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Tuberculosis health profile in indigenous children and adolescents: an integrative review

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Perfil de salud de la tuberculosis em niños y adolescentes indígenas: uma revisión integradora

Perfil de saúde da tuberculose entre crianças e adolescentes indígenas: uma revisão integrativa

ABSTRACT

Objective: To analyze how the literature has addressed the tuberculosis health among indigenous children and adolescents. Method: An integrative review conducted with descriptors indexed in the Medline, Scopus, Embase, Web of Science, and Lilacs databases from primary studies, with complete texts, published in the period 2000 to 2020. Results: 726 publications were identified, and after the application of the previously established criteria, 10 articles were considered eligible, carried out exclusively in Brazil, between 2004 and 2019, with a higher incidence in children under 5 years old, a predominance of the male gender, clinical pulmonary form, being the chest radiography the clinical variable most explored in the studies, the low performance of the tuberculin skin test and nutritional assessment, in addition to a high cure rate. Conclusion: Diagnostic difficulties are evident, including the low exam performance, failure to systematize the search for clinical findings, absence of nutritional assessment, and investigation of contacts.
DESCRIPTORS: Health Profile; Tuberculosis; Indigenous Peoples; Child; Adolescent.

RESUMEN

Objetivo: Analizar cómo la literatura ha abordado el perfil de salud de la tuberculosis en niños y adolescentes indígenas. Método: Revisión integradora realizada con descriptores indexados en las bases de datos de estúdios primarios Medline, Scopus, Embase, Web of Science y Lilacs, com textos completos, publicadas en el período 2000 y 2020. Resultados: Se encontraron 726 publicaciones y, previa aplicación de criterios estabelecido, se consideron elegibles 10 artículos, realizados exclusivamente en Brasil, de 2004 y 2019, con mayor incidencia en menores de 5 años, predominantemente varones, uma forma clínica pulmonar, siendo la radiografia de tórax la variable clinica más explorada em los estúdios, puebra cutânea de tuberculina baja y evaluación nutricional, además de una alta tasa de curación Conclusión: Las dificultades diagnósticas son evidentes, incluyendo mala realización de exámenes, falta de sistematización de la búsqueda de hallazgos clínicos, ausência de valoración nutricional e investigación de contatos.
DESCRIPTORES: Perfil de Salud; Tuberculosis; Pueblos Indígenas; Niño; Adolescente.

RESUMO

Objetivo: Analisar como a literatura tem abordado o perfil de saúde da tuberculose entre crianças e adolescentes indígenas. Método: Revisão integrativa realizada com descritores indexados nas bases de dados Medline, Scopus, Embase, Web of Science e Lilacs a partir de estudos primários, com textos completos, publicados no período de 2000 a 2020. Resultados: Foram encontradas 726 publicações e após a aplicação dos critérios previamente estabelecidos, 10 artigos foram considerados elegíveis, realizados exclusivamente no Brasil, entre 2004 e 2019, maior incidência em menores de 5 anos, predomínio do sexo masculino, forma clínica pulmonar, sendo o exame de radiografia de tórax a variável clínica mais explorada nos estudos, baixa realização do teste tuberculínico e avaliação nutricional, além de elevada taxa de cura. Conclusão: Evidencia-se a dificuldade diagnóstica, incluindo baixa realização dos exames, não sistematização da busca dos achados clínicos, ausência de avaliação nutricional e investigação de contatos.
DESCRITORES: Perfil de saúde; Tuberculose; Povos Indígenas; Criança; Adolescente.

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Tuberculosis health profile in indigenous children and adolescents: an integrative review

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INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by Mycobacterium tuberculosis, that affects all genders, age groups and ethnicities, however, in a heterogeneous way. It is among the top 10 causes of death in the world and, in 2019, 10 million new cases of TB were reported and 1,2 million died from the disease. [1]

Vulnerable populations and those at greater risk of becoming ill with TB, such as people living with the acquired immunodeficiency virus (HIV), deprived of liberty, health professionals, homeless and indigenous peoples [2], they are considered priorities for the realization of health surveillance strategies and actions for the control of the disease. [3]

Indigenous people are minority peoples, represent 5% of the world population and are distributed in 90 countries. The health care of these peoples needs to be differentiated, since they have ethnic and cultural peculiarities. [3] Each country has specific programs for indigenous health care such as, in Australia, through the Indigenous Australians' Health Program (IAHP), which is responsible for accessing the Primary Health Service [4]; in Canada, through the Federal, Provincial and Municipal programs [5] and in Brazil, with a subsystem known as the Arouca law, created in 1999, in the Unified Health System (SUS). [6]

Data on TB among indigenous peoples in different countries are highly variable because they represent different ethnicities, age groups, regions and samples. In order to understand and monitor the health needs of these peoples, it is essential to create unified health reports, which allow to cover the health status of this population in order to understand how specific actions have been developed to control the disease, compare and measure operational and epidemiological indicators, as is done for TB in the Global Tuberculosis Report. [1]

In Brazil, TB in indigenous populations is a worrying disease, whose risk of becoming ill is triple when compared to the general population [2], which in some cases, depending on the region and the year evaluated, is up to 10 times higher. [7] In addition to this, there are social inequalities related to geographical, linguistic and cultural barriers between peoples, in addition to difficulties in accessing SUS, even though the country has a specific subsystem for health care for indigenous peoples. [8,9]

In addition, when the health analysis is restricted to the indigenous children and youth population, the risk of illness increases significantly, since they present symptoms that are similar to other pathologies characteristic of age, with this, the performance of sputum collection and the low amount of bacilli in the lesions, make the diagnosis for TB difficult. [2] Still, literature reviews on indigenous TB in children and adolescents are scarce and are focused on the diagnosis for latent TB and extrapulmonary TB

case series. [10,11] In this sense, it is questioned what is the sociodemographic, epidemiological and clinical profile of this population cut?

Thus, this study aimed to analyze how the literature has addressed the health profile of TB among indigenous children and adolescents.

METHODS

It is an integrative literature review, developed in six stages, namely: formulation of the guiding question, establishment of inclusion and exclusion criteria, location of studies in the databases, critical evaluation of the study for the selection of eligible publications, data extraction and analysis, interpretation and synthesis of the results found. [12]

Based on the guiding question "How has the scientific literature addressed the profile of TB among indigenous children and adolescents?". The PICo strategy was defined, in which P (population) corresponded to indigenous peoples, I (interest) to TB and Co (context) was related to children and adolescents.

As inclusion criteria, primary articles were used, with complete texts, published between 2000 and 2020, in Portuguese, English and Spanish. And as exclusion, duplicate studies, reviews, editorials, studies with a non-indigenous approach, adults, studies outside the proposed theme and case studies, which were intended to evaluate the rare forms of TB, which were not part of the scope of this review.

For the search expression, the free and controlled vocabulary was used, composed of the terms indexed in the Health Sciences Descriptors (DeCS), Medical Subject Headings (MESH) and Embase Subject Headings (Emtree), with their respective synonyms in Portuguese, English and Spanish, combined by the Boolean AND, in addition to the use of the term tracing technique in the databases that allowed it, in order to facilitate the search (Chart 1).

The literature search took place on August 14, 2020, via the CAPES journals portal, through remote access, in the databases Latin American and Caribbean Literature in Health Sciences (LILACS), Medical Literature Analysis and retrieval System Online/PubMed (MEDLINE), EMBASE (Elsevier), SCOPUS (Elsevier) and Web Of Science (Elsevier). Title, abstract and keywords were considered as search fields.

Subsequently, the publications were exported to the online reference manager Rayyan QCRI of the Qatar Computing Research Institute [13] for the selection of studies, by reading the title and abstract, by two independent researchers, whose disagreements were resolved by a third. The concordances were measured using the Cohen Kappa coefficient, and a value of 0,93 was obtained, considered as perfect agreement. [14]

The selected articles went to the reading stage in full and the confirmation of

> **The selected articles went to the reading stage in full and the confirmation of eligibility on the health profile occurred with those who answered the guiding question.**

eligibility on the health profile occurred with those who answered the guiding question. Subsequently, for the extraction and analysis of the data, a synthesis matrix was elaborated with author, year, population, objective, study design and scenario, population, in addition to the main sociodemographic, epidemiological and clinical results.

RESULTS

726 publications were found in the databases and, in order to meet the previously established criteria, 715 were excluded, of which 201 were due to duplication, 130 because they were before the year 2000, 22 because they were in other languages, six because they were incomplete texts, in addition to 16 articles from literature reviews, four case studies and three editorials (Figure 2).

After reading the title and abstract, 93 articles were excluded because they did not address the indigenous population, 72 due to the focus on the adult indigenous population and 168 because they discussed other topics such as vaccination, nutrition, health programs, geographic information, hematological parameters and education in health. Thus, 11 articles were considered eligible for reading in full, of which only one was excluded because the results relating to indigenous and non-indigenous were presented together, making it impossible

Chart 1. Search expressions used in the databases for the integrative literature review, Porto Velho, Rondônia, Brazil, 2020.	
PICO	**CONTROLLED AND/OR FREE VOCABULARY**
Population: Indigenous	"Indigenous People*" OR "Indigenous Communities" OR "Pueblos Indígenas" OR "Etnia Nivaclé" OR "Indígena Guaraní*" OR "Indígenas de Pykasú" OR "Personas Indígenas" OR "Pueblo Guaraní" OR "Pueblo Tupí" OR "Indio Guaraní" OR "Population Group*" OR "Indigenous Population*" OR "Tribes"
	AND
Interest: Tuberculosis	Tuberculosis OR "Mycobacterium tuberculosis Infection*" OR "Koch* Disease" OR Tuberculose* OR "Infección por Mycobacterium tuberculosis" OR "Bacillus tuberculosis" OR "Mycobacteria tuberculosis" OR TB
	AND
Context: Child and teenager	Child* OR paediatric* OR pediatric* OR infant* OR Adolescen* OR Teen* OR Teenager* OR Young OR Youth*
Source: prepared by the authors, 2020.	

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to separate indigenous children and adolescents to use in this review. At the end, 10 articles were included, which make up the basis for the analysis of this research (Figure 2).

The included studies were carried out exclusively in Brazil, with the states of Mato Grosso do Sul [16-19] and Rondônia [7, 20-22] predominant, with four articles each (Chart 2).

The years of publication varied from 2004 to 2019, with a predominance of the year 2013 [17, 18, 20], followed by 2010 [19, 22] (Chart 2).

According to the study population, half described the distribution of cases by age group and there was no deepening of socio-epidemiological and clinical issues. [7, 16, 17, 21, 23] Some studies have compared the indigenous and non-indigenous population [17, 21, 23], others specified ethnicities, such as Suruí, Kaiwá, Guaraní and Terena [7, 15, 21] (Chart 2).

Regarding the type of study, there was a predominance of epidemiological, descriptive, retrospective studies carried out through secondary sources, such

as the Notifiable Diseases Information System (SINAN - Sistema de Informação de Agravos de Notificação) [17, 20, 21, 23, 24], records of the Special Indigenous Sanitary District (DSEI/MS) [18], forms prepared by the authors [16], records with two sources, the Indigenous Health Information System (SIASI - Sistema de Informação de Saúde Indígena) and the National Indian Foundation (FUNAI - Fundação Nacional do Índio) [7], or SINAN and DSEI/MS [19] medical records. Only one study was of the primary type, carried out through field research. [22]

The categorization of the age group differed between studies, depending on the objective investigated, ranging from children under 1 year to 20 years old. [7,16-21, 23, 24] Still, most studies did not relate the findings to the different age groups for children and adolescents, limiting themselves to reporting the data only as children and/or adolescents or even with very broad age groups, without considering the parameters and

concepts established by the World Health Organization and/or the Ministry of Health.

The male gender was found to be prevalent. [17, 19, 21, 23, 24] Regarding the age group of indigenous children with TB, more than half of the studies revealed a greater number of absolute cases among children under 5 years of age. [7, 18-20, 23, 24] It was pointed out that as the age of indigenous children increases, the incidence of TB decreases. [19]

The most explored clinical variable refers to the chest X-ray examination. [7, 16, 20, 22, 24], pointing out that almost ¼ of the patients underwent treatment without even undergoing this examination. [7, 20, 24] It was also evidenced that the majority of cases among children presented only one type of alteration [16] concerning the classification of the findings, whose infiltrates and calcifications are the most frequent in this population. [22]
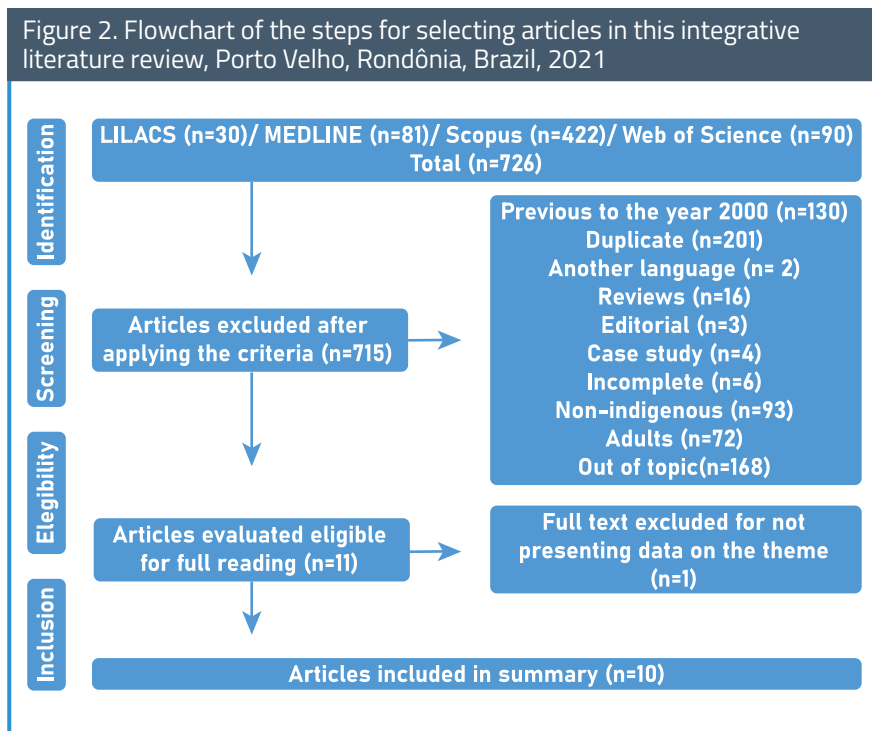
The tuberculin skin test was not performed in more than 80% of the cases [17, 20, 24] or did not have any records about its application. [7]

The parameters related to the individuals' nutritional conditions, such as the verification of the Body Mass Index (BMI) and nutritional status, which are necessary for the child's non-laboratory diagnosis, were present in only two studies. [18, 22]

The predominant clinical form was pulmonary [7, 17, 19-21, 23, 24], however, extrapulmonary forms were found with greater expression in the ganglionic, pleural, miliary, meningeal, musculoskeletal, cutaneous, laryngeal, genitourinary and ocular order. [19, 24]

A higher proportion of treatment abandonment was found among indigenous children co-infected with HIV and only one case of drug-resistant TB. [24]

As for the treatment outcomes, a high cure rate was identified, varying between 86,8 to 91,1%. [19, 20, 24] Abandonment ranged between 3,6% and 7,2% and death was between 2,2% and 4,6% [19,24] (Chart 2).

Figure 2. Flowchart of the steps for selecting articles in this integrative literature review, Porto Velho, Rondônia, Brazil, 2021

Identification
LILACS (n=30)/ MEDLINE (n=81)/ Scopus (n=422)/ Web of Science (n=90)
Total (n=726)

Screening
Articles excluded after applying the criteria (n=715) →
Previous to the year 2000 (n=130)
Duplicate (n=201)
Another language (n= 2)
Reviews (n=16)
Editorial (n=3)
Case study (n=4)
Incomplete (n=6)
Non–indigenous (n=93)
Adults (n=72)
Out of topic(n=168)

Elegibility
Articles evaluated eligible for full reading (n=11) →
Full text excluded for not presenting data on the theme (n=1)

Inclusion
Articles included in summary (n=10)

Source: Adapted by the authors of Moher et al., 2019 [15]

Chart 2. Summary of the articles included in this review, according to the author, year, objective, design, scenario, population and main results of the studies, Porto Velho, Rondônia, Brazil, 2021.

AUTHOR, YEAR	OBJECTIVE OF THE STUDY	STUDY DESIGN	STUDY SCENARIO	POPULATION	MAIN RESULTS
Basta et al., 2004	To characterize the epidemiological profile of TB in the Suruí indigenous group in Cacoal, Rondônia.	Epidemiological, descriptive	Rondônia	General indigenous population	The study pointed out that among indigenous people, 45% of the cases were under 15 years old and ¼ of that total were under five years old. 9% of the cases diagnosed in children under 10 years of age were performed with sputum smear microscopy. In addition, the best rate of microscopically confirmed cases was in the 15-20 year range (85%). Regarding the differences between the sexes, they were pronounced in the age groups of 5 - 10 years old (73,7) and 15 - 20 years old (90,9%)% in males. It was also found that 91% of the children underwent diagnostic radiography.
Basta et al., 2010	Describe the clinical and radiological characteristics of children and adolescents identified as contacts of TB patients, apply the scoring system for the diagnosis of TB in childhood and verify whether the procedures adopted at the local level were in accordance with national guidelines.	Clinical-epidemiological, descriptive	Rondônia	Indigenous children (<15 years)	The mean age was 11,3 years, with a predominance of females (81,8%). There was notification in children under 15 years of age in approximately 50% of cases. Regarding chest X-rays, most of them were found to affect the upper third of the lung. Two or more radiographs were taken in 27% of the cases, and 48,1% were normal and 51,9% were abnormal, of which 22,2% were probably active TB and 33,3% sequelae. The remaining changes (44,5%) were considered suggestive of other diseases. There was a predominance of infiltrates (38,9%) and calcifications (38,9%) and cavitations (11,1%), atelectasis/pleural effusion (11,1%) were observed. No difference in the radiological pattern between indigenous and non-indigenous. The study showed children treated for TB with scheme I (RHZ) and treated for ILTB with isoniazid (H) only, which disagrees with the guidelines in 52,6% of cases. Nutritional deficit was detected in 21,1% of the cases and revaccination with intradermal BCG was observed, checking the vaccine scar.
Marques et al., 2010	Describe the epidemiological aspects of tuberculosis in the indigenous population under the age of fifteen, from Mato Grosso do Sul, Brazil, from 2000 to 2006, after the implementation of the Indigenous Health Subsystem.	Epidemiological, descriptive and retrospective	Mato Grosso do Sul	Indigenous children (<15 years)	Predominance in individuals under the age of 5 years and a high number of cases under the age of 1 year, greater number of cases in the male sex (50,9%). The proportion of tuberculosis cases among indigenous people under the age of 15 was 20,4% (224/1.096). There were high coefficients of incidence of tuberculosis in indigenous people under 15 years of age, but with a downward curve and an annual drop of around 14%. The pulmonary form (92,9%) was predominant, while the distribution of extrapulmonary forms was 7,1%, with the peripheral ganglionar being 31,2% (5/16), the pleural 25% (4/16), meningoencephalitis 18,8% (3/16), miliary 12,5% (2/16) and osteoarticular 12,5% (2/16). Regarding the outcome, 91,1% progressed to cure, 2,2% died 3,6% dropped out of treatment. The average incidence of TB was> 2.500/100.000 inhab., In the 1991-2002 period.

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Orellana et al., 2012	Analyze the sociodemographic characteristics and operational indicators related to tuberculosis control, comparing indigenous and non-indigenous people, in the state of Rondônia, from 1997 to 2006	Epidemiological, descriptive and retrospective	Rondônia	Indigenous and non-indigenous population	Among the notifications from indigenous people, 36% of the cases were under 15 years old.
Basta et al., 2013	Analyze sociodemographic and clinical epidemiological characteristics of tuberculosis cases and factors associated with abandonment and death during treatment	Retrospective, population-based, descriptive and analytical epidemiological	Mato Grosso do Sul	Indigenous and non-indigenous population	A greater number of cases in males, 13,5% were indigenous in children under 10 years of age, while in the other race/color categories, illness in children did not exceed 5,0%. The chance of abandonment was twice as high in the black and brown race/color when compared to indigenous people of all ages.
Gava et al., 2013	To evaluate the epidemiological aspects of tuberculosis in Brazilian indigenous children and the actions for its control.	Epidemiological, descriptive	Rondônia	Indigenous and non-indigenous children (0-14 years old))	Predominance of males (52,8%), notification of 60,8% of cases between <5 years of age, and 84.8% were from rural areas of the state. 94,7% of indigenous cases had a clinical pulmonary form, the mixed form of TB predominating among the 10 to 14 year old age group. Children, aged five to nine years, were affected by extrapulmonary TB. Regarding diagnostic tests, the use of diagnostic tests was lower among indigenous children. No records were made of 85,7% of histopathological exams in children, nor were they performed for diagnostic confirmation in indigenous children from zero to four years old, it was used in only 10,0% of patients, the culture was performed in (2,6%) of the cases, however, no record of the results was available for consultation, and smear microscopy was performed in 26,4% of the notifications; chest radiographs showed results suggestive of TB with greater frequency in the age group from zero to four years (p=0,047). There were no cases of HIV co-infection in indigenous people. The detection of cases was classified as insufficient and/or regular in more than 80,0% of notifications among indigenous people, showing that most diagnoses were based on chest radiography. Adherence to greater treatment among indigenous people. And the average incidence was higher among indigenous people <5 years old, in 2001 (1.047,9 cases/100.000 inhabitant).

Santos et al., 2013	To evaluate the diagnostic process of pulmonary tuberculosis in indigenous children under 15 years old, through the Scoring System of the Modified Ministry of Health (SP-MSm), in children and adolescents with negative results in bacilloscopy	Epidemiological, descriptive and retrospective	Mato Grosso do Sul	Indigenous children (<15 years)	Predominance of males (59%), higher number of cases among children under 5 years old (56%), notifications in the age group of 5 and 9 years old (27%), and 10 and 14 years old (17%). There were symptoms suggestive of tuberculosis, such as fever, cough, adynamia, expectoration and weight loss (67%), and in 63%, the clinical evolution was equal to or greater than 2 weeks. There was no record of the clinical picture of the cases (23%), asymptomatic (8%) and other symptoms (2%). In relation to nutritional status, they had severe malnutrition (49%), weight below the 10th percentile (16%), or had weight equal to or above the 10th percentile, without recording the nutritional status (35%). They were vaccinated with BCG (73,5%). The tuberculin skin test was a reactor in 57% of the cases, among which, 64% presented induration ≥ 10 mm. Contact with bacilliferous adults occurred in 63% of cases, and there was no contact information in 37%. Chest radiographs were taken in 76% of the indigenous people, 84% of whom underwent only one examination. Of these, the radiological findings were normal (11%), suggestive of TB (43%), with infiltrate/condensation (27%). The Indigenous Health Teams were responsible for the diagnosis in 63% of the cases, but the original Ministry of Health Scoring System (SP-MS) was only used in 45%, and the system was not applicable because it is extrapulmonary TB in 10% of cases. The scores of the modified Ministry of Health Scoring System (SP-MSm) were determined in 61% of children under 15 years of age. Of the 30 scored cases, the results of the scores indicated a diagnosis of tuberculosis that was very likely, possible and unlikely in 53%, 37% and 10%, respectively.
Lachi & Nakayama, 2015	Describe the radiological aspects of pulmonary tuberculosis in indigenous patients in the city of Dourados, MS, Brazil, according to age and sex.	Epidemiological, descriptive, quantitative and retrospective	Mato Grosso do Sul	General indigenous population	The study showed 8,6% of cases in children under 10 years old and 8,6% in adolescents between 10 and 19 years old. It also pointed out the frequency of only one type of radiological finding in children under 10 years old (71,4%) and in adolescents aged 10 to 19 years (14,3%). No child presented with lymph node involvement or atelectasis. There was no statistically significant difference between the age groups - children ≤ 9 years, adolescents aged 10 to 19 years - nor in the frequency of different types of findings on radiographs, in the frequency of involvement of different lung areas or in the frequency of abnormal radiographs. Regarding the HIV test, most children (5/7 or 71,4%) and adolescents (4/7 or 57,1%) did not have it and for those who did, HIV serology was negative.
Mendes et al., 2016	Analyze the epidemiological situation of tuberculosis in Rio Grande do Sul, focusing on the indigenous population	Epidemiológico, descritivo	Rio Grande do Sul	General indigenous population	Children under 10 years old presented 12% of TB notifications among indigenous people and there was a record of cases of multidrug-resistant tuberculosis (MDR-TB) among indigenous peoples in Rio Grande do Sul in the period.

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Viana et al., 2019	Describe clinical and sociodemographic characteristics, estimate the incidence of TB, in addition to analyzing factors associated with abandonment and death during the treatment of TB cases reported among indigenous children and adolescents, in Brazil, between 2006-2016.	Epidemiological, descriptive	Brasil	Indigenous children and adolescents	Predominance of the male sex (53,1%), mainly in the age group of 15-19 years (35,9%). Most of the notifications were concentrated in the rural area of the country (68,5%). Regarding the diagnosis, chest X-rays (15,2%), normal reports (6,6%), indicative of another pathology (1,1%) were not performed. Almost a quarter 22,9% of the cases that underwent treatment for TB in the period did not contain conclusive radiological data. Regarding the tuberculin skin test, a higher concentration of strong reactions was identified among children aged 5-9 years (26%) and a higher proportion of non-performance among adolescents (79,7%). Regarding sputum smear microscopy, there were positives in sputum smear microscopy in the 10-14 year old age group (29,7%). Sputum culture showed more frequent positive results among adolescents aged 15-19 years (18,9%). The pulmonary clinical form was more frequent (83,3%) in the set of notifications, especially among adolescents (87,9%), varying between 89,6% and 3,6% in the cases that evolved to cure and death, respectively . The most frequent extrapulmonary and mixed forms were in the age group of 5-9 years (20,9%), namely: peripheral ganglionar (43%), pleural (18,2%), others (15.1%), miliary (9,4%), meningeal (7,7%), bone (4%), cutaneous (1,4%), laryngeal (0,6%), genitourinary and ocular (0,3%). The disparity in the mixed notifications between deaths (19,2%) is noteworthy, and the cases that evolved to cure (76,7%) and that abandoned the treatment (4,1%), the highest proportion of abandonment concentrated among the extrapulmonary cases (10,1%). HIV serology was not performed in (40,7%) of the notifications, with more frequent failure to perform it among the cases that evolved to death (6,6%). As for the results of the examination, there is a greater proportion of seroreagent tests among cases of abandonment (31,2%). It is important to note that negative results were more frequent among cases of cure (92%). It is worth mentioning the closure of a case due to MDR TB, in a child aged 0-4 years, who had a clinical pulmonary form and lived in the urban area of the Midwest region. Cases with insufficient and regular follow-up were more likely to drop out and die. Retreatment and anti-HIV positive cases were also associated with abandonment. In extrapulmonary and mixed clinical forms, cases in <4 years and cases from the North and Center-West regions were associated with death. High proportions of insufficient follow-up were recorded among deaths (94%) and among cases that abandoned treatment (13,5%). More than a third (39,4%) of the cases and the highest proportions of death (5,7%) were reported in the Northern Region. The average incidence was 49,1/100 thousand, ranging from 21,5/100 thousand to 97,6/100 thousand in the Northeast and Midwest regions, respectively, with a focus on adolescents aged 15-19 and children of 0-4 years.

Source: prepared by the authors, 2021.

DISCUSSION

This study allowed the identification of the health profile of indigenous children and adolescents with TB, based on the literature carried out exclusively in Brazil, which shows the interest of this theme in the country, especially in the states where they have a higher number of indigenous people. [7, 16-22]

On the other hand, a gap in studies with an age range among indigenous people in other countries was identified. However, studies that have this configuration are necessary, as they allow the description of

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subjectivities in the health-disease process for the indigenous population, relating them to nutritional [18, 19, 22], immunological [17], sociocultural [22], organizational [7, 21] factors, as well as regional inequalities [23, 24], that modify the epidemiological profile so that an equitable distribution of resources occurs [17], universal access with an emphasis on health promotion, protection and recovery [24], personal training [17] and the prevention of injuries in the villages [21], in order to ensure greater equity.

There was a heterogeneity regarding the epidemiological and clinical data of this population [7, 17-21, 23, 24], insofar as there was no standardization regarding the age group. However, descriptive studies with indigenous children of different age groups identify and characterize the proportion of infected children, who are sentinel cases, and through them it is possible to understand and monitor cases of recent infection among adults and assist in the implementation of measures and controls focused on the reality of this population. [19, 20] In this way, it is possible to evaluate the performance of the National TB Control Program (PNCT - Programa Nacional de Controle à Tuberculose) regarding the surveillance of these cases by the Indigenous Health Team. [7]

Access to the specific database for the indigenous population, the SIASI, should be encouraged, as there were difficulties in carrying out studies that proposed to describe and correlate epidemiological, clinical findings and outcomes with ethnicities. The authors had to associate the surname with the people, since it is customary for the population to have ethnicity as their surname or even, cross-reference the patient's address with georeferencing of the villages. [20, 21]

Chest radiography (X-ray) and tuberculin skin test (TST) were not performed in all suspected cases [7, 18, 20-24], as recommended by the Ministry of Health for children and adolescents with negative smear or Molecular Rapid Test for TB (RMT-TB) not detected. A justification regarding the reduced number of X-rays is due to the distances betwe-

en the location of the device in relation to the villages, since the examinations are carried out through partnerships with the DSEI and the Municipal Health Departments. There may also be difficulties in the radiological interpretation of the image due to the lack of issuing a report, which discourages the request for the exam [18], in addition to restricted access to healthcare in the use of diagnostic tests. [24] However, performing the X-ray is quick, inexpensive and essential to speed up the diagnosis. [16]

The RX and TST are complementary exams to clinical evaluation, and are part of the scoring system of the Ministry of Health that is being carried out with low applicability for the diagnosis of TB in children and adolescents [18, 20, 21], whose public often does not present bacteriological confirmation. [18] In addition, there were discrepancies between the diagnosis and the scoring system, since the treatment was performed without sufficient elements to confirm TB, treatment for LTBI was performed in a patient who should have received chemotherapy for TB, as well as in patients who should have been treated for LTBI and received no therapy. [22]

The assessment of nutritional status, as well as the investigation of anemia and intestinal parasites, has been carried out in a few studies. However, it is necessary to understand the factors that favor the transmission of TB, since malnutrition compromises the immune response in addition to the villages presenting precarious socioeconomic conditions. [22] In addition, high rates of malnutrition were observed in the years 2003 and 2004 in the region of Grande Dourados, in Mato Grosso do Sul, which could be associated with the increase in TB in the region and the aforementioned period. [19]

The cure outcome in indigenous children and adolescents was greater than the general population [19, 20, 24] and higher than the World Health Organization (WHO) recommendation, which is at least 85%. [1] This may reflect the monitoring of cases during treatment after the creation of the

Indigenous Health Care subsystem, which is a better effectiveness of the supervised TB treatment strategy [19] and/or selection bias regarding the diagnosis, since the registered cases may be the cases that are followed up and had greater access to the health service. [23]

In addition, it is noted that abandonment and death are greater than the recommended by the WHO of, at most, 5%. [1] These data are associated with the inadequate monitoring of cases and difficulties in carrying out an early diagnosis in children aged 0-4 years, relating to regional difficulties and there is a significant difference between the age groups. [24] Complementarily, they may be related to the ineffective performance of the PNCT and the indigenous health subsystem, in addition to the inability to monitor cases in health services because of disparities in access to diagnosis and follow-up until the end of treatment. [7, 17, 21, 23]

Studies point out the importance of investing in concrete actions to reduce poverty and inequality in order to improve the incidence of TB [17], as well as in the attention to indigenous health, regarding the conformity of the detection of TB cases with priority to national and international recommendations. [20, 23]

CONCLUSION

The health profile of TB among indigenous children and adolescents showed the characterization of the population without ethnic description, with a higher incidence of the pulmonary form, male and in children under 5 years old. The difficulties permeate the non-systematization of the search for clinical findings, the lack of documentation of nutritional conditions and the low performance of diagnostic support tests, such as X-rays and TST for the investigation of childhood and juvenile TB.

It is evident, therefore, the need for intersectoral actions and permanent health education for working professionals. Especially considering transculturality, development of surveillance actions and the articulation between services, as well as

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the expansion of access to health services and diagnostic tests.

The limitation of this study is related to the exclusive search in indexed databases, which means that studies published in non-indexed journals are not used. ■

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