Magnitude between accessibility, time period, and tuberculosis diagnosis

Magnitude entre a acessibilidade, espaço de tempo e o diagnóstico da tuberculose

Magnitud entre la accesibilidad, el espacio de tiempo y el diagnóstico de la tuberculosis

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Abstract

Objective: To analyze, from the perspective of tuberculosis patients, the relationship between accessibility to the health system, time period, and diagnosis.

Methods: This is an analytical, correlational study with a cross-sectional design was carried out with 105 tuberculosis patients treated in Primary Healthcare and in the Specialized Reference Service of a priority municipality in Minas Gerais. Multiple correspondence analysis was used to identify the association between the components of accessibility to the health system, time period, and tuberculosis diagnosis.

Results: A temporal association was observed with the delay in tuberculosis diagnosis, with a direct relationship between patients' first choice service, and hospitals were the places that gave diagnosis in a timely manner, revealing low resolution of primary care services for disease control actions, especially regarding the identification of respiratory symptoms.

Conclusion: The findings highlight the urgency in the reorganization of tuberculosis care services, strengthening the decentralization of actions for Primary Healthcare, focusing on the early identification of respiratory symptoms and ensuring accessibility to healthcare services, in order to minimize the impacts of temporal extension on early diagnosis.

Resumo

Objetivo: Analisar, na perspectiva dos portadores de tuberculose, a relação entre a acessibilidade ao sistema de saúde, o espaço de tempo e a realização do diagnóstico.

Métodos: Estudo analítico, correlacional, com delineamento transversal, realizado com 105 portadores de tuberculose atendidos na Atenção Primária à Saúde e no Serviço de Referência Especializado de um município prioritário mineiro. A análise de correspondência múltipla foi utilizada para identificar a associação entre os componentes da acessibilidade ao sistema de saúde, o espaço de tempo e a realização do diagnóstico da tuberculose.

Resultados: Observou-se associação temporal com o retardo no diagnóstico da tuberculose, com relação direta do serviço de primeira escolha do paciente, sendo os hospitais os locais que realizavam o diagnóstico em tempo oportuno, revelando baixa resolutividade dos serviços de atenção primária para as ações de controle da doença, no que se refere, principalmente, à identificação dos sintomáticos respiratórios.

Conclusão: Os achados destacam a urgência na reorganização dos serviços de atenção à tuberculose, fortalecendo a descentralização das ações para a Atenção Primária à Saúde, com enfoque na identificação precoce dos sintomáticos respiratórios e garantia de acessibilidade aos serviços de saúde, a fim de minimizar os impactos da extensão temporal no diagnóstico precoce.

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Resumen

Objetivo: Analizar, bajo la perspectiva de los portadores de tuberculosis, la relación entre la accesibilidad al sistema de salud, el espacio de tiempo y la realización del diagnóstico.

Métodos: Estudio analítico, correlacional, con diseño transversal, realizado con 105 portadores de tuberculosis atendidos en la Atención Primaria de Salud y en el Servicio de Referencia Especializado de un municipio prioritario del estado de Minas Gerais. El análisis de correspondencia múltiple fue utilizado para identificar la relación entre los componentes de la accesibilidad al sistema de salud, el espacio de tiempo y la realización del diagnóstico de tuberculosis.

Resultados: Se observó asociación temporal con el retraso del diagnóstico de la tuberculosis, con relación directa del servicio de primera opción del paciente, de los cuales los hospitales era el lugar que se realizaba el diagnóstico a su debido tiempo, lo que revela una baja resolución de problemas de los servicios de atención primaria para las acciones de control de la enfermedad, principalmente respecto a la identificación de los sintomáticos respiratorios.

Conclusión: Los resultados señalan la urgencia de reorganizar los servicios de atención de tuberculosis y fortalecer la descentralización de las acciones hacia la Atención Primaria de Salud, con enfoque en la identificación temprana de los sintomáticos respiratorios y garantía de accesibilidad a los servicios de salud a fin de minimizar los impactos de la extensión temporal del diagnóstico temprano.

Introduction

Although the efforts established by the World Health Organization (WHO) to control tuberculosis are being continuously restructured, its indicators remain high.[1] In Brazil, in 2019, 73,864 new cases were diagnosed, which corresponds to the incidence of 35 cases/100,000 inhabitants; and about 2.2 deaths/100,000 inhabitants, which corresponded to 4,490 deaths due to tuberculosis.[2] Over the years the incidence and mortality coefficients of tuberculosis in Brazil declined, but were not sufficient to achieve and maintain the goals estimated by the WHO.

Effective disease control is related to patients and healthcare services, as temporal dependence influences success to expedite diagnosis.[3] This time is determinant for the early identification of respiratory symptoms and the initiation of treatment within the appropriate time period, avoiding the worsening of the case and increasing the chances of cure.[4]

The temporal magnitude reflects the quality and resolution of tuberculosis control strategies.[5] The relationship between patients' first contact with the healthcare service and its accessibility directly reflects on diagnosis.[6] Time is one of the determining factors to assess the effectiveness of tuberculosis control actions, being influenced by issues related to healthcare services, patients, community profile and the epidemiological situation of the disease.[7]

As one of the ways to enable accessibility to healthcare services, the decentralization of control measures for Primary Healthcare (PHC) streamlines some issues related to the disease, such as early identification of respiratory symptoms, proximity to healthcare services of patients' residence, a greater link between health teams and the population, making it possible to demonstrate organizational and performance aspects that influence diagnosis in a timely manner.[6,8]

Given the fundamental role of early diagnosis of tuberculosis for follow-up in the therapeutic itinerary, the study seeks to answer in what aspects the organizational structure of healthcare services as well as individual elements related to patients delay tuberculosis diagnosis? In this scenario, the aim of this study was to analyze, from the perspective of tuberculosis patients, the relationship between accessibility to the health system, time period and tuberculosis diagnosis.

Methods

The present study analyzes and correlates, through a cross-sectional approach, the structural component of accessibility to tuberculosis care services, from the perspective of its carriers. Carried out in a priority municipality for tuberculosis control actions in the state of Minas Gerais, which had the second highest incidence in 2018.[9] Data were collected in Basic Health Units and in the Specialized Tuberculosis Service (Tisiology), accessible scenarios for the approach of patients, since monthly control consultations were performed in these places.

Patients diagnosed with tuberculosis, over 18 years of age and who started treatment at least one month from the date of collection, were invited to

participate in the study. According to the selection criteria and the total population eligible for the study, the sample was non-probabilistic of voluntary type, totaling 105 participants. Tuberculosis patients belonging to the prison system were excluded; hospitalized during the collection period; patients with mental disorders and those who were not found during the scheduling of visits with at least three attempts to approach. Participants were contacted by telephone or through a Community Health Worker, and the data collection was scheduled and, in this opportunity, received explanations about the research. Before collection, they signed the Informed Consent Form (ICF), in compliance with Resolution 466/2012.

Data collection occurred between November 2017 and December 2018 by a previously trained team. The Primary Care Assessment Tool (PCATool) elaborated by Starfield was used, adapted to treat tuberculosis by Villa and Ruffino-Netto.[10,11] The component assessed in this study was "access to diagnosis".

The results of 6 variables were used: entry door of respiratory symptomatic in the health system, healthcare service that diagnosed the disease, time to have an appointment, number of times they sought the service to discover tuberculosis, time to confirm diagnosis and search for the service closest to the residence. A socioeconomic survey was jointly conducted, with questions related to age, sex, education, income, marital status and work situation.

To analyze diagnosis time extension - which is determined from the first search for the healthcare service to obtaining the laboratory result, and to present the correlations between the variables, indicators were created that correspond to the mean value obtained by the sum of the answers, which are standardized to indicate the number of days until diagnosis was obtained, with an average value of 23.5 days (SD± 12.8).

The data were treated and analyzed using the statistical software of free domain, the R program, being typed by double entry. After typing, database consistency and editing was assessed to eliminate the probability of typing failures.

To study the association and explore the structure of the relationships between the variables, multiple correspondence analysis was used, and correspondence graphs were constructed. In these graphs the association between categories is observed through the location of each of them in relation to the axes. In general, categories in the same quadrant have common characteristics, indicating a profile and the points located near the origin indicate small associations. Thus, the further away from the origin and close to each other the categories are, the greater the association between them.[12]

This research was submitted and approved by an Institutional Review Board with Opinion 2,085.06/2017, according to Resolution 466/12 (CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 65955617.7.0000.5147).

Results

The study included 105 tuberculosis patients. For analysis of socioeconomic profile, it is observed that the mean age of participants was 39 years (SD ± 13.8), mostly men (55.2%, n=58), young adults (56.1%, n=59), did not finish elementary school (29.6%, n=31), single (54.3%, n=57), unemployed (41.9%, n=44) and had income slower than three minimum wages (69.6%, n=73).

The correspondence chart of Figure 1 was constructed to assess the association between the healthcare service that diagnosed tuberculosis, the time it took patients to have an appointment, and the number of times they had to look for the service to discover the disease. This graph explains 31% of data variance.

Patients diagnosed in emergency care are associated with a waiting time of 5 days or more to have an appointment and need to seek the service twice. Those diagnosed in a public hospital are characterized by having an appointment in 1 day and diagnosing the disease at the first visit. In Basic Health Units, patients take 3 to 4 days to have an appointment and need to seek the service 5 times or more to be diagnosed. In the private hospital, patients seek the

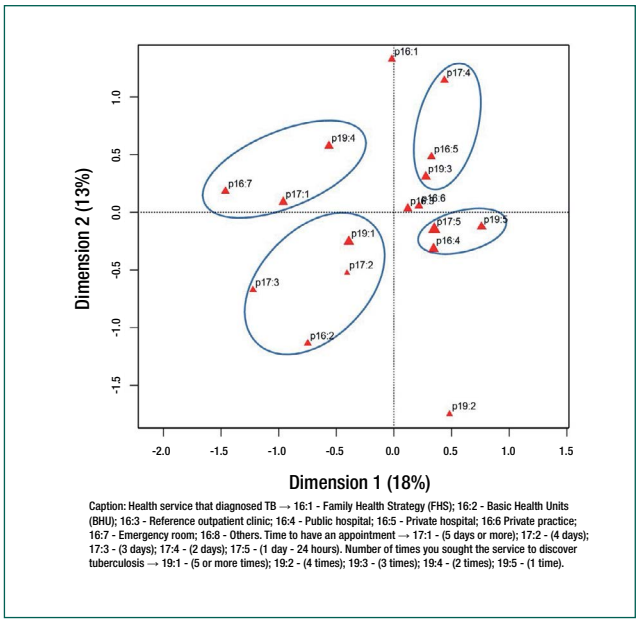

Figure 1. Association between the site that diagnosed tuberculosis, the time to have an appointment and the number of times patients sought the healthcare service until receiving tuberculosis diagnosis

healthcare service 3 times to obtain diagnosis and, in general, it takes 2 days to have an appointment.

To assess the association between the first healthcare service sought by patients when they presented symptoms of tuberculosis and the site that diagnosed the disease, we used the correspondence graph of Figure 2, which explains 33.2% of data variance.

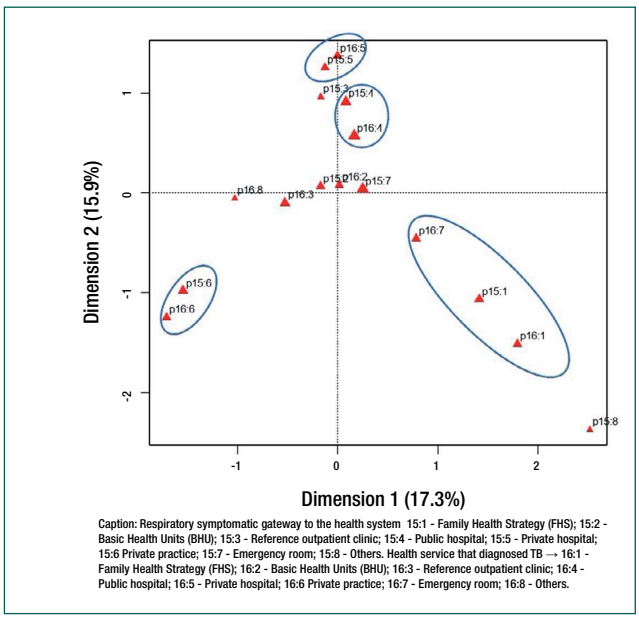

Figure 2. Preferential access of respiratory symptomatic to the health system and the site that diagnosed tuberculosis

It can be said that there is an association between seeking the private hospital, when symptoms begin, and being diagnosed in this healthcare service, that is, patients seeking private hospital with symptoms of tuberculosis are diagnosed mainly in this hospital. The same association can be observed for private offices and public hospitals. In the case of q patient seeking Family Health Strategy, diagnosis is mainly associated with this health unit, but also with emergency care.

Considering the time it takes for patients to discover a disease and the number of times they seek the healthcare service, we can say, observing Figure 3, that patients seeking the healthcare service 5 or more times are characterized for a time of 5 or more weeks to discover the disease. On the other, those who seek the health unit only once are associated with a time of 2 to 3 weeks to obtain diagnosis.

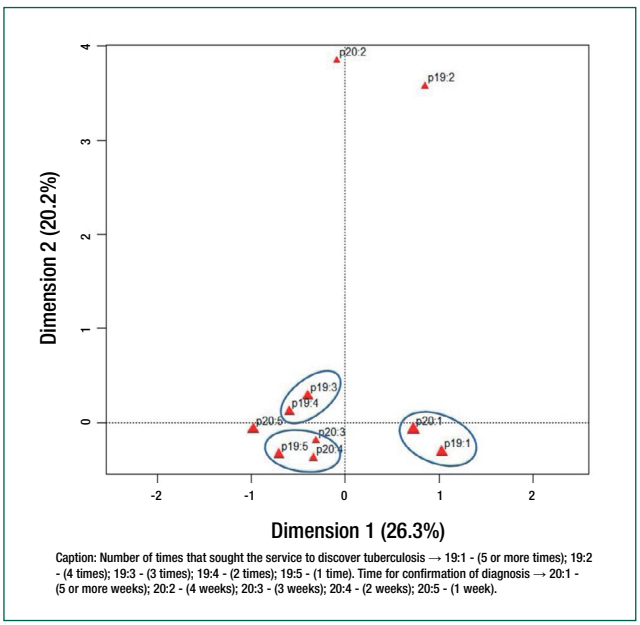

Figure 3. Temporal relationship between the search for healthcare service and tuberculosis diagnosis

Discussion

The study demonstrated that the actions recommended to guarantee the therapeutic itinerary of tuberculosis are not effective, starting with disease diagnosis. Accessibility to healthcare services is not a guarantee of success in tuberculosis control, since

patients' preferred gateway does not occur through PHC, characterizing low resolution, which causes their saga to begin in search of assertive care for other levels of technological complexity, increasing diagnosis time.

The socioeconomic characteristics of participants reinforce the relationship between the disease and the social factor, reiterating, mostly, individuals with little school education, young and unemployed adults, corroborating previous research.[7]

The study points out that in the association between the site that diagnosed tuberculosis and the response time, it was possible to notice that the services of high technological complexity were the ones that had satisfactory performance in patients' vision. Although tuberculosis control programs preempize that diagnosis be given in PHC, most patients are still diagnosed in hospitals.[6,13] Barriers to accessibility to Basic Health Units and their low resolution favor the increase of cases identified in hospitals.[14]

Accessibility obstacles focus on aspects of the population and on characteristics of healthcare services. The search for care closer to housing and conditions for travel to health units are factors that relate to users. The location of health units, the structural characteristics of services and the capacity of attention to users are points that describe the institutional aspects of accessibility.[6,7] In each aspect, these barriers limit the early diagnosis of tuberculosis, favoring increased transmissibility and worsening of patients' prognosis.

From the point of view of resolution, it is noticeable that tuberculosis care services in the municipality do not meet the demands that arise, having difficulties in implementing the strategies that have been agreed. Resolvability can be understood as a satisfactory assessment of the services obtained by serving its users.[15] This analysis involves issues related to the organization and performance of healthcare services, levels of technological complexity, accessibility, professional dexterity, among others.[8]

Failures in tuberculosis control actions in primary care contribute to the growing number of cases diagnosed in hospitals, which often patients already have an advanced clinical picture, with an increased risk for death.[16] This situation converges to late diagnosis of and overcrowding of high complexity services.[13] The private network was highlighted with the suspicion and speed in tuberculosis diagnosis. Patients who seek this healthcare service do so by the logic of problem-solving capacity and agility with cases, as well as because they have a more favorable socioeconomic condition in relation to those diagnosed in the reference outpatient clinics and in Basic Health Units.[17]

It is observed with the study that the health levels with greater complexity are able to identify the cases early, while those patients who seek PHC as the first choice for care, diagnosis does not always occur in this place, being also associated with emergency care. Studies show the relationship between early diagnosis and first-contact healthcare services, with emergency and emergency units being those that patients with respiratory symptoms (RS) most frequently seeks when the clinical picture of tuberculosis begins.[6,13,17]

Due to the logic of the organization of healthcare networks, the gateway for patients with RS is characteristic of PHC, constituting a structuring and ordering axis of the care line course.[8] However, this premise was not evident in the present study, in which patients with RS seek, first, the levels of greater technological complexity, configuring as a resolute reach for their health needs, as in the case of Emergency Care Units (ECU), which they present a flow by spontaneous demand in 24 hours, with resources of medium technological complexity, which meet the acute conditions of their customers.[6,13]

Considering the successive visits by tuberculosis patients to healthcare services to be able to consult and their association with the time for disease discovery, it was possible to verify that the more patients seek healthcare services to obtain care, the longer the time for suspicion of tuberculosis and diagnosis. Since tuberculosis is one of the priority diseases in Brazil, control actions should have minimal structure and performance of health teams and services, through encouragement for active search of cases and the immediate perception of RS, access to diagnostic tests, treatment and preventive measures.[5,6]

Patients with RS who seek healthcare services with classic signs of tuberculosis should be investigated, as these symptoms are often underestimated as a health problem by the patients themselves, worsening the prognosis and delaying the performance of diagnostic tests, which also present barriers to it concerns the return time of results.[7,18] Early diagnosis should not exceed three weeks of RS identification, initiating treatment of positive bacilliferous within a maximum of 48 hours after the test result.[19] These conditions are associated with the successive returns of patients to healthcare services for appropriate case referrals.

The delay in giving diagnosis is not only related to patients' conditions. Its effectiveness may be related to the type of healthcare service sought by patients as a gateway, which suggests the ease of access and resolution of the case, with the perception of immediate service, accessible technological resources and a feeling of solving the problem when the demand is preferably for medium and high complexity services.[5,6,13]

Geographical accessibility to healthcare services influences diagnosis time and conditions improvements in tuberculosis indicators.[14,20] The proximity to the health unit meets patients' needs, assuring them reception and resoluteness. Their bond with the health teams is reinforced and, in tuberculosis control, they contribute to RS identification and for diagnosis to be given in a timely manner.[5,14]

Even with the advances in the structuring of tuberculosis control policies, issues still persist to enable accessibility to patients.[14] It is necessary to overcome the challenges that contribute to the ineffectiveness of actions, such as low PHC coverage in the municipality of the study (with about 57.95% of the total population), the location of some health units in areas of difficult access, the organizational structure of healthcare services, the limitation of hours of care for tuberculosis patients, inadequate infrastructure for patient care and reception, the inability of health professionals to suspect clinically and to request tests for early diagnosis, among others.[9,14]

It is necessary to reorganize tuberculosis care services, giving conditions for the implementation of decentralization to PHC, in order to strengthen their organizational capacity to promote the problem-solving capacity of their actions, avoiding the constant return of patients to healthcare services without giving diagnosis or moving it to the levels of greater complexity. Also, given the scenario presented, it is suggested the expansion of PHC coverage; the continuous training of primary care health teams in clinical suspicion, prioritizing prevention actions in the perspective of strengthening primary care to expand the active search for cases and early detection of respiratory symptoms, which reduces diagnosis time and follow-up in patients' therapeutic itinerary.

Limitations were identified in the study, which demonstrates the reality of a municipality; some health units have geographical barriers that interfere with data collection and the difficulty of finding patients in their home.

Conclusion

The study showed a temporal association with the delay in tuberculosis diagnosis, showing a direct relationship of the service of first choice for patients, with the hospitals being the places that performed the diagnosis in a timely manner. This reality demonstrates low resolution of disease control actions, specifically in PHC, impacting the early diagnosis and unfavorable prognosis of patients. It is important to analyze the determinants that hamper the continuous flow of care, intensifying the assertive welcoming of patients and the organizational measures that structure tuberculosis care services, for early detection by intensifying the active search for cases and clinical suspicion of RS patients, in order to minimize the impacts of the temporal extension for the realization of the diagnosis, promoting the effectiveness of disease control measures within an acceptable time interval to continue the therapeutic itinerary.

Collaborations

Terra AAA, Silva GA, Silva MR, Giarola LTP and Schiavon ICA contributed to the conception of the

study, data analysis and interpretation, writing of the article, relevant critical review of intellectual content and approval of the final version to be published.

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