Cogitare Enfermagem

ORIGINAL ARTICLE

HANSEN`S DISEASE IN CHILDREN UNDER 15 YEARS OLD: SOCIODEMOGRAPHIC AND CLINICAL CHARACTERIZATION OF THE CASES IN A HYPERENDEMIC MUNICIPALITY

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ABSTRACT

Objective: to analyze the sociodemographic and clinical profile of reported cases of Hansen´s disease in children under 15 years old in the municipality of São Luís - Maranhão - Brazil. Method: descriptive study conducted with 826 cases reported in the Notifiable Diseases Information System, in São Luís - Maranhão, in the period from 2010 to 2019. Data were analyzed using descriptive statistics and were expressed in absolute and relative frequencies. Results: age group between 10 and 14 years (60.29%), male (51.09%), brown (69.59%), incomplete elementary education (39.58%), multibacillary (62.71%), dimorphic clinical form (54.24%), up to five lesions (74.45%), zero to two nerves affected (83.23%), no bacilloscopic (46.28%), new cases (93.70%), spontaneous demand (46.38%) and zero degree of disability at diagnosis (78.98%). Conclusion: hyper-endemic parameters with high risk for the disease were demonstrated. It is important to create control and prevention strategies to reduce Hansen´s disease transmission in children.

DESCRIPTORS: Leprosy; Epidemiology; Neglected Disease; Endemic Disease; Comprehensive Health Care.

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INTRODUCTION

Hansen´s disease is a chronic infectious disease, characterized by dermato-neurological lesions that can affect people of any age, being more common in adults and less frequent in children[1]. In endemic areas, and when there are Hansen´s disease cases in the

family, the transmission of the disease occurs actively, which increases the risk of getting sick in the population aged 0 to 14 years[2]. Globally, Brazil ranks second in the detection of new cases, especially in the North, Midwest, and Northeast regions of the country[1]. The occurrence of Hansen´s Disease in children under 15 is an important epidemiological indicator that reflects the expansion and severity of the disease. Moreover, this indicator also points to high endemicity, early exposure, high transmissibility, and insufficient control actions[3].

Considering the historical stigma and high incapacitating power of the disease, Hansen´s Disease diagnosis in childhood and adolescence can have a negative impact on the lives of affected minors, with the physical, emotional, and social aspects being the most affected[4-5]. For health professionals, Hansen´s disease case detection in this specific population becomes a major challenge due to limitations in performing sensitivity tests and neurological evaluation[6].

Current data from the Ministry of Health (MS) reveal that between the years 2009 and 2018, Brazil recorded 21,808 new cases of Hansen´s disease among people under 15 years of age, showing a decline in the number of detected cases[7]. For Schneider and Freitas, despite the decreasing trend at the national level, some units of the federation and Brazilian capitals present stagnant and hyperendemic trends, which means active transmission and difficulties in the elimination of Hansen´s disease in the country[8]. In this sense, the reduction of cases in children under 15 years old has become a priority for the National Leprosy Control Programme (PNCL), especially in the states of high magnitude, located in the Center-West, North and Northeast regions[9].

The current literature also emphasizes that there are few studies carried out in regions of high magnitude. Therefore, it is of fundamental relevance to carry out more research related to the theme, to contemplate new views about Hansen´s disease in children under 15 years of age[3, 5, 10].

In view of the above and the severity of Hansen´s disease in this age group, this study aims to analyze the socio-demographic and clinical profile of reported cases of Hansen´s Disease in children under 15 years of age in the municipality of São Luís - Maranhão - Brazil.

METHOD

This is a descriptive, retrospective study, with quantitative approach, developed in the city of São Luís, capital of the state of Maranhão. The population consisted of all 826 cases of Hansen´s Disease in children under 15 years old notified in the Notifiable Diseases Information System (Sinan) in the period between January 2010 and December 2019. Access to data was obtained with the Municipal Health Secretariat, and the information was collected through a questionnaire and stored in a database.

Through this bank, a survey of the number of Hansen´s disease cases in children under 15 years of age and which variables were available for collection was carried out. After this first step, the variables of interest (sociodemographic and clinical) were selected, and a new database was built in an Excel spreadsheet. This process of building and organizing the variables occurred between November and December 2020.

In the present study, the following variables were analyzed: age group, sex, race/color, education, residence/provenance, operational classification, clinical form, degree of physical disability at diagnosis, number of lesions, nerves affected, mode of entry and mode of new case detection. The variables of interest mentioned were selected taking into consideration the availability and objective of the research. The data were analyzed in the EPI-INFO program, version seven (CDC - Atlanta) by means of descriptive statistics and expressed in absolute and relative frequencies.

For the calculation and classification of the epidemiological indicator "Hansen´s disease annual detection rate in the population between zero and 14 years old, per 100,000 inhabitants", the guidelines defined in the "Guidelines for surveillance, care, and elimination of Hansen´s disease as a public health problem" were used. The numerator is the number of new cases in children under 15 years old, residing in a given place and diagnosed in the year of the evaluation; the denominator is the population between zero and 14 years old, in the same place and period; using the multiplication factor, 100 thousand inhabitants, according to the endemicity classification parameters adopted: low (less than 0.50), medium (0.50 to 2.49), high (2.50 to 4.99), very high (5.00 to 9.99) and hyperendemic situation (greater than or equal to 10.00)[9].

Data on the population from zero to 14 years old residing in São Luís (MA) in the analyzed period were obtained from the Department of Informatics of the Unique Health System of the MS[11].

The study is part of a larger project entitled: "INTERGRAHANS MARANHÃO: integrated approach to clinical, epidemiological (space-time), operational, and psychosocial aspects of Hansen´s disease in a hyperendemic municipality in Maranhão" and approved by Research Ethics Committee of the University Hospital of the Federal University of Maranhão, under opinion no. 3.605.294.

RESULTS

Throughout the historical series (2010-2019), the municipality notified 826 cases of Hansen´s Disease in children under 15 years old. As for the annual detection rate, the values found were always higher than 10 cases per 100,000 inhabitants in all years analyzed, which classified the city of São Luís as hyperendemic according to parameters established by the MS (Figure 1).

The highest detection rates occurred in 2013 (30.5/100,000 inhabitants) and 2015 (31.4/100,000 inhabitants), while the lowest rate was 17.4/100,000 inhabitants in 2016. It was also observed a 7.8% decline in the detection rate in the analyzed period, from 29.2 cases/100,000 inhabitants in 2010 to 21.4/100,000 inhabitants in 2019 (Figure 1).

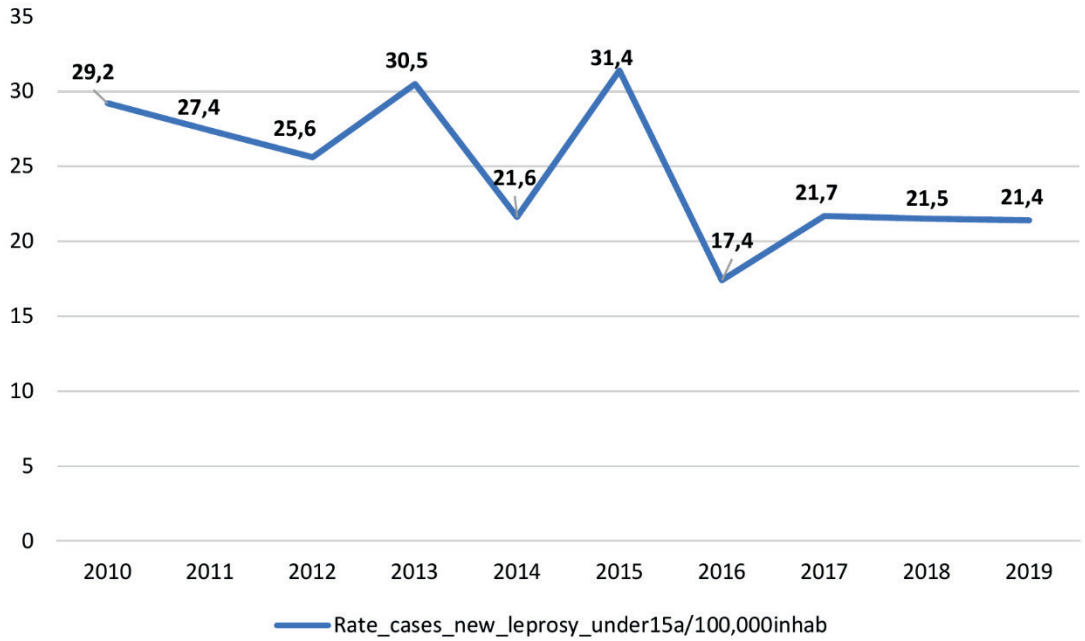

Figure 1 - Historical series of the annual detection rate of Hansen´s Disease in the population aged zero to 14 years old in the period from 2010 to 2019. São Luís, MA, Brazil, 2021.

Source: SINAN (2021).

Regarding the sociodemographic aspects, Hansen´s Disease occurred more frequently in children between 10 and 14 years old (60.29%; n=498), male (51.09%; n=422), brown race (69.59%; n=572), who were between the 5th and 8th grade of incomplete elementary school (39.58%; n=323) and who lived in the state capital (71.91%, n=594) (Table 1).

Table 1 - Cases of Hansen´s Disease in children under 15 years old according to sociodemographic characteristics, in the period from 2010 to 2019 (n=826). São Luís, MA, Brazil, 2021.

VARIABLE	n	%
Age Group		
0-4	41	4,96
5-9	287	34,75
10-14	498	60,29
Gender		
Female	404	48.91
Male	422	51.09
Color/Race (n=822) *		
White	97	11.80

Black	142	17.27
Yellow	10	1.22
Brown	572	69.59
Ignored	01	0.12
Education (n=816) *		
Illiterate	02	0.25
Incomplete elementary school 1st to 4th grade	245	30.02
4th grade complete, elementary school	71	8.70
5th to 8th grade incomplete elementary school	323	39.58
Elementary School Complete	29	3.55
Incomplete Elementary School	23	2.82
High School Complete	02	0.25
Ignored	02	0.25
Does not apply**	119	14.58
Residence/place of origin		
State Capital	594	71,91
Other cities of the Island	104	12,59
Other cities of the Island	126	15,25
Other States in the Country	02	0,25

* Excluded cases with no record of the information.
** Cases with age < 6 years
Source: SINAN (2021).

Regarding clinical aspects, there was a predominance of cases with multibacillary operational classification (62.71%; n=518), dimorphic clinical form (54.24%; n=448), zero to five skin lesions (74.45%; n=606), zero to two nerves affected (83.23%; n=675) and zero degree of physical disability at diagnosis (78.89%; n=650). As for bacilloscopic, less than half of those notified perform the test (46.28%; n=379). Regarding the mode of entry, new cases prevailed (93.70%; n=774), detected by spontaneous demand (46.38%; n=359) and referrals (37.34%; n=289) (Table 2).

Table 2 - Hansen's disease cases in children under 15 years old according to clinical characteristics, in the period from 2010 to 2019 (n=826). São Luís, MA, Brazil, 2021.

VARIABLE	**n**	**%**
Operational Classification		
Paucibacillary	308	37.29
Multibacillary	518	62.71
Clinical Form		
Indeterminate	75	9.08
Tuberculoid	236	28.57

Dimorphic	448	54.24
Leprosy, Lepromatous	59	7.14
Not Classified	8	0.97
Bacilloscopic (N=819)		
Positive	87	10.62
Negative	348	42.49
Not performed	379	46.28
Ignored	5	0.61
Number of lesions (N= 814) * Positive		
0-5	606	74.45
6-10	132	16.22
More than 10	76	9.34
Nerves affected (N=811) * 0-2		
0-2	675	83.23
3-5	82	10.11
6 or more	54	6.66
Disability grade at diagnosis (n=823)		
Grade 0	650	78,98
Grade I	94	11,42
Grade II	26	3,16
Not Evaluated	53	6,44
Input Mode		
New Case	774	93.70
Transfer from the same municipality (another unit)	3	0.36
Transfer from another municipality (same State)	10	1.21
Transfer from another State	1	0.12
Recidivism	1	0.12
Other re-registration	37	4.48
New case detection mode (n= 774) **		
Referral	289	37.34
Spontaneous Demand	359	46.38
Collective examination	35	4.52
Contact examination	91	11.76

* Excluded cases with no record of the information.
** Final sample of new case.
Source: SINAN (2021).

DISCUSSION

The endemicity classification within the hyperendemic range (≥10.00 per 100,000 inhabitant.) presupposes severity and active transmission of the disease, besides classifying the capital of Maranhão as a priority region for Hansen´s disease control actions in the country[9]. According to data from the latest updated MS bulletin, between 2010 and 2019 the municipality analyzed presented values of detection rate of new cases in children under 15 years old above those found in the state of Maranhão (ranging between 15.15 and 19.22) and in the Northeast region of Brazil (ranging between 5.73 and 8.31)[7].

Regarding the involvement of Hansen´s disease by gender, the highest percentage of the disease occurred in males, as well as in other national epidemiological studies carried out in Goiânia and Manaus[12-13]. Divergent results were found in other two studies carried out in a Brazilian municipality, in the state of Bahia, which verified in their analyses the predominance of females among the cases reported in the population from zero to 14 years old[14-15].

However, a descriptive and retrospective study carried out in the city of Manaus (AM) - Brazil, states that the occurrence of Hansen´s disease according to gender varies according to the public analyzed. In adults, the disease affects more men, while in children there is no relevant difference according to gender among the total of diagnosed cases[16].

In this study, the highest percentage of Hansen´s disease detection among children under 15 years of age occurred in children aged 10 to 14 years, corroborating the findings of other studies carried out in the northeast of Brazil, in the states of Ceará and Bahia[14-17]. The higher occurrence of Hansen´s Disease in older children was also evidenced in a study carried out in the municipality of Cuiabá - MT, an endemic region in Central-Western Brazil, in which, when analyzing the age range variable, it was verified that the chance of getting sick from Hansen´s disease in individuals aged between eight and 14 years is 3.4 times higher than in individuals aged between one and seven years[10].

Other authors emphasize that the low frequency of the disease in children under nine

years of age can be justified by the long incubation period of Hansen´s disease, which lasts an average of two to seven years. It is also noteworthy that the younger the child is, the more difficult it is for professionals to perform the sensitivity test, which causes a delay in diagnosis. On the other hand, the occurrence of Hansen´s Disease in children younger than five years old indicates early and continuous exposure to M. leprae, existence of undiagnosed household contacts with the contagious forms of Hansen´s disease and active transmission of the disease[4].

Regarding the race/color variable, as in other studies, there was a predominance of the brownish color among the cases reported[18-19]. Factors related to the colonization and migration flow, miscegenation, organization process and territorial expansion may justify the higher prevalence of the brown race among those affected by Hansen´s disease. It should be added that the predominance of brown-skinned patients can show the relationship between Hansen´s disease and socioeconomic inequalities, since the disease is more frequent among non-white individuals living in precarious social conditions, which makes the black and brown population a priority group for prevention and control actions[20].

Regarding education, most of the notified cases were of school age, attending between the 5th and 8th incomplete grades of elementary school. A similar result was verified in the state of Ceará - northeastern Brazil, between the years 2007 and 2017, where about 59.4% of notified cases were between the 5th and 8th grade of incomplete elementary school[17].

About the level of education of the minor and the family members, some authors point out that education represents an important data, because it interferes in the understanding

of the health-disease process and may contribute or not to treatment adherence[21]. In this context, we highlight the importance of the active search for Hansen´s disease cases in the school environment by means of health education actions, as a strategy to control the disease in the

age group under 15 years old[22]. A Brazilian study highlights that the historical stigma of the disease and the difficulties to diagnose Hansen´s disease in children under 15 years old justify the need for care in places distant from their homes[23].

As for the origin of the cases, the study found that most of those notified in the municipality of São Luís - MA, resided in the state capital itself. However, it was also observed that the municipality attended and notified cases residing in other municipalities and other states. Similar results were found in an analysis conducted in the city of Fortaleza - CE, where 71.3% of reported cases came from the capital of Ceará, and about 28.7% came from other cities in the state[17].

As for the clinical characteristics of Hansen´s disease, the literature points out that in the population aged zero to 14 years, it is expected that cases are diagnosed with the paucibacillary operational classification due to the incubation period of the disease[16]. However, in endemic areas, as in the present study, the multibacillary classification may prevail.

National studies conducted in the metropolitan region of Goiás and in the Amazon region of Amapá - Brazil, showed similar results to those found in this research, because they also found high percentages of multibacillary cases[5, 13, 24]. We emphasize the existence of failures in health services to identify multibacillary cases, characterized by high bacillary load and high risk of transmission[4].

Considering the clinical forms, other studies carried out in Mato Grosso and Pará - Brazil, also found a higher proportion of cases in children under 15 years old diagnosed with one of the most severe forms of Hansen´s Disease, the dimorphic - multibacillary clinical form[4, 21]. In the municipality of Imperatriz (MA) - Brazil, the results were divergent, showing predominance of undetermined - paucibacillary Hansen´s Disease among the children

notified[19]. For the MS, the proportion of cases diagnosed with the contagious clinical forms of Hansen´s Disease is directly related to maintaining the chain of transmission and the hidden prevalence of the disease[9].

Regarding the performance of the skin smear test, the highest frequency was found in individuals who did not perform the test. There was also an important percentage of cases that underwent the complementary exam and presented negative results. In contrast to this result, a study conducted in the state of Amapá, in the Amazon region of Brazil, showed that between the years 2008 and 2016, about 72.6% of reported cases underwent the bacilloscopic, with mostly negative results; and that only 3.4% of cases did not undergo the test at the time of diagnosis[24].

The bacilloscopic helps in the diagnosis of Hansen´s disease and should be requested to assist in the investigation of the case. However, it is observed that, in most cases, the examination is ignored at the time of diagnosis. The non-performance of the smear test is an important indicator to evaluate the quality of care to Hansen´s Disease patients[25].

Regarding the dermatological symptoms of Hansen´s disease, there was a prevalence of individuals with zero to five skin lesions, but with a predominance of multibacillary cases. In the present study, this finding is not in accordance with the literature, which recommends up to five skin patches for the diagnosis of a paucibacillary case. A survey conducted in non-priority municipalities in the state of Mato Grosso showed the relationship between the number of lesions and operational classification, where most children notified had up to five dermatological lesions, with higher prevalence of paucibacillary cases (53.9%)[18].

According to a Brazilian study, multiple skin lesions mean advanced stages of Hansen´s disease and even late diagnosis, which may reflect in the quality of services and disease control in people under 15 years of age[8].

Regarding the number of affected nerves, most of the cases analyzed in this study had up to two nerves affected. Research conducted in the metropolitan region of Goiânia - Brazil, between 2009 and 2011, showed the predominance of cases among children under 15 years old with one to three nerves affected in the initial examination[13].

A survey conducted in western India, highlights that impaired nerve function has a direct relationship to the occurrence of physical disability. Patients should be patients should be followed more closely to prevent nerve damage and the development of further disabilities[26].

Despite the predominance of multibacillary cases and the dimorphic clinical form among the individuals analyzed in this study, most did not present physical disability at diagnosis, as evidenced in other national studies[17,25]. The absence of physical impairment at the time of diagnosis may be related to the shorter time of disease progression in the population under 15 years of age. However, one should not disregard that the appropriate treatment must be carried out to avoid or reduce the risk for the development of physical disabilities in children and adolescents[13].

It is noteworthy that in this study about 6.44% of the cases reported did not undergo physical disability assessment at diagnosis, and 14.58% were already diagnosed with some degree of neural impairment (grades I and II). The proportion of children who did not undergo physical evaluation and who presented disabilities in the first evaluation is relevant data that serves as an alert for surveillance services because it indicates late diagnosis and ineffective control[19].

The mode of detection represents a way to evaluate strategies that require strengthening of guidance on the need to seek assistance. In this study, new cases detected by spontaneous demand prevailed, a result like the study conducted in the state of Tocantins - Brazil, where it was found that 55.8% of new cases reported were identified by spontaneous demand[27].

The passive notifications, made by spontaneous demand and referrals, show that there are failures in the active search for cases in people under 15 years old, which suggests worsening of the disease and greater risk for disabilities. The active search for The active search for cases, through contact and community examination, is one of the most important measures for the early diagnosis of Hansen´s disease in children under 15 years old[13].

A limitation of the study is the inadequacy or absence of filling out the notification forms, which leads to the inconsistency of important variables to perform a more in-depth analysis.

CONCLUSION

The study showed that during the period analyzed, the city of São Luís-MA presented hyperendemic parameters for Hansen´s disease in people under 15 years of age (more than 10 cases per 100,000 inhabitants), which indicates active transmission and maintenance of the severity of the disease in the region.

Among the main results, we highlight detection of Hansen´s disease mainly in the age group between 10 and 14 years old; most cases had multibacillary operational classification and clinical form transmittable Dimorphic and low percentage of notification, which were detected by active search. These findings suggest early exposure, delayed diagnosis of the

disease, persistence of transmission foci and high risk for the development of complications such as physical disabilities.

Thus, the importance of specific control and prevention strategies for children is emphasized to reduce the chain of transmission of the disease and the number of reported cases. We also emphasize the need for education in the communities and the active search for contacts to perform the examination and the proper handling of the notification form.

Nurses play a relevant role in health education activities, since they contribute to the creation of strategic actions aimed at Hansen´s disease control and prevention; they use health education as a tool to spread knowledge that favors early diagnosis, and they also help in the planning of health strategies to collaborate to reduce the incidence coefficient in people under 15 years old.

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