

Epidemiologic situation of tuberculosis in Rio Grande do Sul: an analysis about Sinan's data between 2003 and 2012 focusing on indigenous peoples

Situação epidemiológica da tuberculose no Rio Grande do Sul: uma análise com base nos dados do Sinan entre 2003 e 2012 com foco nos povos indígenas

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ABSTRACT: *Objective:* This article analyzes the epidemiological situation of tuberculosis in the state of Rio Grande do Sul, emphasizing the indigenous population. The data are based on the Information System of Grievance Notification (Sinan) between 2003 and 2012. *Methods:* The notified cases of tuberculosis were analyzed according to age, sex, zone of residence, input type, means of diagnosis, clinical form, anti-HIV exam, medical care, supervised treatment (in Portuguese, TDO), closure, and race. *Results:* The highest incidence rates in the period were among Afro-Brazilians, yellow, and indigenous peoples. The cases affected mainly adult men living in urban areas. Indigenous peoples showed the highest rates of notifications among people aged less than 10 years (12%). In the sputum test, missing information and not-performed exams reached more than 50.0% in all periods and groups. The cure was more prevalent among white people (66.2%); indigenous, brown, and Afro-Brazilian people presented the lowest cure rates: 59.4, 58.4, and 60%, respectively. *Conclusion:* Tuberculosis is one of the biggest problems in Rio Grande do Sul. The actions of diagnosis, clinical form, and treatment of the cases have not been implemented as proposed. The indigenous peoples' situation is similar and diverse at the same time in comparison with other peoples from different areas of Brazil. Nevertheless, it is unfavorable on a balanced evaluation of the whole scenario. Furthermore, the discrepancies among races are evident: the indigenous and Afro-Brazilian peoples fill the spread sheet, in general terms, on the worst situation, whereas the white people fill the data with the best health situation.

Keywords: Tuberculosis. Indigenous population. Health of indigenous peoples. Health inequalities. Indians, South American, Epidemiology.

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RESUMO: *Objetivo:* O trabalho analisa a situação epidemiológica da tuberculose no Rio Grande do Sul, com enfoque na população indígena, com base no Sistema de Informação de Agravos de Notificação (Sinan), entre 2003 e 2012. *Métodos:* Os casos notificados de tuberculose foram analisados conforme faixa etária, sexo, zona de residência, tipo de entrada, meios de diagnóstico, forma clínica, realização do anti-HIV, acompanhamento, tratamento supervisionado (TDO), encerramento e raça/cor. *Resultados:* As maiores taxas de incidência no período foram descritas pelos grupos de raça/cor preta, amarela e indígena. Os casos acometeram principalmente homens adultos que residiam em zonas urbanas. Indígenas apresentaram maior percentual de notificações em menores de 10 anos (12%). Nas baciloscopias de controle, informações ausentes e exames não realizados somaram mais de 50% em todo o período e grupos. A cura foi mais prevalente entre brancos (66,2%); indígenas, pardos e pretos tiveram os menores índices de cura: 59,4, 58,4 e 60%, respectivamente. *Conclusão:* A tuberculose é um grave problema de saúde no Rio Grande do Sul, e as ações de diagnóstico, acompanhamento e tratamento dos casos não vêm ocorrendo como preconizadas. A situação indígena guarda semelhanças e diferenças em comparação com o observado em outras regiões do país, permanecendo contudo francamente desfavorável perante os demais grupos. Por fim, destacam-se marcantes desigualdades entre os grupos de raça/cor. Enquanto indígenas e pretos ocupam, em termos gerais, as piores posições no quadro, os brancos, a melhor.

Palavras-chave: Tuberculose. População indígena. Saúde de populações indígenas. Desigualdades em saúde. Índios sul-americanos. Epidemiologia.

INTRODUCTION

Tuberculosis is a serious public health issue in Brazil, and is one of the communicable diseases that mostly impact the mortality rates caused by infectious parasitic diseases. Brazil, according to the World Health Organization (WHO), together with Russia, India, China, and South Africa, concentrates 50% of the global cases of tuberculosis.^{1,2}

In 2013, more than 70,000 cases of tuberculosis were notified, with incidence of 35.4 cases per 100,000 inhabitants in the Brazilian territory. Despite being a disease with available and effective treatment, tuberculosis is the fourth cause of death for infectious diseases (9.5%), and the first cause among patients with acquired immunodeficiency syndrome (Aids) in the country¹⁻³. In 2013, the South Region held the fourth position in the incidence of notified cases in Brazil. More specifically, Rio Grande do Sul is among the six states with the highest incidence of tuberculosis; and Porto Alegre is among the three capitals with the highest incidence of the condition in the country, after Cuiabá and Recife².

The actions of surveillance and control of these patients diagnosed with tuberculosis are followed according to the flowchart proposed by the State Program of Tuberculosis Control from Rio Grande do Sul (PECT/RS). The respiratory symptomatic patients, spontaneously or after guidance, look for a health unit to collect the first sputum sample, and are advised for the second collection. They are also registered and scheduled the second visit.

Then, the sample collected is sent to the laboratory, which has to return the results between 24 and 48 hours. If they are positive, the result is communicated by telephone to the Epidemiological Surveillance, which is in charge of locating the case and the risk area, communicating the Family Health Strategy. The latter looks for the patient and awaits for his/her return, according to the schedule. The anti-HIV test is performed and then the treatment begins; contacts are notified and investigated. The activities of search for respiratory symptomatic patients and treatment follow-up (Dots) are carried out by Basic Care.

The indigenous population in the state accounts for more than 33,000 people, distributed among the ethnicities Guarani Mbyá and Kaingang, belonging to two Special Indigenous Sanitary Districts (DSEIs): Southern countryside and Southern coast. They are mainly distributed in the rural areas where the indigenous lands are located (36 cities); however, these groups can also be found in a reduced number of campsites (11 cities, including Porto Alegre) and in urban areas. Both DSEIs are administered by a local office hosted in Passo Fundo, Rio Grande do Sul.

Concerning the studies already conducted among indigenous peoples in the country, the incidence rates of tuberculosis are expressive when compared to those observed in the other population segments in terms of race/color. The incidence rates reach over 2,000 cases per 100,000 inhabitants, and studies are mostly focused on the North and Center-Western regions⁴⁻¹⁶.

Data from the literature consistently associate the occurrence of tuberculosis and less favorable life conditions, and there is evidence of health and socioeconomic indicators usually unfavorable among indigenous peoples all over the country, including the South region. This segment of the population, therefore, was characterized as *special population* by the Ministry of Health regarding the problem¹. This reinforces the vulnerability of these peoples when it comes to tuberculosis, and still, the importance of a deeper description of the behavior of this problem in these populations, especially in the regions that have not been contemplated as a specific segment of analysis, in order to obtain parameters to subsidize strategies to face the situation.

By describing the epidemiological situation of tuberculosis in Rio Grande do Sul, which is a clear public health issue in the state, the information produced in the scope of this study is expected to lead to actions from PECT/RS, enabling a better evaluation of the services and their adaptation, aiming at improving the indicators related to the situation of the problem, in order to include the more vulnerable populations.

METHODS

This is a descriptive study whose target population was constituted by the residents of Rio Grande do Sul, focusing on the indigenous population. The analysis used secondary data and considered as inclusion criteria the new cases of tuberculosis notified to the Information System of Grievance Notification (Sinan) in the state, according to

categories race/color, excluding the others. These cases were used as numerators to calculate the incidence, presented in mean rates in the periods of 2003–2005, 2006–2008, and 2009–2012.

The denominators of the incidence rates were defined by the population totals made available by the Brazilian Institute of Geography and Statistics (IBGE). The calculation of the progression of these populations used the mean growth rates of -1.6% for indigenous peoples, and, still, of 0.09, 1.10, 4.09 and 13.93% for white, black, brown, and yellow people, respectively. To estimate these rates, the calculation method used was that proposed by the Integrated Health Information Network, based on the populations from the demographic censuses of 2000 and 2010¹⁷.

All data related to the problem were extracted from the tab data in the Epidemiological Survey of the state (TabNet), of unrestricted access to the public, in .xls. These data were organized in the software Microsoft Excel 2007. The percentage of missing information regarding race/color was lower than 4% (data ignored or blank), so it was the category of reference in comparison to the other variables. An important limitation in the analyses carried out in information systems like Sinan is mainly associated with the quality of the available data; however, this factor did not stop the proposed analysis. The following variables were analyzed according to race/color: sex, age group, zone of residence, diagnostic means, clinical form, type of entrance, follow-up data through control methods of bacilloscopy, indication and performance of directly observed therapy (DOT), situation of the outcome of the cases, anti-HIV and HIV coinfection serology. The decade comprehended between 2003 and 2012 was analyzed, except for the follow-up data and DOT, which were verified according to the period (2003–2005, 2006–2008, and 2009–2012).

RESULTS

In total, between 2003 and 2012, 59,839 cases of tuberculosis were identified in the state of Rio Grande do Sul, out of which 47,579 were new cases. They are concentrated in the segments of white and black race/color, accounting for almost 90% of the number of notifications. The largest proportion of cases affected male individuals, corresponding to more than 65% of the cases in all categories of race/color analyzed. In terms of age, the cases are concentrated in the population aged from 20 to 39 years, close to 50% in all population fractions.

In the indigenous segment, the proportion of cases among people aged less than 10 years is remarkable, overcoming 12%, whereas the other categories did not present with more than 2% of the cases in the age groups. The cases concentrate in the urban zone, comprehending more than 80% of the total in almost all categories of race/color. However, a different profile is observed in the indigenous category, in which 51% of the registered cases correspond to the urban area (Table 1).

Table 1. Distribution of tuberculosis cases according to race/color, sex, age group, zone of residence, and outcome. Rio Grande do Sul, 2003 to 2012.

Variables	Indigenous		White		Brown		Black		Yellow		Ignored/Blank		Total	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex														
Ignored	0	0	1	0	0	0	0	0	0	0	4	0,2	5	0
Male	128	66.7	29,414	68	3,001	67.7	6,626	65.8	155	67.4	1,189	72.8	40,513	67.7
Female	64	33.3	13,861	32	1,432	32.3	3,448	34.2	75	32.6	441	27	19,321	32.3
Total	192	100	43,276	100	4,433	100	10,074	100	230	100	1,634	100	59,839	100
Age group (years)														
< 1	4	2.1	215	0.5	22	0.5	49	0.5	1	0.4	15	0.9	306	0.5
1 to 4	12	6.3	217	0.5	24	0.5	56	0.6	1	0.4	6	0.4	316	0.5
5 to 9	8	4.2	213	0.5	33	0.7	84	0.8	0	0	10	0.6	348	0.6
10 to 19	17	8.9	2,392	5.5	266	6	633	6.3	13	5.7	90	5.5	3,411	5.7
20 to 29	50	26	9,525	22	1,084	24.5	2,570	25.5	44	19.1	418	25.6	13,691	22.9
30 to 39	41	21.4	9,845	22.7	1,172	26.4	2,712	26.9	61	26.5	405	24.8	14,236	23.8
40 to 49	26	13.5	8,842	20.4	920	20.8	2,079	20.6	49	21.3	290	17.7	12,206	20.4
50 to 59	13	6.8	6,191	14.3	547	12.3	1,139	11.3	30	13	202	12.4	8,122	13.6
≥ 60	21	10.9	5,836	13.5	365	8.2	752	7.5	31	13.5	198	12.1	7,203	12
Total	192	100	43,276	100	4,433	100	10,074	100	230	100	1,634	100	59,839	100
Zona of residence														
Urban	98	51	39,520	91.3	3,983	89.8	9,497	94.3	192	83.5	1,391	85.1	54,681	91.4
Rural	85	44.3	2,255	5.2	257	5.8	247	2.5	24	10.4	103	6.3	2,971	5
Periurban	2	1	288	0.7	47	1.1	56	0.6	5	2.2	31	1.9	429	0.7
Ignored	7	3.6	1,213	2.8	146	3.3	274	2.7	9	3.9	109	6.7	1,758	2.9
Total	192	100	43,276	100	4,433	100	10,074	100	230	100	1,634	100	59,839	100
Outcome														
Healing	114	59.4	28,659	66.2	2,587	58.4	6,048	60	140	60.9	986	60.3	38,534	64.4
Abandonment	28	14.6	4,916	11.4	747	16.9	1,844	18.3	32	13.9	203	12.4	7,770	13
Death by tuberculosis	2	1	945	2.2	127	2.9	235	2.3	9	3.9	46	2.8	1,364	2.3
Death by other causes	13	6.8	2,937	6.8	293	6.6	798	7.9	13	5.7	130	8	4,184	7
Transfer	17	8.9	3,973	9.2	482	10.9	768	7.6	22	9.6	188	11.5	5,450	9.1
MDR-TB	0	0	360	0.8	35	0.8	106	1.1	0	0	5	0.3	506	0.8
Ignored	18	9.4	1,486	3.4	162	3.7	275	2.7	14	6.1	76	4.7	2,031	3.4
Total	192	100	43,276	100	4,433	100	10,074	100	230	100	1,634	100	59,839	100

MDR-TB: Multidrug-resistant tuberculosis.

The mean incidence rate of cases of tuberculosis was, from 2003 to 2012, 45 cases per 100,000 inhabitants. Among the segments of race/color analyzed, brown and indigenous populations almost doubled the rates in the last quadrennium (61.7/100,000) in comparison to the first three (31.2/100,000), whereas the increase among brown people was less than 1% in the same period.

Regarding the diagnostic criteria, the first sputum bacilloscopy does not happen in about 20% of the cases, and the highest proportion is among indigenous population (27.6%). In the second bacilloscopy, the percentage of tests that are not conducted grows in all groups of race/color and, once again, indigenous people have the highest rates (of not taking the exam) (31.3%). It is equally important to mention the proportion of lack of information about the test, which overcomes 30% in all groups. The sputum culture is a diagnostic resource that is little used in the state, in all categories of race/color, not conducted in approximately 80% of the notified cases in all categories of race/color, including among indigenous population.

There is prevalence of the pulmonary clinical form in more than 75% of the notifications in all groups. The highest proportion is present in the yellow race/color (83.5%), and the lowest one is among indigenous peoples (75%), which, inversely, register the highest percentages of extrapulmonary and mixed forms, considered as the most severe types of the diseases. The anti-HIV serology takes place in 60–78% of the cases, in different groups. When the information about race/color is available, the lowest proportion of tests is observed among yellow people (65%), and the highest one among black people (78%). The highest percentages of positive cases are seen among white, brown, and black people: 20, 25, and 28%, respectively.

As to the control methods of bacilloscopy, information ignored or blank added to the tests not performed account for more than 50% in all periods and groups of race/color. From 2003 to 2005, bacilloscopy in the second month is not conducted, or there are no records in more than 50% of the cases in all categories. Regarding the second and third periods, this percentage overcomes 60%, getting to 87% in the indigenous segment. The situation of bacilloscopy after 6 months is more serious: in the two first periods, more than 60% of the tests are not performed, or have ignored or blank information in all groups of race/color, and this percentage is close to or overcomes the 80% between 2009 and 2012.

When analyzing the indication and conduction of DOT according to race/color, throughout the decade there was a progressive increase in the practice of this follow-up action among all categories, about 20%. In the last years that were analyzed (2009–2012), this action among indigenous population reached 38% of the indicated cases, being directly observed during treatment, whereas in the first years the information about this activity was ignored in practically 100% of the cases.

The lowest rates of cure were identified among brown and indigenous peoples, reaching 58.4 and 59.4%, in this order. No categories of race/color reached rates higher than 70% of cure. There were no records of cases of multidrug-resistant tuberculosis (MDR-TB) among indigenous peoples in Rio Grande do Sul in the same period.

The highest percentages of death caused by tuberculosis were registered among yellow and brown people (4 and 3%, respectively), and the lowest among indigenous population (1%). The highest percentage of abandonment was among black individuals, of 18.3%, and the lowest rate was among white people, of 11.4%. Indigenous people registered 14.6% of the cases of abandonment (Table 1).

DISCUSSION

The analysis of the epidemiological status of tuberculosis in the state of Rio Grande do Sul shows a precarious situation marked by major inequalities between groups of race/color in the different variables analyzed, and it points out to important flaws in the National and State Tuberculosis Control programs.

The indigenous segment presents the third highest mean incidence rate for the period as a whole, after the yellow and black race/color. However, this profile changes when we analyze the last quadrennium (2009–2012), when indigenous people presented the second highest incidence rate. These data indicate a clearly unfavorable scenario for the segment and makes it unequal in comparison to the other groups of race/color, except for black people. At the same time, it is compatible with the data available about health and nutrition among indigenous peoples from the South region of Brazil, which point to the prevalence of precarious social and sanitary conditions, besides health care issues¹⁸. In broad terms, the differences observed in the profiles are also compatible with the data available about the health inequalities affecting the indigenous peoples in the Brazilian population^{16,19,20}.

Concerning specifically the situation of tuberculosis in the indigenous populations and its comparative dimension, the situation in Rio Grande do Sul is similar to that described in other studies conducted in the country, both addressing indigenous peoples, specifically, or including data about race/color in the analyses. However, this set of studies has pointed out to even more severe situations, when the indigenous segment systematically presents higher incidence rates than those registered in the other segments^{4-16,21-26}.

As an example, in a study conducted with indigenous peoples in Rondônia, the mean incidence rate from 1997 to 2006 was 515.1/100 inhabitants, whereas the mean rate in the state was 38.3/100,000 inhabitants¹⁵. Also in Rondônia, Mello et al.¹³ registered rates of 415/100,000 inhabitants and 35.6/100,000 inhabitants among indigenous and non-indigenous peoples, respectively. In 2010, the incidence coefficient among indigenous peoples was 94.9 cases per 100,000 inhabitants, almost three times higher than that registered for Brazil. The segment may represent 0.4% of the Brazilian population; however, it is responsible for about 1% of the cases of tuberculosis registered in the country²⁴.

The age distribution of cases points to its concentration among young adults and to a profile that is particularly different in the indigenous segment, in which the percentage of children aged less than 10 years is about four times higher than that observed in

the other segments of race/color. This profile was also observed in other studies conducted among indigenous peoples^{6-8,11,12,15,25}. As a possible explanation for this dynamics, Gava et al. point to the active transmission in indigenous communities and to flaws in the process of following up the cases and of identifying the bacillus early, which would contribute to the propagation of the disease among children²⁶.

Concerning the zone of residence of the notified cases of tuberculosis, there is clear prevalence of notifications in urban areas. The indigenous race/color, however, presents more than 40% of its cases in rural areas, in a different situation than that presented by the other groups described in this study. That can be explained by the distribution of the indigenous population in Rio Grande do Sul and by the location of the indigenous lands, usually located in rural areas. However, it is worth mentioning that 25% of the notified cases in the indigenous race/color group in the period were pointed out as being residents of the capital, Porto Alegre (Data from Sinan, not presented in tables).

This seems to place the indigenous peoples in the state in a significantly different context than that registered by previous studies conducted in other regions, in which the notified cases are mostly rural^{9,11,15,22,27}. The data also indicate the existence of groups from different indigenous ethnicities, which, for several reasons, move from their communities of origin and stay in camps with precarious life conditions. The city of Porto Alegre, in 2012, counted on seven indigenous communities in this situation: Lomba Kaingang, Morro do Osso, Polidoro, Vila Safira, Vila Jari, Lami, and Lomba do Pinheiro Camp.

Regarding the diagnosis of pulmonary tuberculosis, the positive cases found in the first bacilloscopy do not surpass 60% of the cases notified in the period, and much less for indigenous peoples (48%). These data allow assuming that other diagnostic means are being used in the state. In Brazil, 85.4% of the cases are diagnosed via bacilloscopy³.

Besides, there is a high percentage of bacilloscopy tests not performed or with ignored or blank information, especially when it comes to the second bacilloscopy. It is also possible that the high percentage of cases with negative results shows the inadequate collection or flaws in the process of analysis and identification of the bacillus. Still, for indigenous people, the percentage of extrapulmonary and mixed cases reaches 25%, and the conduction of culture tests, which should take place in these cases, does not get to 19%.

Similar patterns are found among indigenous people in several regions of the country, even though the percentages range. Machado Fiho¹² observed, among indigenous peoples in the Amazon region, positive bacilloscopy in only 34% of the cases, which is below expected according to the rules of the National Program of Tuberculosis Control¹. In a series of other studies, the positive results rarely overcome 50%^{5,9,12,15,23}.

Sidon¹⁵ and Orellana et al.²³ registered, among indigenous peoples in Rondônia, a high proportion of suspicious X-ray tests (superior to 80%) for tuberculosis, whereas the conduction of the purified protein derivative (PPD) is also unexpressive: something between 18 and 25% of the analyzed cases in which the tuberculosis tests were performed. This pattern does not change much between indigenous and non-indigenous peoples, when compared. The same was identified by Basta et al.⁹ in the state of Mato Grosso do Sul after Sinan's analysis per race/color^{9,15,23}.

DOT has been implemented by WHO with the main objective of reducing the rates of treatment abandonment; however, since 2011, the strategy has been indicated for the entire population seen as vulnerable to tuberculosis, including indigenous peoples¹. In the state of Mato Grosso do Sul, this strategy effectively reduced the abandonment rates and increased the healing rates among indigenous people²⁸.

The data analysis available for this period in this study points out to an even more unsatisfactory situation, and shows that the guideline did not take place in the state. In this measure, Rio Grande do Sul is not an exception when considering this component in the indigenous segment. Sidon¹⁵ observed in Rondônia, from 1997 to 2006, equally unsatisfactory patterns. Most of the data about DOT were ignored or blank, and this strategy was performed in only 13.2% of the cases diagnosed in the decade. Even if considering the inexistence of the guideline at the time, this is a much reduced proportion of the cases¹⁵.

Still referring to the follow-up of cases, bacilloscopies in the second and the sixth months of treatment are not a common practice, even though they are important to assess the evaluation of the effectiveness of the treatment for tuberculosis¹. There seems to be no change in the scenario through the decade in any category of race/color, and the percentage of not-performed tests ranges between 30 and 60%. Basta et al.⁹ describe, for Mato Grosso do Sul, concerning the supervised treatment and follow-up variables, a positive evolution of control actions between 2001 and 2009. Besides, they record better follow-up rates among indigenous people⁹.

The healing outcome is not even close to reaching the goals established by the Ministry of Health and WHO^{1,2}. In Rio Grande do Sul, only 64.4% of the cases led to cure, and the situation became even worse among brown, indigenous, and black individuals, unlike the one found in studies that addressed the analysis of the problem among indigenous peoples, for whom the healing percentages are usually better in comparison to the other segments of the population.

This situation is contradictory, considering that the same studies report high rates of tuberculosis associated with the highest percentages of cure. This allows suggesting a possible selection bias not in relation to the studies, which usually use solid databases, but in terms of the diagnosis. It is possible that the registered cases are those that in fact are followed-up, with more access to health services. Besides, it is possible that, with this profile, the dissemination of the problem remains worrisome, considering that some individuals are not identified as *sick*, and, therefore, continue to contaminate the rest of the population, or yet that these diagnoses are not reliable because it is difficult that the spaces that assist these populations really follow the protocol, so, there might be some *false diagnoses*.

As to the abandonment of the treatment, it is possible to notice the higher susceptibility of all groups when it comes to the white group, with much higher rates than those established by WHO². On the one hand, it once again shows the health inequalities between the categories of race/color. On the other hand, it shows that follow-up and treatment actions are not fully effective. Abandonment has been associated with

the nonperformance of control bacilloscopy, which apparently is not considered to be a priority action of control by the program in Rio Grande do Sul. Natal et al.²⁹ interconnected the matter to other factors that are intrinsically related to the socioeconomic status of the assisted population and to the creation of a connection with the team that cares for the patient²⁹.

In this study, the lowest percentage of deaths caused by tuberculosis registered among indigenous peoples is similar to the data found in some studies carried out with this population^{3,15,24}, but different from others, in which the rates are higher than in other groups⁸. New investigations may deepen the causes associated with the different profiles found in varied contexts.

Considering that the actions of indigenous health mostly follow the specifications of the National Policy of Indigenous Health, maintaining health teams in their territories to ensure the access to basic care services, and that the reference network of the Unified Health System (SUS) works to complement these actions, including the PECT/RS, we can infer that the situation of this population should be in better conditions; however, this is not what we observed in this analysis.

CONCLUSION

The incidence rates of tuberculosis found in the state of Rio Grande do Sul are higher than those seen in the country, especially those observed in segments that are knowingly vulnerable when it comes to health indicators, that is, among black and indigenous people. Among indigenous people, these rates are worrisome, because they tend to remain the same or increase in the period, suggesting flaws in the effectiveness of the National Program of Tuberculosis Control. It is a known fact that tuberculosis particularly affects the least favored segments of the population, and that indigenous peoples in Brazil demonstrate health indicators that are consistently worse than those shown by the rest of the country's population^{14,16,18-20,24}.

Even with limitations, the data analyzed confirm the existence of important inequalities between groups of race/color; black and indigenous people, in general, hold the worst positions in the scenario, and white people, the best ones. Considering the South of Brazil, characterized by more favorable development rates than those found in other parts of Brazil, these data show more inequalities between different segments of the regional population.

Finally, the analysis indicates the unsatisfactory function of the program, emphasizing that several goals are far from being reached, whereas specific guidelines are not fulfilled. It is worth to mention that the flaws in the program do not affect the different groups of race/color equally, but preferably, and generally, black and indigenous people. It is important to make efforts to reverse these disparities, and to fulfill the protocols of diagnosis and follow-up of the cases, as predicted by the Program of Tuberculosis Control in Rio Grande do Sul.

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