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CONTROL AND MONITORING OF LEPROSY IN PRIMARY HEALTH CARE: EVIDENCE FROM THE LITERATURE

CONTROLE E MONITORAMENTO DA HANSENÍASE NA ATENÇÃO PRIMÁRIA À SAÚDE: EVIDÊNCIAS NA LITERATURA

CONTROL Y MONITOREO DE LA LEPRA EN LA ATENCIÓN PRIMARIA DE SALUD: EVIDENCIAS EN LA LITERATURA

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RESUMO

A hanseníase persiste como um problema de saúde pública, especialmente em países tropicais como o Brasil, onde desafios relacionados ao diagnóstico precoce, estigma e acesso ao cuidado ainda são significativos. Este estudo teve como objetivo identificar evidências disponíveis na literatura sobre o controle e o monitoramento da hanseníase na atenção primária à saúde. Trata-se de uma revisão integrativa da literatura, conduzida por meio de buscas nas bases de dados PubMed, LILACS, CINAHL e Google Acadêmico. Na revisão, foram incluídos artigos publicados entre 2019 e 2024, em português, inglês e espanhol, que abordassem estratégias, práticas ou indicadores relacionados ao controle da hanseníase. Foram excluídos artigos duplicados, relatos de caso, revisões e estudos que não dialogassem diretamente com o tema. A amostra final foi composta por 23 estudos, os quais evidenciam falhas na detecção precoce, subnotificação, desigualdades territoriais e limitações na capacitação dos profissionais de saúde. Apesar de avanços pontuais, os achados reforçam a necessidade de estratégias integradas e contínuas. Este estudo contribui para a compreensão dos desafios enfrentados na vigilância e no manejo da hanseníase, destacando a importância da qualificação da atenção primária e do fortalecimento das políticas públicas para o controle e monitoramento da doença.

DESCRITORES: Hanseníase; Atenção Primária à Saúde; Diagnóstico Precoce; Vigilância em Saúde; Estigma Social.

ABSTRACT

Leprosy remains a public health problem, especially in tropical countries such as Brazil, where challenges related to early diagnosis, stigma, and access to care are still significant. This study aimed to identify available evidence in the literature on the control and monitoring of leprosy in primary health care. This is an integrative literature review, conducted through searches in the PubMed, LILACS, CINAHL, and Google Scholar databases. Articles published in the last 10 years, in Portuguese, English, and Spanish, addressing strategies, practices, or indicators related to leprosy control, were included in the review. Duplicated articles, case reports, reviews, and studies not directly related to the topic were excluded. The final sample consisted of 23 studies, which reveal flaws in early detection, underreporting, territorial inequalities, and limitations in the training of health professionals. Despite some advances, findings reinforce the need for integrated and continuous strategies. This study contributes to understanding the challenges faced in leprosy surveillance and management, highlighting the importance of strengthening primary health care and public policies to control and monitor the disease.

KEYWORDS: Leprosy; Primary Health Care; Early Diagnosis; Health Surveillance; Social Stigma.

RESUMEN

La lepra continúa siendo un problema de salud pública, sobre todo en países tropicales como Brasil, donde persisten dificultades relacionadas con el diagnóstico temprano, el estigma y el acceso a la atención. El propósito de este estudio fue identificar evidencias en la literatura sobre el control y el seguimiento de la lepra en la atención primaria de salud. Se realizó una revisión integrativa mediante búsquedas en PubMed, LILACS, CINAHL y Google Académico. Se incluyeron artículos publicados entre 2019 y 2024, en portugués, inglés y español, que trataran estrategias, prácticas o indicadores relacionados con el control de la enfermedad. Se excluyeron duplicados, estudios de caso, revisiones y trabajos sin relación directa con el tema. La muestra final incluyó 23 investigaciones, que revelaron fallas en la detección temprana, subregistro, desigualdades territoriales y limitaciones en la capacitación de los profesionales de la salud. Aunque se observan avances puntuales, los resultados refuerzan la necesidad de estrategias continuas e integradas. Este estudio aporta a la comprensión de los desafíos en la vigilancia y el manejo de la lepra, resaltando la relevancia de fortalecer la atención primaria y las políticas públicas para mejorar el control y el seguimiento de la enfermedad..

DESCRIPTORES: Lepra; Atención Primaria de Salud; Diagnóstico Precoz; Vigilancia en Salud; Estigma Social.

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1 INTRODUCTION

Leprosy remains a public health concern, particularly in tropical countries such as Brazil. Although it is a preventable disease and free treatment is provided by the Unified Health System (Sistema Único de Saúde -SUS), several factors continue to contribute to its persistence within the population. Among these, social inequality stands out, as it hinders users' access to healthcare services and exacerbates conditions of sanitary vulnerability. Issues such as inadequate sanitation, poor nutrition, and high population density in certain regions create an environment conducive to the transmission of the disease[1-2].

Moreover, operational and institutional challenges have a significant impact. The lack of technical training among primary healthcare (atenção primária em saúde - APS) professionals undermines early diagnosis and the interruption of the transmission chain. The absence of an adequate institutional flow, combined with high service demand and insufficient supplies such as monofilaments, hinders case management. These weaknesses are especially exacerbated in hyperendemic municipalities, where resource scarcity is more pronounced[1,3].

Other relevant factors include the social stigma and prejudice associated with leprosy, which discourage individuals from seeking medical care and delay diagnosis. This situation not only perpetuates the transmission of the disease but also contributes to the worsening of patients' physical and emotional conditions[4].

In this context, it becomes essential to gather and analyze the available scientific evidence regarding leprosy control and monitoring strategies within APS. This effort aims to identify effective practices, care gaps, and guidelines that strengthen public policies and expand access to qualified healthcare services.

Thus, the present study aims to critically analyze the available literature on leprosy control and monitoring practices within primary health care in Brazil. Specifically, it seeks to identify the main challenges faced by health services, examine the strategies implemented, and assess the impacts of these actions on the management and care provided to individuals affected by leprosy.

2 THEORETICAL FRAMEWORK

Leprosy, also known as Hansen's disease, is a chronic infectious condition caused by Mycobacterium leprae. It is characterized by hypopigmented or reddish skin lesions, loss of sensation in the affected areas, and thickening of peripheral nerves, potentially progressing to physical disabilities and permanent deformities if not diagnosed and treated early. Although preventable and treatable, leprosy continues to pose a challenge to public health, particularly in developing countries such as Brazil, which ranks second worldwide in reported cases, behind only India[4-5].

Leprosy control faces barriers such as low technical training among healthcare professionals, unclear institutional workflows, and an overload of health services. These factors hinder early diagnosis, which is essential to interrupt disease transmission and prevent disabilities. Furthermore, the social stigma associated with leprosy, marked by prejudice and exclusion, leads to patient isolation and delays in seeking medical care, perpetuating transmission and worsening the physical and psychosocial consequences[4,6-7].

On the other hand, significant advances have been achieved. Local and international partnerships have encouraged studies that expand the understanding of Mycobacterium leprae genetics and the socioeconomic impacts of the disease. These initiatives seek effective solutions that integrate prevention, diagnosis, and treatment, with a focus on reducing stigma and strengthening health systems[4,7].

Acquiring knowledge about the disease within APS requires a solid theoretical foundation built upon updated scientific evidence. In this regard, systematic observation is essential for obtaining reliable data, enabling the testing of hypotheses and the development of theories. Thus, the integrative review (IR) emerges as a robust methodological strategy for consolidating previous knowledge and identifying gaps in the literature[8-10].

Thus, the integrative review (IR) process involves six phases: (1) formulation of the guiding research question; (2) literature search or sampling; (3) data collection; (4) critical analysis of the included studies; (5) discussion of the results; and (6) presentation of the review[10]. A well-structured research question is the essential starting point and can be guided by the PICO strategy—patient/population, intervention, comparison, and outcome—which helps in defining controlled descriptors[11].

Figure 1 – PICO with controlled descriptors, applied to the research question and across search platforms

Source: prepared by the authors based on the research data (2025).

Systematic and integrative reviews are of great value to healthcare professionals and public policy makers, as they facilitate access to and use of reliable information for decision-making. The clarity, completeness, and transparency of these review reports are key factors in enabling their replication, updating, and practical applicability[12].

From this perspective, the guiding research question of this study was: *"How has APS, guided by its own policy framework, developed leprosy control and monitoring actions in order to achieve disease eradication?"* Based on this question, a systematic survey of evidence was conducted using selected databases, prioritizing primary sources and highlighting their relevance to the scope of the research (see Table 1).

Table 1 – Main sources of primary information

Source	Adress	Access	Characteristic
PubMed	www.pubmed.gov	Free	Mainly covers North American literature.
Embase	www.embase.com	Paid	Mainly covers European literature.
Scopus	www.scopus.com	Free*	Includes disciplines not directly related to health.
LILACS	http://lilacs.bvsalud.org	Free	The most comprehensive in Latin America.
CINAHL	http://www.ebscohost.com/academc/cinahl-plus-with-full-text	Free*	Specialized in the field of nursing.
Google scholar	http://scholar.google.com.br/	Free	Highly comprehensive.

Source: adapted from Pereira and Galvão[13].
Note: * Through the CAPES Journal Portal, available at: www.periodicos.capes.gov.br.

For this research, four main databases were selected: PubMed, Latin American and Caribbean Health Sciences Literature (LILACS), The Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Google Scholar, each offering specific contributions to the study. Rigorous inclusion and exclusion criteria were adopted for article selection, according to the particularities of each database. In PubMed, articles were filtered by "clinical trial," "observational study," and "case report." In LILACS, filters common to the other databases were applied. In CINAHL, only articles from academic journals were included. In Google Scholar, due to its broad coverage, articles of any type and language were considered, excluding duplicates and publications without full-text access.

This detailed process enabled the consolidation of the most relevant evidence regarding leprosy control and monitoring practices within APS, contributing to the formulation of more effective public policies and the improvement of patient care.

3 METHODOLOGY

To achieve the proposed objectives, the integrative review (IR) method was adopted—a qualitative systematic review approach that enables the synthesis, compilation, analysis, and critique of research from various natures—empirical or theoretical, experimental or observational—on specific themes and issues. In the context of this study, this method provides a comprehensive overview of the literature on the chosen topic, thereby contributing to the identification of gaps, the consolidation of knowledge, and the guidance of future investigations on leprosy within APS[14].

The research focused on the LILACS, PubMed, CINAHL, and SciELO databases, selecting articles published between 2019 and 2024 in Portuguese, English, and Spanish. Inclusion criteria considered original studies published in full and available online that addressed surveillance, monitoring, and clinical management of leprosy within the scope of APS. To ensure data relevance, review articles, theses, and dissertations were excluded, as well as works outside the defined scope, based on title and abstract screening. Despite the absence of specific filters in the CINAHL and Google Scholar databases, rigorous screening procedures were applied in these repositories, in alignment with the research scope.

The search process was systematized using the reference manager Mendeley, which assisted in storing and

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removing duplicate articles. To enhance reproducibility, the PRISMA instrument (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was adopted, allowing for the structured organization of the characterization, compatibility, and eligibility stages[12]. As a result, 23 articles were selected that aligned with the objectives of this research (see Table 2).

Table 2 – Flowchart of the article characterization, compatibility, and eligibility process

Characterization	Characterization of articles found in the databases	(leprosy AND "field epidemiology") OR (leprosy and "clinical study") OR (leprosy and "observational study") OR ("epidemiology")	PubMed: 68 LILACS: 22 CINAHL: 3 Google Scholar: 3.650
		(leprosy AND "field epidemiology" AND "clinical study") OR (leprosy AND "observational study")	PubMed: 64 LILACS: 21 CINAHL: 36 Google Scholar: 20
		(leprosy AND "clinical study" AND "observational study") OR (leprosy and "field epidemiology")	PubMed: 2 LILACS: 0 CINAHL: 6 Google Scholar: 5
		(leprosy OR "clinical study" OR "field epidemiology") OR (leprosy OR "observational study" OR "field epidemiology")	PubMed: 1.335 LILACS: 283 CINAHL: 131 Google Scholar: 15.700
Compatibility	Screening of studies by title and abstract	PubMed: 78 LILACS: 37	CINAHL: 15 Google Scholar: 1.385
	Duplicate articles: 301		
	Articles excluded	Topic outside the scope of the research: 306 Inaccessibility due to incomplete text: 124 Study did not address any of the descriptors: 895	
Eligibility	Full-text screening of selected articles	PubMed: 21 LILACS: 15	CINAHL: 8 Google Scholar: 34
	Final articles selected: 23		

Source: prepared by the authors based on the research data (2025).

Between january and april 2025, the following search strategy was conducted: [(leprosy AND "field epidemiology") OR (leprosy AND "clinical study") OR (leprosy AND "observational study")], yielding 68 results in PubMed, 22 in LILACS, 3 in CINAHL, and 3,650 in Google Scholar. Upon modifying the Boolean operator to [(leprosy AND "field epidemiology" AND "clinical study") OR (leprosy AND "observational study")], the search returned 64 results in PubMed, 21 in LILACS, 36 in CINAHL, and 20 in Google Scholar. In a third search, using [(leprosy AND "clinical study" AND "observational study") OR (leprosy AND "field epidemiology")] as the filter, 2 articles were found in PubMed, none in LILACS, 6 in CINAHL, and 5 in Google Scholar. In a fourth attempt, the query [(leprosy OR "clinical study" OR "field epidemiology") OR (leprosy OR "observational study" OR "field epidemiology")] yielded 1,335 results in PubMed, 283 in LILACS, 131 in CINAHL, and 15,700 in Google Scholar. Additionally, other searches were performed using various Boolean operators; however, they did not return relevant results. The search process adhered to recommended practices for translating research questions into efficient strategies, incorporating controlled descriptors, natural language terms, and wildcard characters to optimize retrieval[15].

The data analysis was conducted in three main stages: exploratory reading, thematic categorization, and narrative synthesis. The exploratory reading enabled the initial screening of the articles, while the thematic

categorization organized the findings into categories such as surveillance, monitoring, and clinical management. Finally, the narrative synthesis integrated the results to highlight the main advances and gaps related to the topic.

Recognizing the potential biases in the selection process, within the context of this research, challenges were identified related to the exclusion of articles with incomplete texts and the lack of unrestricted access in certain databases. These aspects were mitigated through the application of rigorous inclusion and exclusion criteria for article selection, yet they represent inherent limitations of bibliographic research. Nevertheless, the transparency in documenting each stage and the resulting findings reinforces the validity of the review and its applicability in the formulation of public policies for leprosy control within APS.

4 RESULTS

To select the articles based on the scope of the research, it was necessary to follow an organized and rigorous workflow. The initial screening involved reading the titles and analyzing the abstracts, which enabled the exclusion of studies that were not aligned with the established objectives. This preliminary step was essential for refining the results and focusing efforts on the most relevant studies.

In the subsequent stage, 1,515 articles were pre-selected for analysis. Among these, 301 were excluded due to duplication, while another 306 did not meet the defined criteria. Additionally, 124 articles were removed due to lack of access to the full text, and 895 did not contain the essential descriptors for the research. At the end of this phase, 78 articles underwent detailed review, resulting in the selection of 23 studies that fully met the inclusion criteria.

The entire selection process was systematically documented using the PRISMA tool, which provides clarity and organization to the steps undertaken. The final selected articles addressed aspects related to epidemiological surveillance, monitoring strategies, and clinical management of leprosy in Primary Health Care, representing a significant contribution to the analysis proposed in this study.

Ideally, the screening of titles and abstracts should be conducted independently by at least two reviewers. Any discrepancies are resolved by consensus or with the assistance of a third evaluator, ensuring greater rigor in the process. In this study, however, the review was carried out by four authors, who collaborated to ensure that each stage was conducted with accuracy and transparency. Furthermore, the selected articles were thoroughly analyzed to verify their compliance with the established criteria. The reasons for exclusion were also recorded, and the reference lists of the included studies were reviewed, which enabled the identification of relevant publications not captured in the initial searches[15].

The table 3 presents the selected articles following paired review.

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Table 3 – Articles Selected for the Integrative Review

Reference	Title	Type of study / Approach	Main findings
Barros ICA, Sousa CCM, Silva NRF, Mascarenhas MDM. Characterization of cases and epidemiological and operational indicators of leprosy: time series analysis and spatial distribution, Piauí, 2007–2021. Epidemiol Serv Saúde [Internet]. 2024;33:e2023090.	Characterization of cases and epidemiological and operational indicators of leprosy: time series analysis and spatial distribution, Piauí, 2007–2021.	Observational, ecological, time series; quantitative	A decreasing trend was observed in the overall detection rates, in the detection of cases among individuals under 15 years of age, and in the detection of cases with grade 2 physical disability. An increasing trend was noted in the proportion of multibacillary (MB) cases. High leprosy detection rates were recorded, despite the declining trend in the indicators, except for the proportion of MB cases.
Bulstra CA, Blok DJ, Alam K, Butlin CR, Roy JC, Bowers B, et al. Geospatial epidemiology of leprosy in northwest Bangladesh: a 20-year retrospective observational study. Infect Dis Poverty [Internet]. 2021;10(1):1-12.	Geospatial epidemiology of leprosy in northwest Bangladesh: a 20-year retrospective observational study.	Observational with ordinal regression; quantitative	The relative risk for leprosy was up to 12 times higher among residents of hotspots compared to individuals living outside these areas. A significantly higher number of cases were detected in individuals under 15 years of age, indicating recent transmission.
Ansari AS, Saxena K, Singh KK, Choudhary A, Singh A, Tripathi AK, et al. Clinicobacteriological evaluation of leprosy patients with 1-5 skin lesions. Int J Mycobacteriol [Internet]. 2020;9(2):209-11.	Clinicobacteriological evaluation of leprosy patients with 1-5 skin lesions.	Clinical; quantitative	Of the 62 patients analyzed, 15 were classified as multibacillary (MB) and 47 as paucibacillary (PB) based on skin smears and histopathology. The WHO classification of leprosy based on the number of lesions appears to be inadequate, as it categorizes cases with a multibacillary number of lesions as PB, thereby confusing treatment strategies.
Vieira NF, Martínez-Riera JR, Lana FCF. Primary Care Quality and Its Effects on Leprosy Monitoring Indicators. Rev Bras Enferm [Internet]. 2020;73(4):e20190038.	Primary Care Quality and Its Effects on Leprosy Monitoring Indicators	Observational, cross-sectional; quantitative	The quality of leprosy control actions carried out by primary care professionals has an impact on health indicators, making it necessary to develop strategies that are consistent with the realities of the territory.
Ferrá-Torres TM, Rodríguez-del-Valle K, Florat-Gutierrez D. Characterization of clinical-epidemiological factors in the incidence of leprosy. Rev Arch Médico Camagüey [Internet]. 2022;26:e8788.	Characterization of clinical-epidemiological factors in the incidence of leprosy.	Observational, descriptive, cross-sectional; quantitative	Multibacillary (MB) leprosy showed the highest incidence, with a predominance in the age group between 20 and 59 years, and males being the most affected. The urban area had the highest number of cases. Patients presented with extremely low socioeconomic status.
Moraes PC, Eidt LM, Koehler A, Ransan LG, Scrofeneker ML. Epidemiological characteristics of leprosy from 2000 to 2019 in a state with low endemicity in southern Brazil. An Bras Dermatol [Internet]. 2023;98(5):602-10.	Epidemiological characteristics of leprosy from 2000 to 2019 in a state with low endemicity in southern Brazil.	Observational, descriptive; quantitative	Rio Grande do Sul presents low endemicity for leprosy. The average detection rate was 1.61 new cases per 100,000 inhabitants. Of the patients, 79.0% were multibacillary (MB); 37.5% presented the borderline clinical form; 16% had grade 2 physical disability at diagnosis; and bacilloscopy was positive in 35.4% of the cases.
Siman JB, Simões MO, Marques REB, Rodrigues KC, Fernandes DPC, Yamaguchi LC, et al. Hospitalization for leprosy and its sequelae: a descriptive study. Rev Bras Promoç Saúde [Internet]. 2021;34:11213.	Hospitalization for leprosy and its sequelae: a descriptive study.	Observational, descriptive; quantitative	Hospitalization records for leprosy and its sequelae in Minas Gerais follow the epidemiological pattern of the disease's occurrence. The need to strengthen primary health care for diagnostic, treatment, and prevention actions was identified.
Chen X, Liu H-B, Shui T-J, Zha S. Risk factors for physical disability in patients with leprosy disease in Yunnan, China: Evidence from a retrospective observational study. PLoS Negl Trop Dis [Internet]. 2021;15(11):e0009923.	Risk factors for physical disability in patients with leprosy disease in Yunnan, China: Evidence from a retrospective observational study.	Observational, retrospective; quantitative	Delayed diagnosis, nerve damage, absence of skin lesions, WHO and Ridley-Jopling classifications, leprosy reactions, advanced age, rural occupation, Han ethnicity, and male sex were associated with disability in patients with leprosy. The identification of risk factors may help prevent physical disability.
Rivera-Chavarría A, Sánchez-Hernández G, Espinoza-Aguirre A. Family impact of Hansen's disease in Costa Rica. Acta Médica Costarricense [Internet]. 2021;63(1):5-13.	Family impact of Hansen's disease in Costa Rica.	Observational with semi-structured interviews; qualitative	The study showed that 12 participants came from three family groups; two of these groups had three affected generations. The participants were diagnosed during economically active ages. Additionally, they performed manual labor, had low levels of education, and identified as Christian. At the time of the interview, they were aware of their family history. The clinical presentation in all three family groups was virchowian leprosy.
Mendes ALG, Joaquim HM, Zamae MIS, Assis RM, Peixoto JRM, Araújo MMG, et al. Expression of NLRP3 inflammasome in leprosy	Expressão do inflammasoma NLRP3 na hanseníase indica evasão imunológica por Mycobacterium leprae	Observational, cross-sectional, comparative; quantitative	Strong expression of NLRP3 and inflammatory caspases-4/5 was observed in virchowian leprosy. The NLRP3 inflammasome is inactive in leprosy, suggesting immune evasion by *M. leprae*.

indicates immune evasion of Mycobacterium leprae. Mem Inst Oswaldo Cruz [Internet]. 2020;115:e190324.			
Chagas DF, Diniz LM, Lucas EA, Moraes MO. Relapse in leprosy and drug resistance assessment in a tertiary hospital of the state of Espírito Santo, Brazil. Rev Soc Bras Med Trop [Internet]. 2021;54:e0375-2020.	Relapse in leprosy and drug resistance assessment in a tertiary hospital of the state of Espírito Santo, Brazil.	Observational, descriptive; quantitative	In 25 cases, the incubation period ranged from 5 to 15 years after the initial treatment, favoring bacillary persistence. In the remaining 5 cases, the disease recurred after 15 years, suggesting reinfection, since none of the patients showed resistance to the medications.
Zheng Y, Xing H-Y, Zhu Z-G, Zhu H-H, Zhang F, Gao X, et al. Identification of sensitive indicators in immune response for leprosy affected patients: An observational clinical study of safety and immunogenicity of influenza vaccine. Med (Baltimore) [Internet]. 2021;100(31):e26744.	Identification of sensitive indicators in immune response for leprosy affected patients: An observational clinical study of safety and immunogenicity of influenza vaccine.	Clinical observational; quantitative	Clinically cured leprosy patients are relatively safe to receive the influenza vaccine. A patient cured of leprosy presents an immunological deficit in antibody production.
Moreira RJO, Bezerra JM, Santos FS, Pascoal LM, Santos LH, Santos Neto M. Clinical-epidemiological characteristics and temporal trend of new leprosy cases with grade 2 physical disability in the state of Maranhão, 2011-2020. Epidemiol Serv Saúde [Internet]. 2023;32(2):e2022435.	Clinical-epidemiological characteristics and temporal trend of new leprosy cases with grade 2 physical disability in the state of Maranhão, 2011-2020.	Observational, cross-sectional, descriptive, ecological, time series; quantitative	Of the 2,147 reported cases, 71.5% were male, 48.9% had up to 8 years of education, 66.5% were of brown skin color/race, 95.5% presented the multibacillary (MB) form, 58.8% had the borderline clinical form, and 32.3% had a negative bacilloscopy at diagnosis. A stationary trend was observed at the state level, and a decreasing trend in the São Luís health region.
Rachmani E, Hsu C-Y, Chang PWS, Jumanto J, Fuad A, Ningrum DNA, et al. Encouraging on-time completion of leprosy patients treatment: Implementing e-leprosy framework to primary health care in Indonesia. Asia Pac J Public Health [Internet]. 2019;31(4):296-305.	Encouraging on-time completion of leprosy patients treatment: Implementing e-leprosy framework to primary health care in Indonesia	Observational, experimental; quantitative	SMS reminders proved effective in increasing on-time completion and attendance rates by 21% and 14.6%, respectively. There is a trend of delayed medication pickups during the 3rd, 8th, and 11th rounds of multidrug therapy.
Verma S, Garg RK, Rizvi I, Malhotra HS, Kumar N, Jain A, et al. Central nervous system, spinal root ganglion and brachial plexus involvement in leprosy: A prospective study. J Cent Nerv Syst Dis [Internet]. 2022;14:11795735221135476.	Central nervous system, spinal root ganglion and brachial plexus involvement in leprosy: A prospective study	Observational prospective; quantitative	The central nervous system (CNS), the spinal root ganglion, and the brachial plexus are involved in patients with leprosy-related neuropathy. The immune reaction against the *M. leprae* antigen may be a plausible pathogenic mechanism for imaging abnormalities in the brachial plexus and CNS.
Vieira NF, Lanza FM, Martínez-Riera JR, Nolasco A, Lana FCF. Orientation of primary care in actions against leprosy: factors related to professionals. Gac Sanit [Internet]. 2020;34(2):120-126.	Orientation of primary care in actions against leprosy: factors related to professionals	Observational with linear regression; quantitative	In the descriptive analysis, most professionals had not attended cases and had not received training to carry out leprosy-related actions. It is necessary to increase the effectiveness of health surveillance as a means of early detection and professional training.
Nery JAC, Sales AM, Hacker MAVB, Moraes MO, Maia RC, Sarno EN, et al. Low rate of relapse after twelve-dose multidrug therapy for Hansen's disease: A 20-year cohort study in a Brazilian reference center. PLoS Negl Trop Dis [Internet]. 2021;15(5):e0009382.	Low rate of relapse after twelve-dose multidrug therapy for Hansen's disease: A 20-year cohort study in a Brazilian reference center	Observational cohort; quantitative	Incidence rate of 1.16 relapse cases per 1,000 person-years (95% confidence interval = 0.5915–2.076). The cumulative risk was 0.025 over 20 years. The very low risk observed in this cohort of MB patients treated with twelve doses reinforces the success of the current multidrug therapy regimen.
Santos DF, Garcia LP, Borges IS, Oliveira TJ, Antunes DE, Luppi AM, et al. Early diagnosis of neural impairment in seropositive leprosy household contacts: The experience of a reference center in Brazil. Front Med [Internet]. 2023;10:1143402.	Early diagnosis of neural impairment in seropositive leprosy household contacts: The experience of a reference center in Brazil.	Clinical-observational; quantitative	Positivity rates for skin smear and qPCR of skin biopsy were 35.5% and 25.8%, respectively. Electroneuromyographic (ENMG) evaluation of seropositive contacts revealed neural impairment in 23.5%, with a predominance of the mononeuropathy pattern in 62.3%. Clinical neural thickening was observed in 17.5% of seropositive contacts, but among individuals with altered ENMG results, only 25.9% showed neural thickening on clinical examination.

Franca J, Aires C, Nobre M, Sakamoto S, Dias GH. Spatial analysis reveals failures in leprosy control activities in a hyperendemic city in Brazil. Lepr Rev [Internet]. 2023;94(4):276-85.	Spatial analysis reveals failures in leprosy control activities in a hyperendemic city in Brazil.	Ecological, descriptive; quantitative	Among the cases with peripheral nerve involvement, there was a predominance of male patients, with multibacillary (MB) leprosy and low educational levels. In 38.5% of health units, cases with grade 2 disability were residing within 431 meters of the care facility.
Carvalho AG, Dias CLH, Blok DJ, Ignotti E, Luz JGG. Intra-urban differences underlying leprosy spatial distribution in central Brazil: Geospatial techniques as potential tools for surveillance. Geospat Health [Internet]. 2023;18(2):1227.	Intra-urban differences underlying leprosy spatial distribution in central Brazil: Geospatial techniques as potential tools for surveillance	Observational, ecological; quantitative	Heterogeneous and peripheral spatial distribution at the neighborhood level, which appears to have been shaped by intra-urban differences related to deprivation and poor living conditions.
Mahendra MA, Hendrati LY. Analysing the problem of finding new cases of grade 2 disabled leprosy. Indones J Glob Heal Res [Internet]. 2024;6(1):151-8.	Analysing the problem of finding new cases of grade 2 disabled leprosy	Observational, descriptive; qualitative	The primary issue in identifying new leprosy cases with grade 2 disability is the lack of knowledge among patients and their families, which leads to inappropriate behavior in response to the initial symptoms of leprosy.
Zanette ACC, Minasse CY, Vieira YAI. Epidemiological analysis of leprosy in children under 15 years old in Brazilian regions: an ecological study. Brazilian J Implantol Heal Sci [Internet]. 2024;6(5):498-507.	Epidemiological analysis of leprosy in children under 15 years old in Brazilian regions: an ecological study	Observational, ecological, cross-sectional; quantitative	Northeast Brazil is the region with the highest endemicity of leprosy in the country, accounting for 47.68% of cases. In 2019 and 2020, there was a nationwide decline in the number of reported cases. The COVID-19 pandemic limited access to care for leprosy patients due to changes in the routine of health services. There was a reduction in leprosy diagnoses in the general population and in children under 15 years of age. There was also an increase in diagnosed MB cases, indicating a serious impact of the pandemic on leprosy control and monitoring in Brazil.
Rivas-Mina AM, Chantré-Cusi A, Santa-Yepes J, Hoyos-Ocampo DM, Pacheco-López R, Ferro BE. Determination of persistence and delayed diagnosis of leprosy in Valle del Cauca from 2010 to 2016. Rev Fac Nac Salud Publica [Internet]. 2021;39(3):e343156.	Determination of persistence and delayed diagnosis of leprosy in Valle del Cauca from 2010 to 2016	Observational cohort, descriptive; quantitative	Delayed diagnosis and entry with some degree of disability indicate late detection of patients, some already in advanced stages. Treatment abandonment and disability at entry add to the complexity of the situation.

Source: prepared by the authors based on research data (2025).

5 DISCUSSION

Based on the analysis of the 23 articles, multiple perspectives emerged that highlight the complexity of leprosy control. This diversity underscores the public health challenges posed by the disease, encompassing epidemiological, clinical, operational, and social dimensions, with particular emphasis on the weaknesses of Primary Health Care in the areas of surveillance, diagnosis, and case follow-up.

5.1 Epidemiological and spatial scenario

Studies conducted in Brazil and in international contexts indicate that, even in areas of low endemicity, leprosy continues to exhibit high detection rates. The concentration of cases in underserved urban areas with greater social vulnerability reinforces the inequality in the distribution of the disease[1,3,5,16].

Another relevant point identified was the significant proportion of cases among individuals under 15 years of age, which highlights failures in early diagnosis and perpetuates the transmission chain. Additionally, the impact of the COVID-19 pandemic caused a serious setback in the control and monitoring of leprosy, with a reduction in the number of reported cases, compromising access to diagnosis and treatment, particularly in regions with high endemicity[3-4,16].

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5.2 Diagnosis, recurrence, and clinical monitoring

Studies have identified limitations in the classification of leprosy and in the use of criteria based solely on the number of lesions, which may lead to confusion and hinder treatment strategies. The recurrence of the disease in some patients, combined with delayed diagnosis—particularly in rural or hard-to-reach areas—demonstrates the need for greater effectiveness in active surveillance strategies and clinical follow-up[3,5-6].

The persistence of these shortcomings in diagnosis and monitoring underscores the urgency of training Primary Health Care professionals and adopting integrated practices for early detection and appropriate patient management[2,4,10].

5.3 Involvement of primary health care and professional training

The role of Primary Health Care has proven to be essential for leprosy control, as evidenced by Brazilian studies. However, challenges remain for the effective management of the disease, such as low coverage, lack of professional training, and discontinuity in health care actions[7,17].

Innovative initiatives, such as SMS reminders to ensure treatment adherence and the use of geospatial surveillance and risk algorithms, have proven to be promising tools for enhancing the effectiveness of interventions in Primary Health Care. These strategies demonstrate that technological innovation can be a powerful ally in the reorganization of health services[10,16-17].

5.4 Psychosocial and family impacts

A study conducted in Costa Rica highlighted the familial occurrence of the disease across generations in socially vulnerable settings, underscoring the importance of educational initiatives tailored to the psychosocial context. In this domain, leprosy generates profound repercussions for both patients and their families. These effects are exacerbated by social stigma, which hinders the pursuit of diagnosis and treatment, thereby perpetuating not only disease transmission but also the physical and emotional consequences associated with it[1,4,6,8].

5.5 New scientific findings

Discoveries such as the involvement of the NLRP3 inflammasome in the immune response to leprosy and the immunological deficits observed in cured patients suggest the importance of immunosurveillance. These new findings pave the way for advancing the development of more effective therapeutic strategies and for the long-term follow-up of patients[2,18].

Although often overlooked in municipal health planning due to its low pathogenicity—even in the context of high endemicity—leprosy requires broad and continuous education and training initiatives within Primary Health Care. These efforts, alongside the development of specific public policies, contribute to building a more robust and inclusive approach to disease control[3,6,17].

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6 CONCLUSION

The integrative review enabled the collection and analysis of essential data regarding the control and monitoring of leprosy within APS, revealing both the progress achieved and the challenges that still persist. Although some regions, such as Piauí and Maranhão, have shown a reduction in the detection of new cases, indicators related to multibacillary cases, the number of patients with physical disabilities, and diagnosis continue to reflect shortcomings in early detection and in the health actions carried out.

The analysis highlighted how socioeconomic factors—such as poverty, low educational attainment, and social inequalities—continue to influence the distribution of the disease. These conditions reinforce the importance of intersectoral strategies and territorially-based approaches that consider the specific needs of each region. Furthermore, the lack of preparedness and ongoing training of health teams, combined with the persistent stigma in society, represent significant barriers to the effective control of leprosy.

Conducting evidence-based reviews requires not only methodological rigor but also a critical evaluation of the available information. This study followed a systematized process grounded in well-defined criteria, thereby ensuring the reliability of the analysis performed. As a result, it was possible to detail aspects of the epidemiological profile of leprosy in diverse contexts, highlight weaknesses in surveillance actions, and suggest pathways to overcome existing gaps.

Therefore, the control of leprosy within APS requires a comprehensive, continuous, and geographically defined approach, with emphasis on early detection, guided self-care, and the fight against social stigma. Continued research is essential to improve diagnosis and treatment and, above all, to promote education and social awareness. Collaboration among researchers, health professionals, and the community is crucial to overcoming the remaining challenges and advancing toward the elimination of leprosy as a public health problem, in alignment with the principles of Brazil's SUS and the country's global health commitments.

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