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Short Communication

Sociodemographic and epidemiological profile of leprosy patients in an endemic region in Brazil

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Abstract

Introduction: The incidence of Hansen's disease is high in overlooked populations. **Methods:** Data of Hansen's disease cases reported in the information system of the Department of Informatics, Brazilian Unified Health System, from 2013 to 2014 were analyzed. **Results:** Among 434 studied cases of Hansen's disease, the female sex (52.5%), adult age (73.7%), low educational level (61.8%), and multibacillary form were associated with higher prevalence rates. **Conclusions:** Hansen's disease is more frequent among female adults with a low educational level, and the prevalence of multibacillary leprosy reflects disease detection at late stages.

Keywords: Health profile. Socioeconomic factors. Hansen's disease.

Hansen's disease is a public health crisis in Brazil, which ranks first among nations in terms of incidence and second to only India in terms of prevalence. In the last 5 years, cases of Hansen's disease have been concentrated in the Northern, Northeastern and Mid-Western regions of Brazil[1]. For example, this disease is highly endemic and continuing to expand in the state of Mato Grosso, where the capital, Cuiabá, was selected in 2012 by the Ministry of Health from among 45 municipalities to obtain resources for contingent actions to fight Hansen's disease[2].

Early diagnosis and immediate treatment help to reduce the incidence of Hansen's disease, as well as the related risks of disabilities, sequelae, and deformities. Patients affected by leprosy can only be sure of a normal life, in which they can develop their talents and life projects, within the context of a health care setting that does not abandon the patient after the disease has been cured. Therefore, it is fundamentally important to evaluate all patients during treatment, at the time of discharge, and in subsequent years[3].

Studies regarding the disabilities experienced by Brazilian patients with leprosy remain scarce. Given this lack of data, it is relevant to study the prevalence and degrees of these disabilities, determine leprosy classifications, and verify distributions with regard to sex and age group, as well as epidemiological characteristics. These studies will enable health professionals and health sector managers to understand the relationship between the etiological bacillus and infected individuals, and may subsequently lead to strategic and rational increases in financing that consider the peculiarities of each region.

This report discusses a retrospective epidemiological study with a descriptive approach that used Hansen's disease notification data available in the computerized systems of the Municipal Secretary of Health and the Department of Informatics of the Unified Health System (DATASUS), Ministry of Health, Brazil. The study database encompassed data collected from 2013 to 2014. The computerized database comprises all Hansen's disease cases reported and confirmed using the Individual Form of Notification/Investigation of Hansen's disease filed at the National Information System of Notifiable Diseases (SINAN) of individuals living in Cuiabá, Mato Grosso, Brazil. All cases that received disease confirmation were included in the study. Cases that were reported but lacked a confirmed diagnosis or exhibited inconsistencies were excluded.

The analyzed variables included race, skin color, sex, age, educational level, age range, year of diagnosis, number of lesions and nerves affected, clinical form, operating class, degree of physical disability, bacilloscopy, and therapy scheme. An exploratory analysis of the data was conducted by assessing absolute simple frequencies and percentages for categorical variables, and the results were organized in tables and graphs. This information was stored in a database using the Program Statistical Package for Social Science (SPSS), version 21.0 (SPSS, Inc., Chicago, IL, USA).

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During the study period, 434 cases of Hansen's disease were registered in the municipality, including 352 in the year 2014; the annual average prevalence was 8.50/10,000 inhabitants, and the total detection rate was 61.7/100,000 inhabitants. The patients had an average age of 47.96 years [standard deviation (SD) = 17.9 years]. The case distribution revealed a greater prevalence of females (52.5%), older adults (≥60 years; 26.3%), mixed race (48.4%), and low educational level (61.8%) **(Table 1)**.

Regarding the operating disease class, most cases were multibacillary (67.3%). The predominant clinical form was dimorphic (45.2%), and 37.8% of the cases presented with 2-5 lesions. In addition, 141 (32.5%) patients exhibited some degree of physical disability, and 37.5% had a negative bacilloscopy result. The most frequently adopted therapeutic regimen was a 12-dose course of multidrugtherapy/multibacillary (MDT/MB) (65%), and the great majority of cases did not exhibit a lepra reaction (92.9%) **(Table 2)**.

Hansen's disease is considered a severe health issue, mainly because of the high risk of associated disability[4]. For this reason, in endemic municipalities, individuals with skin lesions in visible areas might be reported as cases of suspected Hansen's disease during routine clinical examinations[5].

Leprosy mainly affects individuals during the economically active periods of their lives; generally, this period ranges from 20 to 60 years of age, although studies differ with respect to the most affected age groups[6]. In the present study, individuals in this most economically productive age range accounted for 54% of the total patient population. However, we must also highlight the population of young people (<15 years) affected by leprosy, which reflect active transmission circuits[7]. The Hansen's disease detection rate among individuals younger than 15 years of age in the municipality of Cuiabá was 13.98/100,000 inhabitants in 2014.

In our study, we also observed a predominance among female subjects. This finding corroborated those reported previously by Melão et al. in 2011[8], but contradicted other findings[1] [6] [7] [9]. According to a World Health Organization report[10], although this disease affects both sexes, men are more frequently affected than women, with male:female ratios frequently as high as 2:1.

Our study reaffirmed existing social premises such as poverty, malnutrition, or nutritional deficiencies, which along with poor hygiene conditions, are associated with the geographic distribution of Hansen's disease. Frequently, Hansen's disease is found to correlate with factors such as a low family or *per capita* income, lack of education, and poor basic health conditions[1]. The present study found that the majority of individuals affected by Hansen's disease had a low educational level, in accordance with previous studies[1] [6] [9].

Clinically, Hansen's disease is characterized by a range of skin and neurological lesions that, depending on the level of involvement, may provoke disabilities to degrees that are classified as 0, 1 or 2. In the present study, we observed that a significant portion of patients presented with some degree of physical disability. This is in agreement with the findings of other authors[9]. The associated deformities and physical disabilities represent the main challenge of leprosy, and the percentage of patients with disabilities is an important indicator of the social and sanitary effects of this disease[11]. Certainly the low level of population coverage by the Family Health Strategy program in the municipality of Cuiabá is a significant factor underlying the detection of Hansen's disease at advanced stages.

TABLE 1

Characterization of a sample from Araçatuba, 2015.

Variables	Number	Percentage
Sex		
female	228	52.5
male	206	47.5
Age group (years)		
13–29	66	15.2
30–39	91	21.0
40–49	77	17.7
50–59	86	19.8
≥60	114	26.3
Race		
white	120	27.7
black	90	20.7
yellow	14	3.2
mixed race	210	48.4
Education		
illiterate	99	22.8
1st grade to less than 4th grade	80	18.5
basic education	89	20.5
high school	142	32.7
higher education	24	5.5
Total	**434**	**100.0**

Another factor that deserves mention is the lack of professional qualification, which has led to the late diagnosis of many cases[12]. The late diagnosis of a patient with existing disabilities suggests that health services are unable to detect all affected individuals, thus contributing to the maintenance of undiagnosed cases. These cases will progress to deformities and disabilities and continue the transmission chain and cause decreases in patients' laboring capacities, limit their social lives, and induce psychological problems[12]. In the present study, we identified a higher percentage of cases with grade 2 physical deformities than that considered acceptable by the Ministry of Health (<5%)[2].

Clinically, Hansen's disease may be categorized according to the methods prescribed by the Ministry of Health, which uses an operating classification that defines cases with up to five lesions and an undetermined and/or tuberculoid classification as paucibacillary, and cases with more than five lesion and a dimorphic and/or Virchowian classification as multibacillary[11]. In the present study, most analyzed cases were found to meet the multibacillary criteria.

In most cases, the bacilloscopy results were negative, in agreement with other authors[6]. According to the Ministry of

TABLE 2

Characterization of a sample from Araçatuba, 2015.

Variables	Number	Percentage
Operating disease class		
paucibacillary	142	32.7
multibacillary	292	67.3
Number of lesions		
none	61	14.1
1 lesion	119	27.4
2–5 lesions	164	37.8
6–9 lesions	43	9.9
≥10 lesions	47	10.8
Clinical forms		
undetermined	90	20.7
tuberculoid	70	16.1
dimorphic	196	45.2
virchowian	68	15.7
not classified	10	2.3
Degree of physical disability		
grade zero	244	56.2
grade 1	91	21.0
grade 2	50	11.5
not assessed	49	11.3
Bacilloscopy		
positive	127	29,3
negative	163	37,5
not performed	144	33,2
Therapeutic regimen		
MDT/PB/06 doses	137	31.6
MDT/MB/12 doses	284	65
MDT/MB/24 doses	13	3.4
Lepra reaction		
yes	31	7.1
no	403	92.9
Total	**434**	**100.0**

MDT: multidrugtherapy**; PB:** paucibacillary**; MB:** multibacillary.

Health, bacilloscopy, a relatively simple test used to classify cases of Hansen's disease, is one criterion used to determine leprosy treatment[3]. Although positive bacilloscopy indicates a case of multibacillary Hansen's disease, negative result, does not necessarily exclude a diagnosis[13]. In the present study, some positive cases were likely classified as paucibacillary because of a mistaken diagnosis at the time of the first treatment. Such cases later presented with repeated positive bacilloscopy tests.

In the present study, the individuals with more than five lesions were prescribed a 12-dose course of MDT (MDT/MB/12). The assessments of physical disability were ignored for only two patients who received a 24-dose course (MDT/MB/24). These data disagree with the findings of another study[7] in which the physical disability assessments of a greater number of patients treated with 24-dose courses of MDT/MB/24 were ignored. Furthermore, in our study, only 10 (2.3%) patients presented with a single lesion and were prescribed a six-dose MDT regimen, in contrast to a much higher rate in the 2010 report by Miranzi et al[7].

In addition to accepting one's status as the bearer of a contagious disease, a patient with Hansen's disease must face the challenges and difficulties associated with treatment. In a study regarding disease stigma[14], all interviewed patients affirmed that they were undergoing treatment for three reasons: to be cured, fear of transmitting the disease to family members, and fear of physical sequelae. We conclude that the prevalence of multibacillary leprosy, as well as that of disabilities, reflects the late detection of this disease, inadequate treatment, and deficient knowledge among health professionals.

Ethical considerations

The study was conducted within the standards required by Resolution 466/12 of the National Board of Health and approved by the Human Research Ethics Committee of the Araçatuba Dental School, UNESP (CAEE: 36331714.0.0000.5420).

Conflict of Interest

The authors declare that there is no conflicts of interest.

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