

PROFILE OF TUBERCULOSIS PATIENTS

PERFIL DE PESSOAS ACOMETIDAS POR TUBERCULOSE

PERFIL DE PERSONAS ACOMETIDAS POR TUBERCULOSIS

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The objective was to build the profile of people affected by TB and describe how the disease presents itself in the city of Natal, Rio Grande do Norte, Brazil. It outlined a descriptive epidemiological study, with reported cases of tuberculosis in the National Notifiable Diseases System between 2006 and 2010. 2,632 cases were reported, by year of diagnosis. Disease incidence was greater when compared with national and other studies. The disease has shown cure rates slightly below the national figures. Diseases associated to the tuberculosis were present. Certain population groups are more likely to develop the disease in the city, most cases occurring among men in their economically active age group, and less profitable occupations. The existence of health professionals with tuberculosis was shown. The disease is highlighted in the social and economic context of the region and presents itself as a health problem to be faced by health professionals, health managers and population.

Descriptors: Tuberculosis; Epidemiology; Information Systems.

Objetivou-se construir o perfil das pessoas acometidas por tuberculose e descrever como a doença apresenta-se no município de Natal/Rio Grande do Norte. Foi delineado um estudo epidemiológico descritivo, com os casos de tuberculose notificados no Sistema Nacional de Agravos de Notificação, entre 2006 e 2010. Foram notificados 2.632 casos, por ano de diagnóstico. A incidência da doença foi maior quando comparada com a nacional e com outros estudos. A evolução da doença demonstrou percentual de cura pouco abaixo dos valores nacionais. As doenças associadas a tuberculose estavam presentes. Determinados grupos da população estão mais susceptíveis a contrair a doença no município, ocorrendo mais entre homens, em faixa etária economicamente ativa, e de ocupações menos rentáveis. Demonstrou-se existência de profissionais da saúde com tuberculose. A doença tem destaque no contexto social e econômico da região e se apresenta como problema a ser enfrentado por profissionais de saúde, gestores e população.

Descritores: Tuberculose; Epidemiologia; Sistemas de Informação.

El objetivo fue construir el perfil de personas afectadas por tuberculosis y describir cómo la enfermedad se presenta en Natal/Rio Grande do Norte, Brasil. Estudio epidemiológico descriptivo, con casos de tuberculosis notificados en el Sistema Nacional de Agravios Reportados, entre 2006 y 2010. Fueron reportados 2.632 casos por año de diagnóstico. La incidencia fue mayor en comparación con los datos nacionales y otros estudios. La enfermedad ha mostrado tasas de curación levemente abajas de los valores nacionales. Las enfermedades asociadas a la tuberculosis estuvieron presentes. Algunos grupos de población están más propensos a contraer la enfermedad, la mayoría ocurren entre los hombres en grupo de edad económicamente activa, y de ocupaciones menos rentables. Había profesionales de salud con tuberculosis. La enfermedad tiene relieve en el contexto social y económico de la región y se presenta como problema de salud a ser combatido por profesionales de salud, gestores y población.

Descriptor: Tuberculosis; Epidemiología; Sistemas de Información.

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INTRODUCTION

Tuberculosis (TB) is an infectious chronic disease, that mainly attacks the lung, caused by the bacteria *Mycobacterium tuberculosis*, present in the human population since the remote times of history and which continue deserving attention of the health professionals and the society, in all its spheres. Attacking millions of people a year, this disease corresponds to the second main cause of death around the world, among the infectious diseases, second only to the infection caused by the Human Immunodeficiency Virus (HIV). It still demands all the criteria of prioritization of a disease considered public health problem, which involves great magnitude, transcendence and vulnerability⁽¹⁻³⁾.

Although nowadays there are technological resources such as the means of mass communication, information systems, fast laboratory exams and detection of resistant bacteria, among others, which can favor the prevention and the greater control of the disease, the perspective of not obtaining, soon, its elimination as a public health problem still persists, once the context of the disease reveals questions of vulnerabilities and inequities in health. Associated to this situation, the occurrence of the infection by HIV made the context of TB an additional challenge worldwide, due to the significant increase of morbidity and mortality. The situation can even be more problematic, the favorable conditions to be affected by the disease and the dissemination of resistant cepas of *M. tuberculosis* brings more problem for this situation, which makes the treatment and control of the disease difficult^(1,4).

According to WHO, in 2011, 5.8 million new cases were notified in the whole world, exceeding the 3.4 million cases notified in 1995, but still below the estimate, which would be from 8.7 to 9 million people with TB in 2011. From these, almost three million people die annually^(1,3,5).

In Brazil, TB constitutes a priority health problem, together with other 22 countries under development,

where 80% of all the cases distributed worldwide occur. National data show that men develop the disease two times more than women, and more than 50 million people will be infected by *M. tuberculosis*, with approximately 80 thousand new cases and 4 to 5 thousand deaths a year. It reaches all age ranges, prevailing among economically active subjects from 15 to 54 years of age of the male population^(1,5).

Although the epidemiological data on TB are available in the information systems of Ministério da Saúde (Health Department) (MS), they are not sufficiently explored and analyzed regionally, in order to allow the planning of new strategies of intervention and to evaluate the actions that have been developed. Considering the growing expansion and lack of adequate control of TB in Brazil, we proposed to make this study having as objective the construction of the profile of the people who developed TB in county of Natal from 2006 to 2010.

METHOD

A descriptive epidemiological study was outlined, developed together with the Núcleo de Agravos Notificáveis (Nucleus of Notifiable Diseases) (NAN) of the Vigilância Epidemiológica da Secretaria Municipal de Saúde (County Health Department) (SMS) in Natal, including all the cases of TB notified from 2006 to 2010 and present in the data bank of the Sistema Nacional de Doenças Notificáveis (National Notifiable Diseases System) (Sinan). The data were tabulated per year of the diagnosis, during that period.

The city of Natal has 803,739 inhabitants, according to the 2010 census⁽⁶⁾, it has an area of 167 km² it is situated in Brazilian Northeast, having borders with the states of Paraíba and Ceará.

The data collection occurred at NAN, in April and May, 2012. The notifications were included in the Sinan until the 16th Epidemiological Week of 2012,

corresponding to May 14th of the same year. The variable occupation was inserted in Sinan from 2007, so the data referring to it are from 2007 to 2010. The data registered in the files of notification/investigation of TB of Sinan were exported and tabulated using TabWin version 3.6, linked to Sinan-net, to the Microsoft Office Excel 2010, where planning sheets were made up for each variable of interest of the study.

Public secondary data of the Sinan was used, and only the variables here presented were made available by SMS. So, and because there was no access and manipulation of human beings identification data, the study was not submitted to the Committee of Ethics, and it was approved by the county manager.

The variables of the study were sex, age range, occupation, home district, type of entry, situation of closing/evolution of the case, type of disease and also associated diseases: Acquired Immunodeficiency Syndrome (Aids), alcoholism, diabetes, mental diseases and other diseases.

For the variable home district, the Epinfo Program was used for the exportation of the data. For the data analysis, measures of absolute and relative frequency and incidence coefficients were calculated. The free

software Terraview 4.2.0 was used for the elaboration of the cartogram about the distribution of spatial cases of TB in the county of Natal, RN, Brazil.

In order to calculate the coefficients of incidence, the census or estimated population provided by IBGE was used as the denominator, and it is available at www.datasus.gov.br.

RESULTS

In the county of Natal, 2,632 cases of tuberculosis from 2006 to 2010 were notified, considering the year of diagnosis. This county has 5 sanitary zones: west, east, south, north I and north II.

The west sanitary zone presented a higher concentration of cases (773) in the period, followed by the east district (558); the north II zone (497); the south zone (425) and the north I zone (331). Ignored districts or in blank totalized 48 cases. The spatial distribution of the cases notified per zone is in figure 1.

The following districts were highlighted: Felipe Camarão, with 203 notified cases, Quintas, with 157, both in the west zone of Natal; Potengi, with 202 and Nossa Senhora da Apresentação with 186, in the sanitary zone north II.

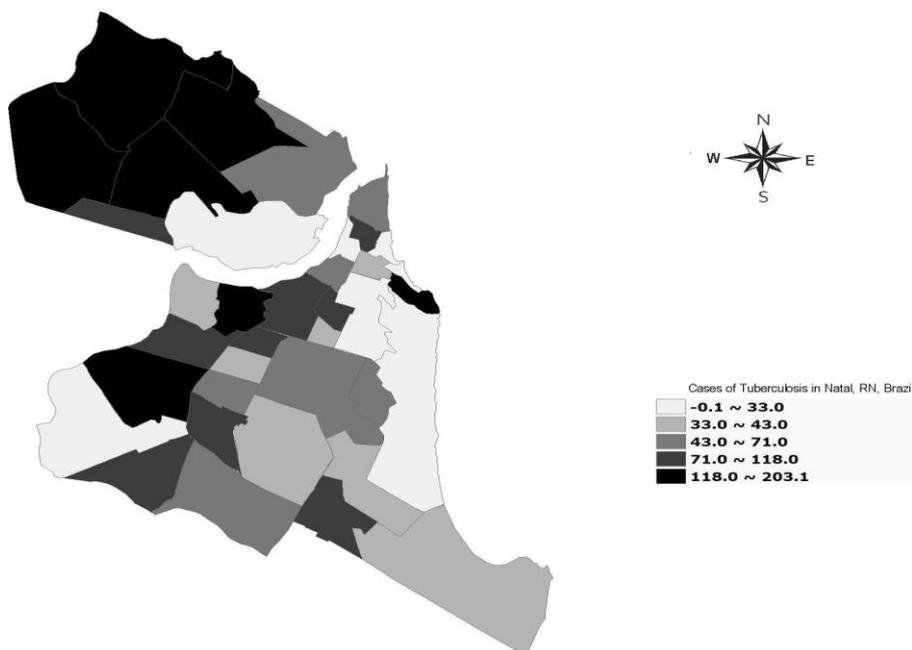


Figure 1 – Spatial distribution of the notified cases of tuberculosis per zone in Natal, RN, Brazil, from 2006 to 2010.

The county presented a coefficient of incidence of 66.1 and 62.5, in 2006 and 2010, respectively. The year 2008 is highlighted with an incidence of 68.9 (Table 1).

Table 1 – Coefficient of incidence of TB for the years 2006 to 2010 in the county of Natal, RN, Brazil.

Year	Number of cases	New cases per 100 thousand	Resident population per year in Natal, RN
2006	522	66.1	789,895
2007	515	64.2	801,665
2008	550	68.9	798,065
2009	543	67.4	806,203
2010	502	62.5	803,739

When stratified, the coefficients of incidence for the male sex represented 89.3 e 92.6 and for the female sex 45.6 and 35.7, in 2006 e 2010, respectively

(Table2). The incidence of the disease for the male sex was higher in all the years studied.

In all the period, the male sex was more prevailing, 67.0% (1,764).

Table 2 - Coefficient of incidence of TB by sex in the county of Natal, RN, Brazil, from 2006 to 2010.

Year	Male			Female		
	Population	Cases	Incidence	Population	Cases	Incidence
2006	370,768	331	89.3	419,127	191	45.6
2007	376,139	357	94.9	425,526	158	37.1
2008	374,415	366	97.8	423,650	184	43.4
2009	378,195	360	95.2	428,008	183	42.8
2010	377,947	350	92.6	425,792	152	35.7

There was a predominance of affected people between 35 and 44 years old (22.7%), with incomplete grade school (24.47%). They entered in the system as new cases (77.7%), reincident (5%) and return after quitting (9.89%).

As to the occupation of the people affected by TB from 2006 to 2010, Sinan, registered a total of 1,236 people but the information of the occupation of all cases notified in the period was not presented, mainly for the year 2006 (Table 3).

Table 3 – Distribution of the most frequent occupation among the people with TB in the county Natal, RN, Brazil, from 2006 to 2010.

Occupation	People with TB	%
Retired/Pensioner	193	15.6
Housewife	191	15.4
Civil construction work	160	12.9
Student	123	9.9
Commerce workers	87	7.0
Ignored	63	5.1
Health professionals	28	2.3
Pedal vehicle drivers	24	1.9
Unemployed	18	1.5
Maid in general services	14	1.1
Convict	13	1.0
Other occupations	322	26.0
Total	1236	100.0

Table 4 - Distribution of the most frequent occupation among the health professionals affected by TB in the county Natal, RN, Brazil, from 2007 a 2010.

Occupation	Professionals with TB	%
Nurse	6	21.4
Nursing Technician	5	17.8
Health communitary agent	3	10.7
General practitioner	3	10.7
Physiotherapist	3	10.7
Nursing assistant	2	7.1
Dental surgeon – general practitioner	1	3.6
Veterinarian	1	3.6
Biochemist	1	3.6
Nutritionist	1	3.6
Psychologist	1	3.6
Dental Office attendant	1	3.6
Total	28	100.0

The situation of the closing of this issue states how the evolution of the case or disease happened. Of the 2,632 cases diagnosed in the period, 59.8% (1,575) were cured; 16.5% (433) abandoned the treatment; 11.0% (292) stopped the treatment due to transference; 3.5% (92) died due to TB; 2.5% (65) died due to other causes; 5.3% (138) were in the ignored or blank fields representing the most cases, and 56 cases, most of them, in 2010. Two cases had as closing situation the multiresistant TB and 35 had a change in the diagnosis.

The most prevailing form of the disease is the pulmonary, 84.2% (2,215). The extra-pulmonary resulted in 13.2% (349) and the pulmonary plus the extra-pulmonary in 2.6% (68).

Similar to the filling of the field occupation in the TB notification record, the field referring to the variable associate diseases did not correspond to the totality of the notified case. So, for this variable the data bank presented a total of 2021 cases of associated diseases, highlighting that one person with TB can present more than one disease associated to TB, which would surpass the total number of notified cases.

The main associated diseases notified were Aids (119), alcoholism (338), diabetes (134) and mental disease (47). It was observed that for each disease associated and notified the number of information ignored or in blank was quite expressive: Aids (1,198),

alcoholism (950), diabetes (1,093) and mental disease (1,141). Other diseases were also associated, but they were not highlighted.

DISCUSSION

The city of Natal, RN, considered as a priority county for the control of TB in Brazil according to the Technical Note no. 15 of 2011 of the Secretaria de Vigilância em Saúde do MS (Health Department) presented an incidence of the disease higher when compared to the national records and to the records of other states^(1,7-9).

A study made in Ribeirão Preto, SP, from 2000 to 2006, pointed out the higher incidence covering the whole period of 38.9, to every 100 thousand inhabitants, for the year 2001⁽⁸⁾. In Brazil, in 2007, 72,194 new cases were notified, which corresponds to a coefficient of incidence of 38/100,000 inhabitants⁽²⁾. Natal, RN, in turn, presented a coefficient of incidence of 68.9 in 2008 and 62.5 in 2010, the highest and the lowest indicators of the period studied, respectively. In these cases the capital of RN presented a higher incidence of the disease related to other regions of the country.

According to the main global targets and indicator for the control of TB of WHO, following the perspective of the targets of development of the millennium, we have as world target of impact the reduction, until the

year 2015, of the incidence of TB to 25.9/100,000 inhabitants. The aim is that until 2050 the global incidence of the active TB will be lower than 1/1,000,000 inhabitants per year⁽¹⁰⁾.

The districts with the highest number of notified cases of TB in the county of Natal, RN were Felipe Camarão and Quintas, in the West sanitary zone, Potengi and Nossa Senhora da Apresentação, in the North II sanitary zone. These districts are characterized for being quite populous with many areas of agglomeration of residences, showing a disorganized urban growth with jeopardized social and economical situation. In the county, these sanitary districts have a predominant population of low income and little schooling, although there are districts in some zones with better economical and social conditions⁽¹¹⁾.

The epidemiological characteristics of TB in Brazil show that there are no seasonal variations of practical importance in the characterization of the disease. So it is observed that the prevalence is higher in areas of a high population concentration and precarious social economical and sanitarian conditions. The most vulnerable subject to this disease are the ones who live with baciliferous patient, groups with reduction of immunity, people with silicosis and the ones corticosteroids, or infected by HIV⁽¹⁾.

The distribution by age and sex showed that TB affected the male adult in his economically active age more often. National studies also reveal similar results, as well as the official data of MS^(1,8,12-13). This portrays a problem in the social economical sphere of the country, once the disease keeps the worker away from his occupational activities, increasing absenteeism and decreasing the productivity of the companies, lowering the family income, if not totally jeopardizing and temporarily enabling the worker. The compulsory dismissal from work resulting from the disease can lead to the aggravation of the suffering of the person with TB, once he feels that the disease causes social

isolation and occupational limitation⁽¹⁾.

As to schooling, the people with TB, predominantly, have incomplete grade school, which shows that the disease affects the ones with low schooling more often, although there were people affected by the disease in all levels of schooling. Similar results were found in other studies^(12,14). The low schooling can lead to social vulnerability in the sense that the access to information on the disease and the treatment and on the quality of life can be jeopardized, which can lead to the quitting of the treatment⁽¹⁴⁾.

The level of instruction also collaborates to an effective participation in the actions of education in health, once it allows a greater understanding in the apprehension of the knowledge acquired in living with the disease or being sick. The ignorance of the disease, its transmission, prevention and treatment can lead to the discrimination of the person of TB in several scenarios, both in the family or professional environment⁽¹⁾.

The way of entry in the information system showed that most cases enter as a new case for the county. However, it is highlighted that 5% are due to the reappearance of the disease and 9.8% due to the re-entry, expressing a worrisome situation, once approximately 15% of the people are not doing the treatment adequately. According to the MS, the aim is to have the rates of cure higher than 85% and the rates of quitting not above 5%. The success in the control of TB has as tools the early detection of the cases and the effective treatment of the disease. In this context, the health services, especially the basic attention, are responsible for the reduction of the quitting of the treatment and its adequate accomplishment^(2,15).

The occupation of the people with TB had a quite varied distribution, predominating activities which require little schooling. Among the most affected subjects, the retired subjects and the housewives were highlighted. The retired subjects are, many times, in a

situation of vulnerability, regarding the insufficient income for his survival, to the access to the services of health, to the abandonment of the family members, or even the neglected care by the closest people, to the social needs which were not assisted by the public policies, to the difficulty in the resolutive implementation of the policy of attention to the health of the elderly, among others. The housewives, who have similar work to the house maids, but without due remuneration, can be exposed to the situation of insufficient family income, precarious and unhealthy conditions of life, low schooling, low quality of food, difficulty in the access to health services, and others, which portray the context in which TB predominantly occurs⁽¹⁶⁻¹⁷⁾.

The areas of civil construction, commerce and services were also outstanding. The workers of civil construction, due to the well drilling, tunnels and tile cuts, are exposed to silica powder. Studies revealed that workers who are exposed to silica, with or without silicosis, present a higher vulnerability to develop TB⁽¹⁸⁾. Besides that, in the civil construction, the unhealthy conditions of working and housing are frequent, the low remuneration, the informality of work, the lack of monitoring, inspection and action by the competent organs, the non compliance with the Regulating Rules of the Ministério do Trabalho e Emprego (Secretary of Work and Employment), among others. These factors contribute for the high morbidity, or even mortality, associated to the performance of work^(2,17).

The workers who render services in the commerce, for example, keep permanent contact with the public in general and this makes them more exposed to respiratory diseases such as TB. A study made in Curitiba, PR, Brazil, showed that the people affected by TB were working in the commerce, civil construction, industry and home services⁽¹⁴⁾.

The results also pointed to another group of workers, especially the health professionals, above all, the nursing professionals. For this category, the

occupational exposition to the bacillus of TB, many times occurs at work, coming from the biological risk, when the due precautions are not implemented and practiced as part of this process, such as the simple use of equipment of individual protection, the ventilation of the environment or adequate exchange of air, the hygienise of the hands and others. A study made on the theme of occupational TB, reveals that it is necessary to implement the measures of bio-safety in the health services and make the health professionals able to recognize themselves as vulnerable to the disease due to the exposition to TB, claiming place safe places and conditions of work regarding biological exposition⁽¹⁹⁾.

In the occupational aspect of people with TB, the predominance of cases of the disease in certain economical activities showed that these productive forces and specific social relations can imply in a higher vulnerability for the development of the disease within society⁽²⁰⁻²¹⁾.

So, it is evident that certain groups of the population are more susceptible to being affected by the disease in the county of Natal, RN, Brazil, once the disease occurs more among men, in their economically active age range, that is, among the adults with low income occupations.

The evolution of the disease or its closing situation showed a percentage of cure a little below the national figures^(8,22). Brazil has a percentage of cure around 70%. The WHO reports that the global rates of success in the treatment or closing by cure, have presented high levels for several years. For the cases of pulmonary TB with positive bacilloscopy, they have reached 87% and for the new cases, 85%, according to the data of 2010⁽³⁾.

Regarding the kind of the disease, the pulmonary TB prevailed on the extra-pulmonary and mixed kinds. This statement matches the results of the studies made on TB and the data of MS^(2,14). The MS states that 90% of the cases of TB are pulmonary, and from these, 60%

baciliferous, which shows the need of an early diagnosis of the disease, using an active search for cases in order to break the chain of transmission of the disease⁽²⁾.

Among the diseases associated to TB, these were present: Aids, diabetes, alcoholism and mental disease, constituting aggravation of the health condition of the affected person, which can cause more mortality^(1,8).

Facing the characterization of the people affected by TB, the need of improvement in the system of the information on the disease is notorious, once many fields of filling of the records of notification/investigation are not informed, which makes the real knowledge of occurrence of the disease and its occupational determinants difficult. This situation was also observed in many other studies made^(19,23).

It is important to point out that the data generated by Sinan must be used not only as part of the bureaucratic group, but also as a tool of health management for all the health professionals directly or indirectly involved in the assistance to the people with TB. Under this perspective, the data and the information coming from the system of information, can contribute for the monitoring and evaluation of the actions in health, developed by the health professionals in the control of TB⁽²³⁾.

The system then allows to quantitatively diagnose the disease, which can contribute for the planning of the actions in health, once the high incidence and mortality of TB can be a portrait of the failures of the health systems, which come from the manner of preventing and treating of the disease⁽²⁴⁾.

The characterization of the people with TB points the importance of attention to health focusing the cultural, social and integral care, besides the clinical and pharmacological assistance, considering the social inequities in the complex context which involves the disease. Therefore, facing the scenario which permeates the person with TB, involving poverty and social

disadvantage, the interventions in health must be the most effective and pertinent ones⁽²⁵⁾.

CONCLUSION

It is extremely important for the local public health to analyze the data bank of the compulsory diseases once, in many situations, the information in these banks are stagnant due to the technical, bureaucratic and legal function of the transmission of the information to other levels of management in health.

The study made the epidemiological diagnosis of TB in the country of Natal, RN, Brazil possible, which contributes to subsidize policies and manner of care in the area of collective health turned to the segment of the population which is more affected by the disease. The discussion of the findings allowed recognizing to whom the actions of control of TB in the local reality must be directed, besides having allowed its confrontation with the recent publications on the theme.

The incidence of the disease was high, 68.9% in 2008 and 62.5% in 2010, respectively the highest and the lowest indicators in the period studied. The evolution of the disease showed a percentage of cure a little below the national figures, 59.8%. The spatial distribution made clear that the disease occurred more in districts with less favorable economical and social conditions. The diseases associated with TB were present, constituting aggravation to the condition of health of the person affected. The study still showed that certain groups of the population are more susceptible to being affected by the disease in the county, which is coherent with the literature, when it places that the disease occurs more often among men in their economically active age range, that is, among adults with low income occupations.

Besides that, there was recognition of the occupations of the people who were more affected by TB in the region, highlighting the workers of civil

construction (160) and commerce (87). Among those occupations, are the health professionals (28) with TB, although no occupational correlation was made. It is important to point out the role of the nursing professionals in the services of health, especially because they are the most affected subjects among the health professionals, in the organizational aspects of these places and in the educational aspects for all involved in the assistance to people with TB.

For all the workers affected by TB, it is important and necessary that there are partnerships between the Ministério da Saúde and the Ministério do Trabalho e Emprego in order to prevent and control the disease in the areas of work and to promote health of the workers, especially the most vulnerable and affected ones.

The findings showed that the disease is outstanding in the social and economical context of the region and which is presented as a health problem to be faced by the health professionals, health managers and the population.

In the field of collective health there is the need of several social actors, directly or indirectly involved with the social services and equipment and with the health care, to keep intersectoral actions in a permanent way.

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