ACOMPANHAMENTO E SITUAÇÃO DE ENCERRAMENTO DE CASOS DE TUBERCULOSE NOTIFICADOS*

MONITORING AND CLOSURE STATUS OF REPORTED TUBERCULOSIS CASES

SITUACIÓN DE SEGUIMIENTO Y CIERRE DE CASOS DE TUBERCULOSIS NOTIFICADOS

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RESUMO

Objetivo: analisar o acompanhamento, a situação de encerramento dos casos de tuberculose notificados e identificar seu padrão de morbimortalidade. Método: trata-se de um estudo quantitativo, descritivo, retrospectivo e epidemiológico realizado a partir dos dados coletados no Sistema de Informação de Agravos de Notificação da Secretaria da Saúde, composto de todos os casos de tuberculose notificados e residentes, no período de 2014 a 2018. Resultados: identificaram-se 678 casos de tuberculose, com coeficiente médio anual de incidência de 71,32 casos/100 mil habitantes e mortalidade média de 4,45 óbitos/100 mil habitantes. Informa-se que a maioria dos casos era de sexo masculino, com idades entre 20 a 34 anos, Ensino Fundamental incompleto, pardos, forma clínica pulmonar, com baciloscopia positiva em 55,60% dos casos, entre outros. Acrescenta-se que em 2018 ocorreu a maior frequência de indivíduos curados (77,61%), o abandono de tratamento tendo chegado a 18,30% em 2016, e 2,99% tendo encerramento óbito em 2018. Conclusão: conclui-se que a tuberculose no município apresenta indicadores epidemiológicos e operacionais distantes do preconizado, o que aponta a fragilidade do serviço de saúde local em acompanhar os indivíduos contaminados.

Descritores: Tuberculose; Doenças Negligenciadas; Serviços de Saúde; Resultado do Tratamento; Saúde Pública; Epidemiologia.

ABSTRACT

Objective: to analyze the follow-up and closure status of the reported tuberculosis cases, identifying their morbidity and mortality pattern. Method: this is a quantitative, descriptive, retrospective, and epidemiological study based on data collected from the Secretariat of Health's Disease Notification System, composed of all reported and resident tuberculosis cases from 2014 to 2018. Results: 678 cases of tuberculosis were identified, with an average annual incidence rate of 71.32 cases/100,000 inhabitants and an average mortality rate of 4.45 deaths/100,000 inhabitants.
Most cases reported were male, aged between 20 and 34 years, with incomplete Elementary School, brown-skinned, pulmonary clinical form, with positive Bacilli smear in 55.60% of the cases, among others. In addition, in 2018 there was the highest frequency of cured individuals (77.61%), the abandonment of treatment having reached 18.30% in 2016, and 2.99% having died in 2018. **Conclusion:** it is concluded that tuberculosis in the municipality presents epidemiological and operational indicators far from those recommended, which points to the fragility of the local health service in monitoring contaminated individuals.

Descriptors: Tuberculosis; Neglected Diseases; Health Services; Treatment Outcome; Public Health; Epidemiology.

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**RESUMEN**

**Objetivo:** analizar el seguimiento, la situación de cierre de los casos notificados de tuberculosis e identificar su patrón de morbilidad y mortalidad. **Método:** se trata de un estudio cuantitativo, descriptivo, retrospectivo y epidemiológico realizado con base en los datos recolectados en el Sistema de Información de Enfermedades Notificables de la Secretaría de Salud, compuesto por todos los casos de tuberculosis notificados y residentes, en el período de 2014 a 2018. **Resultados:** 678 tuberculosis se identificaron casos, con un coeficiente de incidencia promedio anual de 71,32 casos / 100 mil habitantes y una mortalidad promedio de 4,45 defunciones / 100 mil habitantes. Se informa que la mayoría de los casos fueron del sexo masculino, 20 a 34 años, primaria incompleta, mestizo, forma clínica pulmonar, con baciloscopia de esputo positiva en el 55,60% de los casos, entre otros. Se agrega que en 2018 hubo una mayor frecuencia de curados (77,61%), habiendo alcanzado el abandono del tratamiento el 18,30% en 2016 y finalizado el 2,99% en 2018. **Conclusión:** se concluye que la tuberculosis en la ciudad tiene efectos epidemiológicos y operativos. indicadores alejados de los recomendados, lo que apunta a la debilidad del servicio de salud local en el seguimiento de las personas infectadas. **Descriptores:** Tuberculosis; Enfermedades desatendidas; Servicios de salud; Resultado del tratamiento; Salud pública; Epidemiología.

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Tuberculosis is known to be an infectious disease of relevant global magnitude that, despite effective drug treatments having been discovered for decades, promoting cure and reducing mortality rates, still remains a major public health problem worldwide, with millions of people still falling ill with tuberculosis every year.¹

It is estimated that ten million people worldwide developed the disease and 1.3 million died in 2017.¹ Brazil is among the 22 countries with the highest morbidity and mortality rates due to tuberculosis, which altogether correspond to 80% of the global burden of the disease.²

72,788 new cases were diagnosed in Brazil in 2018, corresponding to an incidence rate of 34.8 cases/100,000 inhabitants. In Bahia, in the same period, there was an incidence of 27.5/100,000 inhabitants, with 72.73 cases/100,000 inhabitants in Ilhéus. Thus, the incidence of the disease in the municipality of Ilhéus is reported to be more than twofold the national and state rates.³

It is pointed out that non-adherence to treatment and low cure rates have been the greatest obstacles to effective tuberculosis control and combat. The World Health Organization (WHO) recommends the achievement of minimum goals for the control of the disease, with 85% adherence to treatment and a maximum of 5% of cases of abandonment.⁴

Tuberculosis therapy can reach cure in almost 100% of new cases when the treatment is adequately followed;⁴ however, its effectiveness varies according to the region, the national average being around 70% (50-90%).⁵

The treatment outcome is considered an excellent indicator of the effectiveness of the actions of the Tuberculosis Control Program and can be evaluated according to the closure status classification: cure (patient who at the end of the treatment presents two negative Bacilli smears), and discharge for cure can also be given to the patient who finished the treatment without evidence of failure, being discharged based on clinical and radiological criteria; abandonment of treatment (patient who made use of medication for 30 or more days and interrupted the treatment for 30 or more consecutive days); failure (patient who presents a positive sputum Bacilli smear at the end of the treatment); and death.⁶

The treatment of tuberculosis is aimed at curing and rapidly reducing the transmission of the disease. Considering that Bacilli individuals are the greatest source of transmission, early detection

References:
¹ Available from: https://www.who.int/tb/publications/world tuberculosis report/en/
² Available from: http://www.tuberculosis-brazil.org/morbidade_e_mortalidade.shtml
³ Available from: http://www.who.int/tuberculosis/publications/world_report/2017/en/
⁴ Available from: http://www.who.int/tb/publications/stop-tb-report-2017/en/
⁵ Available from: http://www.who.int/tb/publications/world_report/2017/en/
⁶ Available from: http://www.who.int/tb/publications/stop-tb-report-2017/en/
and correct treatment of such cases are evaluated as the best available preventive means in the health system. The lack of treatment or ineffective treatment have serious implications for public health, such as continuity of the source of infection, maintaining the chain of transmission and the development of multidrug-resistant bacteria.

Thus, this study is justified by the tuberculosis situation in the country, especially the concerning incidence in the municipality of Ilhéus. It is necessary to seek knowledge and use local epidemiological data related to the reported and monitored cases, since the available and shared results can subsidize health professionals in planning and implementing actions which are consistent with the situational reality of the municipality for better treatment outcomes and the achievement of the goals established by the Tuberculosis Control Program.

**OBJECTIVE**

To analyze the follow-up and closure status of the reported tuberculosis cases, identifying their morbidity and mortality pattern.

**METHOD**

This is a quantitative, descriptive, retrospective and epidemiological study carried out based on data collected by the Disease Notification System of the Health Secretariat of the State of Bahia (SINAN/SESAB).

The studied population comprises all reported tuberculosis cases living in the municipality of Ilhéus from 2014 to 2018. This municipality is located in the south of the state of Bahia, 460 km from the capital, Salvador, with a territorial area of 1,588,555 km², and a population of 184,236 inhabitants according to the latest census in 2010.

The variables of interest were collected in the SINAN database, categorized into sociodemographic variables (gender, age, race/skin color, education) and clinical-operational variables (clinical form, related comorbidities, conducting a Bacilli smear at diagnosis, conducting a Bacilli smear during treatment - second, fourth and sixth months, conducting serology for HIV, Directly Observed Therapy (DOT) and closure status).

For data analysis, the technique of simple descriptive statistics was used, obtaining the mean and the absolute and relative frequencies of each variable by using the Microsoft Office Excel program, which generated the tables and graphs.

In addition, some epidemiological and operational indicators described in the National Tuberculosis Control Program (NTCP) were calculated in order to achieve the objectives proposed by the study: epidemiological indicators - incidence rate of tuberculosis per 100,000 inhabitants.

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tuberculosis mortality rate per 100,000 inhabitants; operational indicators - proportion of cases of cured tuberculosis, proportion of abandonment of treatment, proportion of cases with death closure, and proportion of cases that underwent Directly Observed Therapy.

Additionally, due to this type of study, it was not necessary to submit it to the Research Ethics Committee (REC) according to Resolution no. 466/2012 of the National Health Council, since only data of public domain, of unrestricted access, whose information is gathered without the possibility of individual identification, were used.

RESULTS

678 cases of tuberculosis were identified in the municipality of Ilhéus from 2014 to 2018, with an average annual incidence rate of 71.32 cases/100,000 inhabitants. A significant increase in the incidence from 2014 to 2016 is observed, going from 53.19 cases/100 thousand inhabitants to 83.04 cases/100 thousand inhabitants, with a decrease between 2016 and 2017, then remaining steady from 2017 to 2018, with 72.73 cases/100 thousand inhabitants (Figure 1).

Figure 1. Tuberculosis incidence rate per 100,000 inhabitants. 2014 to 2018. Ilhéus (BA), Brazil, 2019. Source:

The mortality rate fluctuated along the years with an average of 4.45 deaths/100,000 inhabitants, its lowest rate occurring in 2015. (2,71%) (Figure 2).
Table 1 shows the sociodemographic profile of the reported and monitored tuberculosis cases in the period.

Table 1. Sociodemographic characterization of reported tuberculosis cases. 2014 to 2018. Ilhéus (BA), Brazil, 2019.

| Variables                                      | n  | %   |
|------------------------------------------------|----|-----|
| **Sex**                                        |    |     |
| Male                                           | 436| 64,31|
| Female                                         | 242| 35,69|
| **Age Group**                                  |    |     |
| < 1 year old                                   | 6  | 0,88 |
| 1 - 4                                          | 5  | 0,74 |
| 5 - 9                                          | 4  | 0,59 |
| 10 - 14                                        | 10 | 1,47 |
| 15 - 19                                        | 54 | 7,96 |
| 20 - 34                                        | 217| 32,01|
| 35 - 49                                        | 179| 26,40|
| 50 - 64                                        | 138| 20,35|
| 65 - 79                                        | 50 | 7,37 |
| 80 and +                                       | 15 | 2,21 |
| **Education**                                  |    |     |
| Ign/Blank                                      | 194| 28,61|
| Illiterate                                     | 40 | 5,90 |
| Incomplete 1st to 4th grades of Elementary School | 135| 19,91|
| Complete 4th grade of Elementary School         | 34 | 5,01 |
The clinical-operational characterization of reported tuberculosis cases is identified in Table 2.

Table 2. Clinical-operational characterization of reported tuberculosis cases. 2014 to 2018. Ilhéus (BA), Brazil, 2019.

| Variables                        | n   | %   |
|----------------------------------|-----|-----|
| **Type of entry**                |     |     |
| New case                         | 527 | 77,73 |
| Recurrence                       | 47  | 6,93 |
| Re-entry after abandonment       | 55  | 8,11 |
| Do not know                      | 4   | 0,59 |
| Transference                     | 41  | 6,05 |
| Post-mortem                      | 4   | 0,59 |
| **Clinical form**                |     |     |
| Pulmonary                        | 591 | 87,17 |
| Extrapulmonary                   | 72  | 10,62 |
| Pulmonary + extrapulmonary       | 15  | 2,21 |
| **Total**                        | 678 | 100,00 |
| **Related diseases and illnesses** |   |     |
| Aids                             |     |     |
| Ign/Blank                        | 373 | 55,01 |
| Yes                              | 39  | 5,75 |
| No                               | 266 | 39,23 |
| Alcoholism                       |     |     |
| Ign/Blank                        | 86  | 12,68 |
| Yes                              | 146 | 21,53 |

Source: 3

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| Condition                          | Ign/Blank | Yes | No | Total | Percentage |
|-----------------------------------|-----------|-----|----|-------|------------|
| **Illicit Drugs**                 |           |     |    |       |            |
| Yes                               | 106       |     |    | 162   | 23,89      |
| No                                | 410       |     |    | 678   | 60,47      |
| **Total**                         | 678       |     |    | 678   | 100,00     |
| **Smoking**                       |           |     |    |       |            |
| Yes                               | 182       |     |    | 353   | 26,84      |
| No                                | 143       |     |    | 286   | 21,09      |
| **Total**                         | 678       |     |    | 678   | 100,00     |
| **Diabetes**                      |           |     |    |       |            |
| Yes                               | 45        |     |    | 45    | 6,64       |
| No                                | 540       |     |    | 540   | 79,65      |
| **Total**                         | 585       |     |    | 585   | 100,00     |
| **Mental disorder**               |           |     |    |       |            |
| Yes                               | 15        |     |    | 15    | 2,21%      |
| No                                | 566       |     |    | 566   | 83,48%     |
| **Total**                         | 581       |     |    | 581   | 100,00     |
| **1st Bacilli smear**             |           |     |    |       |            |
| Ign/Blank                         | 15        |     |    | 15    | 2,21%      |
| Positive                          | 377       |     |    | 377   | 55,60      |
| Negative                          | 187       |     |    | 187   | 27,58      |
| Not done                          | 99        |     |    | 99    | 14,60      |
| **Total**                         | 581       |     |    | 581   | 100,00     |
| **Follow-up Bacilli smear in the 2nd month** |           |     |    |       |            |
| Ign/Blank                         | 173       |     |    | 173   | 25,52      |
| Positive                          | 18        |     |    | 18    | 2,65       |
| Negative                          | 296       |     |    | 296   | 43,66      |
| Not done                          | 191       |     |    | 191   | 28,17      |
| **Total**                         | 581       |     |    | 581   | 100,00     |
| **Follow-up Bacilli smear in the 4th month** |           |     |    |       |            |
| Ign/Blank                         | 214       |     |    | 214   | 31,56      |
| Positive                          | 2         |     |    | 2     | 0,29       |
| Negative                          | 262       |     |    | 262   | 38,64      |
| Not done                          | 200       |     |    | 200   | 29,50      |
| **Total**                         | 581       |     |    | 581   | 100,00     |
| **Follow-up Bacilli smear in the 6th month** |           |     |    |       |            |
| Ign/Blank                         | 258       |     |    | 258   | 38,05      |
| Positive                          | 1         |     |    | 1     | 0,15       |
| Negative                          | 269       |     |    | 269   | 39,68      |
| Not done                          | 150       |     |    | 150   | 22,12      |
| **Total**                         | 581       |     |    | 581   | 100,00     |
| **HIV Test**                      |           |     |    |       |            |
| Positive                          | 52        |     |    | 52    | 7,67%      |
| Negative                          | 327       |     |    | 327   | 48,23      |

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Regarding the HIV test, it is reported that it was conducted in 56.64% of the cases.

In relation to the DOT procedure, a considerable downward trend was observed, reaching only 8.11% of the cases submitted to this modality of treatment in 2018 (Figure 3).

Figure 3. Proportion of tuberculosis cases that underwent Directly Observed Therapy. 2014 to 2018. Ilhéus (BA), Brazil, 2019. Source:3

Figure 4 shows the closure status distribution of the reported cases in the studied period. The percentage of cure is observed to have increased during the period, the lowest percentage being observed in 2016 (66.67%), and the highest in 2018 (77.61%). The highest percentage of abandonment of treatment was recorded in 2016 (18.30%). In relation to cases with death closure, a downward trend was observed, with the highest percentage in 2014 (9.24%), and the lowest in 2018 (2.99%). There were no cases of failure in this study.

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since a low level of education may be related to a limited understanding of information on health having low level of education, which may contribute to the increase in vulnerability to tuberculosis, their work duties. This explains one of the social problems generated by tuberculosis.

The predominance of the 20 to 49-year-old group coincides with the national standard composed of economically active adults, commonly the only providers of family income, being unable to fulfill their work duties. This explains one of the social problems generated by tuberculosis.

Regarding education, despite the large percentage of "Ignored", most individuals are described as having low level of education, which may contribute to the increase in vulnerability to tuberculosis, since a low level of education may be related to a limited understanding of information on health.

Figure 4. Proportion of tuberculosis cases ending in cure, abandonment of treatment and death. 2014 to 2018. Ilhéus (BA), Brazil, 2019. Source.³

DISCUSSION

The Ministry of Health (MS) implemented the National Plan to End Tuberculosis, whose objective is to end tuberculosis as a public health problem in Brazil, establishing as one of the goals the reduction of the incidence rate to less than ten cases per 100 thousand inhabitants and the mortality rate to less than one death per 100 thousand inhabitants by the year 2035.⁶

The historical series shows an upward trend in the incidence rate and, despite a slight reduction from 2016 to 2018, the rates have remained high in recent years, as has the mortality rate with a record of 5.97 deaths/100,000 inhabitants in the last year under analysis, which reveals that the municipality has not yet achieved the goals set at national level.

Young adult men were observed to be the most prevalent, as the male sex is still the most affected by tuberculosis. This can be explained by economic, cultural and social factors, by the greater exposure to risk factors for the disease, such as smoking and alcoholism, and by the low and late demand for health services in comparison to women. The recognition of differences in the incidence of the disease between the sexes points to the need to plan interventions that take into account the differences in habits and risk factors for each gender.⁹⁻¹¹

The predominance of the 20 to 49-year-old group coincides with the national standard composed of economically active adults, commonly the only providers of family income, being unable to fulfill their work duties. This explains one of the social problems generated by tuberculosis.¹⁰⁻²

Regarding education, despite the large percentage of "Ignored", most individuals are described as having low level of education, which may contribute to the increase in vulnerability to tuberculosis, since a low level of education may be related to a limited understanding of information on health.

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promotion, disease prevention and use of therapy, thus increasing its incidence and reducing adherence to treatment.\textsuperscript{12-13}

It is pointed out that self-declared brown individuals were the most affected by tuberculosis in this study and this may be a reflection of the ethnic racial profile of the region's population.\textsuperscript{8} This finding corroborates other surveys carried out in the state of Bahia.\textsuperscript{14-15}

The clinical-operational profile consisted predominantly of new cases, i.e., those who had never been submitted to treatment for tuberculosis or had done so for up to 30 days. It is known that the history of previous treatment is essential, since retreatment for tuberculosis is strongly associated with drug resistance.\textsuperscript{16}

It is noticeable that most individuals had the clinical pulmonary form of the disease, with a large percentage of ignored in follow-up Bacilli smears, pointing out the fragility of filling out the fields of the notification forms, as well as a large percentage of not done. It is important to remember that pulmonary tuberculosis is the most significant form within epidemiology due to its higher infectivity, which increases with the degree of positivity of the Bacilli smear, Bacilli cases being the main disseminators of the disease. Therefore, it is essential to carry out a sputum Bacilli smear, both for diagnosis and monitoring.\textsuperscript{6-17}

It is recommended by the NTCP to conduct the monthly treatment control Bacilli smear, which is mandatory in the second, fourth and sixth months, but the lack of expectoration is known to make it impossible to do the test. In order for patients to be initially discharged from hospital, two negative Bacilli smears are necessary to prove the cure, one in the follow-up phase and the other at the end of the treatment, and those who have not carried out the test due to lack of expectoration will be discharged based on clinical data and radiological examination.\textsuperscript{4}

Testing for HIV is also recommended. According to the MS, 100% of tuberculosis cases are expected to be tested for HIV,\textsuperscript{4} but it is important to remember that the patient's permission to conduct the test is mandatory; therefore, in order to do so, he/she must sign the consent form, and his/her refusal may result in an increase in untested cases. The early identification of cases of co-infection is extremely important to achieve satisfactory treatment closure, because tuberculosis is the major cause of death in patients with AIDS.\textsuperscript{4}

Among the related aggravating variables, smoking and alcoholism stand out in this study. It was found that people who consume tobacco have an increased risk of becoming ill with tuberculosis, and the mortality rate is considerably higher in smokers than in non-smokers; alcoholism influences both the incidence of tuberculosis as well as the clinical evolution and its outcomes.\textsuperscript{7}

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Concerning tuberculosis associated to AIDS, there is high incompleteness in the recording of this variable, making the analysis difficult (Table 2). However, it should be highlighted that in priority municipalities in Bahia, among which Ilhéus, completeness to AIDS was below 50%, and this could be explained by the fact that this field is not mandatory to be reported in the SINAN database. Developing actions oriented to co-infection is difficult due to the lack of information being filled in.

With regard to the DOT, the municipality of Ilhéus is reported to have low coverage. DOT is understood as an important strategy, recommended by the WHO and established by the Tuberculosis Control Program, which aims at strengthening the patient’s adherence to treatment and to preventing the emergence of drug-resistant strains.4

The results of a study conducted in municipalities in São Paulo identified higher cure rates and lower rates of abandonment of treatment through good performance and coverage of DOT.19 However, limitations were recognized according to regional particularities for the practice of DOT, such as population size, service centralization, low level of implementation of the Family Health Strategy (FHS), besides the lack of inputs for carrying out the practice.20 It should be emphasized that such limitations corroborate the findings in Ilhéus, where the tuberculosis control service is still centralized and has low coverage by the FHS.

Despite the increase in the proportion of cure on the closure status of the cases in this study, the indicator is estimated to be still below the minimum goal of 85% recommended by the WHO.4 Similar rates were found in studies conducted in other regions, with 77.60% cure in a study conducted in São Carlos/SP,21 and 74.7% in a study conducted in Belo Horizonte/MG.22 It is believed that high percentages of cure reveal the effectiveness of treatment, besides being an important indicator of outcomes of control actions and quality of services addressed at tuberculosis.23 The percentage of cases of abandonment is pointed out as not having reached the goal in any of the years analyzed, with several factors that may lead the individual to abandon the treatment, for instance, social and behavioral determinants such as socioeconomic, cultural and demographic barriers. However, besides intrinsic factors to the patient, there is also an important percentage related to the therapy and health service: the way it is organized, centralized in a single health service, many times distant from the homes, which is aggravating regarding the access to the treatment and the unfavorable outcome.12-24

It is also possible to see that between 2016 and 2018 (Figure 4), while there was a decrease in the percentage of cure, there was a proportional increase in the percentage of abandonment. As
the proportion of cure decreased, the abandonment rates increased, being directly linked to the prevalence of the disease and the occurrence of multi-resistant strains.23

CONCLUSION

This study made it possible to know the profile of tuberculosis cases in Ilhéus from 2014 to 2018, which mainly affects the young, economically active adult male, self-declared brown/black, with low educational level, as having the Bacilli form of the disease.

The main epidemiological and operational indicators show that the situation of tuberculosis in the municipality of Ilhéus is far from what has been recommended and remains an important public health problem. The high incidence, low rate of cure and high rate of abandonment of treatment due to the lack of control actions, such as monthly follow-up of Bacilli smears, low offer of HIV serology, low coverage of DOT, and the fragility of the health service in the municipality in monitoring individuals with tuberculosis, indicate the need for greater planning and development of actions beyond the biological approach in order to reach the sick person in his/her particularities and situation of vulnerability.

The importance of service decentralization, the consolidation of primary health care through the FHS, the ongoing training of health care professionals for an effective integrality of actions, the continuity of care and reaching the most vulnerable populations in order to ensure that everyone has access to quality treatment and better results in the control of the disease should be highlighted.

CONTRIBUTIONS

All authors have contributed to the conception of this research project, to the collection, analysis and discussion of data, to the writing and critical review of the content with intellectual contribution, as well as to the approval of the final version of this study.

CONFLICT OF INTEREST

Nothing to declare.

REFERENCES

1. World Health Organization. Global Tuberculosis Report 2018 [Internet]. Geneva: WHO; 2018 [cited 2019 Oct 11]. Available from: https://www.who.int/tb/publications/global_report/en/

2. Cecilio HPM, Santos AL, Marcon SS, Latorre MRDO, Mathias TAF, Rossi RM. Tuberculosis mortality trend in the state of Paraná, Brazil - 1998-2012. Ciênc Saúde Colet. 2018 Jan; 23(1):241-8. DOI: 10.1590/1413-81232018231.25242015

http://www.ufpe.br/revistaenfermagem/
3. Bahia (Estado), Secretaria de Saúde, Superintendência de Vigilância e Proteção da Saúde, Diretoria de Vigilância Epidemiológica. Sistema de Informação de Agravos de Notificação [Internet]. Salvador: Secretaria de Saúde; 2019 [cited 2019 Oct 15]. Available from: http://www3.saude.ba.gov.br/cgi/tabcgi.exe?sinan/tube.def

4. Ministério da Saúde (BR), Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Tuberculose na Atenção Primária à Saúde [Internet]. Brasília: Ministério da Saúde; 2011 [cited 2019 Aug 10]. Available from: http://189.28.128.100/dab/docs/publicacoes/geral/livro_tuberculose11.pdf

5. Rabahi MF, Silva Junior JLR, Tannus-Silva DGS, Conde MB. Tuberculosis treatment. J Bras Pneumol. 2017 Nov/Dec; 43(6):472-86. DOI: 10.1590/s1806-3756201600000388

6. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Manual de Recomendações para o Controle da Tuberculose no Brasil [Internet]. Brasília: Ministério da Saúde; 2019 [cited 2019 Aug 10]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/manual_recomendacoes_controle_tuberculose_brasil_2_ed.pdf

7. Silva DR, Muñoz-Torrico M, Duarte R, Galvão T, Bonini EH, Arbex FF, et al. Risk factors for tuberculosis: diabetes, smoking, alcohol use, and the use of other drugs. J Bras Pneumol. 2018 Mar/Apr; 44(2):145-52. DOI: 10.1590/s1806-3756201700000443

8. Ministério do Planejamento, Orçamento e Gestão (BR), Instituto Brasileiro de Geografia e Estatística. Censo Demográfico 2010 [Internet]. Rio de Janeiro: IBGE; 2010 [cited 2019 oct 20]. Available from: https://cidades.ibge.gov.br/brasil/ba/ilheus/pesquisa/23/22957

9. Yates TA, Atkinson SH. Ironing out sex differences in tuberculosis prevalence. Int J Tuberc Lung Dis. 2017; 21(5):483-4. DOI: 10.5588/ijtld.17.0194

10. Freitas WMTM, Santos CC, Silva MM, Rocha GA. Clinical and epidemiological profile of patients with tuberculosis cared at a municipal health center in Belém, Pará State, Brazil. Rev Pan-Amaz Saude. 2016 June; 7(2):45-50. DOI: 10.5123/S2176-62232016000200005

11. Castro DB, Maciel EMGS, Sadahiro M, Pinto RC, Albuquerque BC, Braga JU. Tuberculosis incidence inequalities and its social determinants in Manaus from 2007 to 2016. Int J Equity Health. 2018 Dec; 17:187. DOI: 10.1186/s12939-018-0900-3

12. Sá AMM, Santiago LA, Santos NV, Monteiro NP, Pinto PHA, Lima AM, et al. Reasons for treatment abandonment among tuberculosis patients. Rev Soc Bras Clin Méd [Internet]. 2017 July/Sept [cited 2019 Aug 10]; 15(3):155-160. Available from: https://pesquisa.bvsalud.org/portal/resource/pt/biblio-875434

http://www.ufpe.br/revistaenfermagem/
13. Moraes MFV, Corrêa RGCF, Coutinho NPS, Caldas AJM, Silva TC, Santos KCB, et al. Epidemiological profile of tuberculosis cases in a priority municipality of the state of Maranhão. Rev Pesq Saúde [Internet]. 2018 Sept/Dec [cited 2019 Aug 10]; 18(3):147-50. Available from: http://www.periodicoeletronicos.ufma.br/index.php/revistahuufma/article/view/10149/5903

14. Santos TA, Martins MMF. Profile of re-entry cases after abandonment of treatment of tuberculosis in Salvador, Bahia, Brazil. Cad Saúde Colet. 2018 July/Sept; 26(3):233-40. DOI: 10.1590/1414-462x201800030235

15. Matos PVC, Sousa OC, Rodrigues RL, Oliveira ISC, Soares MLD, Galvão LVS, et al. Updating of the therapeutic scheme in 2009: a reflection on morbidity and mortality due to tuberculosis in Bahia. Braz J Health Rev [Internet]. 2019 Mar/Apr [cited 2019 Aug 10]; 2(2):1220-44. Available from: http://www.brazilianjournals.com/index.php/BJHR/article/view/1333

16. Chaves EC, Carneiro ICRS, Santos MIPO, Sarges NA, Neves EOS. Epidemiological, clinical and evolutionary aspects of tuberculosis among elderly patients of a university hospital in Belém, Pará. Rev Bras Geriatr Gerontol. 2017 Jan/Feb; 20(1):45-55. DOI: 10.1590/1981-22562017020.160069

17. Churchyard G, Kim P, Shah NS, Rustomjee R, Gandhi N, Mathema B, et al. What we know about tuberculosis transmission: an overview. J Infect Dis. 2017 Nov; 216 (Suppl 6):S629-35. DOI: 10.1093/infdis/jix362

18. Lirio M, Santos NP, Passos LAR, Kritski A, Galvão-Castro B, Grassi MFR. Completeness of tuberculosis reporting forms for disease control in individuals with HIV/AIDS in priority cities of Bahia state. Ciênc Saúde Colet. 2015 Apr; 20(4):1143-8. DOI: 10.1590/1413-81232015204.00672014

19. Arakawa T, Magnabosco GT, Andrade RLP, Brunello MEF, Monroe AA, Ruffino Netto A, et al. tuberculosis control program in the municipal context: performance evaluation. Rev Saúde Pública. 2017 Mar; 51:23. DOI: 10.1590/s1518-8787.2017051006553

20. Russoni B, Trindade AAM. Supervised Therapy Strategy for Tuberculosis in Brazil: a qualitative study. Rev Saúde Colet UEFS [Internet]. 2019 July [cited 2019 Aug 10]; 9:70-8. Available from: http://periodicos.ufes.br/index.php/saudecoletiva/article/view/4060/3804

21. Fusco APB, Arcêncio RA, Yamamura M, Palha PF, Reis AA, Alecrim TFA, et al. Spatial distribution of tuberculosis in a municipality in the interior of São Paulo, 2008-2013. Rev Latino-Am Enfermagem. 2017 June; 25:e2888. DOI: 10.1590/1518-8345.1064.2888

http://www.ufpe.br/revistaenfermagem/
22. Soares VM, Almeida IN, Figueredo LJA, Haddad JPA, Oliveira CSF, Carvalho WS et al. Factors associated with tuberculosis and multidrug-resistant tuberculosis in patients treated at a tertiary referral hospital in the state of Minas Gerais, Brazil. J Bras Pneumol. 2020 Mar/Apr; 46(2):e20180386. DOI: 10.36416/1806-3756/e20180386

23. Pinto ML, Silva TC, Gomes LCF, Bertolozzi MR, Villavicencio LMM, Azevedo KMFA, et al. Occurrence of tuberculosis cases in Crato, Ceará, from 2002 to 2011: a spatial analysis of specific standards. Rev bras epidemiol. 2015 Apr/June; 18(2):313-25. DOI: 10.1590/1980-5497201500020003

24. Lima LM, Harter J, Tomberg JO, Vieira DA, Antunes ML, Cardozo-Gonzales RI. Monitoring and assessment of outcome in cases of tuberculosis in a municipality of Southern Brazil. Rev Gaúcha Enferm. 2016 Mar; 37(1):e51467. DOI: 10.1590/1983-1447.2016.01.51467

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