



iJERResearch

International Journal of Education and Research

Vol. 1, Number 2, September - 2026 | Peer-Reviewed Journal

ISSN 2764-9733 | ijerresearch.org

DOI: 10.5281/zenodo.23194130

ADHERENCE TO AND DISCONTINUATION OF LEPROSY TREATMENT IN THE MUNICIPALITY OF PILAR, ALAGOAS (2021–2025): CLINICAL-EPIDEMIOLOGICAL PROFILE AND OUTCOME-RELATED CHARACTERISTICS ACCORDING TO SINAN/DATASUS DATA

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ABSTRACT

Leprosy remains an important public health problem, particularly in settings characterized by social vulnerability, delayed diagnosis, and challenges in treatment continuity. This study aimed to analyze the clinical and epidemiological profile of leprosy cases among residents of Pilar, Alagoas, from 2021 to 2025, describing patterns of treatment completion, cure, and treatment abandonment, as well as the sociodemographic, clinical, and operational characteristics related to these outcomes. This was an epidemiological, observational, retrospective, descriptive, and quantitative study based on secondary data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS. A total of 32 new cases were analyzed. The highest numbers of diagnoses occurred in 2022 and 2023. The cases were characterized by a predominance of individuals identified as brown (pardo), a higher concentration among adults, a high frequency of low educational attainment, and higher proportions of multibacillary cases and the borderline clinical form. Most cases were detected through spontaneous presentation or referral. Regarding treatment outcomes, 25 cases were classified as cured, three as treatment abandonment, and four had no recorded type of discharge. Among the

evaluable cohorts, the 2023 and 2024 cohorts achieved 100% cure, whereas the 2025 cohort showed a lower cure proportion and a higher proportion of treatment abandonment. The findings indicate that, despite the predominance of cure, challenges remain in early diagnosis, treatment follow-up, contact surveillance, and data quality.

Keywords: Leprosy. Treatment adherence. Treatment abandonment.

INTRODUCTION

Leprosy remains a neglected tropical disease of major public health relevance, despite being curable and having free treatment available. Caused primarily by *Mycobacterium leprae*, it has a chronic course, tropism for the skin and peripheral nerves, and the potential to cause sensory, motor, and autonomic changes, physical disabilities, and psychosocial repercussions. In 2024, 188 countries, areas, and territories reported 172,717 new cases, of which 9,397 occurred in children and 9,157 already presented grade 2 physical disability at diagnosis (World Health Organization, 2025). These indicators show that active transmission, late diagnosis, and preventable sequelae persist in different settings, requiring elimination to be understood not merely as a numerical reduction, but as sustained interruption of transmission, prevention of disabilities, and efforts to address stigma.

Brazil occupies a central position in this scenario, since in 2024 alone, 22,129 new cases were recorded, corresponding to a detection rate of 10.41 per 100,000 inhabitants; among them, 921 occurred in children under 15 years of age, with a rate of 2.19 per 100,000 in this population (Brasil, 2026a). The occurrence of leprosy in children is particularly relevant because it serves as a marker of recent transmission and of failures in the timely detection of sources of infection in the territory. In addition, the concentration of the disease in socially vulnerable areas confirms that leprosy cannot be explained solely by biological factors. Housing conditions, income, education, access to health services, discrimination, and the organization of the health care network influence the risk of illness, the timing of diagnosis, and continuity of care (Jesus et al., 2023).

Leprosy treatment is based on multidrug therapy, consisting of rifampicin, dapsone, and clofazimine. Six doses are recommended for cases classified as paucibacillary, whereas multibacillary cases receive 12 doses, according to the criteria established by the Brazilian Ministry of Health (Brasil, 2022). Appropriate treatment cures the disease, interrupts the chain of transmission after treatment is initiated, and helps prevent progression of neural impairment and disabilities. However, treatment completion depends not only on the availability of medications, but also on continuous follow-up provided by health services.

In this context, adherence should not be understood as simple patient compliance with the medication prescription. Continuation in treatment may be influenced by understanding of the disease, perceived improvement, occurrence of adverse events, the relationship with the health care team, family support, socioeconomic conditions, accessibility of services, and the health care network's capacity to identify and follow patients who miss appointments. Cruz and Franchi (2025), when investigating people who discontinued multidrug therapy, identified factors related to nonadherence, including lack of perceived improvement and questioning of the diagnosis. These findings reinforce the need for clear communication, health education, and longitudinal follow-up throughout treatment.

Social inequalities must also be considered when understanding different therapeutic trajectories.

Jesus et al. (2023) emphasize that social vulnerability, stigma, and difficulties in accessing services may overlap and produce trajectories marked by late diagnosis, difficulties in continuity of care, and a greater risk of disabilities. Thus, sociodemographic and clinical characteristics should not be interpreted in isolation, but rather within the social and health care context in which people affected by leprosy live.

In Brazil, treatment discontinuation remains an important challenge for disease control. Between 2014 and 2023, 241,460 new cases belonging to follow-up cohorts were analyzed, of which 14,766, equivalent to 6.1%, were closed as treatment discontinuation. Among these records, 78.1% were multibacillary, 43.9% had been detected through spontaneous demand, and 7.5% presented grade 2 physical disability at diagnosis. During the same period, the national proportion of treatment discontinuation increased from 4.5% to 8.0%, while in the Northeast it rose from 4.4% to 7.6%. In Alagoas, it increased from 3.6% to 4.6%, showing a statistically stationary trend over the period analyzed (Brasil, 2025a). These data demonstrate that, even in locations where percentages remain within parameters considered satisfactory, treatment interruption continues to require surveillance, especially because of differences among municipalities.

The period from 2021 to 2025 deserves attention because it includes years still marked by the effects of the COVID-19 pandemic and the subsequent reorganization of health services. Leprosy detection declined markedly during the public health emergency, followed by recovery in subsequent years. Changes in health service utilization, interruption of community activities, reduced contact examination, and difficulties in accessing Primary Health Care may have affected patient diagnosis and follow-up (Brasil, 2025b). Silvério et al. (2024), when analyzing the follow-up of people affected by leprosy during the pandemic, identified weaknesses related to the availability of health professionals and medications and to users' understanding of the disease. Therefore, fluctuations observed in the first years covered by this study should also be interpreted in light of the functioning of health services, without automatically attributing these variations to changes in disease transmission.

In the state of Alagoas, Lima et al. (2025) identified a significant reduction, between 2010 and 2022, in prevalence, overall detection, and detection among children under 15 years of age. Annual reductions were 2.89% for prevalence, 4.43% for overall detection, and 6.03% for detection among children under 15. However, spatial analysis revealed substantial heterogeneity among municipalities and different stages in the elimination process. In 2022, only 27 municipalities were classified as non-endemic, while the others remained at stages requiring actions aimed at interrupting transmission, achieving elimination, or conducting post-elimination surveillance. The authors also emphasize that low numbers or absence of notifications do not necessarily mean absence of transmission, since underdiagnosis, limited active case-finding capacity, and weaknesses in surveillance systems may affect the records.

In this regard, a specific analysis of Pilar is relevant because state-level indicators may not fully reflect the municipality's epidemiological and health care reality. The use of SINAN data made available through TABNET is an important tool for this investigation because it brings together epidemiological, clinical, and operational information related to leprosy, such as year of diagnosis, sex, age group, race/skin color, education, operational classification, clinical form, mode of detection, grade of physical disability at diagnosis, slit-skin smear, initial treatment regimen, number of skin lesions, and type of case closure. This information makes it possible to characterize the case profile, examine closure patterns, and conduct descriptive comparisons between cases closed as cure and treatment discontinuation.

Thus, investigating new leprosy cases among residents of Pilar, Alagoas, between 2021 and 2025 makes it possible to characterize the recent dynamics of the disease at the municipal level and identify

relevant aspects of treatment follow-up. The analysis allows examination of the temporal distribution of diagnoses, the patients' sociodemographic and clinical-epidemiological profile, modes of detection, the presence of disabilities at diagnosis, and case-closure patterns. It also makes it possible to compare, exclusively descriptively, the characteristics of patients whose cases ended in cure or treatment discontinuation and to assess the proportions of these outcomes in cohorts with an adequate follow-up period.

Therefore, this study aims to analyze the clinical-epidemiological profile of leprosy cases among residents of the municipality of Pilar, Alagoas, from 2021 to 2025, describing patterns of treatment completion, cure, and discontinuation, as well as sociodemographic, clinical, and operational characteristics related to these outcomes, based on SINAN data made available by DATASUS. The relevance of this study lies in the possibility of developing a local understanding of cases and their treatment outcomes, providing information that may contribute to strengthening epidemiological surveillance, early diagnosis, patient follow-up, disability prevention, and strategies aimed at reducing treatment discontinuation.

METHODOLOGY

Study design and type

This was an epidemiological, observational, retrospective, descriptive, and quantitative study developed from secondary leprosy data recorded in the Notifiable Diseases Information System (SINAN) and publicly made available by the Department of Information and Informatics of the Brazilian Unified Health System (DATASUS) through the TABNET tool. The study was considered retrospective because it used information on previously recorded cases; descriptive because it characterized the clinical-epidemiological distribution and treatment outcomes; and quantitative because the data were organized into absolute frequencies, proportions, and annual distributions, without the use of inferential statistical methods.

The period of interest covered the years 2021 to 2025. This timeframe allowed analysis of five recent consecutive years, including different stages in the organization of health services after the onset of the COVID-19 pandemic and making it possible to observe changes in case distribution and treatment outcomes over time.

Data source and study population

The data source was TABNET/DATASUS, under the Epidemiology and Morbidity group, using SINAN information on leprosy cases. DATASUS makes consolidated SINAN data available through TABNET, a public tool designed to organize and tabulate health information according to filters defined by the researcher (Brasil, 2026).

The study population consisted of leprosy records for residents of the municipality of Pilar, state of Alagoas, from 2021 to 2025, according to data availability on the platform. Municipality of residence was selected so that the analysis would epidemiologically represent the population residing in Pilar, avoiding inclusion of people notified or followed at services located in the municipality but residing elsewhere. The study had a census-based approach because all aggregated records available in TABNET that met the established filters were used.

Selection criteria and filters used

Data were collected from the DATASUS portal, in the TABNET health information area, using the

module dedicated to SINAN epidemiological data. The state of Alagoas, municipality of residence Pilar, and the years corresponding to 2021 through 2025 were selected. The content used in the tabulations was record frequency, and rows and columns were modified according to the variable under investigation.

For the general characterization of the epidemiological profile, cases recorded during the period and available in the leprosy tabulation were considered. When the analysis specifically addressed cure and treatment discontinuation indicators, new cases were prioritized, since official indicators for evaluating treatment effectiveness are calculated among new cases belonging to follow-up cohorts. This distinction was necessary because transfers, relapses, and other re-entries represent different epidemiological situations and could artificially alter cure or treatment discontinuation proportions. The Brazilian Ministry of Health's Manual for Tabulation of Leprosy Indicators recommends that these outcomes be analyzed by considering new cases, municipality of residence, operational classification, and type of case closure (Brasil, 2026).

Leprosy records for residents of Pilar within the established period and presented by TABNET in the selected categories were included. For analyses of the general profile, ignored or unreported categories were retained when available, allowing assessment of data completeness. For the specific calculation of cure and treatment discontinuation indicators, the inclusion and exclusion criteria recommended by the Ministry of Health were followed, especially regarding mode of entry and type of case closure.

Transfers to other health units, municipalities, states, or countries, deaths, and diagnostic errors were not considered treatment discontinuation. Treatment discontinuation was also not presumed when the type of case closure was blank or missing, since lack of completion does not necessarily mean interruption of treatment. This decision avoided overestimating the treatment discontinuation outcome.

Analysis variables

Variables were selected according to their availability in TABNET and their relevance to characterizing the case profile and understanding patterns related to different treatment outcomes. In the sociodemographic component, sex, age group, race/skin color, and education were analyzed when available in the public tabulation.

In the clinical-epidemiological component, variables such as year of diagnosis or notification, mode of entry, mode of detection, operational classification, clinical form, grade of physical disability at diagnosis, treatment regimen, and other information presented by the system that allowed characterization of the disease and case follow-up were considered. For treatment assessment, the main variable used was type of case closure, comprising categories such as cure, transfers, death, treatment discontinuation, and diagnostic error. The official SINAN follow-up instrument also uses information such as operational classification, treatment regimen, number of doses, disability assessment, and type of case closure to monitor leprosy cases.

The categories 'ignored,' 'blank,' 'not assessed,' or equivalent were retained and presented whenever made available by TABNET. This strategy avoided artificial redistribution of cases among known categories and made it possible to assess limitations related to the quality of data completion.

Definition of adherence, cure, and treatment discontinuation outcomes

Because this study was based on aggregated TABNET data, treatment adherence was not interpreted as a directly measured individual variable. TABNET does not allow assessment of patient

behavioral aspects, such as motivation to remain in treatment, correct home use of medications, or personal reasons for attending appointments. For this reason, adherence was operationalized based on outcomes available in the system, primarily using treatment completion through cure as a favorable indicator of therapeutic continuity.

The 'cure' category was considered according to the closure status reported in SINAN. According to the Ministry of Health, discharge due to cure presupposes compliance with treatment regularity criteria, considering the number of doses and the time established for the treatment regimen. Therefore, this study did not directly assign adherent status to each individual, but analyzed the proportion of treatment completion through cure as an operational indicator related to adherence.

Treatment discontinuation was defined according to the classification already recorded in SINAN. According to the Ministry of Health, discontinuation is defined, for paucibacillary cases, as absence from the health service for more than three consecutive months and, for multibacillary cases, for more than six consecutive months since the last visit, despite attempts to return the patient to follow-up. Thus, no study-specific criteria were created to determine discontinuation; only the classification made available by the system was used (Brasil, 2026).

When applicable, the treatment discontinuation proportion was calculated as the number of new cases closed as treatment discontinuation divided by the total number of eligible new cases in the respective cohort, multiplied by 100. Similarly, the cure proportion was obtained by dividing new cases closed as cure by the total number of new cases included in the analyzed cohort, multiplied by 100.

The parameters established by the Ministry of Health were used to interpret these indicators. For treatment discontinuation, proportions below 10% are classified as good; from 10% to 24.9%, fair; and 25% or higher, poor. For cure, a proportion of 90% or higher is considered good, 75% to 89.9% fair, and below 75% poor (Brasil, 2026).

Follow-up cohorts and handling of 2025 data

Specific care was taken in analyzing treatment outcomes because the year of diagnosis does not necessarily correspond to the year of treatment closure. The Ministry of Health recommends that cure and treatment discontinuation indicators be calculated by cohorts, considering paucibacillary and multibacillary cases separately because of differences in the time required for follow-up. For evaluation in a given year, PB cases diagnosed in the previous year and MB cases diagnosed two years earlier are considered (Brasil, 2026).

Accordingly, the 2021–2025 series was used in full to describe the epidemiological profile of cases diagnosed or recorded during the period. However, in the evaluation of cure and treatment discontinuation, records that had not yet had sufficient time for outcome determination were not automatically classified as lack of adherence. Particularly for 2025, cases without definitive closure were presented separately when necessary, avoiding interpretation of records still under follow-up as treatment discontinuation or therapeutic failure.

This procedure was especially important for multibacillary cases, which require a longer follow-up period. Thus, only cohorts with sufficient follow-up time were used in consolidated cure and treatment discontinuation calculations, preserving indicator comparability and reducing the risk of underestimating treatment completion.

Data processing and analysis

Tables produced in TABNET were exported and organized in Microsoft Excel spreadsheets. After extraction, the applied filters, selected years, municipality of residence, and variable categories were checked to ensure that the tables corresponded to the same analytical universe.

The analysis was exclusively descriptive, without hypothesis testing, regression, p-value calculation, confidence intervals, or other inferential statistical techniques. Absolute numbers and percentages were used to present sociodemographic, clinical, and epidemiological characteristics, as well as types of case closure and treatment outcomes. Proportions were calculated by dividing the frequency of each category by the corresponding valid total and multiplying by 100.

Temporal evolution was examined through the distribution of records from 2021 to 2025, making it possible to identify increases, decreases, or relative stability in frequencies and proportions over the years. Results were presented in five (5) tables and two (2) charts prepared from tabulations extracted from DATASUS.

To explore factors related to outcomes, descriptive comparisons were made between cure and treatment discontinuation categories according to variables available in TABNET, such as sex, age group, race/skin color, education, operational classification, clinical form, grade of disability, and other information that could be cross-tabulated on the platform. Because inferential methods were not used, the expression 'associated factors' was used to refer to characteristics showing differences or proportional concentration between the analyzed outcomes, without implying a statistically proven association, independent effect, or causal relationship.

Interpretation of the findings considered the inherent limitations of secondary databases, including the possibility of underreporting, incomplete data entry, ignored records, subsequent updates, and inability to retrieve information not available in aggregated tabulations. The Ministry of Health emphasizes that follow-up indicators depend directly on proper updating of SINAN records and that recent information may change as databases are consolidated (Brasil, 2026).

Ethical considerations

The study used exclusively secondary, aggregated, anonymized, publicly accessible data made available by the Ministry of Health through TABNET/DATASUS. There was no access to names, document numbers, addresses, medical records, individual forms, or any other information that could identify people registered in the system. The Ministry of Health itself characterizes TABNET as a public-domain tool for organizing and consulting health information.

For this reason, the study was not submitted to the CEP/Conep System, since it used only previously aggregated data with no possibility of individual identification. Circular Letter No. 17/2022 of the National Research Ethics Commission clarifies that the exemption from submission provided for aggregated databases covers research using public databases such as DATASUS and IBGE (Brasil, 2022).

Even though public information was used, the principles of scientific responsibility, fidelity to the original data, transparency in describing procedures, confidentiality, and presentation of results exclusively in aggregated form were observed. No attempt at individual identification or re-identification was made at any stage of the research.

RESULTS AND DISCUSSION

This section presents and discusses the results concerning new leprosy cases diagnosed among residents of the municipality of Pilar, Alagoas, from 2021 to 2025. The analysis was organized to address the annual evolution of cases, sociodemographic profile, clinical-epidemiological characteristics, types of case closure, and differences observed between cure and treatment discontinuation outcomes. Cohorts with an adequate follow-up period were also considered, allowing examination of cure and treatment discontinuation proportions according to criteria established by the Ministry of Health. The findings were interpreted in an integrated manner, relating local results to scientific evidence and epidemiological and operational leprosy indicators, as shown in the following tables and charts.

Table 1 — Annual distribution of new leprosy cases among residents of Pilar, Alagoas, 2021–2025

Year of diagnosis	New cases (n)	Distribution during the period (%)
2021	6	18,8
2022	9	28,1
2023	9	28,1
2024	4	12,5
2025	4	12,5
Total	32	100,0

Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

The temporal distribution showed 32 new leprosy cases in Pilar between 2021 and 2025, increasing from six cases in 2021 to nine in 2022, remaining at that level in 2023, and declining to four cases per year in 2024 and 2025. Thus, 2022 and 2023 accounted for 56.2% of diagnoses during the period. This pattern is primarily compatible with a recovery in detection capacity after the limitations imposed by the COVID-19 pandemic, and not necessarily with an abrupt increase in transmission during those two years. At the national level, the Ministry of Health documented a sharp decline in leprosy detection in 2020, followed by growth in new cases in 2021, 2022, and 2023, attributing part of this dynamic to the repercussions of the pandemic on health services (Brasil, 2026).

The reduction from nine to four cases between 2023 and 2024, equivalent to 55.6%, which persisted in 2025, may represent a recent decrease in detected occurrence. However, it is not sufficient to establish a sustained reduction in transmission. In municipalities with a small absolute number of cases, changes of only a few records produce substantial percentage variations. In addition, the analysis of Alagoas showed a downward trend in detection between 2010 and 2022, but also marked municipal heterogeneity and the possibility of underdiagnosis and underreporting; therefore, a lower number of recorded cases does not automatically indicate epidemiological control (Lima et al., 2025).

Accordingly, the most consistent interpretation is that Pilar showed fluctuations in detection, with a possible recovery in diagnostic capacity in 2022–2023 and a recent reduction in records in 2024–2025. This decline should be confirmed by other clinical and operational indicators before being interpreted as an actual reduction in disease burden.

Table 2 — Sociodemographic profile of new leprosy cases among residents of Pilar, Alagoas, 2021–2025

Variable	Category	n	%
Sex	Male	16	50,0
	Female	16	50,0
	Total	32	100,0
Age group	5 to 9 years	1	3,1
	10 to 14 years	1	3,1
	15 to 19 years	1	3,1
	20 to 29 years	4	12,5
	30 to 39 years	3	9,4
	40 to 49 years	8	25,0
	50 to 59 years	5	15,6
	60 to 69 years	4	12,5
	70 to 79 years	3	9,4
	80 years and older	2	6,3
	Total	32	100,0
Race/skin color	White	7	21,9
	Black	3	9,4
	Brown (parda)	22	68,8
	Total	32	100,0
Education	Ignored/blank	8	25,0
	Illiterate	8	25,0
	Incomplete grades 1–4 of elementary school	4	12,5
	Completed grade 4 of elementary school	2	6,3
	Incomplete grades 5–8 of elementary school	2	6,3
	Incomplete high school	1	3,1
	Completed high school	6	18,8
	Incomplete higher education	1	3,1
	Total	32	100,0

Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

Table 2 reveals a sociodemographic profile characterized by equal distribution between the sexes, concentration of cases in adulthood, predominance of people identified as Brown (parda), and a high frequency of low educational attainment. Men and women each represented 50.0% of cases. This balance differs partially from the recent national pattern, in which males remain more frequent among new cases; in 2023, for example, men accounted for 55.4% of diagnoses in Brazil (Brasil, 2025). In Pilar, therefore, the disease was not concentrated in a specific sex, indicating that, during the period analyzed, exposure and detection occurred similarly among men and women.

With regard to age, the highest concentration was among people aged 40–49 years (25.0%), followed by those aged 50–59 years (15.6%). Together, these two groups accounted for 40.6% of cases, demonstrating a substantial disease burden among working-age adults. In addition, 28.2% of records involved people aged 60 years or older. This pattern is consistent with the national profile, in which leprosy occurs substantially among adults and older people; in 2023, 53.6% of new Brazilian cases were among people aged 30–59 years and 29.6% among those aged 60 years or older (Brasil, 2025). The concentration at older ages is also compatible with the long incubation period of the disease and reinforces the need for timely diagnosis to prevent accumulated disabilities.

An epidemiologically relevant finding was the occurrence of two cases among children under 15 years of age, equivalent to 6.2% of the total. Detection in this age group is recognized by the Ministry

of Health as a marker of recent transmission and persistence of the transmission chain, since children generally have less cumulative exposure time. In 2024, children under 15 represented 4.1% of new Brazilian cases, and the Northeast still had a detection rate considered high in this population (Brasil, 2026). Thus, the presence of childhood cases in Pilar is evidence that transmission has not been completely interrupted and reinforces the importance of systematic contact investigation.

Regarding race/skin color, 68.8% of cases occurred among people identified as Brown (parda); when Brown and Black individuals are considered together, they represent 78.2% of records. This profile is consistent with the national scenario, in which 72.0% of new cases in 2024 occurred among people who self-identified as Black or Brown (Brasil, 2026). This result should not be interpreted as a biological predisposition related to race/skin color, but within the context of social determinants, since leprosy remains strongly associated with economic, social, housing, and health care access inequalities (Jesus et al., 2023; Brasil, 2026).

Educational attainment reinforces this vulnerability profile. One quarter of cases involved people who were illiterate (25.0%). Among the 24 records with known education, 16 individuals, or 66.7%, were illiterate or had not completed elementary school. Low educational attainment may limit understanding of the early signs of the disease, treatment instructions, and the importance of continuous follow-up, constituting a relevant component of social vulnerability related to leprosy. Nationally, in 2024, 6.7% of cases involved illiterate people and 41.0% had incomplete or complete elementary education (Brasil, 2026). Therefore, the profile observed in Pilar shows a particularly high concentration of low educational attainment among recorded cases.

Finally, the 25.0% of records with education classified as ignored or blank represent a relevant operational limitation. This percentage exceeds the 19.9% incompleteness of this variable recorded nationally in 2024 and reduces the precision of patients' social characterization (Brasil, 2026). Taken together, the results depict a scenario in which leprosy affects both sexes, is concentrated mainly among middle-aged adults, reaches socially vulnerable groups, and remains present among children under 15 years of age, simultaneously indicating persistent transmission and the need to strengthen contact surveillance and early diagnosis.

Table 3 — Clinical-epidemiological characteristics of new leprosy cases among residents of Pilar, Alagoas, 2021–2025

Variable	Category	n	%
Operational classification	Paucibacillary (PB)	12	37,5
	Multibacillary (MB)	20	62,5
	Total	32	100,0
Clinical form	Indeterminate	9	28,1
	Tuberculoid	4	12,5
	Borderline	17	53,1
	Lepromatous	2	6,3
	Total	32	100,0
Mode of detection of new case	Ignored/blank	1	3,1
	Referral	12	37,5
	Spontaneous demand	13	40,6
	Community screening	2	6,3
	Contact examination	3	9,4
	Other modes	1	3,1
	Total	32	100,0
Grade of physical disability at diagnosis	Grade 0	16	50,0

	Grade I	11	34,4
	Grade II	3	9,4
	Not assessed	2	6,3
	Total	32	100,0*
Slit-skin smear at diagnosis	Positive	3	9,4
	Negative	0	0,0
	Not performed	29	90,6
	Total	32	100,0
Initial treatment regimen	PQT/PB/6 DOSES	12	37,5
	PQT/MB/12 DOSES	20	62,5
	Total	32	100,0
Number of skin lesions	Reported as 0 or 99	1	3,1
	Single lesion	11	34,4
	2–5 lesions	8	25,0
	>5 lesions	12	37,5
	Total	32	100,0

Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

Table 3 shows a predominance of multibacillary cases (62.5%), accompanied by a higher frequency of the borderline clinical form (53.1%) and the presence of more than five skin lesions in 37.5% of records. Together, these findings indicate that a substantial proportion of patients reached diagnosis with clinically established disease rather than predominantly early forms. This pattern deserves attention because multibacillary cases have a higher *Mycobacterium leprae* load and greater potential to sustain transmission when untreated. In a national analysis of 228,577 cases, Araújo et al. (2026) also observed a predominance of multibacillary disease and the borderline form; additionally, multibacillary classification was associated with a greater likelihood of grade 2 physical disability.

The mode of detection reinforces this interpretation. Spontaneous demand (40.6%) and referral (37.5%) jointly accounted for 78.1% of diagnoses, whereas contact examination and community screening represented only 15.7%. This demonstrates a predominance of passive detection; that is, diagnosis occurred mainly after patients themselves sought care or were referred, rather than through systematic active case-finding strategies. The Clinical Protocol and Therapeutic Guidelines for Leprosy (PCDT) emphasizes that contact examination is one of the strategies with the strongest evidence base for early detection and recommends clinical evaluation of all household contacts. Therefore, the small contribution of this modality in Pilar reveals a concrete opportunity to strengthen contact surveillance in Primary Health Care (Brasil, 2022).

The grade of physical disability is another relevant indicator. Although 50.0% had grade 0, 43.8% had grade I or II. Considering only the 30 patients assessed, 46.7% had some disability and 10.0% had grade II. Identification of grade II at diagnosis is recognized as evidence of late detection because it represents more advanced neural damage and, in some situations, visible deformities. The 6.3% not assessed also indicate an operational weakness, since neurological assessment is necessary to establish baseline functional status and monitor its progression (Brasil, 2022; Araújo et al., 2026).

Another notable finding was that slit-skin smear microscopy was not performed in 90.6% of cases. This percentage is much higher than the 33.0% of examinations not performed in the national analysis by Araújo et al. (2026). Slit-skin smear microscopy complements the clinical diagnosis, and its absence alone does not invalidate the diagnosis; however, its use helps estimate bacillary load, and a positive smear classifies the case as multibacillary. Thus, the low utilization observed reduces the availability of laboratory information useful for the clinical characterization of cases (Brasil, 2022).

On the other hand, there was complete correspondence between operational classification and the

initial treatment regimen: 12 PB cases received PB multidrug therapy for six doses and 20 MB cases received MB multidrug therapy for 12 doses. This concordance indicates that the recorded regimen was appropriate for the operational classification, as recommended by the Ministry of Health. Overall, therefore, the profile found suggests the coexistence of correctly targeted treatment with signs of relatively late detection and strong dependence on spontaneous demand, highlighting early diagnosis, systematic neurological assessment, and strengthening contact examination as priorities.

Table 4 — Distribution of types of case closure among new leprosy cases in residents of Pilar, Alagoas, diagnosed between 2021 and 2025

Type of case closure	n	%
Not completed	4	12,5
Cure	25	78,1
Transfer to another unit in the same municipality	0	0,0
Transfer to another municipality in the same state	0	0,0
Transfer to another state	0	0,0
Transfer to another country	0	0,0
Death	0	0,0
Treatment discontinuation	3	9,4
Subtotal of valid leprosy records	32	100,0
Diagnostic error*	0	0,00

Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

Table 4 shows that 25 of the 32 cases (78.1%) were closed as cure, while three (9.4%) were recorded as treatment discontinuation and four (12.5%) remained without a completed type of case closure. The predominance of cure indicates that most patients were able to remain in follow-up until treatment completion. However, this result should not be interpreted as the municipality's official cure proportion, because the indicator recommended by the Ministry of Health is calculated from cohorts of new PB and MB cases, respecting different follow-up periods. For this indicator, values $\geq 90\%$ are considered good; thus, the descriptive percentage found suggests that important losses still occur along the care pathway and need to be clarified through cohort analysis (Brasil, 2026).

The 9.4% treatment discontinuation rate deserves particular attention. Although numerically below the official 10% threshold used to classify treatment discontinuation in cohorts, it is very close to this limit and should not be considered irrelevant, especially given the small absolute number of cases. In Brazil, the official treatment discontinuation proportion increased from 4.5% in 2014 to 8.0% in 2023, while in the Northeast it rose from 4.4% to 7.6%, indicating increasing difficulty in maintaining treatment (Brasil, 2025a). Cruz and Franchi (2025) demonstrated that doubts about the disease, lack of perceived improvement, and disbelief in the diagnosis may compromise continuity of multidrug therapy, reinforcing the importance of health education, the care relationship, and active follow-up of patients who miss appointments.

The presence of four records without a reported type of case closure (12.5%) also deserves emphasis. This incompleteness reduces the precision of treatment outcome assessment because some of these patients may have progressed to cure, treatment discontinuation, or another outcome without an update in the system. The Ministry of Health emphasizes that completeness and consistency of records are essential components of SINAN data quality and directly affect the construction of leprosy indicators (Brasil, 2025b).(Brasil, 2025b)

Thus, the findings point to a scenario in which favorable treatment completion predominates, but is accompanied by relevant treatment discontinuation and weaknesses in case closure, indicating the need to strengthen longitudinal follow-up and systematic updating of information.

Table 5 — Sociodemographic and clinical characteristics of new leprosy cases according to cure and treatment discontinuation outcomes, Pilar, Alagoas, 2021–2025

Variable	Category	Cure n (%)	Treatment discontinuation n (%)	Total
Sex	Male	10	2	12
	Female	15	1	16
Age group	5 to 9 years	1	0	1
	10 to 14 years	1	0	1
	15 to 19 years	0	1	1
	20 to 29 years	3	1	4
	30 to 39 years	3	0	3
	40 to 49 years	6	0	6
	50 to 59 years	5	0	5
	60 to 69 years	2	0	2
	70 to 79 years	2	1	3
	80 years and older	2	0	2
Race/skin color	White	4	2	6
	Black	2	0	2
	Brown (parda)	19	1	20
	Asian/Yellow	0	0	0
	Indigenous	0	0	0
Education	Ignored/blank	0	0	0
	Ignored/blank	8	0	8
	Illiterate	5	1	6
	Incomplete grades 1–4 of elementary school	3	0	3
	Completed grade 4 of elementary school	1	0	1
	Incomplete grades 5–8 of elementary school	2	0	2
	Incomplete high school	0	1	1
	Completed high school	6	0	6
	Incomplete higher education	0	1	1
	Paucibacillary	10	2	12
Clinical form	Multibacillary	15	1	16
	Indeterminate	6	2	8
	Tuberculoid	4	0	4
	Borderline	14	1	15
Grade of disability at diagnosis	Lepromatous	1	0	1
	Grade 0	13	1	14

	Grade I	9	1	10
	Grade II	2	0	2
	Not assessed/ignored	1	1	2
Slit-skin smear	Positive	2	0	2
	Negative	0	0	0
	Not performed	23	3	26
	Ignored	0	0	0

Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

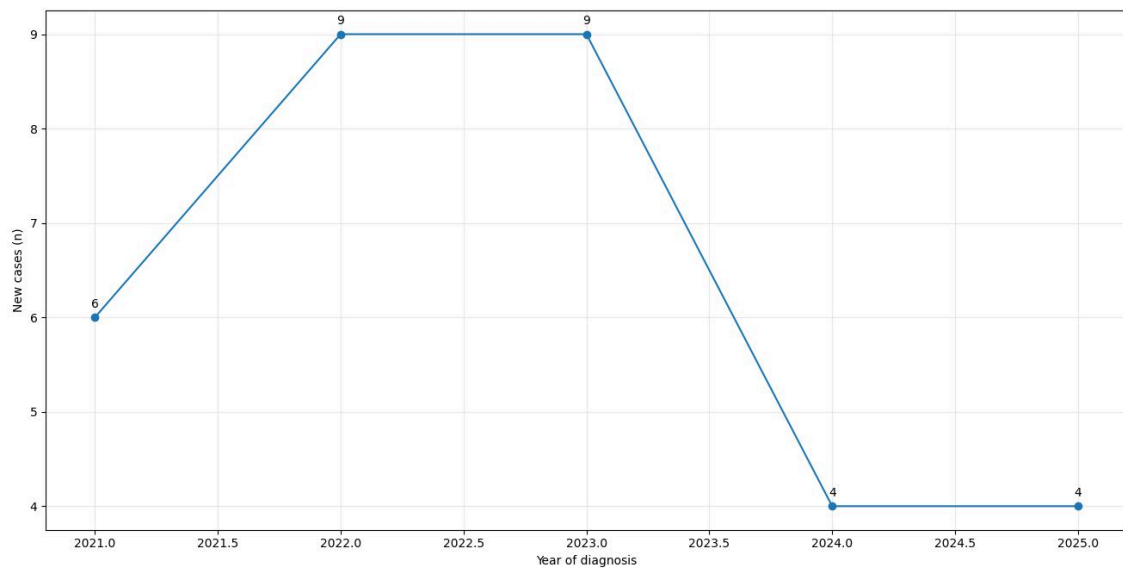
Table 5 allows examination of the characteristics of the 28 cases with outcomes defined as cure or treatment discontinuation, of which 25 progressed to cure and three to treatment discontinuation. In this subset, cure accounted for 89.3% and treatment discontinuation for 10.7%. It is important to distinguish these values from those presented in Table 4, because the four records without a type of case closure are not included in this comparison. In addition, these percentages are descriptive and do not correspond to the official cohort-based cure or treatment discontinuation indicator, which is constructed according to specific criteria established by the Ministry of Health (Brasil, 2026).

Among the three treatment discontinuations, two occurred in men and one in a woman. However, there was no concentration in a single age group: records occurred among those aged 15–19, 20–29, and 70–79 years. No uniform educational pattern was identified either, since the discontinuations involved one illiterate person, one person with incomplete high school education, and one with incomplete higher education. Regarding race/skin color, two discontinuations occurred among White people and one among Brown people. Given the small number of treatment discontinuations, these differences do not support a causal or statistical association between sociodemographic characteristics and treatment interruption. This caution is reinforced by Cruz and Franchi (2025), who found that nonadherence may involve factors extending beyond demographic profile, such as lack of perceived improvement, difficulty accepting the diagnosis, and disbelief in having the disease.

In the clinical component, two of the three treatment discontinuations occurred in paucibacillary cases and one in a multibacillary case; regarding clinical form, two were indeterminate and one borderline. This profile differs from the national scenario between 2014 and 2023, in which 78.1% of cases closed as treatment discontinuation were multibacillary (Brasil, 2025). However, the three cases in Pilar are insufficient to indicate a distinct epidemiological pattern. Regarding physical disability, discontinuations were distributed among grade 0, grade I, and not assessed, with no discontinuation among the two individuals with grade II. The occurrence of one discontinuation among the two patients without a recorded assessment also draws attention to the need for systematic clinical follow-up, considering that neurological and functional assessment is part of the recommended care for people with leprosy (Brasil, 2022).

Finally, none of the three treatment discontinuation cases underwent slit-skin smear microscopy; however, 23 of the 25 cured cases also did not undergo the examination. Therefore, the absence of slit-skin smear microscopy was frequent in both outcomes and cannot be interpreted in these data as a specific characteristic of treatment discontinuation. Taken together, Table 5 does not identify a single profile capable of explaining treatment interruption, but shows that discontinuation occurred in different sociodemographic and clinical groups. This reinforces the need for individualized follow-up, health education, early identification of difficulties during treatment, and active follow-up of patients who miss appointments—measures that are essential to support continuity of multidrug therapy and cure (Cruz; Franchi, 2025; Brasil, 2022).

Chart 1 — Annual trend in new leprosy cases among residents of Pilar, Alagoas, 2021–2025



Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

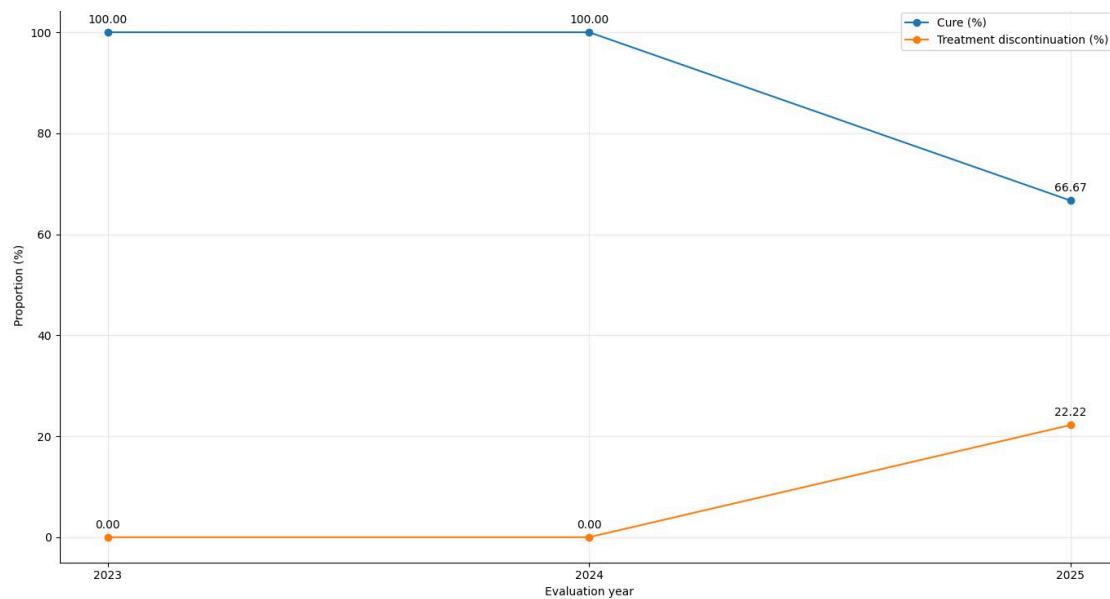
Chart 1 shows a well-defined temporal variation in the detection of new leprosy cases in Pilar, with six diagnoses in 2021, an increase to nine in 2022, maintenance of this number in 2023, and a reduction to four cases in 2024 and 2025. From 2021 to 2022 there was a 50.0% increase, while from 2023 to 2024 there was a 55.6% reduction. Thus, the observed pattern can be divided into two periods: a greater concentration of diagnoses in 2022–2023 and a decrease in records in the following two years.

A plausible epidemiological explanation for the initial increase is the recovery of diagnostic and surveillance capacity after the restrictions caused by the COVID-19 pandemic. In Brazil, the overall detection rate remained reduced in 2021 (8.58 per 100,000 inhabitants), increasing to 9.67 in 2022 and 10.68 in 2023 after the decline recorded during the pandemic (Brasil, 2026). Thus, the increase observed in Pilar in 2022–2023 is compatible with a period of resumed identification of cases that had previously gone undiagnosed or were diagnosed late, in addition to the detection of new cases.

On the other hand, the reduction observed in 2024 and its persistence in 2025 do not, by themselves, allow the conclusion that transmission was interrupted or effectively reduced. Lima et al. (2025) identified a downward trend in detection in Alagoas, but demonstrated substantial heterogeneity among municipalities and warned that few or no recorded cases may coexist with underdiagnosis and underreporting. In Pilar, this caution is even more necessary because of the small absolute number of cases, in which differences of only a few diagnoses produce large percentage variations.

Therefore, the chart indicates a recent reduction in detection, but its epidemiological interpretation must simultaneously consider active case finding, contact examination, early diagnosis, and completeness of notifications. If the 2025 database was identified as partial at the time of extraction, that final year should also be considered subject to updating.

Chart 2 — Comparison of cure and treatment discontinuation proportions among new cases in evaluable cohorts, Pilar, Alagoas, 2023–2025



Source: Prepared by the author based on data from the Notifiable Diseases Information System (SINAN), made available through TABNET/DATASUS, 2026.

Note: Cure and treatment discontinuation proportions were defined according to the official leprosy follow-up cohorts. For each evaluation year, paucibacillary cases diagnosed in the previous year and multibacillary cases diagnosed two years earlier were considered. Records diagnosed in 2025 itself were not included in the consolidated indicator because they had not yet had sufficient time for complete assessment of the treatment outcome.

Chart 2 shows an important change in the performance of treatment cohorts in Pilar. In the evaluation years 2023 and 2024, all cases included in the respective cohorts achieved cure: in 2023 there were nine cures among nine evaluable cases and, in 2024, six among six, resulting in a 100.0% cure proportion and no treatment discontinuation. These results place both cohorts within the parameter considered good by the Ministry of Health for cure, defined as $\geq 90\%$, and also within the good parameter for treatment discontinuation, below 10% (Brasil, 2026a).

The selection of 2023, 2024, and 2025 as evaluation years derives from the official methodology used to construct the cohorts. For each year evaluated, paucibacillary cases diagnosed one year earlier and multibacillary cases diagnosed two years earlier are included. Thus, the 2023 evaluation includes PB cases from 2022 and MB cases from 2021; the 2024 evaluation includes PB cases from 2023 and MB cases from 2022; and the 2025 evaluation includes PB cases from 2024 and MB cases from 2023. Because the study period begins in 2021, 2023 is the first year in which both cohorts can be fully formed without relying on diagnoses before the study period. Likewise, cases diagnosed in 2025 do not appear in this chart because they can only be included in later evaluations: PB cases in 2026 and MB cases in 2027 (Brasil, 2026a).

In 2025, the outcome deteriorated: among nine cases in the cohorts, six achieved cure (66.67%), two were classified as treatment discontinuation (22.22%), and one remained without a completed type of case closure (11.11%). The cure proportion was therefore below the 75% threshold used to classify the indicator as poor, while treatment discontinuation fell within the fair range of 10% to 24.9% (Brasil, 2026a). The simultaneous presence of treatment discontinuation and a record without closure suggests weakness in the follow-up of this cohort, since the cure indicator specifically measures the quality of care, follow-up, and treatment effectiveness (Brasil, 2026b). However,

because only nine cases comprise the 2025 evaluation, small absolute changes produce large percentage variations. Thus, the result should be understood as an operational warning signal, justifying closer monitoring of patients who miss appointments, updating case closures in SINAN, and systematic patient follow-up until treatment completion.

CONCLUSION

This study aimed to analyze the clinical-epidemiological profile of leprosy cases among residents of the municipality of Pilar, Alagoas, between 2021 and 2025, describing patterns of treatment completion, cure, and discontinuation, as well as sociodemographic, clinical, and operational characteristics related to these outcomes, based on SINAN data made available by DATASUS. The general objective was considered achieved, since it was possible to characterize new cases diagnosed during the period, examine their temporal distribution, identify the main sociodemographic and clinical aspects, analyze types of case closure, and descriptively compare the characteristics observed between cases closed as cure and treatment discontinuation.

Thirty-two new cases were analyzed, with the highest number of diagnoses in 2022 and 2023, when nine cases occurred in each year, followed by a reduction to four cases in 2024 and maintenance of that number in 2025. Although this recent decrease is a favorable finding, the data do not support the conclusion that sustained interruption of transmission occurred, especially given the small absolute number of cases, the possibility of underdiagnosis, and the influence of local detection capacity. The presence of two cases among children under 15 reinforces this caution, as it demonstrates that circulation of the disease remained present in the territory during the study period.

Regarding the sociodemographic profile, an equal distribution between men and women was observed, with a predominance of Brown (parda) individuals and the highest concentration in the 40–49-year age group. Educational attainment revealed substantial social vulnerability, with a high proportion of people who were illiterate or had low levels of schooling, in addition to 25.0% of records lacking information in this field. These results demonstrate that addressing leprosy requires consideration not only of clinical aspects, but also of social conditions and the quality of information used by surveillance systems.

In the clinical-epidemiological profile, multibacillary cases, the borderline clinical form, and patients with more than five skin lesions predominated. In addition, spontaneous demand and referral accounted for most modes of detection, while contact examination had a limited contribution. The presence of grade I or II physical disability in a substantial proportion of patients suggests diagnosis at already established stages of the disease. The high proportion of slit-skin smears not performed also deserves attention, although appropriate correspondence was observed between operational classification and the treatment regimen initiated. These findings point to the need to strengthen active case finding, contact examination, neurological assessment, and early diagnosis.

Regarding outcomes, 25 cases were closed as cure, three as treatment discontinuation, and four remained without a completed type of case closure. Among the 28 cases with an outcome defined as cure or treatment discontinuation, no single sociodemographic or clinical profile capable of explaining treatment interruption was identified. The small number of treatment discontinuations and the exclusively descriptive nature of the study preclude establishing statistical or causal associations between the analyzed characteristics and this outcome. In the evaluable cohorts, 2023 and 2024 showed 100% cure and no treatment discontinuation, whereas in 2025 cure fell to 66.67%, treatment discontinuation reached 22.22%, and 11.11% remained without reported closure, representing an important warning signal for patient follow-up.

It is therefore concluded that Pilar made progress in treatment completion, but challenges remain related to early detection, therapeutic continuity, contact surveillance, and completeness of records. Strengthening individualized follow-up, active tracing of patients who miss appointments, health education, periodic disability assessment, and systematic updating of SINAN is recommended. It should also be considered that the results derive from aggregated secondary data and a small number of cases, which do not allow broad generalizations or establishment of causal relationships. Even with these limitations, the study provides a relevant local overview and may contribute to improving leprosy surveillance, care, and prevention activities in the municipality.

For future research, it is recommended to extend the follow-up period and include longer time series in order to determine whether the recent reduction in diagnoses and the worsening observed in the 2025 cohort represent isolated fluctuations or persistent trends. It would also be relevant to conduct studies using an analytical approach and, when possible, individual-level data to investigate more precisely factors related to cure, treatment discontinuation, and late diagnosis. Qualitative research with patients and health professionals may also help to understand barriers to access, reasons for treatment interruption, perceptions of the disease, and difficulties in follow-up. In addition, comparative studies between Pilar and other municipalities in Alagoas may broaden understanding of territorial inequalities and support more specific strategies for leprosy surveillance, prevention, and care.

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