



TUBERCULOSIS AND EPIDEMIOLOGICAL PROFILE OF THE INDIGENOUS POPULATION OF THE ALTO RIO NEGRO - BRAZILIAN AMAZON

ORIGINAL ARTICLE

PASCOAL, Rosana Moraes¹, SOUZA, Keulle Oliveira da², MOREIRA, Elisângela Claudia de Medeiros³, DIAS, Claudio Alberto Gellis de Mattos⁴, MELO, Arlen Maia de⁵, NAZARÉ, Mailson Lima⁶, FECURY, Amanda Alves⁷, DENDASCK, Carla Viana⁸, PIRES, Yomara Pinheiro⁹, TRUSEN, Sylvia Maria¹⁰, OLIVEIRA, Euzébio de¹¹

PASCOAL, Rosana Moraes. *et al.* **Tuberculosis and epidemiological profile of the indigenous population of the Alto Rio Negro - Brazilian Amazon.** Revista Científica Multidisciplinar Núcleo do Conhecimento. Year. 07, Ed. 03, Vol. 04, pp. 91-100. March 2022. ISSN: 2448-0959, Access link: <https://www.nucleodoconhecimento.com.br/health/indigenous-population>, DOI: 10.32749/nucleodoconhecimento.com.br/health/indigenous-population

ABSTRACT

The dissemination of information about Tuberculosis (TB), the types of manifestation of the disease, its main symptoms, which preventive measures are taken and how treatment is carried out are fundamental strategies for coping with it today, in addition to informing the rates of notifications of TB on a global, national and regional scale. The objective of this article is to present the epidemiological profile of the indigenous population of the Alto Rio Negro region, in the State of Amazonas (Brazil), regarding tuberculosis. Methodologically, the article was built through a bibliographical survey, eight articles were read and only two were selected to carry out the literature review identifying the epidemiological aspects of tuberculosis for the indigenous population of the Alto Rio Negro region - AM. By carrying out a literature review, it was possible to identify how essential the relationship between health, society and the environment is in a social group, determining the possible diseases that can affect this population. It was concluded that the social conditions of Indians and non-Indians are different in economic, social, political, cultural and territorial aspects, thus making it difficult to access not



only the diagnosis of the disease, but also the direct treatment observed, and information about the transmission of tuberculosis, its diagnosis, prevention and therapeutic procedure.

Keywords: Tuberculosis, Epidemiological Profile, Indigenous.

INTRODUCTION

According to the Ministry of Health, Tuberculosis (TB) is a contagious disease, its transmission occurs through contact with people infected by a bacillus with the scientific name *Mycobacterium tuberculosis*, also known as Koch's bacillus. The main organ affected in the human body is the lung, however there is the possibility of other organs being affected. From there, it is possible to identify the clinical manifestations of TB, in the pulmonary and extrapulmonary forms.

Symptoms of tuberculosis are dry cough, evening fever, night sweats, weight loss and fatigue. The first symptom to be mentioned is the main one, because when the dry cough persists for more than three weeks, there is a strong indication of suspicion that the patient is infected with Koch's bacillus and has developed TB.

TB is diagnosed through bacteriological and imaging tests, such as: bacilloscopy, rapid molecular test for tuberculosis, culture for mycobacteria and chest X-ray. The transmission of the disease occurs through the air, through sneezing, coughing or the speech of people contaminated by the mycobacterium in its active form.

The treatment of the disease lasts at least six months, the fight is carried out through the ingestion of four antibiotics, rifampicin, isoniazid, pyrazinamide and ethambutol. The SUS[12] (Unified Health System) provides the treatment free of charge and with follow-up, through the DOT (Directly Observed Treatment) regime, so that the medications are administered correctly. If the disease is not properly treated, it evolves into resistant tuberculosis, making the healing process more difficult.



Prevention takes place in several ways, the main one being the BCG (Bacillus Calmette-Guérin) vaccine, intended for children, from birth until the eve of their fifth birthday. It is also advisable to avoid contact with people carrying the disease in the active form, in addition to maintaining well-ventilated environments.

This disease is still considered a public health problem on a global and national scale. According to information posted on the WHO (World Health Organization) website on November 20, 2019, about 25% of the world's population is infected by the mycobacteria that cause tuberculosis. However, a tiny portion of people get sick, due to the low resistance of the human body.

Some facts presented by the WHO on tuberculosis, referring to the year 2018, state that approximately 10 million people in the world fell ill, 5.7 million men, 3.2 million women and 1.1 million children. Such an event occurred in all nations and at different age intervals.

According to the Global Report on Tuberculosis 2019, TB is one of the most deadly diseases in the world, in 2018 alone, 1.5 million people died affected by Koch's bacillus in its active form. In the same year, 87% of new TB cases were reported in countries that already had a high incidence of the disease. Of the 10 million people infected with TB, only 7 million were identified and reported in 2018.

Through the World Health Assembly in 2014, WHO adopted a strategy to combat the tuberculosis epidemic worldwide, reducing the incidence of the disease by 80% and deaths by 90% by the year 2030.

In 2018, in Brazil, 72,788 new cases of tuberculosis were diagnosed. Which is equivalent to an occurrence coefficient of 34.8 cases/100,000 inhabitants (BOLETIM EPIDEMIOLOGICO, 2019). The epidemiological situation of tuberculosis in Brazil is worrying, it is a serious public health problem, approximately 4,500 deaths are the result of TB, according to information provided



by the SVS[13] (Health Surveillance Department) with the Ministry of Health through Epidemiological Data of Tuberculosis in Brazil.

Brazil stands out for occupying the 20th place in the ranking list for the high incidence rate of the disease and the 19th regarding TB/HIV infection. The National Tuberculosis Control Program, along with other civil authorities, implemented a manual called "*Brasil Livre da Tuberculose: Plano nacional pelo fim da tuberculose como problema de saúde pública*", based on the guidelines of the WHO Strategy for the End of Tuberculosis. Such Plan aims to reduce the level of consequence to less than 10 cases per 100,000 inhabitants and mortality to less than 1 death per 100,000 inhabitants by the year 2035.

According to the Ministry of Health, the epidemiological situation of tuberculosis in the northern region of Brazil showed 8,667 new cases in 2018, these data are presented in the historical series report on the number of new cases of tuberculosis from 1990 to 2018. The state of Pará leads the ranking with an amount of 3,936 and in second place is the state of Amazonas with a number of 3,103 new TB events.

METHODOLOGY

The construction of the text took place through a bibliographic survey regarding the published articles by the authors Buchillet and Rios *et al.*, with a literature review and a qualitative approach on the epidemiological profile of the indigenous population of the Alto Rio Negro region - AM. Initially, eight articles were selected from the journals *Revista Brasileira Clínica Médica*, *Caderno de Saúde Pública*, *Boletim Epidemiológico* and *Investigación Original*.

TUBERCULOSIS IN INDIGENOUS PEOPLE

The indigenous population is framed in a classification table as one of the most vulnerable populations to the risk of illness from tuberculosis, as well as those



deprived of freedom, people with HIV (Acquired Immunodeficiency Virus) and homeless people. Indigenous people are three times more likely to fall ill with TB.

According to the thematic notebook Health, Disease and Care in Indigenous Territories available on the Ministry of Health website, which addresses the epidemiological profile of the indigenous population. It clarifies doubts about what makes Indians sick and die most in Brazil, if they are the same diseases in all regions of the National State, if they appear in the same way in Indians and non-Indians.

According to WHO (World Health Organization), the concept of health is related to the absence of disease and perfect physical, mental and social well-being. It is known that perfection is something unattainable, in which case it becomes an obstacle to maintaining quality of life, as it is considered a utopia. Especially because it is difficult to apply this concept to different realities dispersed across planet earth. It is necessary to relate the concepts of health, society and environment in an inseparable approach, for disease prevention.

The indigenous community lives in the woods and establishes a relationship with nature and with the others around them that is different from that of non-Indians. Brazil, for being an extensive territory, has a heterogeneous diversity of vegetation. I will not go into detail about the specificity of each vegetation in the country, however it is worth emphasizing these characteristics for the Amazon, given that later on I will discuss more specifically about TB in the northwest Amazon in indigenous communities.

The Amazon is considered the largest biome on planet earth, comprising nine countries: Brazil, Bolivia, Colombia, Ecuador, French Guiana, Paraguay, Peru, Suriname and Venezuela, in addition to occupying 49.29% of the Brazilian territory, according to information provided on the website of the ICMBIO. It is the largest



tropical forest in the world, has dense vegetation and a predominantly hot and humid climate.

It is possible to understand this climatic and environmental structure in the Amazon as one of the factors that promote illness, in addition to contact with non-Indians. The environment in which the indigenous community is inserted is taken into account, and I do not mean only the forest, but the villages and malocas, as well as the subjects that are part of the social group and the conditions for acquiring healthy attitudes, avoiding contamination by viruses, bacteria and fungi.

Due to precarious sanitation conditions and social inequality, indigenous communities become vulnerable groups for infectious and parasitic diseases. Diarrhea and tuberculosis are the ones that most concern indigenous peoples throughout Brazil, in addition to malaria, yellow fever and leishmaniasis also coming from the Amazon region. However, the focus is on the epidemiological profile of the indigenous community regarding tuberculosis.

I address the situation of tuberculosis as a public health problem for the indigenous population located in the Alto Rio Negro region, in the Amazonian northwest of the state of Amazonas. Where 22 indigenous ethnic groups from the Tukano, Arawak and Maku linguistic families live (BUCHILLET; GAZIN, 1998, p. 182).

In 1998, Buchillet and Gazin published an article entitled The situation of tuberculosis in the population of the Alto Rio Negro, in which they conducted archival research between 1994 and 1996 on cases of tuberculosis in the hospital of São Miguel de Iauareté and at the military hospital in São Gabriel da Cachoeira. This text presents the incidence of tuberculosis in that region during the years 1977 to 1994, when 23 cases appeared annually. In 1991 and 1992, there was an excess of 50 and 45 cases, respectively. Highlighting the pulmonary form as the most frequent in this region and the extrapulmonary form appears in people up to twenty years old. Deaths were reported only in pulmonary forms.



In 2013, Rios *et al.* published an article called Tuberculosis in indigenous peoples of the Brazilian Amazon: an epidemiological study in the Alto Rio Negro region, in which they carried out a retrospective study describing the characteristics of the social behavior of human interactions and organizations and a clinical-epidemiological study of the occurrence of TB and a cross-sectional study addressing the assumption of the predominance of ILBT, establishing a relationship with the return to tuberculin confirmation, therapeutic course and understanding of the disease in the indigenous people of Iauaretê in the period from 1997 to 2007.

Reported occurrences were obtained through SINAN[14] (Notifiable Disease Information System), SIASI[15] (Indigenous Health Care Information System) and the DSEI-ARN[16] (Special Indigenous Sanitary District of Ato Rio Negro) record book. They found that pulmonary tuberculosis is the most frequent form in this 10-year period, and that it affects more men, people over 45 years of age, people with no schooling and people living in rural areas. The latter identified 85 cases for 556 residents of Iauaretê.

Indigenous populations are vulnerable social groups, as a result of the precarious and disparate situations of the environment and the social condition in which they find themselves. A stuffy, humid, hot and unventilated environment is one of the ideal places for contamination and manifestation of tuberculosis. Koch's bacillus takes advantage of these circumstances. The Alto Rio Negro region is a place that has these characteristics related to the environment, not least because of its location, northwest of the state of Amazonas and the condition of indigenous housing.

It is worth mentioning the way in which indigenous society interacts with each other and with the other, I mention the other as being the non-indigenous, because this relationship is also sickening, not only through contact with people infected by the mycobacteria, but also psychically. It is interesting to mention the arrival of the



European colonizer, or rather the explorer, considering that due to the contact with the white man, a large part of the indigenous populations were decimated. Epidemics are considered by the European conqueror as one of his weapons for the annihilation of societies (TODOROV, 1983). A way of establishing a relationship of domination over subordinate peoples.

It is worth remembering that the social conditions of Indians and non-Indians are different in economic, social, political, cultural and territorial aspects, thus making it difficult to access not only the diagnosis of the disease, but the direct treatment observed, and information about the contagion of tuberculosis, its diagnosis, prevention and therapeutic procedure. It can be seen in the same proportion that illness, ignorance, lack of zeal for the environment and for maintaining healthy attitudes and thoughts in society are responsible for the spread of illness.

CONCLUSION

Through a literature review on the epidemiological profile of the indigenous population of the Alto Rio Negro regarding tuberculosis as a public health problem, it was possible to understand the existence of a triad relationship between health, society and environment, thus establishing criteria regarding the manifestation of tuberculosis. TB in a society vulnerable to illness.

In addition to the precarious environment full of social inequality, there is contact with non-Indians, another factor that contributes to the illness of indigenous people. Numerous epidemics were brought with the arrival of the European colonizers, such as the flu, measles and tuberculosis, the latter being worked on in the production of this article.

The process of interacting with people who do not belong to the same ethnic group also leads to illness, either physically or mentally. It is interesting to mention that care for the environment and a healthy relationship with others and with one's own



body, which is also an environment, leads to beneficial paths regarding the maintenance of indigenous health. In addition to the various forms of prevention and knowledge about the disease, thus avoiding contamination by the mycobacteria that cause tuberculosis.

REFERENCES

BOLETIM EPIDEMIOLÓGICO. Brasil Livre da Tuberculose: evolução dos cenários epidemiológicos e operacionais da doença. Disponível em: <http://portalarquivos2.saude.gov.br/images/pdf/2019/marco/22/2019-009.pdf>. Acessado em 10 de janeiro de 2020.

Brasil. Ministério da Saúde. Secretaria de Gestão do Trabalho e da Educação na Saúde. Departamento de Gestão da Educação na Saúde. Programa de Qualificação de Agentes Indígenas de Saúde (AIS) e Agentes Indígenas de Saneamento (AISAN) / Ministério da Saúde, Secretaria de Gestão do Trabalho e da Educação na Saúde, Departamento de Gestão da Educação na Saúde. – Brasília: Ministério da Saúde, 2016. 16 v. : il.

BUCHILLET, Dominique; GAZIN, Pierre. A situação da tuberculose na população indígena do alto rio Negro (Estado do Amazonas, Brasil). Cadernos de Saúde Pública, v. 14, p. 181-185, 1998.

ICMBIO. Amazônia. Disponível em: <http://www.icmbio.gov.br/portal/unidadesdeconservacao/biomas-brasileiros/amazonia>. Acessado em 10 de janeiro de 2020.

MINISTÉRIO DA SAÚDE. Brasil Livre da Tuberculose: Plano Nacional pelo fim da tuberculose como Problema de Saúde Pública. Disponível em: http://portalarquivos2.saude.gov.br/images/pdf/2017/junho/29/plano_nacional_tb_web.pdf. Acessado em 10 de janeiro de 2020.

MINISTÉRIO DA SAÚDE. Dados Epidemiológicos da Tuberculose no Brasil. Disponível em: <http://portalarquivos2.saude.gov.br/images/pdf/2019/dezembro/09/APRES-PADRAO-NOV-19.pdf>. Acessado em 10 de janeiro de 2020.

MINISTÉRIO DA SAÚDE. Série histórica do número de casos novos de tuberculose. Brasil, Regiões e Unidades Federadas de residência por ano diagnóstico (1990 a 2018). Disponível em: <http://portalarquivos2.saude.gov.br/images/pdf/2019/dezembro/09/Casos-novos-tuberculose-1990-2018-base-NOV-2019.pdf>. Acessado em 10 de janeiro de 2020.



MINISTÉRIO DA SAÚDE. Tuberculose: o que é, causas, sintomas, tratamento, diagnóstico e prevenção. Disponível em: <http://www.saude.gov.br/saude-de-a-z/tuberculose>. Acessado em 09 de janeiro de 2020.

OMS. 10 fatos sobre tuberculose. Disponível em: <https://www.who.int/news-room/facts-in-pictures/detail/tuberculosis>. Acessado em 09 de janeiro de 2020.

OMS. Perfis de países para 30 países com alto índice de TB. Disponível em: https://www.who.int/tb/publications/global_report/tb19_Report_country_profiles_15_October2019.pdf?ua=1. Acessado em 09 de janeiro de 2020.

OSM. Relatório Global sobre Tuberculose. Disponível em: <https://apps.who.int/iris/bitstream/handle/10665/329368/9789241565714-eng.pdf?ua=1>. Acessado em 09 de janeiro de 2020.

RIOS, Diana Patrícia Giraldo *et al.* Tuberculose em indígenas da Amazônia brasileira: estudo epidemiológico na região do Alto Rio Negro. Revista Panamericana de Salud Pública, v. 33, p. 22-29, 2013.

TODOROV, Tzvetan. A conquista da América: a questão do outro. São Paulo: Martins Fontes, 1983.

APPENDIX - FOOTNOTE

12. Sistema Único de Saúde (SUS).

13. Secretaria de Vigilância em Saúde (SVS).

14. Sistema de Informação de Agravos de Notificação (SINAN).

15. Sistema de Informação da Atenção à Saúde Indígena (SIASI).

16. Distrito Sanitário Especial Indígena do Ato Rio Negro (DSEI-ARN).

Submitted: March, 2022.

Approved: March, 2022.



-
- ¹ Master's student in Anthropogenic Studies in the Amazon - PPGEAA/UFPA.
- ² Master in Anthropogenic Studies in the Amazon – (PPGEAA/UFPA) and Researcher – Grupo de Pesquisa em Saúde, Sociedade e Ambiente (GPSSA/UFPA).
- ³ Psychologist, PhD in Tropical Diseases, Professor at the Universidade do Estado do Pará.
- ⁴ PhD in Theory and Research of Behavior. Lecturer and researcher at the Instituto Federal do Amapá – IFAP.
- ⁵ Master in Anthropogenic Studies in the Amazon – PPGEAA/UFPA.
- ⁶ Master in Anthropogenic Studies in the Amazon – PPGEAA/UFPA.
- ⁷ PhD in Tropical Diseases. Professor and Researcher at the Universidade Federal do Amapá, AP. Collaborating Researcher at the Núcleo de Medicina Tropical da UFPA (NMT-UFPA).
- ⁸ PhD in Psychology and Clinical Psychoanalysis. Doctorate in progress in Communication and Semiotics at the Pontifícia Universidade Católica de São Paulo (PUC/SP). Master's Degree in Religious Sciences from Universidade Presbiteriana Mackenzie. Master in Clinical Psychoanalysis. Degree in Biological Sciences. Degree in Theology. He has been working with Scientific Methodology (Research Method) for more than 15 years in the Scientific Production Guidance of Master's and Doctoral Students. Specialist in Market Research and Health Research. ORCID: 0000-0003-2952-4337.
- ⁹ PhD in Electrical Engineering – UFPA.
- ¹⁰ PhD in Letters from the Pontifícia Universidade Católica do Rio de Janeiro.
- ¹¹ PhD in Medicine/Tropical Diseases. Lecturer and researcher at the Universidade Federal do Pará – UFPA. Collaborating Researcher at the Núcleo de Medicina Tropical – NMT/UFPA, Belém (PA), Brazil.