

## Adherence of Elderly People to Tuberculosis Treatment

Adesão dos Idosos às Formas de Administração do Tratamento da Tuberculose

Adhesión de los Ancianos a las Formas de Administración del Tratamiento de la Tuberculosis

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### ABSTRACT

**Objective:** The study's purpose has been to know the adherence of elderly people to the different forms of management of tuberculosis treatment. **Methods:** It is a descriptive-exploratory and cross-sectional study with a quantitative approach that was carried out in the Western Sanitary District at *Natal* city, and counted with elderly patients who underwent treatment from January 2010 to December 2015. **Results:** It was observed that the elderly people use both the self-administered regimen (51.1%) and directly observed (48.9%). In both groups the participants were within the age group from 60 to 69 years old (29.8%, 35.1%), the pulmonary form of the disease (41.5%, 44.7%) prevailed, and the new case as the type of entry for the treatment (31.9%, 27.7%). Regarding the treatment termination, the accomplishment of the treatment conclusion was highlighted among the studied cases (33.0%, 25.5%). **Conclusion:** Tuberculosis is still prevalent in Brazil, highlighting the importance of both adequate diagnosis and treatment, as well as the adoption of measures to control and train health professionals with regards to the care of these patients.

**Descriptors:** Elderly, Tuberculosis, Medication Adherence.

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## RESUMO

**Objetivo:** Conhecer a adesão dos idosos às formas de administração do tratamento da tuberculose. **Métodos:** Estudo exploratório-descritivo, transversal e quantitativo, desenvolvido no Distrito Sanitário Oeste de Natal, com os idosos que fizeram tratamento entre janeiro de 2010 a dezembro de 2015. **Resultados:** Observou-se que os idosos utilizam tanto o regime autoadministrado (51,1%) quanto o diretamente observado (48,9%). Em ambos os grupos prevaleceu a faixa etária de 60 a 69 anos (29,8%; 35,1%), a forma pulmonar da doença (41,5%; 44,7%) e o caso novo como tipo de entrada para o tratamento (31,9%; 27,7%). Quanto ao encerramento, destacou-se a conclusão do tratamento (33,0%; 25,5%). **Conclusão:** A tuberculose ainda é prevalente no Brasil, destacando-se a importância do diagnóstico e tratamento adequados, além da adoção de medidas de controle e capacitação dos profissionais de saúde frente ao cuidado desses pacientes.

**Descritores:** Idoso, Tuberculose, Adesão à Medicação.

## RESUMEN

**Objetivo:** Conocer la adhesión de los ancianos a las formas de administración del tratamiento de la tuberculosis. **Métodos:** Estudio exploratorio-descritivo, transversal y cuantitativo, desarrollado en el Distrito Sanitario Oeste de Natal, con los ancianos que hicieron tratamiento entre enero de 2010 a diciembre de 2015. **Resultados:** Se observó que los ancianos utilizan tanto el régimen autoadministrado (51,1%) como el directamente observado (48,9%). En ambos grupos prevaleció el grupo de edad de 60 a 69 años (29,8%, 35,1%), la forma pulmonar de la enfermedad (41,5%, 44,7%) y el caso nuevo como tipo de entrada para el tratamiento (31,9%, 27,7%). En cuanto al cierre, se destacó la conclusión del tratamiento (33,0%, 25,5%). **Conclusión:** La tuberculosis sigue siendo prevalente en Brasil, destacándose la importancia del diagnóstico y tratamiento adecuados, además de la adopción de medidas de control y capacitación de los profesionales de salud frente al cuidado de esos pacientes.

**Descriptores:** Anciano, Tuberculosis, Cumplimiento de la Medicación.

## INTRODUCTION

After more than a century since the discovery of the micro-organism that causes tuberculosis (TB) and more than sixty years after the discovery of the first chemotherapy, this disease still has high incidence and prevalence and is considered a priority public health problem in several countries. Existing studies on the problems caused by this pathology are still insufficient to minimize their impact on the health of the population, and thus persist with high epidemiological importance, causing suffering and losses.<sup>1-2</sup>

With the advent of antimicrobial drug treatment, there was a reduction in mortality; nevertheless, the incidence still remains high in all regions of the country. Several actions have been developed over time as measures for disease control, some succeeding and others inefficient. TB control in our country is an activity shared by the three spheres of government and is based especially on the early detection and diagnosis of people affected, as well as on the appropriate treatment of all cases.<sup>3</sup>

There are some factors that favor the transmission of the bacillus, among them malnutrition, alcoholism, smoking, and diseases that reduce the immune capacity

are highlighted. Other mechanisms of transmission are linked to socioeconomic problems such as housing conditions, especially the clusters of people in the home, poorly ventilated environments, people deprived of their liberty and the population living in the street.<sup>3</sup>

Older people are also more predisposed to the development of TB, both from the endogenous reactivation, which is the most frequent and that is the focus of maintenance of the disease in the community and from exogenous reinfection. Because of its preferential transmission connected to the airway, the disease finds in the elderly a senescent respiratory system, with a reduction in its defense mechanisms, which further increases the risk of infection and illness from the reactivation of latent foci.<sup>4-5</sup>

In 2008, the Health Ministry (HM) confirmed that the TB cure rate was 72% and that of treatment abandonment was 9.9%, while the national and international targets are to reach at least 85% of cure and reduce dropout to less than 5%. Brazil is still far from achieving the agreed goal, and the disease situation remains a problem.<sup>3</sup>

With regards to the treatment of TB, it is available free of charge in the public health network, with primary care being the priority place for its implementation. Even if efforts are made to guarantee it as close as possible to the dwelling or work of people affected by the disease, adherence to treatment becomes a difficult practice, considering the high number of treatment abandonment.<sup>3</sup>

It is believed that the basic principles for treatment relate to adequate drug association, correct doses and use for a sufficient time, aiming at avoiding bacterial persistence, developing drug resistance and, above all, ensuring patient cure. The choice of the best treatment regimen should take into account the metabolic behavior and location of the bacillus, meeting three main objectives as follows: to have early bactericidal activity, to be able to prevent the emergence of resistant bacilli and to have sterilizing activity.<sup>6-7</sup>

In recent years, one of the guidelines that have been recommended for the control of TB is Directly Observed Treatment (DOT), which aims to strengthen patients' adherence to treatment and to prevent the appearance of drug-resistant strains, beyond reducing the cases of neglect and increase the likelihood of cure. The DOT is a change in the way medications are administered, without changes in the therapeutic regimen, the trained professional starts to observe the ingestion of the medication by the patient, from the beginning of the treatment until its cure.<sup>3,7-8</sup>

Concerning the TB treatment, a worrying situation is the treatment abandonment, which is defined as the case where the patient, after starting treatment for tuberculosis, stopped attending the health unit for more than thirty days after the last hospitalization. Abandonment may contribute to the emergence of multidrug resistance, which is striking in several countries. In Brazil, according to HM data, in

2010 there were 611 cases of multidrug-resistant tuberculosis (MDR-TB).<sup>3,7</sup>

It is important to emphasize that nurses should assist in the insertion of the person with TB at different levels of complexity in health services, including medical and nursing consultations, diagnostic support, specialist consultations, if necessary, and access to specific medication, focusing on the problem-solving of the patient. It is fundamental that the network of TB services close to the health unit be mapped, establish formal relationships, define the flow of care, and mechanisms for referral, return and patient follow up.<sup>3</sup>

Given this context, it is questioned: What is the adhesion of elderly people towards the different forms of administration of the tuberculosis treatment?

It is believed that the growth of the geriatric population, associated with the resurgence of tuberculosis, impose greater concern for the students and the authorities responsible for Public Health, then justifying more detailed studies and more decisive actions against this disease.

Therefore, the study's goal is to further understand the adherence of elderly people towards the different forms of administration of the tuberculosis treatment.

## METHODS

It is a descriptive-exploratory and cross-sectional study with a quantitative approach, developed in Basic Health Units belonging to the Western Sanitary District, since it is in this district that there are a both higher incidence and notification of tuberculosis cases in the municipality, considering each district in isolation, so that, of the 517 new cases in the Municipality of *Natal* in 2010, 182 were registered by this district and in 2011 there were 126 registered cases of the disease.<sup>9</sup>

The study population consisted of all the elderly (60 years old or older) who were cared for in the Western Sanitary District of *Natal* over the period from January 2010 to December 2015. Data were collected after the consent of the manager, in the *Secretaria Municipal de Saúde* (SMS) [Municipal Health Department] of the *Natal* city, *Rio Grande do Norte* (RN) State.

Initially, the collected data were organized in a spreadsheet of Microsoft Excel 2013®, followed by descriptive statistics, aiming to analyze the data in order to provide a summarized and intelligible view. The results were presented in tables.

## RESULTS AND DISCUSSION

Between 2010 and 2015, 745 people underwent tuberculosis treatment in the Western Sanitary District of *Natal/RN*, of which 94 (12.8%) were elderly.

**Table 1** shows that of the 94 elderly patients who underwent treatment, the majority underwent self-administered treatment (51.1%). Of the 51.1% of the men who were taking

TB treatment, most used directly observed (29.8%), however, the highest percentage of women (29.8%) used self-administered. The age group from 60 to 69 years old was predominant between the two groups (29.8%, 35.1%), as well as the pulmonary form of the disease (41.5%, 44.7%) and the type of entry for treatment was the new case (31.9%, 27.7%). Regarding the treatment termination, the accomplishment of the treatment conclusion was highlighted among the studied cases (33.0%, 25.5%).

**Table 1** - Epidemiological profile of elderly people according to the type of tuberculosis treatment that they were submitted in the Western Sanitary District of *Natal* from 2010 to 2015. *Natal/RN*, 2016.

Elderly's clinical and epidemiological profile		Self-administered	Directly observed	n	%	
Sex	Male	20	21.3	28	29.8	48 51.1
	Female	28	29.8	18	19.1	46 48.9
Age	60 to 69	28	29.8	33	35.1	61 64.9
	70 to 79	16	17	11	11.7	27 28.7
	80 to 89	3	3.2	2	2.1	5 5.3
	99 to 100	1	1.1	0	0	1 1.1
Tuberculosis type	Pulmonary	39	41.5	42	44.7	81 86.2
	Extrapulmonary	8	8.5	4	4.3	12 12.8
	Pulmonary and extrapulmonary	1	1.1	0	0	1 1.1
Entrance	New case	30	31.9	26	27.7	56 59.6
	Transferred	16	17	15	16	31 33
	Re-entry after relapse	1	1.1	5	5.3	6 6.4
	Reentry after abandonment	1	1.1	0	0	1 1.1
Termination	Treatment completion	31	33	24	25.5	55 58.5
	Healed	13	13.8	14	14.9	27 28.7
	Transferred	1	1.1	5	5.3	6 6.4
	Abandonment	3	3.2	2	2.1	5 5.3
	Death	0	0	1	1.1	1 1.1

Regarding the diagnostic tests for tuberculosis, it can be seen in **Table 2** that the tuberculin test was not performed by the majority of the elderly people in the two groups (37.2%, 39.4%), as well as histopathology (39.3%; 46.8%). Chest X-ray was suggestive of tuberculosis in the majority of cases (36.2%, 36.2%), the most performed exam (81.9%). It was observed that the elderly did not perform the first bacilloscopy (36%, 24.4%) and those who performed the second, it was positive for the majority (55.4%), with a more significant percentage of those with DOT (41.6%). It is worth mentioning that serology for the Human Immunodeficiency Virus (HIV) was not performed in 54.2% (30; 8%, 23.4%) of the elderly people bearing tuberculosis disease. Similar results were observed in most of the variables, nonetheless, the first and second bacilloscopy was more performed in the directly observed treatment group.

**Table 2** - Diagnostic exams performed by the elderly people undergoing treatment of tuberculosis in the Western Sanitary District of *Natal* from 2010 to 2015. *Natal/RN*, 2016..

Elderly's clinical and epidemiological profile		Self-administered		Directly observed		n	%
Tuberculin test	Unrealized	35	37.2	37	39.4	72	76.6
	Strong reactor	11	11.7	5	5.3	16	17
	Weak reactor	1	1.1	2	2.1	3	3.2
	Non-reactor	1	1.1	2	2.1	3	3.2
Histopathology	Unrealized	37	39.3	44	46.8	81	86.1
	Suggestive TB	6	6.4	2	2.1	8	8.5
	BAAR-	1	1.1	0	0	1	1.1
	BAAR++	1	1.1	0	0	1	1.1
	BAAR+++	2	2.1	0	0	2	2.1
	EA	1	1.1	0	0	1	1.1
Chest X-ray	Suspect	34	36.2	34	36.2	68	72.4
	Unrealized	7	7.4	10	10.7	17	18.1
	Normal	7	7.4	2	2.1	9	9.5
1 <sup>st</sup> smear of sputum	Unrealized	34	36.2	23	24.4	57	60.6
	Positive	6	6.4	9	9.6	15	16
	Negative	7	7.4	8	8.5	15	15.9
	Ignored	1	1.1	3	3.2	4	4.3
	Not applicable	1	1.1	2	2.1	3	3.2
2 <sup>nd</sup> smear of sputum	Positive	13	13.8	39	41.5	52	55.3
	Unrealized	30	31.9	30	31.9	30	31.9
	Negative	3	3.2	2	2.1	5	5.3
	Ignored	2	2.1	2	2.1	4	4.3
	Not applicable	1	1.1	0	0	3	3.2
Presence of HIV	Unrealized	29	30.8	22	23.4	51	54.2
	Negative	20	21.3	22	23.4	42	44.7
	Positive	1	1.1	0	0	1	1.1

The fight against tuberculosis is directly linked to patient treatment acceptance. Non-adherence results in therapeutic failure, then making it a worrisome factor for public health. Therefore, a proper association of medications, correct dosages, and recommended use are the basic principles for effective treatment, preventing bacterial persistence and drug resistance from developing, thereby ensuring patient healing. To these principles, the DOT is added as a fundamental strategy to ensure the cure of the patient. Nevertheless, this research showed that most of the health units studied have not yet adhered to this treatment regimen, and are still well below the 70% achievement of DOT proposed by the Health Ministry.<sup>3,10</sup>

It is also observed that the majority of the patients that adhered to the DOT are male. This fact can be attributed to the persistence of health professionals to the greater adherence of men, since studies show that the male patients abandon treatment more than the female ones.<sup>11-12</sup>

With regards to the elderly characterization, it is observed that the majority was male, in the age group from 60 to 69 years old. Research shows that men are more affected by TB because of the greater exposure of TB to the disease, since they are more active in the labor market. Regarding the age group, it is according to a survey carried out in the municipalities of the Central Region of the *São Paulo* State about the profile of patients, flow of care and nurses' viewpoint.<sup>11</sup>

The higher incidence of the pulmonary form of TB, found in the present study, confirms the usual manifestation of the disease and is similar to other studies performed and data from the Health Ministry. It is added that the presentation of

TB in pulmonary form is the most frequent, reaching about 90% of tuberculosis cases, of which 60% are baculiferous, thus becoming the most relevant to public health. It is considered that the diagnosis for this form is inexpensive and allied to the clinical form characteristic of the disease promote greater chances of diagnosis in relation to the other forms.<sup>3,12</sup>

Concerning the type of entry, new cases, defined as those patients who never underwent anti-TB treatment or did so for up to 30 days, predominated. In the year 2014, 25,926 new cases of tuberculosis were registered among the capitals of Brazil, corresponding to 38.1% of the total number of new cases diagnosed in the country, which indicates the high rate of disease incidence. The city of *Natal* is in 11<sup>th</sup> place in relation to the 27 capitals surveyed.<sup>13-14</sup>

Regarding the case termination, it was observed that the frequency of cure (28.7%) is below the goal proposed by the Health Ministry, which is to cure 85% of the cases. Curing criteria are considered to have three negative cultures from the 12<sup>th</sup> month of treatment (12<sup>th</sup>, 15<sup>th</sup> and 18<sup>th</sup>). Positive culture in the 12<sup>th</sup> month of treatment, followed by four negative cultures, without clinical and radiological signs of active disease, until the 24<sup>th</sup> month of treatment (15<sup>th</sup>, 18<sup>th</sup>, 21<sup>st</sup> and 24<sup>th</sup>).<sup>8,2</sup> The present study did not present differences between the percentages of cure in those patients who underwent the self-administered treatment in relation to those who did do the DOT.<sup>3</sup>

Considering the diagnostic exams performed, it was observed that the most performed were chest X-ray followed by sputum smear microscopy. Chest radiography is a diagnostic method of extreme relevance in the investigation of TB. Different radiological findings point to the suspicion of disease in activity or disease in the past, in addition to the type and extent of lung involvement. It should be requested for all patients with clinical suspicion of pulmonary TB. Bacteriological research is the method of fundamental importance in adults, both for diagnosis and for treatment control. Sputum smear microscopy, when correctly performed in all its phases, can detect 60% to 80% of cases of pulmonary tuberculosis.<sup>3-4</sup>

It was observed in the present study that some tests were not performed, such as tuberculin skin test and HIV serology. The tuberculin test is indicated in the investigation of latent infection by *M. tuberculosis* (ILTb) in adults and in the investigation of latent infection and TB disease in children. Furthermore, it can be used in epidemiological studies. Among the factors that interfere in the false negative and positive reactions to the tuberculin test, is the age over 60 years old. Regarding the serology for HIV, it is often discovered the HIV seropositivity during the diagnosis of tuberculosis. It is estimated in Brazil that, although the offer of testing is approximately 70%, only about 50% have access to their results in a timely manner, with a prevalence of positivity of 15%. Moreover, tuberculosis is the leading cause of death among people living with HIV, with a death rate of 20%.<sup>3-4,14</sup>

## CONCLUSIONS

It was observed that the treatment regimen that the most accomplished elderly people is self-administered, with the highest percentage of men using the directly observed treatment. The age group of 60 to 69 years old was predominant between the two groups (self-administered and directly observed), as well as the pulmonary form of the disease and the type of entry for treatment that was the new case. As for the closure, the conclusion of treatment in both groups predominated. The majority of the elderly people did not perform the tuberculin test, neither the histopathology; nonetheless, a chest X-ray was the most used diagnostic test, resulting in suspected tuberculosis.

It should be pointed out that tuberculosis is still a prevalent disease in Brazil, which draws attention to the importance of diagnosis, adequate treatment, and adoption of control measures. Being of fundamental importance the qualification of health professionals in the care of these patients.

Hence, the commitment of the multi-professional health team to the care provided to these patients is necessary, since the lack of commitment by the team along with the difficulties resulting from the disease, such as the treatment side effects, they all are factors that can lead to cessation of therapy. Thus, nursing has an important role in relation to people affected by TB, such as: orientation, supervision, and mainly the establishment of a link with the patient.

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