

Bibliographic analysis on latent tuberculosis infections (LTI) in health professionals in basic care

Análise bibliográfica sobre infecções latentes da tuberculose (ILT) em profissionais da saúde na atenção básica

Análisis bibliográfico sobre infecciones tuberculosas latentes (ITL) en profesionales sanitarios de atención básica

RESUMO

Objetivo: identificar realizar uma análise baseada em evidências sobre Infecções Latentes da Tuberculose em profissionais da rede básica de saúde. Método: Trata-se de uma revisão integrativa de literatura realizada nas bases: Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS), Scientific Electronic Library Online (SciELO), SciVerse Scopus (SCOPUS) e Medical Literature Analysis and Retrieval System Online (MEDLINE/PubMed). Resultado: Foram selecionados para essa revisão 07 artigos. Os resultados evidenciam que, quanto às categorias profissionais, os enfermeiros, técnicos de enfermagem e agentes comunitários de saúde são as categorias que apresentam maiores riscos para ILT. Havendo prevalências entre 24,9% a 57,8%, levando em consideração o ponto de corte estabelecido. Conclusão: Conclui-se que os estudos sobre ILTB em profissionais da atenção básica ainda são escassos, mesmo sendo ela a porta de entrada para os demais serviços de saúde e constituindo-se a principal responsável pela acolhida e tratamento dos pacientes com tuberculose ativa.

DESCRIPTORIOS: Atenção primária à saúde; Pessoal de saúde; Tuberculose latente..

ABSTRACT

Objective: This study aimed to identify an evidence-based analysis of Latent Tuberculosis Infections in basic health care professionals. Method: This is an integrative literature review carried out in the following databases: Latin American and Caribbean Literature on Health Sciences (LILACS), Scientific Electronic Library Online (SciELO), SciVerse Scopus (SCOPUS) and Medical Literature Analysis and Retrieval System Online (MEDLINE/PubMed). Results: Seven articles were selected for this review. Conclusion: The results made it possible to show that, regarding the professional categories, nurses, nursing technicians and community health agents are the categories that present greater risks for ILT. It was concluded that studies on LTBI in primary care professionals are still scarce, even though it is the gateway to other health services and is the main responsible for the reception and treatment of patients with active tuberculosis.

DESCRIPTORS: Primary health care; Health personnel; Latent tuberculosis

RESUMEN

Objetivo: Este estudio tuvo como objetivo identificar un análisis basado en evidencia de Infecciones de Tuberculosis Latente en profesionales de atención básica de salud. Método: Esta es una revisión bibliográfica integradora realizada en las siguientes bases de datos: Literatura Latinoamericana y del Caribe en Ciencias de la Salud (LILACS), Scientific Electronic Library Online (SciELO), SciVerse Scopus (SCOPUS) y Medical Literature Analysis and Retrieval System Online (MEDLINE/PubMed). Resultados: Los resultados muestran que, en cuanto a las categorías profesionales, los enfermeros, técnicos de enfermería y agentes comunitarios de salud son las categorías que presentan mayores riesgos para la THI. Hubo prevalencias entre 24,9% y 57,8%, teniendo en cuenta el punto de corte establecido. Conclusión: Se concluye que los estudios sobre la ITBL en profesionales de atención primaria aún son escasos, a pesar de que es la puerta de entrada a otros servicios de salud y es el principal responsable de la recepción y tratamiento de los pacientes con tuberculosis activa.

DESCRIPTORIOS: Atención primaria de salud; Personal de salud; Tuberculosis latente.

RECEBIDO EM: 04/04/2022 APROVADO EM: 27/05/2022

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INTRODUCTION

In recent years, the re-emergence of tuberculosis (TB) in the world has been witnessed. The year 2015 became a new milestone in the history of this disease, with the proposal of the World Health Organization (WHO) to end TB as a public health problem. For the first time in decades, innovations appear in the diagnostic and therapeutic fields: rapid molecular tests, new drugs developed specifically for the treatment of TB, preventive and therapeutic vaccines, in addition to new shortened regimens being tested in multicenter clinical trials.⁽¹⁾

In this context, Brazil has an extremely relevant role. At the 2014 World Health Assembly, held at WHO headquarters in Geneva, the country was the main proponent of a new global strategy to combat the disease. The action was called the End TB Strategy. The proposal was unanimously approved by the member countries of the United Nations and has as its vision a world free of tuberculo-

sis by the year 2035.⁽¹⁾

The National Plan to End Tuberculosis as a Public Health Problem, in 2017, in line with WHO strategies, proposed three pillars to end the disease as a public health problem in Brazil. They are: prevention and integrated care centered on the person with TB; bold policies and support systems; intensification of research and innovation. In each pillar, the objectives and strategies that must be followed to reach the proposed goals are contemplated.⁽²⁾ Included in these Pillars are the objective of intensifying prevention actions, which include strategies related to increased screening, diagnosis and treatment of latent tuberculosis infection (LTBI), as well as the national implementation of LTBI surveillance, understanding this activity as of fundamental importance to reach the goals.

In this sense, the investigation of contacts is of fundamental importance for the control of the disease, since, through this investigation, it is possible to identify people with LTBI and adequately indica-

te the treatment, enabling the prevention of the development of active TB. However, a population that deserves special attention during screening for the identification of LTBI are health professionals. This attention to health professionals is due to the constant exposure to people with TB, increasing the risk of developing the active disease. In these professionals, it is always necessary to look for and consider the possibility of recent infection.⁽²⁾

According to the WHO guidelines for horizontalization in the fight against tuberculosis, control actions for primary care were redirected and decentralized as of 2004, which, in this case, they would be in charge of the family health strategy (ESF) and the program of community health agents.^(3,4) From this perspective, primary care, due to its dynamism and capillarity, constitutes the preferred gateway and communication center between users and the health care network, leading to the need for research related to these health professionals and not just

the active search in the hospital environment.

Given the above, the present aims to identify an evidence-based analysis of Latent Tuberculosis Infections in professionals in the basic health network.

METHODOLOGY

This is an Integrative Literature Review (ILR). The elaboration of a study of this nature consists of the fulfillment of the steps: identification of the problem, literature search, evaluation, analysis and interpretation of data and presentation of the integrative review.⁽⁵⁾

The guiding question was elaborated with the help of the PICo strategy: P=health professionals; I= Latent Tuberculosis Infections; Co= Basic care. Therefore, the following guiding question was arrived at: What is the prevalence of LTBI in primary care health professionals?⁽⁶⁾

The search and analysis of the data collected in the studies were carried out between December 2021 and February 2022, through the following electronic databases: Latin American and Caribbean Literature on Health Sciences, Scientific Electronic Library Online, SciVerse Scopus and Medical Literature Analysis and Retrieval System Online. The inclusion criteria of the defined articles were: articles published in Portuguese, English and Spanish, available in full, published between 2007 and January 2021 (interval of 15 years).

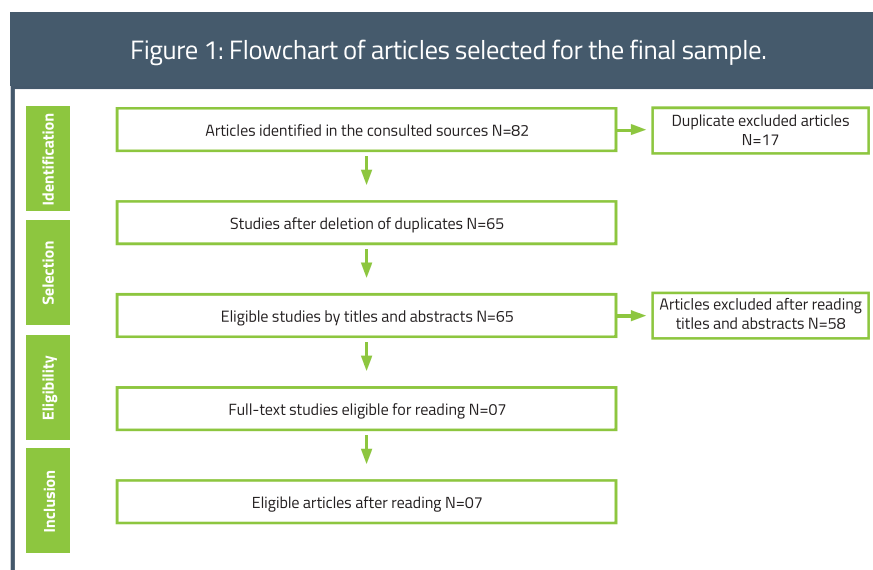
The uni-terms present in the Health Sciences Descriptors (DeCS) were used: Primary Health Care, Health Personnel and Latent Tuberculosis, and the articles indexed by descriptors registered in the Medical Subject Headings (MeSH): Primary Health Care, Health Personnel and Latent Tuberculosis, combined with each other through the Boolean operators “AND” and “OR”, in the researched bases. Duplicate articles, literature review (secondary data source) and those that addressed treatment and other aspects of LTBI were excluded.

Eighty-two articles were identified, of which 17 were duplicates, leaving 65 eligible articles after reading the title and abstract. After reading in full, 07 articles were selected for the final sample of this integrative review because they meet the proposed objective. The material search and selection process can be visualized in the flowchart described in Figure 1.

RESULTS

From the adaptation of an extraction instrument⁽⁷⁾, a synthesis of the included articles was made. Data extraction captured the following information: year of publication; title; authors; published journal; type of study/sample; objectives, tests used, cut-off point and results found.

Table 1 presents an overview of the seven selected publications, highlighting the characterization, methodological aspects, tests used to track the diagnosis



Source: Elaborated by the authors, (2022).

Table 1. Distribution of references included in the integrative review, according to selected databases, in order of year of publication.

| ARTICLE | Year / Journal | Type of study/ Sample | Test used | Cut points | Main results |
|----------------|---|--|-----------------------------------|----------------|--|
| ARTICLE 1 (8) | 2007 - PLoS Medicine | Cross-sectional / informal | Interferon-gamma Release Test | Does not apply | Prevalence of 25.5% in primary health care providers |
| ARTICLE 2 (9) | 2014 – Rev. Bras. Promoção de Saúde | Cross-sectional, observational and descriptive study / 137 health professionals from the basic network | Tuberculin skin test (TST) | ≥ 10 mm | LTBI prevalence was 32%. |
| ARTICLE 3 (10) | 2015 – Rev. Cubana de Medicina Tropical | Cross-sectional / 1,063 health professionals from polyclinics of the basic health network. | Tuberculin skin test *(PPD RT 23) | ≥ 10 mm | LTBI prevalence of 24.9%. |

and results of the listed articles.

The studies include the evaluation of health professionals such as: doctors, nurses, nursing technicians and community health agents, among others, and all articles aimed to assess the prevalence of LTBI, and six of these articles also sought to analyze the risks associated with this infection.

DISCUSSION

The results showed prevalences between 24.9% and 57.8%, taking into account the established cut-off point. Among the associated risk factors, smoking, age, absence of a BCG scar, self-declared ex-smoker status, previous tuberculin skin test, length of service and non-use of masks were found to be predominant. As for the professional categories, nurses, nursing technicians and community health agents are the categories that present the greatest risks.

With the publication of the Strategy to End Tuberculosis by the WHO in 2015, bold goals were set for the end of TB as a public health problem by 2035. Thus, these publications gained a little more development, but still leaving the subject with many gaps for debate. ⁽¹⁾ In this way, the fact of the greater predominance of articles found from 2015 onwards, even without a time frame on the subject, is justified. However, studies on the prevalence of LTBI in health professionals in primary care are still scarce in the current literature. With the present review, four records were found in Brazil. ^(9,10,11,13,14)

In Russia, a study carried out from 2004 to 2005 found a prevalence of LTBI of 40.8% in health professionals from different health care segments and 29.3% in nurses and primary care physicians. The study did not have a formal sample, as it was a study to recruit all forms of TB among health professionals and students. Russia is one of 22 countries defined by the World Health Organization (WHO) with a high incidence rate of TB and high rates of drug resistance, including several

| | | | | | |
|----------------|---------------------------------------|---|---|------------------|--|
| ARTICLE 4 (11) | 2015 - Cadernos de Saúde Pública | Cross-sectional / 253 community health workers | Tuberculin skin test (PPD RT 23) | ≥ 5 mm e ≥ 10 mm | The prevalences were 57.88% and 37.3%, respectively at the cut-off points of 5 mm and 10 mm. |
| ARTICLE 5 (12) | 2017 - Rev Peru Med Exp Salud Publica | Descriptive / Secondary used, 150 health workers | IGRA Method - QuantiFERON-TB Gold in Tube Test (QFT-G-IT) | Does not apply | The prevalence of LTBI in health workers was 56%. |
| ARTICLE 6 (13) | 2017 - Cadernos de Saúde Pública | Cross-sectional / 716 primary care health professionals | IGRA Method - QuantiFERON-TB Gold in Tube Test (QFT-G-IT) | Does not apply | The prevalence of LTBI was 27%. |
| ARTICLE 7 (14) | 2017 - J Bras. Pneumol. | Cross-sectional / 218 primary care health professionals | Tuberculin skin test (PPD RT 23) | ≥ 5mm e ≥ 10mm | The prevalence of **TT positivity was 39.4% and 54.1%, respectively, for the TT cut-off points ≥ 10 mm and ≥ 5 mm. |

Source: Research carried out by the authors (2022).
Caption: *PPD RT-23-Purified Protein Derived Tuberculin Test; **TT Tuberculin skin test.

drugs used. ⁽²⁾

In Peru, the General Directorate of Epidemiology of the Ministry of Health developed a sentinel surveillance in health units, including diagnosis of LTBI, through the application of the IGRA method, in an area with a high incidence of TB. Thus justifying that Peru is an endemic area for this disease. According to the latest report by the Pan American Health Organization, Peru is the second country with the highest TB burden in the world. In this study, the prevalence of LTBI was 56%. ⁽¹²⁾

According to the WHO, Brazil is in 22nd position, among the 22 countries that concentrate 80% of TB cases in the world. Considering the incidence coefficient, the country is in 16th position in absolute numbers of cases. ⁽¹⁶⁾ As a way of dealing with this situation, the National Tuberculosis Control Program (PNCT - Programa Nacional de Controle da Tuberculose) incorporates the assistance

models of primary care in this confrontation, in the perspective that this partnership can contribute to the expansion of TB control actions. ⁽¹⁷⁾

In addition to this context, a cross-sectional study carried out between 2011 and 2012 in four Brazilian capitals with a high incidence of the disease (Vitória, Salvador, Cuiabá and Manaus) can be observed, with community health agents, using the tuberculin skin test PPD RT23 and the cut-off points for 5 mm and 10 mm, obtaining a prevalence of 57.8% and 37.3%, respectively. ⁽¹¹⁾

Another study in Rio Grande do Sul, in 2011, with 137 professionals working in primary care, showed a percentage of 32.8%, with the recommended cut-off point for these professionals of 10 mm (BORGES et al., 2014). Even with most studies proving a greater chance of infection in LTBI in hospitals ^(18,19,20), It is important to emphasize that the ESF is the gateway for suspects and those diagnosed

with TB, presenting a high probability of infection.⁽²¹⁾

Between 2011 and 2012 a study was carried out in Vitória-ES, with 218 professionals working in primary care and in tuberculosis control programs, the prevalence was 39.4% and 54.1% for the cut-off points of 10 mm and 5 mm, respectively.⁽¹⁴⁾

For many years the TT, or PT, was the only test for screening for LTBI. But recently T-cell-based interferon assays (IGRA) have become available on the private laboratory network, although they are not yet found on the public laboratory network. For the diagnosis of LTBI, IGRAs with a positive result are considered. The accuracy and predictive values of interferon gamma-based tests are similar to the results obtained with PT, even in different groups (including PLHIV), and are not indicated only for diagnostic screening of LTBI in children under two years of age.^(1,22)

A more comprehensive assessment was carried out to estimate the prevalence of LTBI in all categories of primary health care professionals from the multicenter study with community health workers carried out in 2011-2012 in Vitória, Salvador, Cuiabá, Manaus and Porto Alegre. They used the IGRA test as a collection method and obtained a prevalence of 27%.⁽¹³⁾ A slightly lower rate than other studies developed in Brazil using TT, can be seen in other articles.^(11,14)

In that same study⁽¹³⁾, the authors mention that the research contributed to the body of evidence on the prevalence of endotracheal hypertension among healthcare professionals in Brazil and suggests the potential usefulness of using interferon-gamma tests (IGRA) to screen candidates for chemoprophylaxis of TB. However, he warns for studies with greater depth, as the IGRA test can result in false positives. False positive tests would reduce the number of people who would need to be treated and thus increase the feasibility of comprehensive LTBI treatment among healthcare professionals in Brazil.⁽¹⁷⁾

According to the Manual of Recommendations for Tuberculosis Control in Brazil⁽¹⁾, IGRA tests have demonstrated several advantages over PT: the fact that it is not influenced by previous vaccina-

reducing the risk of adverse effects. In addition, there are operational advantages, since by requiring only one visit from the patient, returning for the test reading is not necessary. Among the disadvantages, we highlight the high cost compared to PT, the need to perform blood collection, the non-recommendation for serial tests, the frequency of indeterminate results, the need for a well-equipped laboratory, and careful handling to maintain lymphocyte viability.⁽²⁾

In one of the studies evaluated⁽¹³⁾, it was observed that the nursing category had the highest prevalence of LTBI compared to the other categories. A higher prevalence for technicians, followed by nurses, justifying the finding by the greater exposure to patients compared to the other categories.

CONCLUSION

Among the limitations of the study, it is possible to highlight the few studies in the literature on the screening of LTBI, especially in primary health care professionals, most studies focus on case detection and treatment of TB. Another limitation is that the studies found in Brazil are restricted to the same specific areas.

New research is essential for the active search for LTBI among Nursing professionals, since they are part of the multidisciplinary team of primary health care, gateway to the health service, being essential components when it comes to welcoming and caring for patients. One cannot forget also its importance in the active search for diseases in the community. It is noticed that studies on LTBI in primary care professionals are still scarce, even though it is the gateway to other health services and constitutes the main responsible for the reception and treatment of patients with active tuberculosis. And that the prevalence of LTBI could be better accurate with the increase of these studies in the literature. Since the prevalences found in the review were quite distant, ranging from 24.9% to 57.8%.

tion with BCG and that it is less influenced by previous infection with nontuberculous microbacteria (NTM); the result is not subject to bed bias and the test is performed on a biological sample, thus

According to the WHO guidelines for horizontalization in the fight against tuberculosis, control actions for primary care were redirected and decentralized as of 2004, which, in this case, they would be in charge of the family health strategy (ESF) and the program of community health agents.

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