A REFLECTION ON PUBLIC POLICIES IN COMBATING TUBERCULOSIS. A WORLDWIDE PANORAMA

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Abstract: A reflection on public policies to combat Tuberculosis. A global panorama Tuberculosis is an infectious bacterial disease caused by Mycobacterium tuberculosis, mainly affecting the lungs and transmitted from person to person through respiratory droplets. Although the infection does not always cause symptoms in healthy people, when active, it can cause coughing, chest pain, weakness, weight loss and fever. Tuberculosis is currently a global health concern, with millions of deaths and new infections each year, due to factors such as drug resistance, HIV, international travel and homelessness. With a third of the world's population infected, it is essential that healthcare professionals understand the disease and its diagnostic procedures. New research should focus on the social factors that determine TB. In this way, it is believed, Brazil will once again be able to celebrate reaching the WHO targets for the elimination of TB by 2035.

Keywords: Tuberculosis, prevention, treatment, public policies.

INTRODUCTION

The concept of health as the absence of disease was changed in the face of the World Health Organization, which defines: health from a broader concept, being a right of all and a duty of the State, guaranteed through social and economic public policies, focusing on the living conditions of the population and environmental preservation, Through the various tropical diseases and pathologies, tuberculosis stands out. (CARVALHO, 2012)

Tuberculosis (TB) is an infectious bacterial disease caused by Mycobacterium tuberculosis, which most commonly affects the lungs (GOLDRICK, 2014). It is transmitted from person to person through droplets from the throat and lungs of people with active respiratory disease (PORTH,

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2012). In healthy people, M. tuberculosis infection often does not cause symptoms, because the individual's immune system acts to "isolate" the bacteria (FRIEDEN, 2003). Symptoms of active TB of the lung are cough (sometimes with sputum or blood), chest pain, weakness, weight loss, fever, and night sweats. This disease is treatable in approximately six months with antibiotics (JENSEN, 2005). Tuberculosis has recently emerged as a major health concern. Each year, approximately 2 million people in the world die from tuberculosis and 9 million are infected. The prevalence of tuberculosis continues to increase due to the increase in the number of patients infected with the human immunodeficiency virus (HIV), bacterial drug resistance, increased international travel and immigration from countries with high prevalence, and an increase in the number of homeless people and drug users (PINHEIRO, 2022; FERGUSON, 2004)element. With 2 billion people, one third of the world's population, estimated to be infected with mycobacteria, all health professionals, regardless of the area of care, need to understand the pathophysiology, clinical characteristics and procedures for the diagnosis of tuberculosis (EISENHUT, 2016). The vulnerability of hospitalized patients to tuberculosis is often underestimated because infection is usually considered a community-based disease (ROSENKRANDS, 2012). Most hospitalized patients are in a critical immunological state, particularly in intensive care units, making exposure to tuberculosis even more severe than in the community (SILVA, 2014). By understanding the causative organism, pathophysiology, transmission, diagnosis of tuberculosis and clinical manifestations in patients, intensive care professionals will be better prepared to recognize the infection (AGUDELO, 2018).

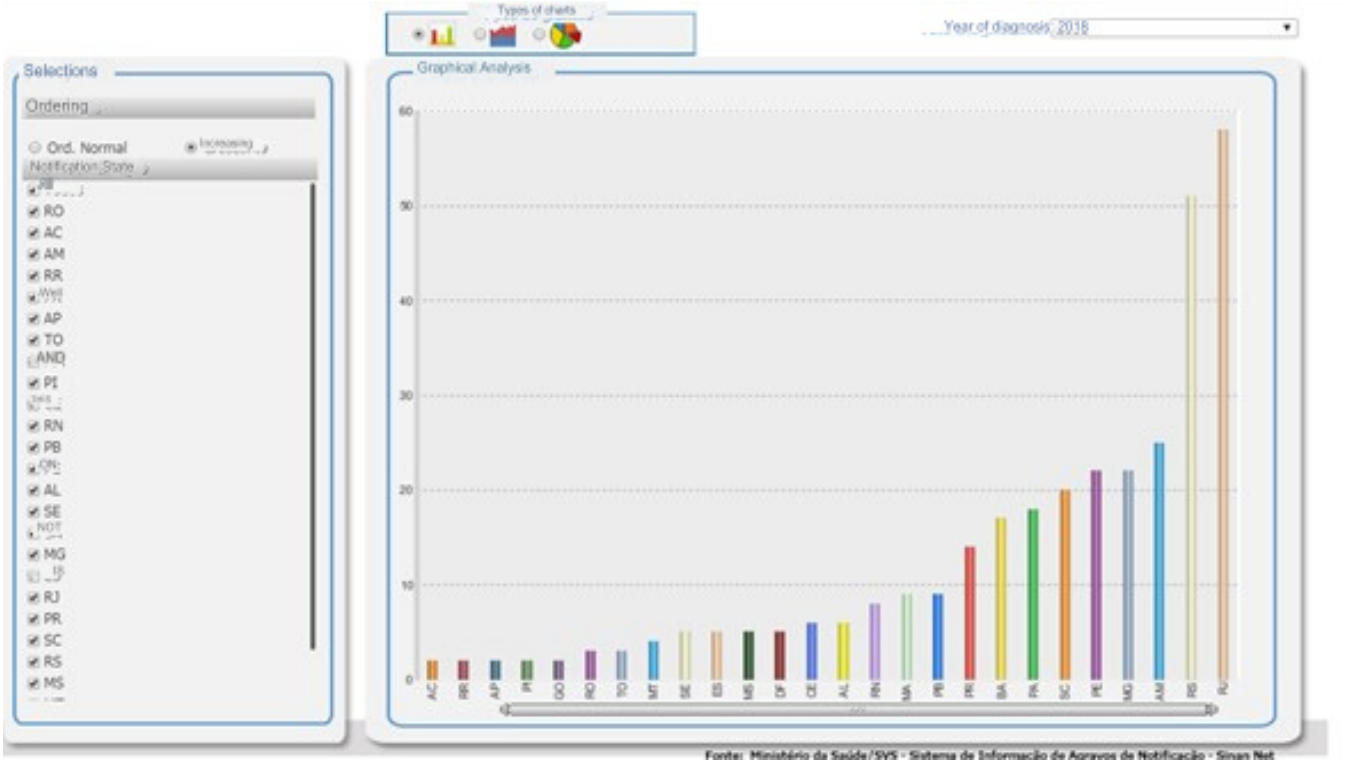
DEVELOPMENT

There are some epidemiological data that guide the population and health agents in general, and provide information pertinent to the situation presented about the characterization of diseases in the day-to-day life of the communities.

According to epidemiological data regarding tuberculosis in the country, it is found in the

literature that each year, approximately 70 thousand new cases are reported and about 4.5 thousand deaths occur (BRASIL, 2018).

The data necessary for the main epidemiological and operational indicators used for local, municipal, state, and national evaluation are contained in the Notifiable Diseases Information System (SINAN).



Data on the number of Tuberculosis cases in 2018 in each Brazilian state. Notifiable Diseases Information System (SINAN).

Região e UF	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Região Norte	387	314	341	333	344	345	348	363	374	354	426	396	453	414	408	428	481
Rondônia	35	37	46	32	30	28	25	34	20	27	25	22	26	24	25	23	24
Acre	26	19	21	18	27	23	28	16	16	15	18	8	28	20	18	18	13
Amazonas	117	106	102	88	104	107	96	113	133	110	126	125	133	128	128	155	158
Roraima	10	6	7	5	7	6	0	3	2	4	7	7	7	2	4	8	6
Pará	175	129	152	170	152	155	169	179	180	172	212	212	225	220	211	206	258
Amapá	11	10	6	6	11	11	11	7	9	13	16	14	10	12	14	12	12
Tocantins	13	7	7	14	13	15	19	11	14	13	22	8	24	8	8	6	10
Região Nordeste	1517	1556	1501	1520	1570	1611	1602	1662	1629	1534	1469	1426	1512	1452	1506	1430	1471
Maranhão	121	125	116	159	181	179	168	196	192	187	177	143	155	164	149	162	169
Piauí	56	79	71	64	73	72	78	84	81	71	52	57	76	48	44	78	55
Ceará	256	232	191	214	232	264	253	269	276	240	236	218	220	182	207	203	207
Rio Grande do Norte	67	48	46	47	52	42	70	71	53	61	72	64	72	59	66	64	69
Paraíba	53	86	113	79	142	109	67	75	80	86	79	74	60	68	88	78	59
Pernambuco	422	401	427	436	398	379	418	403	397	356	357	377	350	408	420	403	423
Alagoas	79	89	89	70	76	83	85	95	99	91	90	94	108	110	78	79	73
Sergipe	34	26	30	39	41	43	35	35	45	39	46	41	45	56	44	44	43
Bahia	429	470	418	412	375	440	428	434	406	403	360	358	426	357	410	319	373
Região Sudeste	2710	2495	2388	2366	2087	2183	2111	2159	2122	2109	2024	1990	2026	1974	2017	1949	1920
Minas Gerais	293	312	308	333	319	298	298	306	315	286	271	275	220	231	237	263	241
Espírito Santo	68	64	71	70	51	67	67	73	70	63	61	74	87	75	76	77	69
Rio de Janeiro	1030	961	889	910	789	848	825	870	815	910	849	795	820	848	832	733	701
São Paulo	1319	1158	1120	1053	928	970	921	910	922	850	843	846	899	820	872	876	909
Região Sul	577	563	538	528	497	472	462	501	460	435	448	374	410	426	470	467	451
Paraná	212	192	203	191	169	176	141	152	122	116	125	97	134	108	125	144	125
Santa Catarina	57	57	59	56	51	54	46	59	65	61	64	47	58	60	52	72	62
Rio Grande do Sul	308	314	276	281	277	242	275	290	273	258	259	230	218	258	293	251	264
Região Centro-Oeste	234	234	219	234	237	212	212	196	212	227	196	235	216	201	209	209	211
Mato Grosso do Sul	58	63	62	68	66	57	48	59	67	66	57	63	62	56	49	63	67
Mato Grosso	94	95	70	76	86	80	87	78	82	98	62	82	62	73	72	72	63
Goiás	59	57	68	68	70	65	59	50	57	49	59	77	73	58	72	58	65
Distrito Federal	23	19	19	22	15	10	18	9	6	14	18	13	19	14	16	16	16
Brasil	5425	5162	4987	4981	4735	4823	4735	4881	4797	4659	4563	4421	4617	4467	4610	4483	4534

*Dados preliminares sujeito a revisão
Fonte: MS/SVS/DASIS - Sistema de Informações sobre Mortalidade - SIM atualizado em 10/2018.

Historical Series of the Number of Deaths from Tuberculosis between 2001 and 2017 in each Region and Federative Unit. Notifiable Diseases Information System (SINAN)

PREVENTION

The vaccine called Bacillus Calmette-Guerin (BCG) was first developed in the 1920s (DHEDA, 2005). It is one of the most widely used vaccines today, and reaches more than 80% of all newborns and babies in the countries where it is part of the national childhood immunization program (SILVA, 2018). However, it is also one of the most variable vaccines in routine use (MYERS, 2016). The BCG vaccine has been shown to offer children excellent protection against disseminated forms of TB (RAVIGLIONE, 2016). However, protection against pulmonary TB in adults is variable (RABAHI, 2017). Because most transmissions originate from adult cases of pulmonary TB, the BCG vaccine is generally used to protect children rather than interrupt adult-to-adult transmission (WORLD, 2015).

The BCG vaccine will usually result in a vaccinated person having a positive TB skin test result (PAOLUCCI, 2022).

To reduce exposure in households where someone has infectious TB, the following actions should be taken whenever possible (FERRO, 2010):

> Homes should be adequately ventilated;
> Anyone coughing should be educated on cough etiquette and respiratory hygiene, and should follow this practice at all times;
> Spend as much time as possible outdoors;
> If possible, sleep alone in a separate, adequately ventilated room;
> Spend as little time as possible on public transport;
> Spend as little time as possible in places where a large number of people gather.

However, what can ensure success in the prevention and control of Tuberculosis permeates Vaccination, it is also necessary to expand the coverage of BCG vaccination, especially in countries where TB is endemic. Invest in research into new, more effective vaccines and the Tracking and Monitoring program, and implement proactive screening programs to identify and treat latent TB cases, as well as monitor the effectiveness of control programs (ANDRADE, 2017).

TREATMENT

In order to carry out tuberculosis treatment, it is important to know that being a drug for TB prevention, also known as chemoprophylaxis, it can reduce the risk of occurrence of a first episode of active TB in people with latent tuberculosis (DE SOUZA, 2018). Treatment of latent TB is being used as a tool to try to eliminate TB in some countries (TORRENS, 2016).

Isoniazid is one of the drugs used to prevent latent tuberculosis from progressing to active tuberculosis or tuberculosis. Isoniazid is an inexpensive drug, but similarly to the use of the BCG vaccine, it is primarily used to protect individuals rather than stop transmission between adults (MACIEL, 2015).

This is because children rarely have infectious tuberculosis, and it is difficult to administer

isoniazid on a large scale to adults who do not have any symptoms (ROCHA, 2015). Taking isoniazid daily for six months is difficult to adhere to and, as a result, many individuals who could benefit from the treatment stop taking the drug before the end of the six-month period (SANTOS, 2013).

There are also concerns about the possible impact of TB treatment in prevention programs on the emergence of drug resistance (SHAH, 2014).

However, the most important for the improvement in disease control was the inclusion, in 2009, of treatment with rifampicin, isoniazid, pyrazinamide and ethambutol (RHZE) in a fixed-dose combination formulation (FDC): RHZE-FDC. Research carried out in Brazil, comparing the standard dose with the combined fixed dose, showed that the latter reduced the rate of treatment abandonment by 14% among the incidence of TB who started treatment in the period from October 2009 to September 2010, in five cities surveyed (GLOBAL, 2022).

To strengthen diagnosis and treatment

It will be necessary to ensure universal access to diagnosis and ensure that all suspected TB cases have access to rapid and accurate diagnoses. This includes expanding the availability of molecular tests and advanced diagnostic technologies.

Enabling effective and complete treatment, ensuring that all patients receive adequate, complete and free treatment. This includes the treatment of drug-resistant forms of TB, such as multidrug-resistant TB (MDR-TB) (CECILIO, 2017).

PUBLIC POLICIES

Regarding the public policies that have been made to combat tuberculosis, some programs and actions aimed at controlling or even eradicating the aforementioned pathology can be mentioned. Increase investment and ensure adequate and sustainable funding for TB control programmes. This

includes funding for research, treatment, diagnosis, and education. Public policies and legislation. It is also important to implement policies that guarantee universal access to health services and TB treatment, and that address inequalities in access to care.

One of the examples is the program that was created in 2015, the "WHO Global TB Program", which convened a global task force for TB patient research (BOCCIA, 2011). Updated in 2023, the WHO Global Report on Tuberculosis (TB) demonstrates a significant global recovery in scaling up TB diagnosis and treatment services in 2022. He points to an encouraging predisposition that begins to reverse the detrimental effects of COVID-19 interruptions on TB services (MINISTRY OF HEALTH, 2023).

This increase is explained by the good recovery of access to and provision of health services in many countries. The Philippines, India, and Indonesia, which together accounted for about 60% of the worldwide reductions in the number of individuals newly diagnosed with TB in 2020 and 2021, recovered to levels subsequent to 2019 in 2022 (MINISTRY OF HEALTH, 2023).

However, the Global Report on Tuberculosis (TB), published annually by the World Health Organization (WHO), offers a comprehensive overview of the state of tuberculosis in the world and presents data and recommendations to improve the fight against the disease. Some of the improvements and advancements that these reports have promoted include (TRAJMAN, 2018):

- Improved Data Collection and Analysis: Reports help enhance data collection and trend analysis, allowing countries and organizations to adjust their strategies according to the latest evidence.
- Increases in Awareness and Policy Priority: By highlighting the global burden of TB and the gaps that exist in treatment and prevention, the reports encourage governments and organizations to prioritize resources and efforts to address the disease.
- Advances in Diagnosis and Treatment: The report frequently presents information on new advances in diagnosis and treatment, such as new drugs and more effective treatment

regimens, which help improve cure rates and reduce drug resistance.

- Focus on Vulnerable Populations: The reports highlight the need to address TB in vulnerable populations, such as people with HIV, people in prisons, and marginalized communities, by encouraging specific programs for these populations.
- Strengthening Prevention Strategies: Recommendations include improvements in prevention strategies, such as expanding BCG vaccination and contact tracing programs, which help reduce the spread of the disease.
- Reducing Drug Resistance: The report frequently addresses the issue of drug-resistant tuberculosis and provides guidance on how to address this more difficult way of treating the disease, including promoting safer and more effective treatment practices.
- Promotion of Care Integration: Encourages the integration of TB services with other areas of health, such as HIV and primary health services, for more holistic and efficient care.
- Focus on Research and Innovation: Highlights the need for more research and innovation for new diagnostic tests, vaccines, and treatments, encouraging global collaboration to accelerate the development of new solutions (TRAJMAN, 2018).

These advances have contributed to a better understanding of tuberculosis and to more effective strategies to combat the disease, with the ultimate goal of reducing its incidence and mortality globally.

Brazil is part of the group of the best countries with good actions in the adaptation and implementation of multisectoral involvement initiatives to end tuberculosis (TB). Brazil is part of the document released by the World Health Organization (WHO) in 2022, entitled “Adaptation and implementation of WHO’s multisectoral accountability framework to end TB (MAF-TB) – Best practices” (MINISTRY OF HEALTH, 2023).

With the objective of architecting national responses to TB, MAF-TB is a tool created by the

WHO and, in this sense, fosters advances through the implementation of political engagement and agreement on targets to end TB as a public health problem.

The Political Declaration of the High-Level Meeting of the UN General Assembly called on the WHO Director-General to complete the multisectoral accountability framework and ensure its implementation in 2019 (WINGFIELD, 2017). WHO supports Member States as they move forward to: assess the initial status of MAF-TB components in their own contexts; engage staff and stakeholders in adapting the framework; and monitor and review their use (REIS, 2015). It also collaborated with Member States and coordinated partners to enable support to strengthen capacity and results at the national, regional and global levels (MACIEL, 2018). WHO has also led coordination with UN agencies and other organizations on multisectoral collaboration related to MAF-TB (KRITSKI, 2018).

One of the major shortcomings of the eradication programme was the inability or unwillingness of some governments to support and manage their own national programme. This applies particularly to those governments that have been pushed towards eradication by international pressure or incentives (VALLA, 1998). Policy analysis research at the national and global levels can help to understand the political landscape and identify how policy strategies can be created to enable long-term policy support in both donor and endemic countries (VALLA, 1998).

Initially, the execution of the actions was the responsibility of the federal government. With the process of decentralization of endemic diseases, actions began to be carried out by the state and/or municipal levels, and for each of their instances the attributions are established in Ordinance No. 1,399, of 12/15/99 (ALBUQUERQUE, 2015).

Eradicating tuberculosis (TB) by 2035 is an ambitious goal that requires a multifaceted approach and the effective implementation of public policies. Based on global guidelines and best practices, here are some essential findings and strategies to achieve this goal both in Brazil and globally (MACIEL, 2018)

CONCLUSION

Eradicating TB by 2035 requires an integrated and sustained approach that combines strengthening health services, effective public policies, and a strong financial and social commitment. Collaboration between governments, international organizations, the private sector, and communities is critical to achieving this goal. With a well-designed strategy and the implementation of effective actions, it is possible to drastically reduce the burden of tuberculosis and work towards its global eradication.

Even though Brazil is an endemic area, it can be concluded from the data obtained that its population has basic knowledge of the disease and of some preventive methods, although they are not used by the majority. The fact that it is a known disease can be explained by the ease of disseminating information that we have today, however, according to the data, this information comes from unreliable sources, with unofficial and incomplete information, so it is still necessary to reinforce the importance of the professional who holds this knowledge in the dissemination of correct information, always stressing the great importance of prevention so that there is greater adherence to them.

Knowledge alone is not enough to generate impacts on the prevention and control of the disease. In addition to knowledge, health education practices that favor the application of knowledge and, thus, generate positive impacts on this important health issue The Family Health program is the first level of primary care of the SUS (Unified Health System) where actions are developed for health promotion, prevention, recovery, rehabilitation of diseases and injuries, the work of multiprofessionals in health units. The medical professional is considered an ideal professional for guidance, awareness regarding treatment adherence, rational and correct use of medications and for the follow-up of patients, however he is considered a professional with little presence and active participation in the services to combat diseases.

In view of the reduction of inequalities and initiatives capable of improving and making more effective and effective in the control of the disease, both the directing of efforts by the existing regias

can bring the country closer to achieving the recommended goals, without the need to incorporate the latest and most expensive technologies. Further research should focus on the social determinants of TB, incorporating innovative methods and the study of vulnerable populations, in order to better understand the impact of control measures on TB incidence and mortality. In this way, it is believed that Brazil will once again be able to celebrate the achievement of the WHO goals for the elimination of TB by 2035.

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