ISSN: 2230-9926

*Available online at http://www.journalijdr.com*

IJDR

*International Journal of Development Research*
*Vol. 12, Issue, 10, pp. 59444-59448, October, 2022*
https://doi.org/10.37118/ijdr.25505.10.2022

RESEARCH ARTICLE OPEN ACCESS

# CLINICAL AND EPIDEMIOLOGICAL PROFILE OF TUBERCULOSIS IN ARACATI CITY, CEARA IN 2017 AND 2018

**Eriza de Oliveira Parente, Jeffeson Hildo Medeiros de Queiroz, Benicio Alves Lima Júnior, Denilson de Queiroz Cerdeira, Rose LídiceHolanda, Danielle Neiva Santos de Aquino Araújo, Herismércia Helena Fidelis Uchoa, Fernanda Costa de Mesquita Souza, Eveline Lima Maia, Cynthia Oliveira Vaz, Ana Paula Mendonça Lima Fernandes, Maria Janete Torres, Teresa Cristina Ponte Barrocas Freire, DéboraTeles Carvalho da Silva Simões, Agueda Menezes da Silva**

Brazil

## ARTICLE INFO

***Article History:***
Received 20th August, 2022
Received in revised form
02nd September, 2022
Accepted 11th September, 2022
Published online 22nd October, 2022

***Key Words:***

Tuberculosis. Epidemiology. Physiotherapy.

****Corresponding author:***
***Eriza de Oliveira Parente***

## ABSTRACT

**Introduction:** Tuberculosis is an infectious disease originated by the bacterium Mycobacterium tuberculosis, which attacks the lungs and can cause death. **Objective:** To delineate an epidemiological profile among the age group of patients diagnosed with tuberculosis, investigate, and identify the magnitude of cases of the disease and its consequences in the municipality of Aracati-CE. **Methodology:** Ecological, descriptive, and quantitative research that sought to understand factors associated with high reported tuberculosis rates. Data collection was performed using data from DATASUS / SINAN, period of the second semester of 2019. **Results:** Regarding the Residence Zone which had the highest index in 2017 and 2018 was Urban Zone 66.67% and 69.24. respectively. About Age Group was 47, 63% for individuals between 10-39 years (2017) and at 64.10% for same age group (2018). In 2017 the brown race reached 76.20% and in 2018 reached 79, 49%. Both in 2017 and 2018 men were the most committed by tuberculosis: 76.20% and 74.35%, respectively. The most verified form of entry was 85.72% of new cases (2017) and new cases were 79.48% (2018). The most recurrent form of the disease was Pulmonary with 71.42% (2017) and the following year this rate reached 92.30%. In 2017 52.39% were cases with laboratory confirmation and in 2018 this rate reached 66.66%. In 2017 85.72% of patients achieved cure while in 2018 30.76% of patients achieved cure. **Conclusion:** This study showed and contributed to the knowledge about tuberculosis cases in the city of Aracati, Ceará, showing with scientific basis the most recent evidence on the subject.



***Citation: Eriza de Oliveira Parente, Jeffeson Hildo Medeiros de Queiroz, Benicio Alves Lima Júnior et al., 2022.*** "Role of the physical therapist in the immediate postoperative period of liver transplantation*", International Journal of Development Research, 12, (10), 59444-59448.*

# INTRODUCTION

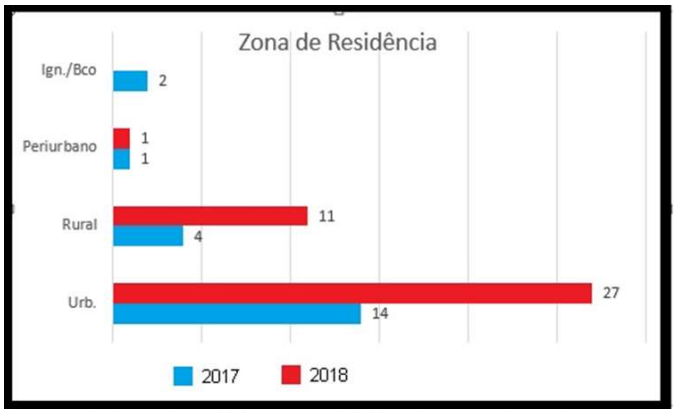
Tuberculosis (TB) is a disease caused by a slow-growing, strict aerobic, alcohol-acid resistant, aerogenically transmissible bacillus. For almost four thousand years, this bacterium has increasingly reached the world population (WHO, 2013). In 2017, the World Health Organization published an assessment of the global efforts made to minimize the occurrence, prevalence, and mortality of TB, in the period from 2000 to 2015. if carried out. The purpose for the period between 2016-2035 is to eradicate the condition as a public health problem, reaching an occurrence of less than 10 cases/100,000 inhabitants. TB persists as the infectious disease that kills the most, even with the knowledge for its control and the cure having been discovered more than 50 years ago (SILVA, 2015).In response to this question, we thought of possible answers: H1 - male individuals are the most affected by the disease; H2 - the age group with the highest rate of disease is the one between 25-50 years old; H3 - the most frequent type of entry is re-entry after abandonment; H4 - about closed cases, the most common index is related to the cure of the disease.Tuberculosis, as stated above, is still one of the diseases that causes the most deaths in the world, thus, delving into this theme is of paramount importance for preventive and treatment measures to be implemented, especially verifying the relevance of physiotherapy in this regard. grievance. This research is justified by the desire as a

physical therapy professional to identify which methodologies and measures can be adopted by the physical therapist to prevent and treat patients with tuberculosis. In addition to serving as a theoretical basis for future studies on the subject.The present study sought to present important aspects about tuberculosis in the municipality of Aracati in the interior of Ceará. Therefore, we start from the following question: what is the clinical-epidemiological profile of tuberculosis in Aracati, Ceará between 2017-2018?

For the development of the research, it aimed to know the general aspects about tuberculosis; to verify the panorama of the disease in the city of Aracati/CE and to analyze the role of physical therapy in the prevention and treatment of tuberculosis.

# METHODOLOGIES

The present study is characterized as ecological research with a descriptive character of a quantitative nature, which sought to understand factors associated with confirmed rates of tuberculosis in the city of Aracati/CE.This study was carried out between the first and second semesters of 2019, where it was built on data collection made in an epidemiological bulletin and confirmed cases in the years 2017/2018.Males and females were considered, aged <1 year to > 80 years, diagnosed between the years 2017 and 2018. As exclusion criteria, time lapse before 2017 and year of undefined diagnosis were considered.At this point, analyzes were carried out in the chosen databases, to collect samples from the population most vulnerable to TB, and from that, to draw an epidemiological profile among the age group of clients diagnosed with Tuberculosis, from this, it was evidenced with research of scientific nature.Data analysis was performed through investigations of epidemiological indicators within the DATASUS/SINAN platform, with confirmed cases of the disease being considered as a dependent variable: year of diagnosis (2017 and 2018), area of residence, age group, race, sex, type of entry, form of disease, laboratory confirmation and closure status. The data were analyzed using the Microsoft Excel program in which the collected data were entered into the program, analyzed, and later transformed into a graph.There was a commitment to mention all the authors cited in the research, in accordance with the Brazilian regulations of regulation 6023 (ABNT), which provides for the elements of inclusion and guidance in the production of references. It is also imperative to state that the data collected and used in this study will be used only and exclusively for academic and scientific purposes.The present research does not require analysis by the Ethics Committee, as it is data in the public domain on the DATASUS platform, however, there was no exposure of individual elements and breach of professional secrecy.



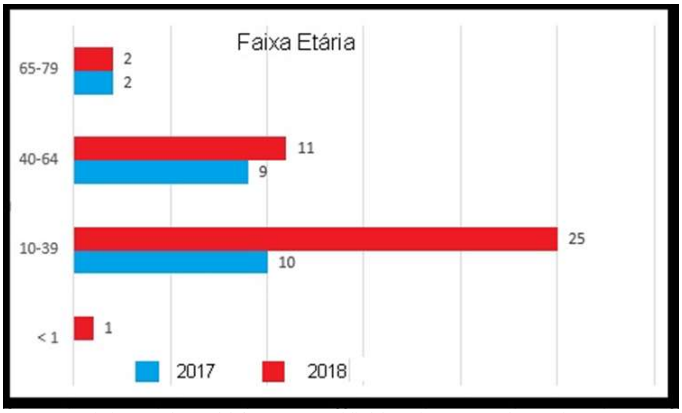

Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019

**Graph 1.** ***Residence Zone. Sample 2019. Aracati-Ce***

# DISCUSSION OF RESULTS

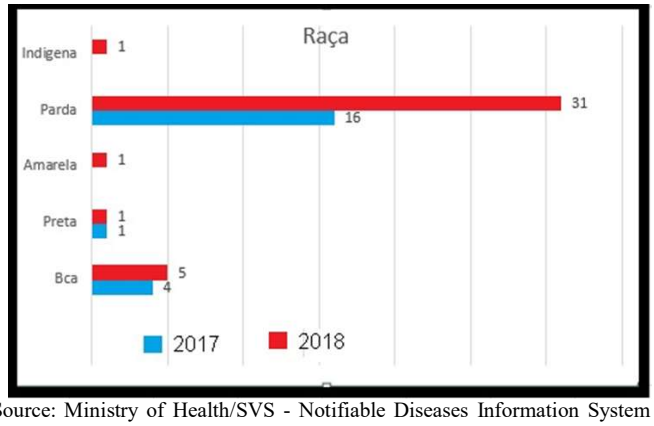
Next, we will present the data collected about the information about Tuberculosis in the city of Aracati, Ceará. The information refers to the years 2017 and 2018, and the variables analyzed were: area of residence, age group, race, sex, type of entry, form of the disease, laboratory confirmation and closed situation. The data will be shown in the form of graphs.In 2017, 69,569 new cases of tuberculosis were reported. In the same year, the incidence coefficient was equal to 33.5 cases/100 thousand inhab. In the period from 2008 to 2017, this index showed an average annual decline of 1.6% (BRASIL, 2018).

In Ceará between 2008 and 2018, 39,353 new cases of tuberculosis were reported, that is, an average of 3,577 cases/year. The occurrence in this period dropped 6.2%, that is, 44.8/100 thousand inhab. to 42.0/100 thousand inhab. Despite this reduction, it is necessary to highlight the need to identify respiratory signs and treat them properly. Tuberculosis control monitoring variables contribute to the quality of care provided by health services and care for people with tuberculosis (CEARÁ, 2019).It is important to know that the cases evaluated are only those confirmed in the reference years. In 2017, the city of Aracati had 21 confirmed cases of Tuberculosis, while in 2018 this number rose to 39 confirmed cases.According to the information above, the confirmed cases of Tuberculosis in Aracati in 2017 in the Urban Zone are 66.67%, in the Rural Zone it is 19.05%, in the Periurban Zone of 4.76% and ignored and/or Whites are 9 .52%. In 2018, the rates were 69.24% in the Urban Zone, 28.20 in the Rural Zone and 2.56% in the Peri-urban Zone.Moraes and Gardengh (2015), when evaluating 134 tuberculosis cases in a certain city, found that 90% were urban residents and 10% rural. According to Longhi (2013), Tuberculosis is commonly found in urban areas.It is noteworthy that air pollution, poorly ventilated places and with a higher incidence of people, something common in cities, increase the risk of tuberculosis (MACEDO et al., 2017).The second variable analyzed referred to "Age group". Between 2008-2018, the most affected age group was 20-34 years old for both sexes. In 2018, the most affected age group continued to be 20-34 years old, corresponding to 70.4% of cases (CEARÁ, 2019). Next, we will present the data for the years evaluated.




Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019

**Graph 2.** ***Age Group. Sample 2019. Aracati-Ce***

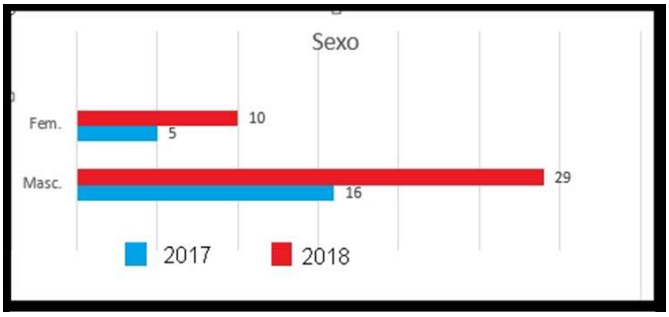



Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019.

**Graph 3.** ***Race. Sample 2019. Aracati-Ce***

According to the graph above in 2017, the age group of 10-39 years old reached a percentage of 47.63%, 40-64 years old reached 42.85% and 65-79 years old reached 9.52%. The year 2018 had 2.57% for patients < 1 year, 64.10% for those aged 10-39, 28.20% for those aged 40-64, and 5.13% for individuals aged 65-79 years old. According to Coutinho et al. (2012), when analyzing 1,829 cases of Tuberculosis, they found that the age group with the highest prevalence was the adult, more specifically the 20-39 age group, corresponding to 51.7%.

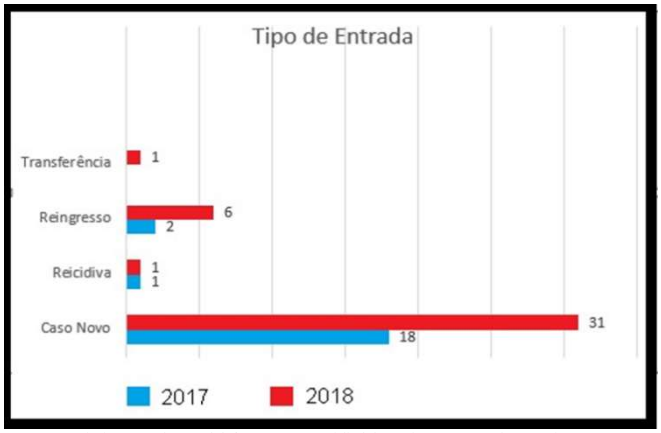
The most affected by Tuberculosis are adults, considering that it is in this age group that individuals are at the peak of their active life. It is urged to know that factors such as: stress, bad eating habits and cigarette use are closely linked to a higher occurrence of Tuberculosis.The third variable verified was "Race", which presented as options: White, Black, Yellow, Brown and Indigenous. In this way, let's see the data about the years 2017 and 2018.The data above show that in 2017, the white race had an index of 19.04%, black was 4.76% and brown was 76.20%. In 2018, the white race reached 12.83%, black 2.56%, yellow 2.56%, brown 79.49% and indigenous 2.56%.It is important to know that, according to the literature, there is a greater risk for this infection in black subjects, and in the present study, this perception was not confirmed, since the occurrence of tuberculosis in black individuals was lower than in white individuals (MACEDO et al., 2017).The fourth variable was related to "Sex". Checking in the reference years which had the highest rates if the Male or Female. Between 2008 and 2018, the highest rate of confirmed cases of tuberculosis in Ceará was in males, with 65.2%. In 2018, the share of male cases was 67.5%.




Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019.

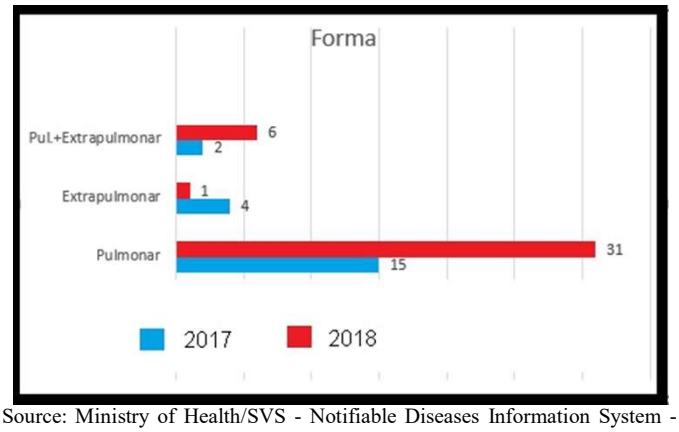
**Graph 4.*Gender. Sample 2019. Aracati-Ce***

The data described above are represented as follows: in 2017, the male sex index was 76.20%, while the female sex was 23.80%; in 2018 the male sex reached 74.35% while the female sex was 25.65%.Zagmignan et al. (2014) when verifying 12,372 cases of tuberculosis in the state of Maranhão, had the following results: 62.9% were male and 37.1% were female. The authors state that the male sex is more affected thanks to greater exposure to bacteria, related to risk factors and/or situations.The fifth variable observed refers to the "Method of Entry" of patients with confirmed cases, having as related aspects: new cases, recurrences, readmissions after abandonment and transfer.It is noteworthy that in 2017, 13,347 cases of retreatment were registered in Brazil, representing 16.1% of the total number of cases reported in the same year. The states with the highest rate of retreatments were Rio Grande do Sul with 23.3%, Rondônia with 19.9% and Paraíba with 19.5%. This result is similar to that observed in the capitals, among which the highest were: Porto Alegre with 31.2%, Campo Grande with 25.8%, João Pessoa with 23.8% and Porto Velho with 23.3% (BRASIL, 2018). The graph above shows the following indices: for the year 2017, we had 85.72% of new cases, 4.76% of relapse cases and 9.52% of readmissions after abandoning treatment; for the year 2018, new cases were 79.48%, recurrences were 2.57%, 15.38% for re-entry after abandonment and 2.57% for transfer cases.The Ministry of Health (BRASIL, 2011) assesses the return of the individual to the treatment regimen with tuberculostatic drugs after discharge for proven cure or not as recurrence. Cases of re-admission after abandonment also appear, however, it is a very worrying element, since it is in this group that the highest rate of patients who develop multidrug-resistant tuberculosis is observed.It is noteworthy that monitoring the group of re-entered patients becomes a priority action to maintain the quality of services. Regarding cases of transfers, they happen when the patient changes his/her treatment location (FARIAS et al., 2013).The sixth variable refers to the "Form of the Disease", which can be: Pulmonary, Extrapulmonary and Pulmonary+ Extrapulmonary.




Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019.

**Graph 5. *Entry Form. Sample 2019. Aracati-Ce***




Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019.

**Graph 6.*Form of Disease. Sample 2019. Aracati-Ce***

Graph six shows that in 2017 the Pulmonary form was 71.42%, Extrapulmonary was 19.05% and the Pulmonary+Extrapulmonary form was 9.53%. In 2018, the rates were 92.30% for the Pulmonary form and 7.70% for the Extrapulmonary form.


Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019.

**Graph 7. *Laboratory Confirmation. Sample 2019. Aracati-Ce***

Freitas et al. (2016) when evaluating 102 medical records of patients diagnosed with Tuberculosis, it was found that the pulmonary form was the one with the highest incidence corresponding to 82.35% of the cases found. The authors also point out that tuberculosis could affect various organs such as bones, kidneys, meninges. The pulmonary form is in fact the most recurrent and with the highest epidemiological index, implying its greater ease of transmission.

The seventh variable observed indicates how much were the "Laboratory Confirmation" rates for confirmed cases of Tuberculosis in Aracati, Ceará.In Brazil, 71.4% of new tuberculosis cases in 2017 were diagnosed through laboratory confirmation. The states with the highest rates were: Roraima with 91.5%, Acre with 88.7%, Espírito Santo with 87.5% and Amapá with 85.8%, Pernambuco presented 56.6% and Mato Grosso with 51, 9% demonstrating the lowest coefficients. Regarding the capitals: Recife with 57.8%, Cuiabá with 58.0% and Rio de Janeiro with 60.8% showed the lowest rates (BRASIL, 2018). The data presented can be described as follows: year 2017 52.39% for cases confirmed through laboratory tests and 47.61% for cases without confirmation; in 2018, 66.66% of cases were confirmed in the laboratory while 33.34% were not confirmed through laboratory tests.Culture is a highly specific method in the diagnosis of tuberculosis. Regarding pulmonary cases with negative sputum smear, sputum culture can add up to 30% of the bacteriological diagnosis of tuberculosis (BRASIL, 2011).The number of retreatment cases that underwent sputum culture is almost three times the number of new cases. Since they need to have a more accurate laboratory diagnosis. It is noteworthy that new cases must first undergo the tuberculin skin test (BELCHIOR; ARCÊNCIO; MAINBOURG, 2016).The eighth variable evaluated was the "Closed Situation" of confirmed cases in the reference years in Aracati, Ceará.One of the main ways of reducing the morbidity and mortality of tuberculosis is the cure of diagnosed patients. In 2017, the cure of new cases in Ceará reached 65.8% of the registered cases, it is noteworthy that the goal determined by the World Health Organization is 85% above (CEARÁ, 2019).It is noteworthy that in Ceará, from 2008 to 2018, the number of registered deaths was 2,333, an average of 212 deaths/year. In 2008, there were 240 deaths, reaching a mortality rate of 2.8/100 thousand inhab. .5% (CEARA, 2019).


Source: Ministry of Health/SVS - Notifiable Diseases Information System - Sinan Net, 2019.

**Graph 8.*Closed Situation. Sample 2019. Aracati-Ce***

According to the data above, among the confirmed cases in 2017, 85.72% were cured, 9.52% abandoned treatment and 4.76% were transferred due to other diseases. In 2018, 30.76% were cured, 15.40% abandoned treatment, 20.52% were transferred, 25.64% ignored and/or white, 2.56% died due to Tuberculosis and 5, 12% died due to other causes.Farias et al. (2013) highlight some elements of risks for abandoning tuberculosis treatment: low education, medication side effects and treatment when they are not properly supervised. The authors emphasize that because it is a long and time-consuming treatment and there is a significant improvement in the first months and with the absence of tuberculosis symptoms, the patient believes he is cured and decides to abandon the treatment.Farias et al. (2013) apud Mendes and Fensterseifer (2004) observed in their study carried out in Porto Alegre that the abuse of licit and/or illicit drugs by tuberculosis patients is one of the most significant elements that incite treatment abandonment.According to Alves and Moreira (2011), the causes of tuberculosis mortality are in access to (late) diagnosis and treatment, as individuals are already faced with advanced stages of the disease. Leading to little effectiveness of treatment and may lead to death.In view of all the information presented, it is urged to know that individuals with tuberculosis, after finishing drug treatment, may demonstrate ventilatory disorders and among the residues normally perceived are regional emphysema, atelectasic striae and pleural fibrosis, which can lead to lobectomy, thoracoplakia or pnemectomy, decreasing exercise tolerance and generating a decline in quality of life (SARMENTO, 2015).Respiratory physiotherapy programs for patients with obstructive respiratory disorders are well established within the scientific literature on the subject, however in recent years there has been a provision for publications aimed at restrictive respiratory disorders (BOTEZEL; DOSENA; NAUE, 2016).It is important to know that breathing exercises help the patient to control breathing, increasing the coordination and efficiency of the respiratory muscles, mobilizing the rib cage and training relaxation techniques.It highlights that the physiotherapy professional has the role of acting in all segments of the respiratory system, and the therapy is determined for the treatment of systemic diseases, prevention of recurrences of pulmonary diseases and prevention of related pathologies. In the case of tuberculosis, the following must be considered: severity of the pathological evolution; adherence to treatment; raised prognoses; existing sequelae; impairment of respiratory muscle strength; patient's lifestyle (BOTEZEL; DOSSENA; NAUE, 2016).

# FINAL CONSIDERATIONS

In view of the research carried out, it was found that in 2017, the profile was male in the age range 10 - 39 years (47.63%), brown (76.20%) from the urban area (66.67%) . In 2018, the Urban Zone index (69.24%), for individuals between 10-39 years old (64.10%). Regarding the brown race, it reached 79.49% of the sample.It can be said that men put themselves in greater risk situations than women, in addition to taking longer to seek treatment when an illness arises. The most verified form of entry in the years 2017 and 2019 was 85.72% and 79.48%, respectively. However, the numbers related to "Re-entry" also draw attention, especially because it is since this occurs after the abandonment of treatment.In the variable "Form of the disease", the options checked were: Pulmonary, Extrapulmonary and Pulmonary+Extrapulmonary. Among the forms of the disease, the most recurrent was Pulmonary, being the most recurrent due to its ease of transmission, with 71.42% in 2017 and in the following year this rate reached 92.30%.The importance of "Laboratory Confirmation" for the identification of the disease is highlighted. In 2017, 52.39% were cases with laboratory confirmation and in 2018 this rate reached 66.66%. Sputum culture is one of the most used methods, especially due to the need to verify the actual occurrence of the disease in new cases through exams.One of the ways of closing the disease was that in 2017, 85.72% of patients reached a cure while in 2018, 30.76% of patients reached a cure. The road to cure is long and very difficult, however, patient persistence, family support and quality care are essential for successful treatment of the patient.This study evidenced and contributed to the knowledge about cases of Tuberculosis in the city of Aracati, Ceará, showing with scientific basis the most recent evidence on the subject. In this way, it appears that in the face of the hypotheses presented, those that were observed as true were those related to the rates of men affected by the disease, as well as the one that points to the cure as the main way of ending Tuberculosis.It is observed, then, that in view of the picture presented of the clinical epidemiological profile of tuberculosis cases in the city of Aracati, Ceará, as it should happen everywhere, the physical therapist is of paramount importance for the process of diagnosis or treatment of patients. affected by this disease.

# REFERENCIES


_____. BoletimEpidemiológico. Vol. 48. Nº 8. Secretaria de VigilânciaemSaúde − Ministério da Saúde, 2017.

_____. Ministério da Saúde, Secretaria de vigilânciaemSaúde, Departamento de vigilânciaepidemiológica. Manual de recomendações para o controle da Tuberculose no Brasil. Brasília: MS; 2011.

ALVES, D. T.; MOREIRA, M. L. Avaliaçãoepidemiológica da tuberculose no município de Coronel Fabriciano - MG no período de 2002 a 2008. Rev. Farm. Ciên. v.2; p.34-49, 2011.

BELCHIOR, A. S.; ARCÊNCIO, R. A.; MAINBOURG, E. M. T. Diferenças no perfilclínico-epidemiológico entre casosnovos de tuberculose e casosemretratamentoapósabandono. Rev. Esc. Enferm. USP v.50; n4; p.622-627, 2016.

BOTEZEL, D. M; DOSSENA, L. O.; NAUE, W. S. Efeito de um programa de fisioterapiaempacientes com tuberculosepulmonar. R. Perspect. Ci. e Saúde. v.1; n.1; p.52-61, 2016.

BRASIL. BoletimEpidemiológico. Vol. 49. Nº 11. Secretaria de VigilânciaemSaúde − Ministério da Saúde, 2018.

CEARÁ. BoletimEpidemiológico: Tuberculose.Coordenadoria de VigilânciaemSaúde. Núcleo de VigilânciaEpidemiológica. Secretaria da Saúde do Estado do Ceará, 2019.

COUTINHO, L. A. S. A.; OLIVEIRA, D. S.; SOUZA, G. F.; FILHO, G. M. C. F.; SARAIVA, M. G. PerfilEpidemiológico da Tuberculose no Município de João Pessoa – PB, entre 2007 – 2010. R brasciSaúde. v.16; p. 29-35, 2012.

FARIAS, E. J. S.; ALBUQUERQUE, I. M. N.; ARAÚJO, R. A.; SOARES, J. S.; LINHARES, M. S. C. AnáliseEpidemiológica dos Casos de TuberculoseNotificados no Município de Sobral - CE no Período de 2007 a 2011. SANARE, Sobral, v.12, n.1, p. 33-39, 2013.

FREITAS, W. M. T. M.; SANTOS, C. C.; SILVA, M. M.; ROCHA, G. A. Perfilclínicoepidemiológico de pacientesportadores de tuberculoseatendidosemumaunidade municipal de saúde de Belém, Estado do Pará, Brasil. Rev. Pan Amaz. Saúde. v. 7; n.2, 2016.

LONGHI, R. M. P. Fatores de riscoassociadosaodesenvolvimento de tuberculosenapopulaçãourbana do município de Dourados – MS, 2013.

MACEDO, J. L.; OLIVEIRA, A. S. S. S.; PEREIRA, I. C.; ASSUNÇÃO, M. J. S. M. Perfilepidemiológico da tuberculoseem um Município do Maranhão. Reon. Facema. v.3; n.4; p.699-705, 2017.

MORAES, M. G.; GARDENGHI, G. Perfilepidemiológico de indivíduos com tuberculosepulmonar no município de Rondonópolis – MT. Revistaeletrônicasaúde e ciência. v. 5; n.2, 2015.

SARMENTO, G. J. V. FisioterapiaRespiratória de A a Z. 1ªed. São Paulo: Manole, 2016. 355p.

SILVA, S. O estadonutricionalnatuberculosepulmonar. [tese]. .Porto: Faculdade de Ciências da Nutrição e Alimentação. Universidade do Porto; 2015.

WORLD HEALTH ORGANIZATION. Guideline: nutritional care and support for patients with tuberculosis. Geneva: WHO; 2013.

ZAGMIGNAN, A.; ALVES, M. S.; SOUSA, E. M.; NETO, L. G. L.; SABBADINI, P. S.; MONTEIRO, S. G. Caracterizaçãoepidemiológica da tuberculosepulmonar no Estado do Maranhão,entre o período de 2008 a 2014. Rev. Investig. Bioméd. v.6; n.1, p. 2-9, 2014.


*******