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Temporal trend of leprosy in Aracaju, Sergipe, Brazil

Tendência temporal da hanseníase em Aracaju, Sergipe, Brasil

Tendencia temporal de la lepra en Aracaju, Sergipe, Brasil

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RESUMO
Justificativa e Objetivos: A hanseníase é uma doença infectocontagiosa crônica, com potencial incapacitante que mantém altas as taxas de incidência mesmo com tratamento eficaz e gratuito. Desta forma, este estudo objetiva analisar os dados epidemiológicos e operacionais da hanseníase em Aracaju-SE, a fim de diagnosticar a tendência da endemia e orientar o aprimoramento de políticas públicas que visem à sua eliminação. **Métodos:** Trata-se de um estudo ecológico, tipo série temporal, que analisou indicadores epidemiológicos e operacionais da Hanseníase no município de Aracaju, capital do estado de Sergipe,de 2003 a 2017. **Resultados:** Entre 2003 e 2017, a taxa de detecção da hanseníase manteve-se decrescente, com tendência anual de queda de 8,63% na população geral e 9,32% em menores de 15 anos. Durante este período, houve tendência a aumento do diagnóstico e tratamento da hanseníase pela Atenção Primária. A cura dos casos manteve-se estável e a proporção de contatos examinados apresentou um significativo incremento, saindo de 20,6%, em 2003, para 82,9%, em 2017. Identifica-se também uma tendência progressiva da queda na detecção das formas paucibacilares em detrimento das multibacilares. **Conclusão:** Há uma tendência de redução da detecção da hanseníase em Aracaju em todas as faixas etárias, porém, a região ainda é considerada de alta endemicidade. É possível perceber o crescimento do papel da Atenção Primária entre 2003 e 2017, além do aumento significativo do exame dos contatos, ferramenta importante no diagnóstico e tratamento precoce. Embora os indicadores de saúde tenham mostrado melhorias, esse avanço permanece insuficiente para adequado controle da doença.
Descritores: Epidemiologia. Indicadores de Saúde. Hanseníase. Saúde Pública.

ABSTRACT
Background and Objectives: Leprosy is a chronic infectious disease that has a disabling potential and maintains high incidence rates even with effective and free treatment. Thus, this study aims to analyze

the epidemiological and operational data of leprosy in the city of Aracaju, Sergipe, Brazil, in order to diagnose the endemic disease trend and guide the improvement of public policies aimed at its elimination. **Methods:** This is an ecological and time series study that analyzed the epidemiological and operational indicators of leprosy in the municipality of Aracaju, capital of the state of Sergipe, from 2003 to 2017. **Results:** Between 2003 and 2017, detection rate of leprosy remained decreasing, with an annual decline of 8.63% in the general population and 9.32% in children under 15 years. During this period, there was a trend to increase the diagnosis and treatment of leprosy by Primary Care. The cure of the cases remained stable and the proportion of contacts examined showed significant increase, rising from 20.6% in 2003 to 82.9% in 2017. There is also a progressive trend to decrease the detection rate of paucibacillary forms due to multibacillary forms. **Conclusion:** There is a trend to reduce the detection of leprosy in Aracaju in all age groups, but the region is still considered to be highly endemic. It is possible to perceive the growth of the Primary Care role between 2003 and 2017, in addition to the significant increase in the examination of contacts as an important tool in the diagnosis and early treatment. Although health indicators have shown improvements, this progress remains insufficient for adequate control of the disease.

Keywords: Epidemiology. Health Status Indicators. Leprosy. Public Health.

RESUMEN

Justificación y Objetivos: La lepra es una enfermedad infectocontagiosa crónica, con potencial discapacitante y que mantiene altas tasas de detección incluso con tratamiento eficaz y gratuito. De esta forma, este estudio objetiva analizar los datos epidemiológicos y operativos de lepra en la ciudad de Aracaju, Sergipe, Brasil, a fin de diagnosticar la tendencia de la endemia y orientar el perfeccionamiento de políticas públicas que apunten a su eliminación. **Métodos:** Se trata de un estudio ecológico, tipo serie temporal, que analizó indicadores epidemiológicos y operativos de la lepra en el municipio de Aracaju, capital del estado de Sergipe, entre 2003 y 2017. **Resultados:** Entre 2003 y 2017, la detección de la lepra se mantuvo decreciente, con una tendencia anual de caída del 8,63% en la población general y el 9,32% en los menores de 15 años. Durante ese período, hubo una tendencia al aumento del diagnóstico y tratamiento de la lepra por la Atención Primaria; la cura de los casos se mantuvo estable; y la proporción de contactos examinados presentó un significativo incremento saliendo del 20,6%, en 2003, al 82,9%, en 2017. Se identifica también una tendencia progresiva a la caída en la detección de las formas paucibacilares en detrimento de las multibacilares. **Conclusión:** Hay una tendencia a reducir la detección de la lepra para Aracaju en todas las edades, pero la región todavía se considera de alta endemicidad. Es posible percibir el crecimiento del papel de la Atención Primaria entre 2003 y 2017, además del aumento significativo del examen de los contactos, una herramienta importante en el diagnóstico y tratamiento precoz. Aunque los indicadores de salud han mostrado mejoras, este avance sigue siendo insuficiente para un adecuado control de la enfermedad.

Palabras clave: Epidemiología. Indicadores de Salud. Lepra. Salud Pública.

INTRODUCTION

Leprosy is an infectious, granulomatous disease caused by *Mycobacterium leprae*, an intracellular parasite that primarily infects macrophages and Schwann cells. The disease has high infectivity, although its pathogenicity is low. Man is the only source of infection. Its transmission and contagion occurs by inhalation through people infected by multibacillary forms.[1,2] It has a variable clinical spectrum related to host response, bacillary load and time of disease detection. It has an incubation period that can vary, on average, from 2 to 7 years, but may have longer periods of 10 years. Therefore, it is infrequent in children under 15 years of age, increasing incidence in areas with higher prevalence and presence of family outbreaks.[1]

Leprosy diagnosis is eminently clinical and epidemiological; the lesions range from forms with benign and self-resolving characteristics to severe manifestations that occur with anatomical changes and permanent neurological lesions. Although the major clinical manifestations sites are skin and nerves, it behaves as a systemic disease, as it can compromise joints, eyes, testicles, ganglia, and other organs.[1,2]

Treatment for leprosy is essentially outpatient and is based on operational classification (paucibacillary or multibacillary). Polychemotherapy used for leprosy has been used for more than 30 years, with high cure rates, low occurrence of relapse and rare drug resistance. Although curable, myths and misconceptions about the disease persist, making it stigmatizing and discriminatory. This generates marginalization, social exclusion and denial of rights of people affected by this disease.[1,3,4]

Currently, the top five countries that embrace more than 80% of the newly discovered cases of leprosy are located in (sub) tropical regions: India, Brazil, Indonesia, Bangladesh, and Ethiopia.[5] In 2017, 210,671 new cases were reported in 150 countries, and the overall detection rate of new cases was 2.77 per 100,000 inhabitants. The top three countries - India, Brazil and Indonesia - accounted for 80.2% of the global burden. With around 25 thousand new cases (NC) per year, Brazil contributed with 92.3% of NC in the Americas region.[6]

One of the Millennium Development Goals, set by the United Nations (UN), was to eliminate leprosy by the end of 2015. This means that countries should register a disease detection rate of less than 10 cases per 100,000 inhabitants.[7] Brazil was unable to reach the goal, with the Midwest, North and Northeast considered the most endemic.[8] As almost all countries have achieved the overall goal, the most recent strategy indicates a shift from "leprosy elimination as a public health problem" to reducing disease burden, measured as a reduction of Level 2 disabilities among NC. The Global Leprosy Strategy 2016-2020, "Accelerating Toward a Leprosy-Free World" has been adopted by most countries, in which leprosy is endemic.[6]

Sergipe is considered a state of high endemicity for leprosy, with a new case detection coefficient in 2016 of 13.7/100,000 inhabitants. It is the 5th most endemic state in the Northeast region.[9]

Leprosy is a disease of compulsory notification and mandatory investigation. The analysis of indicators of the progress of leprosy elimination as a public health problem, measure the magnitude or transcendence of the public health problem.[1,4] In this way, this study aims to analyze the epidemiological and operational data of the disease in Aracaju, in order to identify the endemic trend and guide the improvement of public policies aimed at its elimination.

METHODS

This is an ecological study and a time series that analyzed the epidemiological and operational indicators of leprosy in the city of Aracaju, capital of the state of Sergipe, Brazil, from 2003 to 2017.

In this study, cases of leprosy in the city of Aracaju, state of Sergipe, were confirmed and reported in the *Sistema Nacional de Agravos de Notificação* (SINAN- Brazil's System for Notifiable Diseases) between January 2003 and December 2017.

The data were tabulated by using the program developed by the *Departamento de Informática do Sistema Único de Saúde* (DATASUS - Department of Informatics of the Brazilian Unified Health System) for the databases tab of the *Sistema Único de Saúde* (SUS-Brazilian Unified Health System) (**Tab** for **Windows - TabWin**); imported into the Excel® 2016 program, in which the descriptive data analysis was performed. Population data were obtained by the *Instituto Brasileiro de Geografia e Estatística* (IBGE - Brazilian Institute of Geography and Statistics), based on the population estimates for the intercensorial years.

The epidemiological indicators (Indicators for monitoring the progress of elimination of leprosy as a public health problem) were selected for analysis: 1) Annual detection rate of NC of leprosy per 100 thousand inhabitants; 2) Annual detection rate of new leprosy cases in the population aged zero to 14 years per 100,000 inhabitants; 3) Leprosy NC rates with Level 2 physical disability at the time of diagnosis per 100 thousand inhabitants; 4) Proportion of cases of leprosy with physical disability Level 2 at the time of diagnosis among the NC detected and evaluated in the year; 5) Proportion of cases of leprosy cured with Level 2 physical disability between the cases assessed at the moment of discharge by cure in the year; 6) Proportion of cases of leprosy, according to gender among total NC; 7) Proportion of cases according to the operational classification among the total NC.

Operational indicators (indicators to assess the quality of leprosy services) were also**:** 1) Proportion of leprosy cure among diagnosed NC; 2) Proportion of contacts examined for NC of leprosy diagnosed; 3) Proportion of leprosy NC with physical disability level assessed in the diagnosis; 4) Proportion of cases cured in the year with level of physical disability assessed among leprosy NC. "*Parâmetros das diretrizes para vigilância, atenção e eliminação da hanseníase como problema de saúde pública*" (freely translated as "guidelines for surveillance, care and elimination of leprosy as a public health problem parameters") were used to evaluate the indicators.[10]

In the trend analysis for the 2003 to 2017 time series, Prais-Winsten linear regression models were used to quantify the annual variations in leprosy detection rates with the respective

95% confidence intervals. The Annual Percentage Change (APC) was calculated. Trends were considered to be stationary when the regression coefficient was not significantly different from zero (p> 0.05), ascending when the coefficient was positive and descendent when the coefficient was negative, using the STATA 14.0 software.

The study follows the Resolution of the National Health Board (CNS – *Conselho Nacional de Saúde*) 466/2012, having been approved by the Research Ethics Committee of the *Universidade Federal de Sergipe*, registered with the CAAE (*Certificado de Apresentação para Apreciação Ética* – Certificate of Presentation for Ethical Consideration) 82017718.8.0000.5546 under Opinion 2.484.967/2018.

RESULTS

During the study period, 2526 cases of leprosy were reported in Aracaju, of which 2249 were NC. Of these, 1,100 (48.9%) were males and 1149 (51.1%) were females, this proportion maintained a steady trend (p> 0.05) for both genders during the study period.

The NC detection rate of leprosy in Aracaju remained decreasing in the general population, with an annual decline of 8.63%, from 48.6/100 thousand inhabitants (hyperendemic) to 14.9/100 thousand inhabitants (high endemicity). The decline in the rate of detection from 10.5/100 thousand inhabitants (hyperendemic) to 3.9/100 thousand inhabitants (high endemicity) was also significant in children under 15 years of age, with an annual fall trend of 9,32% (Figure 1).

The NC rate of Level 2 physical disability leprosy at the time of diagnosis was, on average, 1.61/100 thousand inhabitants, showing a steady trend over time.
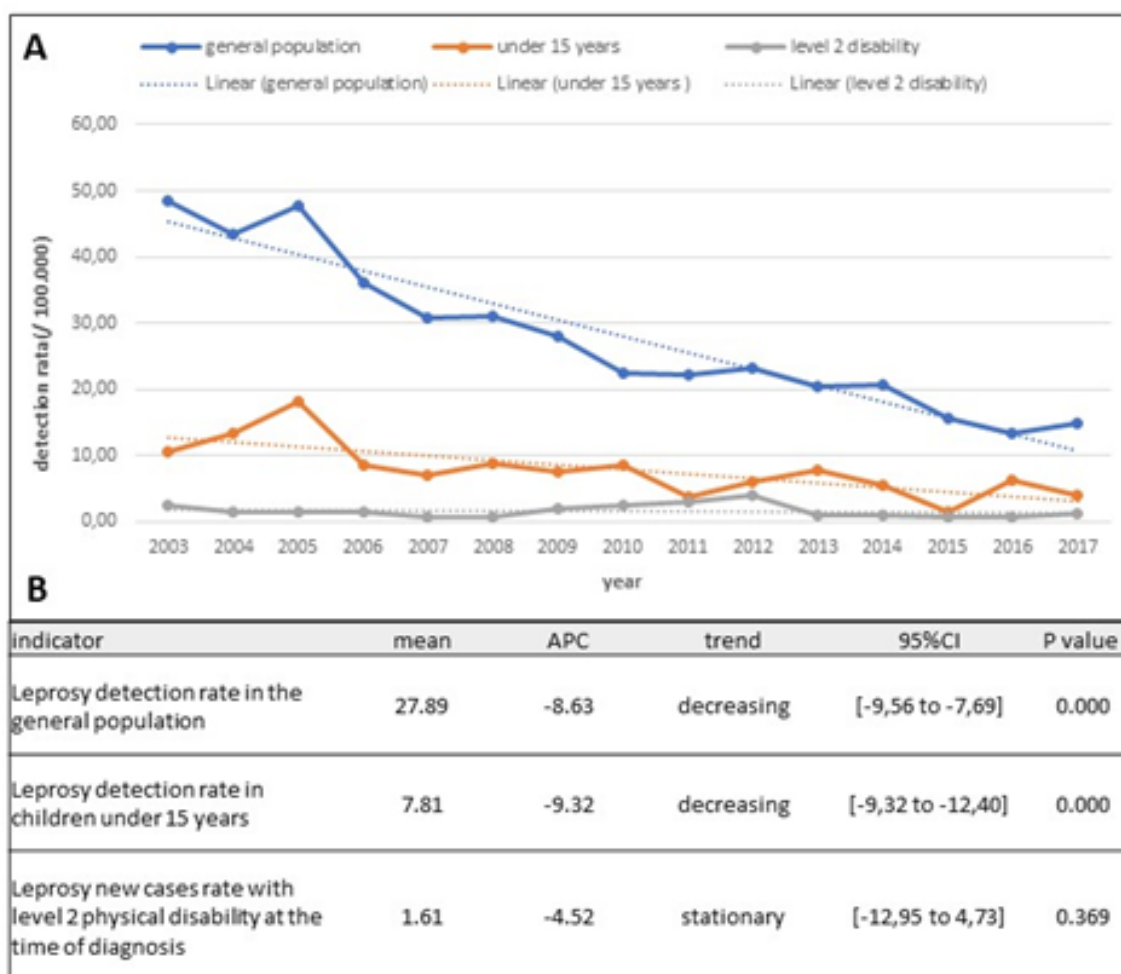
Figure 1. Temporal evolution by indicators of the progress of leprosy elimination as a public health problem in Aracaju, Sergipe, from 2003 to 2017 A) Leprosy detection rate (per 100,000 inhabitants) in the general population, in children under 15 years, in patients with level 2 disability and trend lines; B) Description of trend analysis. APC = Annual Percent Change. 95% CI = 95% Confidence Interval. Data were considered significant when p <0.05.

Detection rates were similar in both genders, with a significant decline (p <0.001) in detection rates in both men (APC = -8.11) and in women (APC = 9.09) (Figure 2).
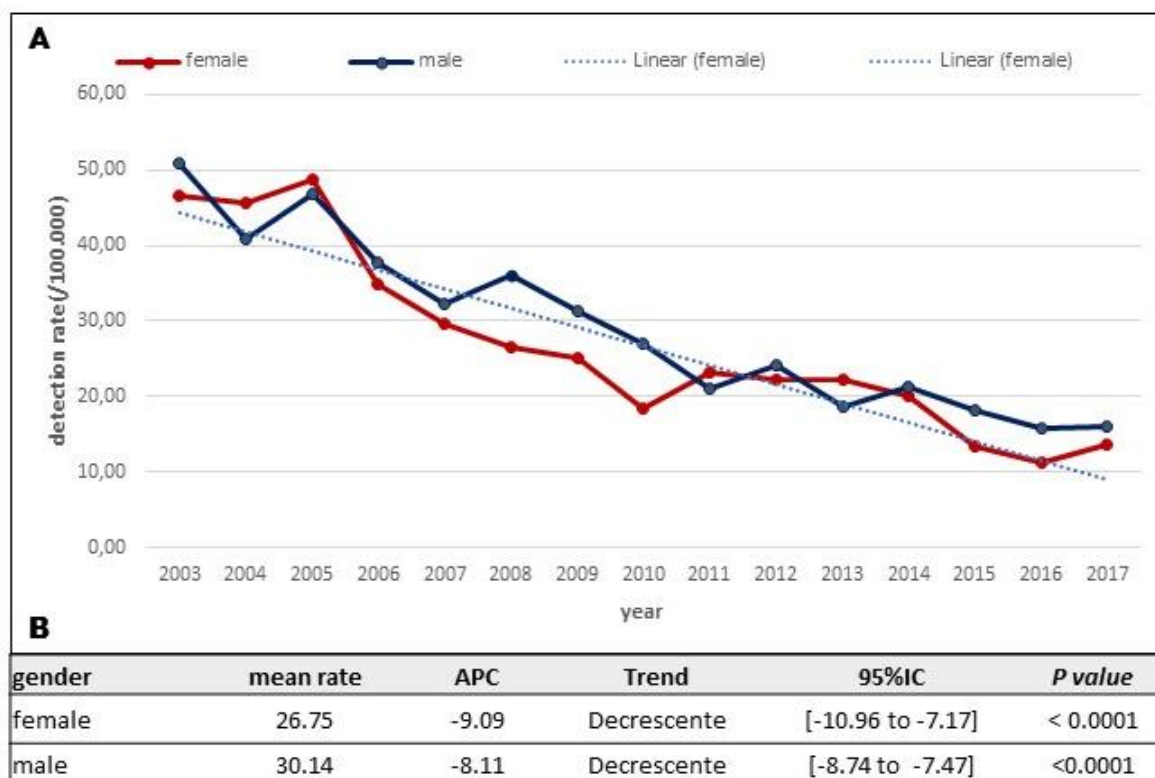
Figure 2. Detection rate of leprosy by gender in Aracaju, Sergipe, Northeast Brazil, 2003-2017 A) Leprosy detection rate (per 100,000 inhabitants) by gender and trend lines; B) Description of trend analysis; APC = Annual Percent Change. 95% CI = 95% Confidence Interval. Data were considered significant when p <0.05.

. There was a significant trend during the period to decentralize the diagnosis and treatment of leprosy to primary care in Aracaju, with an average of 58.89% of NC reported in this health care level (p <0.005) (Figure 3).
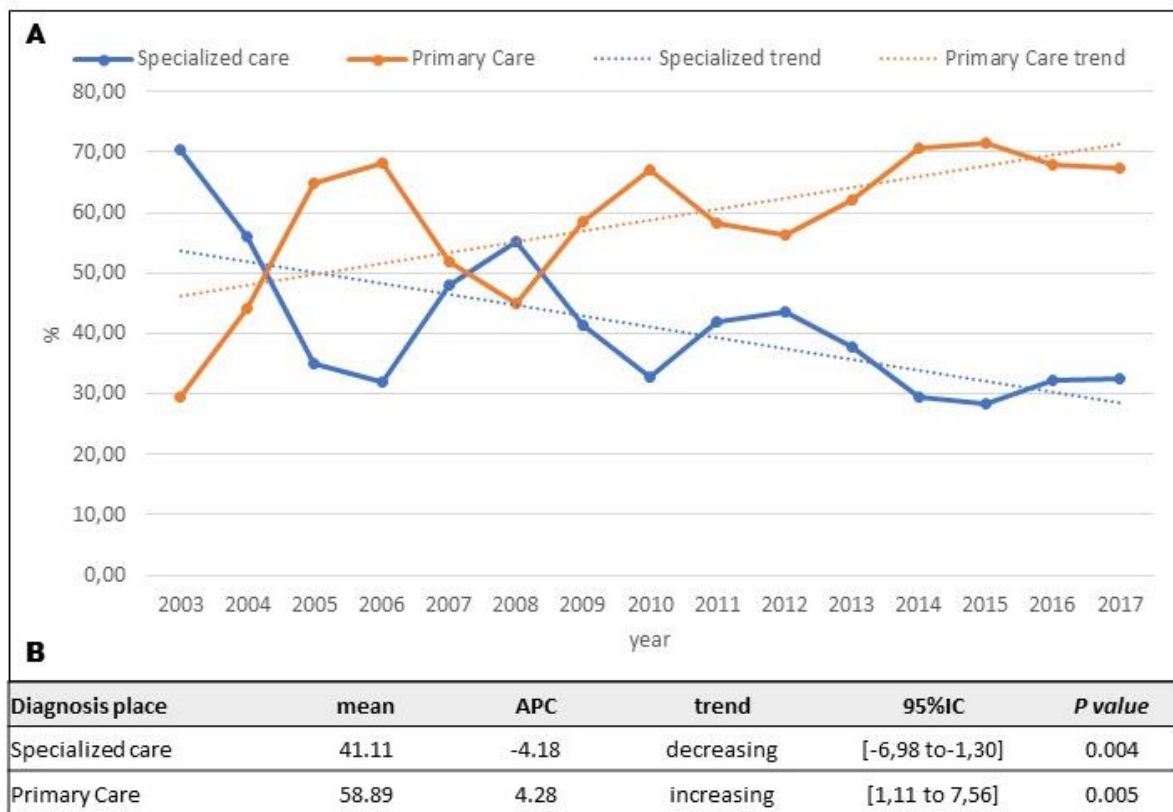
Figure 3. Type of Health Unit Diagnosis of new cases of leprosy in Aracaju, Sergipe, Northeast Brazil, 2003-2017 A) Percentage distribution per diagnosis site (Specialized Care and Primary Care) and trend lines; B) Description of trend analysis; APC = Annual Percent Change. 95% CI = 95% Confidence Interval. Data were considered significant when p <0.05.

The proportion of outcomes (cure and withdrawal) between NC and the proportion of recurrences among the diagnosed cases remained stable throughout the assessed period, presenting a small annual variation, as well as the proportion of physical disability level assessment (DLA), both for diagnosis and cure. The proportion of contacts examined showed a significant increase (APC = 10.38), jumping from 20.6% in 2003 to 82.9% in 2017 (p <0.01) (Table 1).

Table 1. Indicators trend to evaluate the quality of leprosy care in Aracaju, 2003 to 2017

Indicator	Initial Rate (2003)	Mean Rate	Final Rate (2017)	APC	Trend	95%CI	P value
Proportion of NC	89.8	91.0	81.8	-0.40	Stationary	[-1.15 to 0.36]	0.343

Indicator							
Proportion of abandonment of NC	5.8	3.8	8.8	0.09	Stationary	[-11.88 to 13.68	0.990
Proportion of contacts NC examined	20.6	70.9	82.9	10.38	Increasing	[3.56 to 70.88]	0.013
Proportion of relapse	1.2	4.4	7.0	2.9	Stationary	[-5.72 to 12.38]	0.551
Proportion of NC with DLA at diagnosis	78.5	84.6	70.5	0.23	Stationary	[-1.53 to 2.03]	0.810
Proportion of NC with DLA in cure	48.0	63.2	47.3	2.10	Stationary	[-1.96 to 6.33]	0.358

NC = new cases; DLA = Disability Level Assessment.

As for the proportional distribution of NS of leprosy by operational classification, a progressive trend of the decrease in the prevalence of paucibacillary forms (BP) is detected due to multibacillary (MB). The proportion of cases with physical disability (Level II) among the NC detected and evaluated in the year remained in a steady trend during the period, both at the time of diagnosis and at the time of cure (proportion of cured in the year with physical disabilities). The proportional distribution of cases by gender has remained constant throughout the period (Table 2).

Table 2. Indicators trend to evaluate the quality of leprosy care in Aracaju, 2003 to 2017

Indicator	Initial Rate (2003)	Mean Rate	Final Rate (2017)	APC	Trend	95%CI	P value
Paucibacillary Proportion	61,4	52,0	41,0	-1,70	Decreasing	[-2,61 to -0,78]	0,004
Multibacillary Proportion	38,6	48,0	59,0	1,93	Increasing	[0,85 to 3,02]	0,005
Disability Level 2 in diagnosis	6,6	7,3	10,5	4,28	Stationary	[-3,99 to 13,25]	0,363

Disability Level 2 in cure	3,4	5,6	2,9	5,57	Stationary	[-1,2 to 12,80]	0,152

DISCUSSION

The last two decades impacted the success in reducing the global burden of leprosy. One of the milestones was the introduction of polychemotherapy as a standard treatment recommended by the World Health Organization (WHO)[11]. In Brazil, leprosy is found in several agreements of SUS, but the country, even with decreasing detection rates, still has high endemicity for the disease, registering between 2012 and 2016 an average detection rate of NC of 14, 97/100 thousand inhabitants.[9]

Very long incubation time and subtle early signs and symptoms are among the characteristics that influence the difficulty of eliminating leprosy. Often, when treatment is started, the patient may already have infected other people who may develop disease very late. Therefore, treatment impact on reducing detection rates would be gradual.[5] The epidemiological situation of leprosy should be analyzed in a wide way, using indicators that can objectively portray the real scenario of the studied locality, so that in addition to comparing with other localities, it is possible to identify weaknesses of the policies adopted and to base the planning of new actions.

During the 15-year historical series, the municipality of Aracaju presented a significant drop in the detection rate of NC of leprosy, starting from an epidemiological situation classified as hyperendemic (> 40.00 cases/100 thousand inhabitants) to a high endemicity (20.00 to 39.99 cases/100 thousand inhabitants), with a rate similar to the national average of the last years.[10] This change pattern has been observed heterogeneously in studies in Brazil as well as in other endemic countries. The analysis of the indicators by macro-region showed that the Center-West (37.27/100 thousand inhabitants), North (34.26/100 thousand inhabitants) and Northeast (23.42/100 thousand inhabitants) had the highest rates averages of general detection in the recent period analyzed (2012-2016), while the lowest were recorded in the South (3.75 per 100,000 inhabitants) and Southeast (5.31 per 100,000 inhabitants).[9]

A trend study in 692 high-burden cities for leprosy in the states of Mato Grosso, Tocantins, Rondônia, Pará and Maranhão, demonstrated, despite the high rates, an overall trend of decreasing NC detection rate in both the general population (APC = -6.2%), and in those younger than 15 years (APC = -5.65).[12]

In the 22 priority countries for leprosy, the WHO, studying the trend of NC detection, identifies that the reduction of detection has occurred gradually or even stabilized in the last decade. When this decline is very marked, care should be taken that this cannot be a consequence of precariousness of diagnosis and notification of cases.[6]

Detection analysis rates of leprosy NC in children under 15 years of age, in addition to checking the trend of the endemic, measured the strength of the recent transmission of leprosy.[10] The reproduction of *M. leprae* occurs by binary division, and its growth is slow, thus, leprosy usually has a long incubation period, being less frequent in children under 15 years of age.[2] Over the 15 years analyzed, there was a downward trend in the rate of detection of leprosy NC in children younger than 15 years in Aracaju, with an APC = -9.32%, but remaining in the parameter still considered high. Differently from the previous study, which showed a great variation in the detection rates of leprosy in children younger than 15 years in Aracaju, the current study demonstrates a consistent reduction of this rate, with an annual reduction rate higher than in the general population.[13] Thus, although it is still classified by this indicator as a high detection area, its downward trend can be interpreted as a drop in the recent transmission of leprosy.

In the period between 2001 and 2016, the average rate of detection of leprosy in children under 15 years in Brazil was 5.77 per 100 thousand inhabitants, considered to be very high. However, there was a decreasing trend of this rate, with APC of -5% being that, in 2016, the detection rate was 2.71 per 100 thousand inhabitants, classified as high.[5] At different speeds, the fall in the detection rate of leprosy NC, in children under 15, has been verified in other regions of the country. In the Northeast region, there was a downward trend in the states of Maranhão, Piauí, Ceará, Paraíba, Pernambuco and Sergipe, while in Rio Grande do Norte, Alagoas and Bahia, they showed a steady trend of the indicator.[5, 15, 16] A study in hyperendemic Brazilian municipalities has also shown a decreasing annual trend (-3.6%), with variations among the states involved as a larger fall in the municipalities of Mato Grosso (-5.9%) and stationary trend in the municipalities of the states of Rondônia and Tocantins.[12] The decreasing trend has also been identified in low endemic states, as in the priority municipalities of Paraná.[14] The rate of leprosy detection in children under 15 expresses the recent transmission strength of the disease. Therefore, it is essential to follow the trend of this endemic disease in a complementary way to detection in the general population.[10, 11]

The NC detection rate for both genders showed a significant decreasing trend over the studied period. The characterization of the disease by gender can indicate differences in access in terms of the program's capacity to reach and the capacity of the population to use health

services. Moreover, it is possible to identify variations in the burden of leprosy among population groups and also to discuss whether they are linked to socioeconomic processes, such as the difference in access and opportunities.[6, 10] In the study period, there was a slight predominance in females (51.1%), with a steady trend in the proportion of cases between the genders. In Brazil, the data show that 55.6% of NC occurred in males.[9,15] Globally, only 39.3% of the total number of new cases are women, which has led WHO to consider whether this lower proportion may be occurring due to women's access to services in some localities.[6,11]

Effective control of leprosy requires an integrated approach that offers greater equity and accessibility, better cost-effectiveness and long-term sustainability. This implies that leprosy elimination activities should be implemented by primary health services, integrated with a referral network. Integration not only improves treatment affordability but also reduces the stigma and discrimination faced by people affected by leprosy.[11] In Brazil, the implementation of the *Normas Operacionais Básicas do SUS* (NOB-SUS 91 (freely translated as Basic Operational Norms of SUS), especially NOB-SUS 93 and 96), in addition to promoting the integration of actions among the three spheres of government, triggered a process of intense decentralization, transferring to the states, and especially to the municipalities, a set of responsibilities and resources for the operationalization of SUS, previously concentrated at federal level. Care for people with leprosy has long been provided as a vertical and centralized program. The decentralization of leprosy control actions and their integration into Primary Care services were strengthened with the *Norma Operacional de Assistência à Saúde de 2001* (freely translated as 2001 Brazilian Health Care Operational Standard), which describes that leprosy control actions should be developed by Primary Care services in the country.[17] In recent years there has been a progressive trend towards the decentralization of the diagnosis and treatment of leprosy to the PHC teams in Aracaju, where 58.89% of the cases were registered. A previous study comparing some epidemiological and operational indicators, showed that the decentralization of leprosy control actions in Aracaju immediately led to an increase in the general detection rate, besides the improvement of some operational indicators (greater proportion of the evaluation of the level of disability, greater proportion of contacts examined).[18]

The quality of care offered by health services to the person with leprosy can be evaluated by several indicators, among them the analysis of cure and the abandonment of cohorts NC.[10] The proportion of cure remained throughout the time series, with a mean of 91%, being considered, by the parameters of the Ministry of Health, as good. Abandonment remained below 10%.

There is no specific protection for leprosy, so it is essential to develop actions to reduce the burden of disease. Among these actions are the timely diagnosis, the treatment until the cure and the examination of the contacts. As a strategy for the early detection and control of leprosy, the examination of the intradomiciliary contacts at the time of diagnosis (or shortly thereafter) is therefore a very important operational indicator for the detection of the disease.[5,1] In Aracaju, there was an increasing trend to carry out contact surveys between 2003 and 2017, leaving an indicator considered precarious to regulate, but not yet reaching the ideal (90% or more of the contacts examined). In the period from 2012 to 2016, 77% of contacts of leprosy NC diagnosed in the country were evaluated, and among the regions, the Northeast had a lower percentage (71.8%). In relation to the percentage of contact examination by state, it was observed that the Rondônia, Amapá, Sergipe, Alagoas and Mato Grosso had higher percentages of contacts examined, among contacts of registered NC.[9]

Among infectious diseases, leprosy is considered a major cause of physical disability because of its potential to cause neural lesions. This high disabling potential is directly related to the immunogenic characteristics of *Mycobacterium leprae*.[4] The assessment of the physical disability level (PDL) should be performed at the time of diagnosis and at the end of treatment. Thus, the assessment of the proportion of cases with L2I identified at the time of diagnosis collaborates to evaluate the effectiveness of timely-detection activities.[10] In Aracaju, DLA was performed in 84.6% of cases at the time of diagnosis. At the time of the cure, it was performed in only 63.2%, considered precarious for the parameter of the Ministry of Health.

The rate of detection of leprosy NC with physical disability Level 2 (L2I) at the time of diagnosis used is important for monitoring the trend of timely detection.[10] The number of cases with L2I at the time of diagnosis directly reflects, in addition to the early detection of cases, also the impact of factors, such as awareness of leprosy in the community and capacity of the health system to recognize leprosy and access to services.[6] Differently from the decreasing trend of NC detection in Aracaju, the detection rate of NC with L2I remained stable with an average of 1.61 cases/100 thousand inhabitants. The detection rate has varied widely among the regions of the country, with the largest in the Midwest (2.28/100 thousand inhabitants), North (2.24/100 thousand inhabitants) and Northeast (1.44/100 thousand inhabitants).[12] In a study carried out to evaluate municipalities with high endemicity, the rate of NC with L2I reached 3.41 cases/100 thousand inhabitants.[12]

Leprosy presents a broad spectrum of clinical manifestations influenced by the type of immune response. For treatment purposes, a simplified operational classification is available based on the number of cutaneous lesions: paucibacillary leprosy (PB) with one to five

cutaneous lesions and multibacillary (MB) patients with six or more skin lesions. MB forms are present in people with low resistance to *M. leprae* and are related to the maintenance of the chain of transmission, since they are the main infective forms.[2,4] Between 2003 and 2017, in the city of Aracaju, the proportion of PB cases decreased significantly (61.37% to 41.1%), due to the proportional increase of MB cases. The increase in the proportion of MB cases has been observed in Brazil and in other countries, following the decline in the leprosy detection.[5,6] Thus, the progressive decrease in the detection of new cases observed in Aracaju, associated to the proportional increase of MB, may indicate a decrease in local transmission. It is also important to consider that, in some localities, the predominance of MB forms may indicate a deficiency in the identification of PB forms, since these are often not reasons for health service demand, except in the presence of leprosy reactions or disabilities.[6,19]

An important limitation faced in this study is that despite working with all cases of leprosy, because they are secondary data, the variables studied depend on the adequate completion of the notification/investigation form for leprosy, besides the possibility of underreporting of cases. Moreover, the analysis of some indicators, such as the proportion of L2I identified in both diagnosis and cure, is hampered by the large annual variation in its performance.

When presenting the epidemiological context of leprosy in a historical series of 15 years in the city of Aracaju, the study identifies important trends that must be considered, such as the significant trend to reduce detection rates in the general population, in both genders and in under 15 years. It is also possible to perceive the growth of the role of local Primary Care in actions of endemic control, including maintaining a good cure rate and increased contact examination, essential tools in the decline of the transmission chain.

It is clear that the epidemiology of leprosy has undergone transformations and changes in both clinical-epidemiological and operational aspects, in the city. In order to maintain the process of consistent reduction in transmission of leprosy, it is essential that actions be maintained and intensified, because despite the association between the decrease in incidence and the increase in the proportion of MB cases, the presence of these forms without diagnosis and timely treatment make it possible to maintain the transmission cycle. Although the epidemiological and operational indicators have shown improvements in disease control, this progress remains insufficient for its elimination, emphasizing the importance of strengthening policies to promote, prevent and diagnose leprosy.

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