



Leprosy behavior in Pinar del Río province during the period 2014-2024

Comportamiento de la lepra en la provincia Pinar del Río durante el periodo 2014-2024

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Submitted: 12-04-2025 | Revised: 16-06-2025 | Accepted: 16-07-2025 | Published: 23-07-2025

ABSTRACT

Introduction: Leprosy is an infectious and low-contagion disease that attacks the skin and peripheral nerves. Objective: To characterize the incidence of leprosy in Pinar del Río province from 2014 to 2024. Methods: A descriptive, cross-sectional study was conducted using a population of 79 patients diagnosed with leprosy. To obtain information, statistical records from the Department of Medical Records and Health Statistics were reviewed. Statistical analysis was performed using the EPIDATA 3.0 program. Absolute and relative frequencies, and incidence rates per 100,000 inhabitants, were used. Results: There was a decrease in leprosy cases during COVID-19 and an increase in cases in 2024. Females predominated, with more than 30% of cases occurring in the 25-59 age group. The multibacillary form predominated, with early diagnosis in most cases through early detection. Conclusions: Leprosy in Pinar del Río has tended to increase in 2024, showing a decline during the pandemic years. To advance its control, it is crucial to continue strengthening health systems, promote education and awareness about the disease, and foster a collaborative approach among different social actors to ensure that all people have access to adequate and timely medical care, contributing to the elimination of leprosy as a public health problem in the region.

Keywords: leprosy; incidence; multibacillary.

RESUMEN

Introducción: la lepra es una enfermedad infecciosa y poca contagiosa que ataca piel y nervios periféricos. Objetivo: caracterizar la incidencia de la lepra en la provincia Pinar del Río en el periodo de 2014 al 2024. Métodos: se realizó un estudio descriptivo, de corte transversal, utilizándose un universo de 79 pacientes diagnosticados de lepra. Para la obtención de la información se revisaron los registros estadísticos del departamento de registros médicos y estadísticas de salud, el análisis estadístico se realizó por medio del programa EPIDATA 3.0, se utilizaron frecuencias absolutas, relativas, y tasa de incidencia por 100 000 habitantes. Resultados: existió disminución de casos de lepra durante el COVID-19, y un aumento de casos en el año 2024, predominó el sexo femenino, más del 30 % de los casos ocurrieron en el grupo de 25 a 59 años. Predomino la forma multibacilar, con un diagnóstico precoz de la mayoría de los casos y por medio de una detección precoz. Conclusiones: la lepra en Pinar del Río ha tenido una tendencia al incremento en el año 2024, mostrando un declive en los años pandémicos. Para avanzar en el control de la misma, es crucial continuar fortaleciendo los sistemas de salud, fomentar la educación y sensibilización sobre la enfermedad, y promover un enfoque colaborativo entre diferentes actores sociales, para garantizar que todas las personas tengan acceso a una atención médica adecuada y oportuna, contribuyendo a la eliminación de la lepra como un problema de salud pública en la región.

Palabras clave: Palabras claves: lepra; incidencia; multibacilar.

INTRODUCTION

Leprosy, also known as Hansen's disease, is a chronic condition caused by the bacterium *Mycobacterium leprae*. Throughout history, this disease has been the subject of stigma and fear, leading to the marginalization of those affected in many societies. In Cuba, leprosy has exhibited a unique epidemiological pattern, marked by periods of control and resurgence, underscoring the need for a continuous focus on its study and management. ¹

Leprosy is considered an ancient epidemic disease in many cultures. It was first described in India and China between 600 and 400 B.C. Egyptians and Persians also have records of this disease, as disfiguring skin lesions have drawn attention. It is a chronic granulomatous disease; it is infectious but not highly contagious. It primarily affects the skin and peripheral nerves. Other organs, such as the eyes, mucous membranes of the upper respiratory tract, bones, and testicles, may also be affected, and this involvement produces the typical clinical phenotypic spectrum of the disease. Throughout history, patients with leprosy were isolated and often barred from living among society, as this disease was considered highly contagious. ²

There was a fear that simply touching an infected person could spread the disease. Today, we know that leprosy is not easily transmitted, but the exact mechanism of the disease and its transmission still need to be better understood. It is known that bacilli are transmitted from person to person through nasal secretions and that those living with an untreated multibacillary (MB) case are at increased risk of infection. In addition, other possible transmission models, such as zoonotic transmission, are currently being considered. ³

Although curable, this disease remains a public health problem in various parts of the world. The exact mechanisms that occur after *M. leprae* enters the body are not fully understood, but the development of the disease and its clinical presentation depend on the host's immune status. ¹

The broad spectrum of clinical manifestations allows for the classification of leprosy, ranging from the tuberculoid (LT) or paucibacillary (PB) form to the lepromatous (LL) or multibacillary (MB) form. In India, Brazil, the Democratic Republic of the Congo, Nepal, the United Republic of Tanzania, Madagascar, and Mozambique, there are foci of high endemicity; however, in Europe, the disease has almost completely disappeared, although small foci have been reported in Spain, Portugal, and Russia. In 2023, the global number of new cases reached 182,815, with 13.6% of them reported in the Americas, where Brazil accounts for more than 90%. ³

In 2018, 30,957 cases of leprosy were reported in the Americas, a figure that decreased to 29,936 in 2019. In 2020, the number of detected cases decreased sharply to 19,195, representing a 35.9% decrease from the previous year, attributed to the impact of the COVID-19 pandemic. In 2021, the number of cases increased slightly to 19,826 (631 more than in 2020). In 2022, the number of cases subsequently increased to 21,398, and the increasing trend continues to occur until 2023, when a total of 24,773 cases are reached. In Cuba, 123 cases were reported, for an incidence rate of 0.12 per 10,000 inhabitants. In Pinar del Río, three cases were diagnosed, for a rate of 0.6 per 10,000 inhabitants. ⁴

Since the 1960s, Cuba has implemented a national leprosy control program, which has significantly reduced the incidence of new cases. However, despite these achievements, increases in cases have been reported in various provinces in different years, including Pinar del Río. This phenomenon can be attributed to several factors, such as increased population mobility, changes in demographic patterns, and the persistence of the stigma associated with the disease, which can hinder timely diagnosis and treatment. ²

The clinical manifestations of leprosy are varied and can present in different forms. Skin lesions, peripheral nerve damage, and secondary complications are common features of this disease. Early diagnosis is crucial for preventing disabilities and improving patients' quality of life. Therefore, it is essential that healthcare professionals be trained to identify the signs and symptoms of leprosy and to provide appropriate treatment based on the multidrug therapy recommended by the World Health Organization. ⁵

The 2014–2024 period represents a significant timeframe for examining the behavior of leprosy in Pinar del Río. This study is justified not only by the need to understand epidemiological trends in this specific region but also by the importance of developing effective strategies for the control and prevention of the disease. The collection and analysis of data on new cases, recovery rates, and posttreatment follow-up will provide valuable information that can contribute to improving public health policies. ³

This study has important social implications, and conducting research in this area is essential to combat the stigma associated with the disease and promote greater social acceptance and inclusion of those affected. Analyzing the behavior of leprosy in Pinar del Río during the 2014–2024 period is necessary to address the challenges that still persist in controlling this disease. This research will not only identify epidemiological and clinical patterns but also help strengthen the intervention and awareness strategies needed to eradicate the stigma associated with this condition. With a multidisciplinary approach and a renewed commitment to public health, it is possible to move toward a future where leprosy is no longer a concern in our society.

METHODS

A descriptive, cross-sectional study was conducted to characterize the incidence of leprosy according to sociodemographic variables, clinical forms, timing of diagnosis, and mode of detection of cases diagnosed in the province of Pinar del Río from 2014 to 2024.

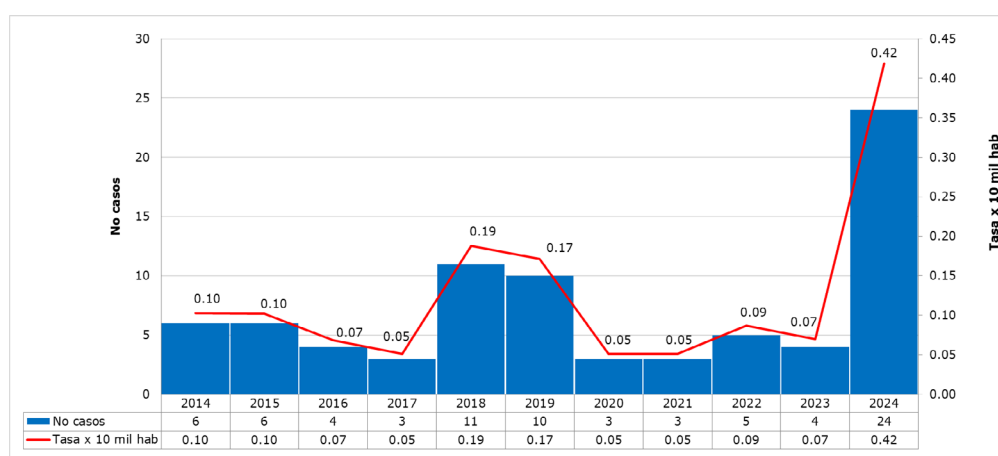
The study population consisted of 79 patients who were diagnosed with leprosy in the province of Pinar del Río between January 2014 and December 2024. The variables considered were the incidence of leprosy, age, sex, clinical form, timeliness of diagnosis, and mode of case detection. To obtain this information, theoretical methods of documentary analysis were used, including a review of statistical records from the Department of Medical Records and Health Statistics at the Pinar del Río Provincial Center for Hygiene, Epidemiology, and Microbiology; the Notifiable Diseases Case Notification form (Form 84-01-1); and the update records of the prevalence of leprosy (form 18-191-04), as well as the epidemiological history of reported cases archived in the provincial epidemiology department. The data were presented in tables and graphs using Microsoft Office 2016.

Statistical analysis was performed using the EPIDATA 3.0 program; absolute and relative frequencies were used, as well as incidence rates calculated per 10,000 inhabitants. The research adhered to ethical principles. No experimental procedures were performed, and the information was processed confidentially without presenting data that could compromise patient privacy. The study complied with the Second Declaration of Helsinki and with current legislation in Cuba. Under no circumstances will the identity of the patients be revealed. The results will be published only for the scientific community.

RESULTS

The incidence of leprosy in Pinar del Río from 2014 to 2024 decreases in 2020 and 2021, which coincides with the years of the COVID-19 pandemic, when case detection was challenging because of movement restrictions during those years. In contrast, in 2024, an increase in cases is observed, with a higher risk of contracting the disease than in the other years in the study, which is due to active case finding.

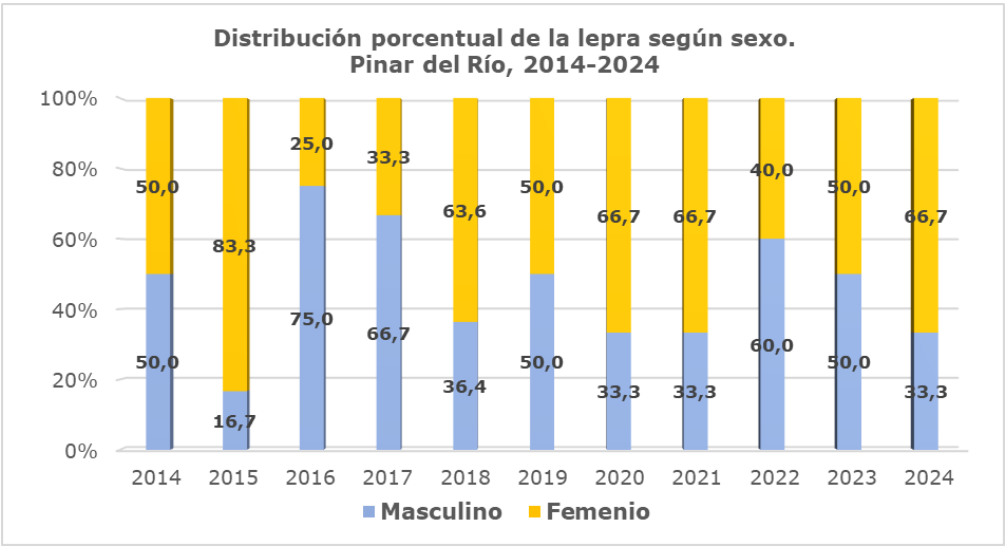
Figure 1. Incidence of leprosy. Pinar del Río 2014–2024



Source: statistical records (form 84-01-1)

The percentage distribution of leprosy cases by sex from 2014 to 2024 is shown in Figure 2.

Figure 2. Distribution percentage of leprosy cases by sex, Pinar del Río 2014–2024.



Source: statistical records (form 84-01-1)

In 2015, 2018, 2020, 2021, and 2024, more women than men were diagnosed, with women accounting for more than 60% of the cases each year. In 2016, 2017, and 2022, men accounted for the majority of the cases, with more than 60% in those years.

The percentage distribution of leprosy cases by age group in Pinar del Río from 2014 to 2024 is shown in Table 1.

Table 1. Distribution of leprosy cases by age group. Pinar del Río 2014–2024

Grupos de edades	2014		2015		2016		2017		2018		2019		2020		2021		2022		2023		2024	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
< 15 años	0	0,0	1	16,7	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0
15-18 años	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0	0	0,0
19-24 años	1	16,7	0	0,0	0	0,0	1	33,3	1	9,1	0	0,0	0	0,0	1	33,3	0	0,0	0	0,0	2	8,3
25-59 años	2	33,3	3	50,0	1	25,0	1	33,3	6	54,5	8	80,0	1	33,3	0	0,0	3	60,0	2	50,0	16	66,7
60-64 años	0	0,0	0	0,0	2	50,0	0	0,0	0	0,0	1	10,0	1	33,3	1	33,3	0	0,0	1	25,0	4	16,7
65 y más años	3	50,0	2	33,3	1	25,0	1	33,3	4	36,4	1	10,0	1	33,3	1	33,3	2	40,0	1	25,0	2	8,3
Total	6	100,0	6	100,0	4	100,0	3	100,0	11	100,0	10	100,0	3	100,0	3	100,0	5	100,0	4	100,0	24	100,0

Source: statistical records (form 84-01-1)

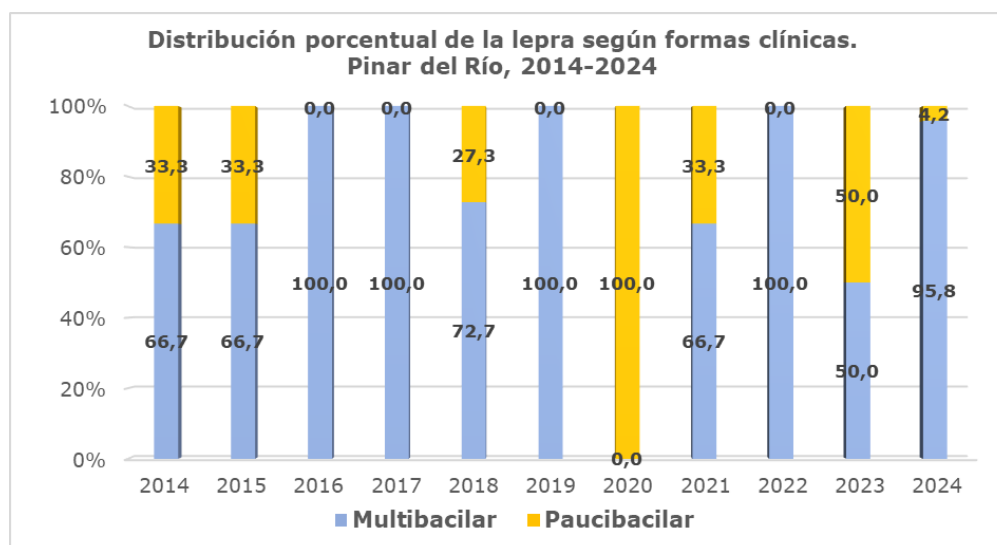
In Pinar del Río, during the study period, the 25–59 age group accounted for more than 30% of the cases in most years, except in 2014, 2016, and 2021. This is followed by the 65+ age group, which accounted for more than 30% in 2014, 2017, 2020, and 2021. No cases of leprosy in children have been reported since 2015.

The percentage distribution of leprosy cases by clinical form from 2014 to 2024 is shown in Figure 3.

In all years, the multibacillary clinical form predominated in more than 60% of cases, except in 2020 and 2023, when the paucibacillary form predominated in the former and both forms showed similar patterns in the latter.

From 2014 to 2024, early diagnosis for reported leprosy cases accounted for more than 65% of the cases, reaching 100% in 2015, 2016, 2018, 2020, 2021, and 2022.

In more than 50% of the reported cases, the diagnosis was made in patients who presented spontaneously to health services, except in 2016, 2020, and 2021; in 2016, screening of at-risk populations detected the most cases (75%), and in the other two years, contact tracing detected 66.7% of the cases in each.

Figure 3. Distribution percentage of leprosy cases by clinical form, Pinar del Río 2014–2024

Source: statistical records (form 84-01-1)

DISCUSSION

Analysis of leprosy trends in Pinar del Río during the 2014–2024 period reveals significant trends that reflect not only the local situation but also patterns observed internationally. One of the most notable findings was the decline in the incidence of leprosy during 2020 and 2021, which coincided with the COVID-19 pandemic. This phenomenon has been documented in various studies suggesting that control measures implemented to combat SARS-CoV-2, such as lockdowns and movement restrictions, led to a reduction in the active seeking of medical care for various diseases, including leprosy. 6

This suggests that although some measures may have had positive effects on reducing transmission, they also created a gap in the care of endemic diseases. The disruption of health services and fear of infection in medical facilities contributed to this decline in the detection of new cases. However, the resurgence observed in 2024, associated with active case findings, highlights the importance of epidemiological surveillance and early detection programs. 1

According to Hierrezuelo Rojas et al.(7), this trend is consistent with what has been reported in other contexts where following periods of low incidence, an increase in case identification has been observed because of intensified active case-finding efforts. These findings underscore the need to maintain constant surveillance and a proactive approach to controlling diseases such as leprosy, even during times of global health crisis.

Notably, leprosy was predominant among women, particularly in the 25–59 age group. This pattern is consistent with the findings of previous studies showing that women may be at higher risk because of social and economic factors that limit their access to health services. 8 The absence of childhood cases since 2015 is another relevant point, which could be interpreted as a success of prevention and education strategies targeting the young population. However, it also raises questions about transmission and access to early diagnosis in vulnerable groups.

The predominance of multibacillary clinical forms is consistent with trends observed globally. According to the WHO classification, multibacillary forms tend to be more prevalent in settings where diagnosis and treatment are delayed. 9 In this regard, the early diagnosis observed in Pinar del Río may indicate a strengthened local capacity to identify and treat the disease appropriately. Spontaneous detection suggests that patients are seeking medical care when symptoms become evident, which is a positive sign in terms of awareness and education about the disease.

The fact that cases have been detected in at-risk populations also highlights the importance of implementing strategies focused on vulnerable groups. The literature suggests that populations with unfavorable socioeconomic conditions or limited access to health services are more susceptible to developing leprosy. Therefore, it is crucial that public health policies be directed toward identifying and caring for these populations to prevent future outbreaks. 6

Several authors have discussed the implications of the findings. For example, Rivera Rivadulla R et al.⁽¹⁰⁾ reported that unequal access to health services is a determining factor in the prevalence of leprosy among women. They suggest that socioeconomic and cultural barriers may limit access to adequate diagnosis and treatment, resulting in a higher disease burden in this group. Furthermore, they emphasize the importance of implementing awareness programs specifically targeting women, with the aim of empowering them and facilitating their access to health services.

On the other hand, Silvente Alarcón et al.¹¹ addressed this issue from an epidemiological perspective, highlighting that vulnerable populations are often the most affected by diseases such as leprosy. They suggest that it is essential to integrate health services to address not only leprosy but also other comorbid conditions affecting these populations. This implies a holistic approach that considers social, economic, and cultural factors in the design and implementation of public health policies.

From the authors' perspective, the results observed in Pinar del Río reflect the complexity surrounding the control of infectious diseases such as leprosy. The temporary decline in cases during the pandemic is concerning, as it suggests that access to medical care was compromised at a critical time. However, the subsequent increase in detection indicates that there is significant potential to improve case identification and treatment if appropriate strategies are implemented. The author suggested that it is essential to learn from this experience to strengthen health systems within institutions. The lessons learned during the pandemic must be applied to ensure that a similar situation does not recur in the future. This includes not only improving the infrastructure and resources available for the diagnosis and treatment of leprosy but also fostering a culture of actively seeking medical care among the most vulnerable communities. Furthermore, it is crucial that public policies be oriented toward comprehensive care that recognizes the intersections between gender, poverty, and health.

The absence of childhood cases since 2015 may be a positive sign, but it also raises questions about how education and prevention are being addressed among younger generations. It is imperative that educational programs be developed to inform young people about leprosy and promote an environment where seeking medical care is not stigmatized.¹² In conclusion, while the results of the analysis are encouraging in some respects, they also serve as a reminder of the ongoing work needed to combat leprosy and other neglected diseases. Collaboration between governments, nongovernmental organizations, and communities is essential to address these challenges and ensure a future where everyone has access to adequate and timely medical care.

CONCLUSION

The results of the study on the epidemiology of leprosy in Pinar del Río during the 2014–2024 period reveal a decrease in cases during the COVID-19 pandemic, suggesting that external factors, such as disruptions to health services, can significantly influence the detection and treatment of endemic diseases. However, the increase in case identification following the pandemic indicates the potential for improving care and timely diagnosis. The findings suggest the need to implement comprehensive strategies that address socioeconomic and cultural barriers limiting access to health services, especially for groups such as women and young people. To advance leprosy control in Pinar del Río, it is crucial to continue strengthening local health systems, promote education and awareness about the disease, and foster a collaborative approach among different social actors. Only in this way can we ensure that everyone has access to adequate and timely medical care, contributing to the elimination of leprosy as a public health problem in the region.

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FUNDING

No financing

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest in the preparation of this document.

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