact that 65% of cases were excluded from the analysis due to unavailability of medical records in the service. However, the findings of this study can help guide future investigations and the development of more effective interventions. Thus, to gain a more comprehensive understanding of the factors that contribute to the development and progression of neurological impairment, it is crucial to conduct prospective studies that identify risk factors and factors that modify the course of the disease at diagnosis, during and after treatment of leprosy patients.

CONCLUSION

In conclusion, this study sheds light on the important sociodemographic and clinical factors associated with physical disabilities and neurological impairments among leprosy patients in Paulo Afonso, Bahia. The findings highlight the need for targeted interventions to address the

challenges faced by male individuals aged 60 years or older, with low levels of education, and presenting with MB operational classification, borderline and lepromatous clinical forms, more than five lesions, and positive bacilloscopy. The delayed diagnosis of cases and high prevalence of physical disabilities and neurological impairments underscore the importance of strengthening primary healthcare in the municipality. Improving healthcare assistance by healthcare teams and raising awareness about leprosy within the community are crucial steps towards addressing this public health issue.

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HBC and IT contributed to the design, execution, writing, revision, and approval of the final version of the article submitted for publication. IOB and VSS contributed to the design, execution and writing. MAVP and MLCC collaborated in the critical review and approval of the final version of the article submitted for publication.

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