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Epidemiological profile of American Tegumentary leishmaniasis in Brazil from 2015 to 2024

Abstract

Introduction: American Tegumentary Leishmaniasis (ATL) is a neglected disease caused by the *Leishmania* protozoan, transmitted by phlebotomine sandflies; it has a high incidence in Brazil, particularly in the North and Northeast regions. Factors such as the tropical climate, deforestation, unplanned urban expansion, and a lack of basic sanitation favor the proliferation of the vector.

Objective: To investigate the epidemiological profile of American Tegumentary Leishmaniasis in Brazil from 2015 to 2024.

Methodology: This is a descriptive, cross-sectional epidemiological study using secondary data from SINAN/DATASUS. Data were tabulated in Excel—where graphs, tables, and maps were created—and analyzed using the Bioestat 5.3 software to perform descriptive statistics. Data were expressed in terms of frequencies, mean, standard deviation, and coefficient of variation.

Results: The results showed that n=159081 cases were recorded in the country between 2015 and 2024, with the highest prevalence in the North region, followed by the Northeast and Center-West. The most affected age group was 20 to 59 years old, with a predominance of men (n=47,566 cases) and individuals self-identifying as mixed-race/brown (65,20%). Low levels of education and illiteracy were also associated with greater vulnerability. There was a 59.84% reduction in cases between 2015 (n=20708) and 2024 (n=8316).

Final considerations: Despite the reduction in cases, ATL remains a public health challenge; the persistence of a high number of cases necessitates integrated strategies involving vector control, health education, and policies to reduce social inequalities. Morbidity is linked to socioeconomic and cultural factors, requiring integrated actions across various sectors of society—such as health, education, and social assistance—to effectively control this disease.

Keywords: epidemiology, leishmaniasis, American tegumentary leishmaniasis

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Introduction

American Tegumentary Leishmaniasis is a disease caused by the *Leishmania* protozoan and transmitted by the bite of infected phlebotomine sandflies. It is considered a significant neglected disease in various tropical and subtropical regions of the world, including Brazil—largely due to the lack of basic sanitation across much of the country and its tropical climate[1] with the North, Northeast, and Central-West regions showing the highest prevalence.[2]

A key factor contributing to the rise in American Tegumentary Leishmaniasis cases in Brazil is the environment, which is conducive to the proliferation of the vector—the phlebotomine sandfly. Given its vast territory, Brazil has several states with environments favorable to disease transmission due to climatic and environmental conditions that support insect reproduction; these include hot, humid climates, dense vegetation, and the presence of rural and peri-urban areas, all of which increase the risk of human exposure to the vector.[3] Furthermore, unplanned urban expansion and deforestation have also facilitated the spread of the disease. Notably, deforestation can drive vectors to migrate into inhabited areas, thereby increasing interactions between sandflies and humans.[4]

A deeper understanding of the epidemiological profile of American Tegumentary Leishmaniasis in Brazil between 2015 and 2024, combined with knowledge of the factors contributing to the disease's occurrence, is significant for public health; it enables the identification of incidence trends and a better grasp of current determining factors.

Furthermore, as highlighted by Dutra et al.,[5] analyzing epidemiological data can reveal factors associated with fluctuations in case numbers, thereby facilitating improved healthcare coverage and enhanced health surveillance for this condition, while also exposing shortcomings in health promotion efforts regarding information and guidance on prevention and control. Given that adequate information on preventive measures contributes to disease prevention—since a population aware of the necessary precautions to avoid infection is likely to see a gradual decline in cases—such analysis is crucial.[6]

It is important to highlight that the analysis of the epidemiological profile can also reveal the underreporting of American Tegumentary Leishmaniasis cases. Structural issues within health services, a lack of professional training, and difficulties in accessing services can lead to the underdiagnosis and undertreatment of the disease.[7]

Another important factor to consider is the lack of adequate information and guidance regarding the prevention and control of tegumentary leishmaniasis. The population is often unaware of preventive measures—such as the use of insect repellents, window screens, and personal hygiene practices—which contributes to the spread of the disease.[8]

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Therefore, investigating the epidemiological profile of American Tegumentary Leishmaniasis in Brazil between 2015 and 2024 is justified by the need to better understand the factors determining its occurrence, thereby enabling the development of more effective prevention and control strategies. Understanding these determinants makes it possible to target interventions aimed at reducing the disease's incidence and improving access to diagnosis and appropriate treatment.

Methodology

This is a retrospective, descriptive, observational cross-sectional study with a quantitative approach covering Brazil and its regions, analyzing epidemiological data regarding the incidence and prevalence of American Tegumentary Leishmaniasis.

Data were collected from the Notifiable Diseases Information System (SINAN)[9] via the TABNET platform of the Department of Informatics of the Unified Health System (DATASUS); the "Epidemiology and Morbidity" module was accessed, and the specific option for leishmaniasis was selected. Subsequently, within the "Notifiable Diseases and Conditions – 2015 onwards" category, data related to American Tegumentary Leishmaniasis were filtered. The timeframe adopted for the analysis spanned the period from 2015 to 2024.

The study population consisted of all patients with confirmed cases of American Tegumentary Leishmaniasis during the period under review. The variables analyzed included age group, self-reported race/color, sex, education level, year of notification, confirmed cases by year of notification, clinical form, and regions of the country. The data were summarized using descriptive statistical analysis—employing absolute and relative figures and proportions—and the results were presented in charts generated in Microsoft Excel, with data grouped according to the applied filters; maps were created using the Microsoft Bing, OpenStreetMap, and Overture Maps Foundation platforms.

This study utilized aggregated secondary data obtained from Ministry of Health databases that are publicly available online. As the databases consulted did not contain confidential information such as names or addresses, approval from a research ethics committee was not required. Nevertheless, the study was conducted in compliance with National Health Council Resolution No. 466 of December 12, 2012, regarding research involving human subjects.

Results

Politically, Brazil comprises 26 states and a federal district; due to its geographical location, it features extensive forest cover and a predominantly tropical climate, along with a vast river network—factors that favor the proliferation of tegumentary leishmaniasis. The region with the highest number of cases was the North (n=72532), followed by the Northeast (n=39665). The states with the highest incidence of reported cases were Pará (n=27370), Mato Grosso (n=18313), Bahia (n=16066), Minas Gerais (n=15169), Amazonas (n=13467), and Maranhão (n=12878). Conversely, the states with the fewest reported cases were Sergipe (n=64), Rio Grande do Sul (n=140), Santa Catarina (n=295), the Federal District (n=486), and Rio de Janeiro (n=532), as shown in Figure 1.

Between 2015 and 2024, n=160700 confirmed cases of American Tegumentary Leishmaniasis were identified in Brazil. The year with the highest number of cases was 2015 (n=18972), representing 11.80% of the total reported over the nine-year period. Compared to 2024—the year with the lowest number of notifications (n=7754)—there was a 41.97% decrease between the two periods. A downward trend is evident throughout the study period. Figure 2 displays confirmed cases of leishmaniasis in Brazil by year and region, highlighting the North Region as having the highest number of confirmed cases in every year, followed by the Northeast Region.

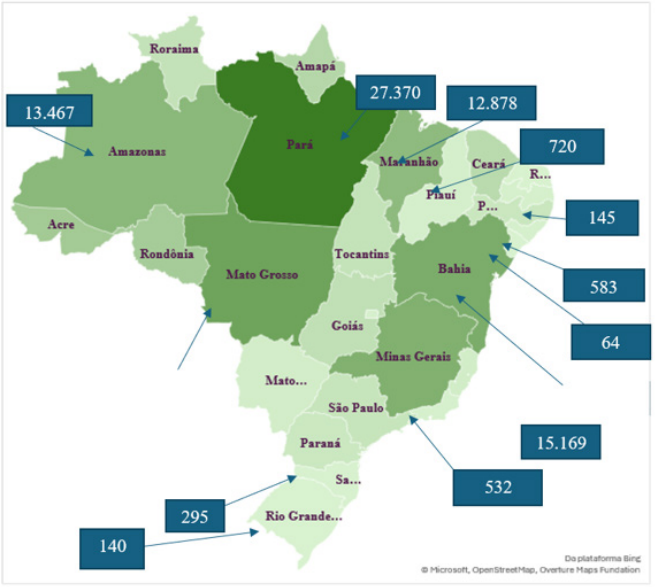

Figure 1 Distribution map of American Tegumentary Leishmaniasis in Brazil, by state, from 2015 to 2024.

Source: Prepared by the author, using data from the Ministry of Health/SVSA – Notifiable Diseases Information System – Sinan Net (2025).

Figure 2, which shows the annual distribution of confirmed American Tegumentary Leishmaniasis (ATL) cases in Brazil by geographic region from 2015 to 2024, reveals a clear predominance of the North Region as the disease's epicenter across all years analyzed. In 2015—the year with the highest number of notifications overall—the North Region accounted for approximately 9.800 cases, followed by the Northeast Region with around n=5600 notifications. The Central-West(n=2400), Southeast(n=2100), and South regions(n=600) showed significantly lower.

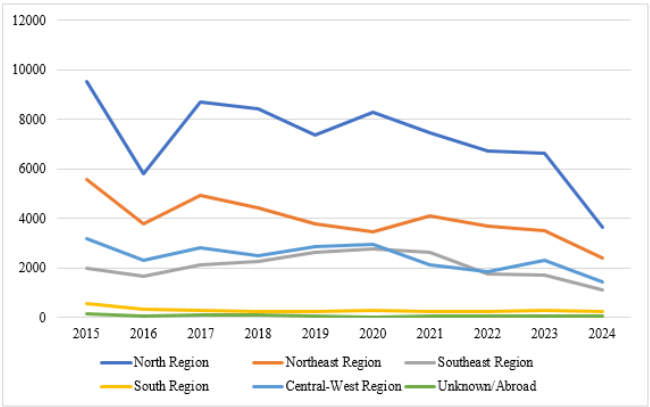

Figure 2 Distribution of American Tegumentary Leishmaniasis in Brazil, by region/year, from 2015 to 2024.

Source: Prepared by the author, using data from the Ministry of Health/SVSA – Notifiable Diseases Information System – Sinan Net (2025).

In 2016, the data showed a slight reduction across almost all regions, although the North Region continued to lead in absolute numbers, with n=9000 cases. The Northeast maintained a pattern like

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the previous year, with a small drop to approximately n=5000 cases. The Southeast and Central-West regions continued to show similar figures, ranging between n=2000 and n=2300 notifications.

Between 2017 and 2019, there was a progressive downward trend in cases across all regions, most notably in the North Region, where the figure fell from approximately n=8500 cases in 2017 to around n=7000 in 2019. Meanwhile, the Northeast fluctuated between n=4500 and n=4000 cases during this period. The remaining regions maintained stable figures, though these consistently remained below half the totals recorded in the North and Northeast regions.

From 2020 onwards, the decline became more pronounced, with the North Region recording approximately n=6000 cases and the Northeast around n=3500. Figures for the Central-West and Southeast regions ranged between n=1300 and n=2000 cases, while the South Region maintained numbers below n=800 annual cases.

In 2023—the penultimate year of the time series—cases dropped further; notably, the North Region recorded just under n=5000 cases, and the Northeast Region did not exceed n=2700. Finally, in 2024—the last year analyzed—the figures were the lowest of the entire period. The North Region still led with approximately n=4000 cases, followed by the Northeast with around n=2200. The remaining regions each reported fewer than n=1500 cases, with the South Region showing the lowest incidence, recording fewer than n=500 cases.

Therefore, the data in Figure 2 reveal a national downward trend in the incidence of cutaneous and mucocutaneous leishmaniasis (LTA) over the last decade. However, they also highlight a persistent concentration of cases in the North and Northeast regions, demonstrating that, although the disease burden is declining, significant regional inequalities remain in addressing the disease.

Figure 3 presents the cumulative distribution of confirmed cases of American Tegumentary Leishmaniasis (ATL) in Brazil, organized by geographic region, from 2015 to 2024. The data clearly show that most cases are concentrated in the North Region, with n=72532 notifications recorded over the decade. This figure accounts for nearly half of the national total, establishing the region as the most affected by the disease in the country.

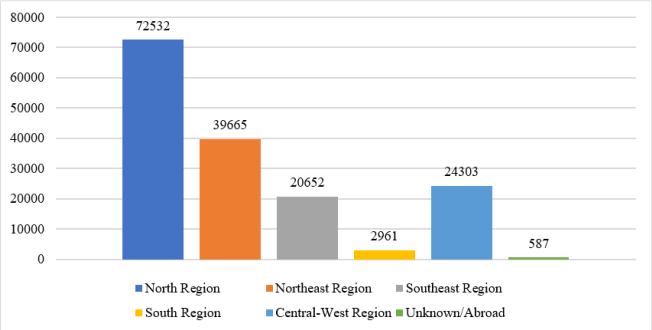

Figure 3 Distribution of American Tegumentary Leishmaniasis in Brazil, by region, from 2015 to 2024.

Source: Prepared by the author, using data from the Ministry of Health/SVSA – Notifiable Diseases Information System – Sinan Net (2025).

The Northeast Region ranks second, with n=39665 cumulative cases, demonstrating that this macro-region also plays a pivotal role in the epidemiological dynamics of ATL. Together, the North and Northeast regions account for over n=112000 cases, representing more than 70% of all national records during the analyzed period. The Central-West Region recorded n=24303 cases, ranking third. Although numerically behind the North and Northeast regions, the Central-West presents a significant case burden; this may be linked to factors such as the presence of vast rural areas, extractive activities, and urban expansion into forested areas.

The Southeast Region reported n=20652 cases between 2015 and 2024, representing a significant burden, particularly given that it is the country's most urbanized and economically developed region. This underscores that American Tegumentary Leishmaniasis (ATL) is not confined to traditionally endemic areas and can occur even in highly urbanized settings, depending on proximity to forested areas and environmental conditions favorable to the vector.

The South Region recorded the lowest number of confirmed cases during this period (n=2961) accounting for less than 2% of the national total. This low incidence may be attributed to climatic factors less conducive to the disease's transmission cycle and a lower prevalence of the vector in the region.

Finally, the "Ignored/Abroad" category accounts for n=587 cases, comprising records lacking regional specification or linked to notifications made outside the country. Although this group represents a very small fraction of the cases, it nonetheless highlights the importance of data completeness and quality within epidemiological surveillance systems.

Therefore, the analysis of Figure 3 reinforces the regional pattern of cutaneous leishmaniasis (LTA) in Brazil, characterized by a marked concentration of cases in the North and Northeast regions and a significant presence in the other regions, particularly the Center-West and Southeast. These data underscore the need for regionalized control and prevention strategies that take into account the specific socio-environmental and epidemiological characteristics of each macro-region.

Table 1 presents the distribution of reported cases of American Tegumentary Leishmaniasis (ATL) in Brazil between 2015 and 2024, considering sociodemographic variables such as sex, age group, race/color, and education level, organized by the patient's region of residence.

When analyzing the data by sex, it is observed that men account for the absolute majority of cases across all regions of the country. In the North Region, n=58279 cases were recorded among males—a figure considerably higher than the total number of cases among females, which stood at n=14248. A similar pattern is seen in the other regions: in the Northeast, there were n=25110 male cases versus n=14533 female cases; in the Southeast, n=12920 among men and n=7729 among women; in the South, n=2214 among men and n=747 among women; and in the Center-West, n=18572 among men versus n=5731 among women. There are also notifications where sex was not recorded—albeit in small numbers—most notably in the Northeast (n=22 cases), followed by the North (n=5 cases) and the Southeast (n=3 cases). This male predominance aligns with the literature on LTA, which indicates higher occupational exposure to the vector among men, particularly in rural, extractive, and forestry activities.

In terms of age group, ATL mainly affects young and middle-aged adults. The most affected age group in absolute terms was 20 to 39 years old, with emphasis on the North Region, where n=32857 cases were reported, followed by the Northeast (n=13344), Central-West (n=8497), Southeast (n=5141) and South (n=823). Next, the range of 40 to 59 years old stands out, with n=17091 cases in the North, n=10087 in the Northeast, n=8184 in the Central-West, n=6856 in the Southeast and n=1103 in the South.

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Table 1 Distribution of American Tegumentary Leishmaniasis in Brazil by sex, age group, race, and education level, by region, from 2015 to 2024

Region	*North*	*Northeast*	*Southeast*	*South*	*Central-West*	*Ignored/Exterior*
Sex						
Ignored	5	22	3	0	0	0
Male	58279	25110	12920	2214	18572	458
Feminine	14248	14533	7729	747	5731	129
Faixa age						
Blank/IGN	7	14	3	0	4	0
<1 Year	889	575	174	28	314	9
01-04 years	1363	1079	333	17	364	7
05-09 years	2295	1675	633	56	483	15
10-14 years	4599	2664	949	72	886	31
15-19 years	8365	3571	1062	116	1452	59
20-39 years	32857	13344	5141	823	8497	258
40-59 years	17091	10087	6856	1103	8184	172
60-64 years	2013	1911	1580	236	1429	11
65-69 years	1329	1584	1355	211	1010	15
70-79 years	1291	2171	1741	218	1243	8
80 e+ years	433	990	825	81	437	2
Race						
Ign/Branco	2123	1461	1162	57	654	27
White	9133	4260	7312	2232	7449	31
Black	4552	4777	1725	116	1739	45
Yellow	510	243	202	28	208	1
Brown	52753	28434	9982	518	12550	375
Indigenous	3461	490	269	10	1703	108
Schooling						
Ign/Branco	15849	9396	6790	680	4871	222
Illiterate	2302	2919	826	86	858	15
1st to 4th incomplete series of EF	10914	7342	2871	388	3481	58
4th complete series of EF	5220	2806	1549	243	1660	32
5th to 8th incomplete series of EF	13897	6241	2224	430	3722	75
Complete fundamental ensino	4792	1862	1301	230	1802	27
Incomplete medium ensino	6009	2163	1086	214	2260	28
Full medium ensino	8535	3819	2407	449	3454	77
Incomplete higher education	667	257	190	43	350	12
Complete higher education	1295	566	690	132	1000	20
Not applicable	3052	2294	718	66	845	21

Source: Prepared by the author, with data from the Ministry of Health/SVSA - Sistema de Informação de Agravos de Notification - Sinan Net (2025).

In pediatric age groups, it is observed that even young children are affected. Among those under one year of age, there were n=889 cases in the North, n=575 in the Northeast, and n=314 in the Center-West. Children aged 1 to 4 also account for significant numbers: n=1363 in the North and n=1079 in the Northeast. Adolescents (aged 15 to 19) also make up a substantial portion of the cases, particularly in the North (n=8365) and Northeast (n=3571).

Interestingly, the elderly group (aged 60 and older) also shows significant figures, especially in the North: n=2013 cases among those aged 60–64, n=1329 among those aged 65–69, n=1291 among those aged 70–79, and n=433 among individuals aged 80 or older. This suggests that, although the disease primarily affects working-age adults, the extremes of the age spectrum are not exempt from the risk either.

Regarding race/color, the majority of reported cases across all regions involved the mixed-race population, highlighting the significant impact of cutaneous leishmaniasis (LTA) on historically vulnerable groups. The highest number of cases among the mixed-race population was recorded in the North (n=52753 cases), followed by the Northeast (n=28434), Center-West (n=12550), Southeast (n=9982), and South (n=518).

The Indigenous population bears a high disease burden in the North (n=3461 cases) and Center-West (n=1703) regions, reflecting these peoples' exposure to the disease vector in forest and rural areas.

Individuals self-identifying as white represent a significant share, particularly in the Southeast (n=7312) and Center-West (n=7449), as well as the South (n=2232). The Black population is also heavily affected, notably in the Northeast (n=4777) and North (n=4552). The "Yellow" category showed low frequency across all regions, while the "unknown/blank" category appears with significant figures in the North (n=2123), Northeast (n=1461), and Southeast (n=1162), which may reflect data collection shortcomings.

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Regarding education level, a considerable number of notifications list this field as unknown or blank, especially in the North (n=15849), Northeast (n=9396), and Southeast (n=6790) regions. However, among records containing this information, a predominance of individuals with low levels of education is observed.

The category of "incomplete primary education (grades 1–4)" stands out in the North (n=10914 cases), Northeast (n=7342), and Center-West (n=3481), reinforcing the association between the disease and poor socioeconomic conditions. Furthermore, there are numerous cases among individuals with "incomplete primary education (grades 5–8)" in the North (n=13897) and Northeast (n=6241), suggesting early discontinuation of schooling.

The number of patients who have completed high school is also high (n=8535) in the North, n=3819 in the Northeast, and n=3454 in the Center-West—which may reflect the increasing urbanization of cases. Cases among individuals with complete or incomplete higher education are less frequent, though still present, indicating that the disease can also affect people with higher levels of education. The "Not applicable" category, which may include preschoolers, accounts for thousands of cases, primarily in the North (n=3052), Northeast (n=2294), and Center-West (n=845), demonstrating that LTA spares not even the youngest.

Table 2 shows a comprehensive analysis of the distribution of American Tegumentary Leishmaniasis (LTA) in Brazil between the years of 2015 and 2024, considering the type of entry of two cases in the system, the clinical form of the diagnosis, the criteria used for diagnostic confirmation and the clinical evolution of two patients, all of them. factors discriminated by geographical region of the country. The objective is to provide an integrated view on the epidemiological behavior of LTA in the national territory.

Table 2 Distribution of American Tegumentary Leishmaniasis in Brazil, by type of entry, clinical form, confirmation criterion, and outcome, by region, from 2015 to 2024

Region	North	Northeast	Southeast	South	Central-West	Unknown/Abroad	
Clinical Form							
Unknown/Blank	989	862	777	123	384	4	3139
New case	67965	36692	18588	2574	22426	543	148788
Relapse	3578	2111	1287	264	1493	40	8773
Confirmation Criterion							
Unknown/Blank	0	2	240	0	0	0	242
Clinical-laboratory	64897	24384	15829	2097	20047	493	127747
Clinical-epidemiological	7635	15279	4583	864	4256	94	32711
Outcome							
Unknown/Blank	14903	13676	4849	1028	7071	64	41591
Cure	53660	23711	13464	1570	16031	433	108869
Loss to follow-up	2817	639	229	59	513	83	4340
Death due to LTA	27	38	34	11	24	1	135
Death due to other cause	179	210	145	43	172	1	750
Transfer	679	439	990	63	221	4	2396
Change of diagnosis	267	952	941	187	271	1	2619

Source: Prepared by the author, with data from the Ministry of Health/SVSA - Sistema de Informação de Agravos de Notification - Sinan Net (2025).

Notwithstanding the type of entry, it is observed that most records correspond to new cases, totaling n=148788 notifications throughout the period studied. The Northern Region leads this number, with n=67965 new cases registered, followed by the Northeast Region, with n=36692. The Southeast and Central-West regions also present high numbers, with n=18588 and n=22426 new cases, respectively. In Região Sul, in turn, n=2574 new cases were notified, and n=543 formal notifications attributed to the "ignored/external" category. In addition, n=8773 cases of recurrence were recorded, in other words, patients who presented their return after previous treatment. Again, the Northern Region concentrates the largest number of recurrences, with n=3578 cases, followed by the Northeast (n=2111), Southeast (n=1287), Central-West (n=1493) and South (n=264), with more n=40 cases in the ignored category. Also, within this block, there appear n=3139 records classified as "ignored or blank", indicating the absence of information on the type of entry, most of them in the Northern (n=989) and Northeastern (n=862) regions.

Curiously, the data related to clinical form exactly replicate the numbers of the entry type. This suggests that, in this case, the fields may have been pre-enclosed redundantly or as a categorization error in the notification system, since the values are identical in each of the columns. Thus, the same n=148788 cases were classified as new case, n=8773 as recurrence and n=3139 as ignored or blank, distributed proportionally between the regions.

By observing the diagnostic confirmation criteria of LTA, it is noted that the most widely used method was the clinical-laboratory one, which corresponds to n=127747 confirmations in the period. This means that most patients have a diagnosis established based on laboratory tests allied to clinical evaluation. Região Norte also leads this quesito, with n=64897 confirmations by this criterion, followed by the Região Nordeste (n=24384), Sudeste (n=15829), Centro-Oeste (n=20047) and Sul (n=2097), n=493 was records framed as "ignored/outside."

Another widely used criterion was the clinical-epidemiological one, applied in n=32711 cases, which allows confirmation to be obtained from the association between compatible clinical sinais and exposure in endemic areas. This form of confirmation was most common in the Northeast (n=15279 cases), followed by the North (n=7635), the Southeast (n=4583), the Central-West (n=4256) and the South (n=864), with another n= 94 records in the ignored category.

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The number of cases with confirmation criteria ignored or in white was low, totaling n=242 in the entire country. These n=240 cases are concentrated in the Southeast Region, which may indicate specific failures without pre-filing the notification forms in that locality.

In relation to the clinical evolution of two cases, or according to the data of each patient, it is observed that the majority was registered as a cure, with a total of n=108869 cases included with therapeutic success. The Northern Region has the highest number of priests (n=53660), followed by the Northeast (n=23711), Central-West (n=16031), Southeast (n=13464) and South (n=1570) regions. Other n=433 cases with evolution for cura foram registered under the "ignored/external" category. Likewise, we must pay attention to the expressive quantity of cases with evolution ignored or left blank, with n=41591 records, which represents an important failure in epidemiological surveillance. The largest numbers in this category are in the North (n=14903), Northeast (n=13676), Southeast (n=4849), Central-West (n=7071) and South (n=1028).

Furthermore, 4,340 treatment abandonments were recorded, indicating patients who did not complete the therapy. The highest incidence of abandonment was in the North (n=2,817), followed by the Northeast (n=639), Central-West (n=513), Southeast (n=229) and South (n=59). There are also records of deaths from American Tegumentary Leishmaniasis, totaling n=135 deaths, although the tegumentary form is generally not considered lethal. The highest number of deaths by LTA was observed in the Northeast (n=38), followed by the Southeast (n=34), North (n=27), Central-West (n=24), South (n=11) and a death in the ignored/exterior category. There are also deaths due to other causes, such as patients who die due to comorbidities or conditions not directly related to LTA, in n=750 cases, with the majority of them in the Northeast (n=210), followed by the North (n=179), Central-West (n=172), Southeast (n=145), South (n=43) and an unspecified case.

Other outcomes include n=2396 patient transfers to other health facilities—a particularly high figure in the Southeast (n=990)—as well as n=2619 changes in diagnosis, representing cases initially reported as cutaneous leishmaniasis (LTA) but subsequently ruled out upon confirmation of another disease. The majority of these changes occurred in the Northeast (n=952 cases) and Southeast (n=941), followed by the South (n=187), Center-West (n=271), and North (n=267), with one case in the "unknown" category.

The data in Table 2 reveal a complex epidemiological scenario for American Tegumentary Leishmaniasis (ATL) in Brazil. A high number of new cases is observed, particularly in the North and Northeast regions, alongside a predominance of clinical-laboratory criteria for confirmation. While the high cure rate is a positive aspect, the significant number of records with unknown outcomes, combined with instances of treatment abandonment and relapse, highlights weaknesses in case follow-up and data quality. These findings underscore the importance of strengthening surveillance and post-treatment monitoring, as well as enhancing the training of professionals responsible for completing notifications in the Notifiable Diseases Information System (SINAN).[9]

Discussion

American Tegumentary Leishmaniasis (ATL) is an endemic disease in Brazil, driven by various factors that facilitate the spread and persistence of its causative agent within the Brazilian population. By analyzing the epidemiological triad—agent, host, and environment—we can identify characteristics that render ATL a serious public health issue.[2]

Regarding the causative agent, the disease is caused by the protozoan *Leishmania*, which is transmitted through the bite of infected phlebotomine sandflies. Humans play a role in the parasite's developmental cycle; the protozoan disrupts the human body—primarily affecting the phagocytic system, such as macrophages—and proliferates until cell lysis occurs, thereby compromising the immune system.[8]

Regarding the environment, regions conducive to the proliferation of disease vectors are characterized by hot, humid climates, dense forests, areas where natural forest habitats have been destroyed, and locations with poor or nonexistent basic sanitation; combined, these factors foster mosquito multiplication, thereby increasing transmission and the resulting infection of the population.[10]

An analysis of the North Region reveals it to be the area most affected by American Tegumentary Leishmaniasis (ATL), consistently recording the highest number of cases over most years—with an incidence rate considerably higher than that of the Northeast Region during several periods. It is possible to identify spatial and environmental patterns contributing to the persistence and expansion of ATL in these regions, which serve as a representative sample for the rest of the country. These regions exhibit characteristics that, when viewed through the lens of the epidemiological triad, favor vector proliferation and disease incidence.[11,12]

Regarding the environmental component of the triad, it is observed that these regions feature urban areas undergoing constant expansion, often in an unplanned manner, near forest zones or areas previously covered by dense vegetation. Urban boundaries encroach upon natural areas, creating transition zones that facilitate contact between humans and phlebotomine vectors. Furthermore, the presence of water bodies, such as rivers and streams, combined with the hot, humid climate characteristic of the North and Northeast regions, creates an environment conducive to the development of the *Leishmania* vector.[13,14]

Additionally, a common feature across the analyzed regions is the presence of areas with inadequate urban infrastructure, particularly regarding basic sanitation, drainage, and solid waste collection. Such environmental conditions foster the proliferation of vectors and sustain the transmission cycle of tegumentary leishmaniasis (LTA). In the North and Northeast regions, there are peripheral neighborhoods with poor urbanization, a situation that increases the vulnerability of local populations to the disease.[15]

This situation aligns directly with national data. Between 2015 and 2024, n=160.700 confirmed cases of American Tegumentary Leishmaniasis were recorded in Brazil, showing an overall downward trend in the number of notifications. In 2015, the number of cases reached n=18972 (11,80% of the total), whereas in 2024, the figure fell to n=7754, representing a 41,97% reduction over the period. Despite this decline, the data still highlight a significant public health challenge.[16]

The profile of the victims also reveals a social pattern. The most affected age group is 20 to 59 years old, accounting for the highest number of reported cases (n=70,600), suggesting a possible link to rural work and deforestation activities, which involve greater exposure to vectors.[17]

Furthermore, analysis by race/color shows that 65,09% of cases were recorded among individuals self-identifying as mixed-race, followed by White (18,92%) and Black (8%) individuals. This finding reinforces the premise that populations, typically those facing greater social vulnerability, are more heavily affected by LTA. Regarding

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education, the data indicate that the majority of cases are associated with incomplete primary education. Individuals with low levels of education, particularly the illiterate and those who completed only up to the 4th or 8th grade of primary school, account for a significant proportion of confirmed cases, especially among adults aged 20 to 59.[18]

In agreement with Meneghel,[19] this study, being a descriptive epidemiological analysis based on secondary data from public databases, is limited by the inability to infer causality and the necessity of relying solely on variables already present in the dataset. Nevertheless, this type of study serves as an excellent source of prevalence data, providing relevant information on the disease's prevalence and distribution; it can inform public health initiatives, while its findings may generate hypotheses and provide a foundation for future field studies.

Final considerations

Analysis of epidemiological data on American Tegumentary Leishmaniasis (ATL) in Brazil from 2015 to 2024, combined with environmental characteristics observed in the most affected regions, has made it possible to establish a clear profile of the population most vulnerable to the disease. ATL remains a serious public health issue, particularly in the North and Northeast regions, where environmental, social, and structural conditions foster vector proliferation and population exposure. The predominant epidemiological profile consists of males, specifically those aged 20 to 59, an age group accounting for the majority of confirmed cases. This prevalence may be linked to occupational activities in forested areas or zones of unplanned urban expansion, where the risk of contact with the vector is higher. Regarding education, the highest concentration of cases was observed among individuals with incomplete primary education, specifically those who had completed between the 5th and 8th grades, highlighting a direct link between low educational attainment and vulnerability to infection.

Illiteracy also emerges as a significant factor among older age groups, such as those aged 40 to 59. Regarding race/color, there is a predominance of cases among individuals who self-identify as mixed-race/brown, accounting for approximately n=104612 (65,09%) of the total cases, followed by white and black individuals. This data highlights the disease's disproportionate impact on socially vulnerable populations, who often reside in outlying areas lacking adequate sanitation, infrastructure, and access to information. Thus, it is evident that cutaneous leishmaniasis (LTA) in Brazil is strongly linked to social, environmental, and economic factors, necessitating the strengthening of integrated public policies that encompass epidemiological surveillance, vector control, health education, and improvements in the living conditions of the most affected populations.

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Conflict of interest

The authors declare that there is no conflict of interest.

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References

1. Abraão LS. Epidemiological profile of American tegumentary leishmaniasis cases in the state of Pará, Brazil, between 2008 and 2017. *Rev Pan-Amaz Saude*. 2020;11.
2. Temponi AOD, de Brito MG, Ferraz ML, et al. Occurrence of American tegumentary leishmaniasis cases: a multivariate analysis of spatial production circuits, Minas Gerais, Brazil, 2007–2011. *Cad Saude Publica*. 2018;34(2):e00165716.
3. Silva MA. American tegumentary leishmaniasis (ATL): treatment and care challenges. *Rev Enferm Mod Cuid Saude Destaque*. 2024;1(1).
4. Pezente LG, Benedetti MSG. Epidemiological profile of American Tegumentary Leishmaniasis in the State of Roraima, Amazon, Brazil, between 2007 and 2016. *Braz J Health Rev*. 2019;2(3):1734–1742.
5. Dutra ASS, Dutra RFF, de Oliveira K, et al. Study of visceral leishmaniasis and American tegumentary leishmaniasis cases in the Northeast region of Brazil and the use of herbal medicines in their treatment. *Braz J Implantol Health Sci*. 2024;6(1):2026–2040.
6. Ferreira CGX, de Oliveira MD, Suguimoto F, et al. Retrospective evaluation of confirmed cases of American tegumentary leishmaniasis in Três Lagoas, MS, from 2007 to 2019. *Braz J Dev*. 2021;7(2):13535–13550.
7. Cavalcanti BLD, Miranda MCC, Soares GB, et al. Epidemiological profile of American tegumentary leishmaniasis in the state of Maranhão, 2018 to 2022. *Cad Ped*. 2024;21(11):e9335.
8. Estumano JC, Sá LL, Macêdo CG. American tegumentary leishmaniasis: A decade-long epidemiological analysis in the interior of the Amazon, Brazil. *Braz J Dev*. 2020;6(6):36311–36325.
9. Ministry of Health, Health Surveillance Secretariat. *Notifiable Diseases Information System (SINAN)*. Brazil; 2025.
10. Alencar CH. Tegumentary leishmaniasis in the Afro-descendant population of northern Maranhão, Brazil: epidemiology, clinical and parasitological aspects. *Rev Soc Bras Med Trop*. 2010;43(4):427–432.
11. Cruz BR. American tegumentary leishmaniasis. *Braz J Dev*. 2023;9(7):21718–21736.
12. Gama MEA. American tegumentary leishmaniasis in the Baixada Maranhense region: epidemiological aspects of cases reported between 2007 and 2013. *Rev Bras Epidemiol*. 2016;19(2):401–413.
13. Fagundes AM, Rosário CC, Ferraz DOM, et al. Analysis of American tegumentary leishmaniasis cases in Brazil. *Res Soc Dev*. 2024;13(5):e6413545779.
14. Ferreira LC. American tegumentary leishmaniasis in the municipality of Santa Quitéria, Maranhão, Brazil: profile of cases diagnosed between 2007 and 2010. *Epidemiol Serv Saude*. 2012;21(2):291–298.
15. Rodrigues GM, Ribeiro ACS, Santana DA, et al. Prophylaxis for American tegumentary leishmaniasis: the nurse's role regarding the disease. *Rev Liberum Accessum*. 2020;1(1):54–67.
16. Matias MGL, Júnior ELDS, Silva TAFD, et al. American Tegumentary Leishmaniasis and the parasite's action on the immune system. *Rev Multidiscip Saude*. 2021;2(2):22.
17. Lima AA, Nunes ICM, Lima BRS, et al. Epidemiological characterization of American tegumentary leishmaniasis in the state of Alagoas from 2008 to 2018. *Divers J*. 2021;6(3):3268–3280.
18. Macedo JB, Macedo DB, Ferreira AF, et al. Spatial analysis and social determinants in the surveillance of neglected diseases. *Res Soc Dev*. 2020;9(8):e808986261.
19. Meneghel SN. *Epidemiologia: Exercícios Indisciplinados*. Tomo Editorial; 2015.