



Tuberculosis: patient profile, service flowchart, and nurses' opinions*

Tuberculose: perfil de doentes, fluxo de atendimento e opinião de enfermeiros

Tuberculosis: perfil de enfermos, fluxograma de atención y opinión de enfermeros

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ABSTRACT

Objective: To characterize the profile of patients with tuberculosis (TB) and identify the service flowchart, and the opinion of professionals responsible for the Tuberculosis Control Program of municipalities in the Regional Health Department III of the State of São Paulo. **Methods:** A descriptive study of quantitative approach covering 122 notifications identified in the Control System of Patients with Tuberculosis, 2007/2008, and six interviews with nurses responsible for this program in the region. **Results:** Of 122 notifications identified, 69% were men, 35% were unemployed, 25% were alcoholics and 86% had pulmonary TB. The control activities were centralized, and the nurses were responsible for programs in the region. These professionals identified favorable points of team involvement and ease in requesting examinations. Unfavorable points included the lack of equipment and professionals, and the delays in obtaining exams. **Conclusion:** The region has the typical profile for TB, including aspects of social fragility, centralized control actions, and those in charge do not recognize the centralization of the actions, and the lack of autonomy of the units or weaknesses of the program..

Keywords: Health services evaluation; Tuberculosis; National health programs

RESUMO

Objetivo: Caracterizar o perfil de pacientes com tuberculose (TB) e identificar o fluxograma de atendimento e a opinião dos profissionais responsáveis pelo Programa de Controle da Tuberculose de municípios do Departamento da Regional de Saúde III do Estado de São Paulo. **Métodos:** Estudo descritivo de abordagem quantitativa abrangendo 122 notificações identificadas no Sistema de Controle de Pacientes com Tuberculose, de 2007/2008, e seis entrevistas com enfermeiros responsáveis por esse Programa, na região. **Resultado:** Das 122 notificações identificadas, 69% eram de homens, 35% desempregados, 25% etilistas e 86% com TB pulmonar. As ações de controle eram centralizadas, e os enfermeiros eram os responsáveis pelos programas da região. Estes profissionais apontaram como pontos favoráveis o envolvimento da equipe e a facilidade em solicitar exames. Como desfavoráveis, a falta de equipamentos e de profissionais e demora na realização de exames. **Conclusão:** A região apresenta o perfil típico para TB, incluindo aspectos de fragilidade social, ações de controle centralizadas, e os responsáveis não reconhecem a centralização das ações e a falta de autonomia das unidades como fragilidades do programa.

Descritores: Avaliação de programas e projetos de saúde; Tuberculose; Programas nacionais de saúde

RESUMEN

Objetivo: Caracterizar el perfil de pacientes con tuberculosis (TB) e identificar el fluxograma de atención y la opinión de los profesionales responsables del Programa de Control de Tuberculosis de municipios del Departamento de la Región de Salud III del Estado de Sao Paulo. **Métodos:** Se trata de un estudio descriptivo con abordaje cuantitativo que abarcó 122 notificaciones identificadas en el Sistema de Control de Pacientes con Tuberculosis, del 2007/2008, y seis entrevistas a enfermeros responsables de ese Programa, en la región. **Resultado:** De las 122 notificaciones identificadas, el 69% eran de hombres, el 35% de desempleados, el 25% de etílicos y el 86% de personas con TB pulmonar. Las acciones de control estaban centralizadas, y los enfermeros eran los responsables de los programas de la región. Estos profesionales señalaron como puntos favorables el involucramiento del equipo y la facilidad para solicitar exámenes. Como desfavorables, la falta de equipamientos y de profesionales, demora en la realización de los exámenes. **Conclusión:** La región presenta el perfil típico para la TB, incluyendo aspectos de fragilidad social, acciones de control centralizadas, y los responsables no reconocen la centralización de las acciones y la falta de autonomía de las unidades como fragilidad del programa.

Descriptor: Evaluación de programas y proyectos de salud; Tuberculosis; Programas nacionales de salud

* Study performed at the Tuberculosis Control Program in the counties corresponding to the Region III Health Department of the State of São Paulo - São Carlos (SP), Brazil.

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INTRODUCTION

Tuberculosis (TB) is among the oldest and most well studied diseases known by humankind. Although TB became curable in the last century, it still poses a major public health challenge in many countries, particularly developing countries⁽¹⁻³⁾.

In addition to representing a severe socioeconomic problem because of its disproportionate burden on the lower social classes, TB is the leading cause of death by infectious disease in adults globally^(4,5).

In Brazil, 72,000 new cases of TB were registered in 2007, and the national average prevalence was 38.2 cases/100,000 inhabitants, with 4,500 deaths associated with this disease. The most affected group comprised young impoverished men who used alcohol and were affected by social problems. In Brazil, the most vulnerable populations include the following: Indians (in whom the incidence is four times higher than the national average), individuals co-infected with human immunodeficiency virus (HIV) (30-fold higher risk), individuals in prison (40-fold higher risk), and the homeless (60-fold higher risk). Nevertheless, TB may occur in any social segment regardless of income or education⁽⁶⁾.

The state of São Paulo plays a leading role in the identification and follow-up of TB cases due to a model of regional and hierarchical healthcare networks, which was established in 1996 and participates in the identification and assessment of regional problems⁽⁷⁻⁸⁾. Moreover, in 2006 the online System of Control of Tuberculosis Patients (TBWEB) was established to facilitate the notification, follow-up, and closing of TB cases⁽⁹⁾. Nevertheless, São Paulo, the state with the highest number of TB cases in the country, strives to achieve the recommended cure rates.

Despite universal, free access to diagnosis and treatment and the wide extension of the primary care network, 17,817 TB cases were recorded in 2006, of which 15,300 were new cases, 1,417 were relapses, 1,018 were retreatment after treatment dropout, and 82 were retreatment after treatment failure⁽⁶⁾.

Social inequality, poverty, the AIDS epidemic, the ageing of the population, large migratory movements, difficulties in the operationalization of TB control programs, and uncontrolled population growth are considered to be the main factors affecting the TB prevalence and population distribution⁽¹⁰⁻¹¹⁾.

The only preventive measure that truly removes the risk factors for TB is the elimination of contamination sources by means of the active identification and proper treatment of infected individuals⁽¹²⁻¹⁵⁾.

Although early diagnosis and specific treatment are priorities in the control of the disease, many cases of TB are not diagnosed rapidly enough due to a lack of access to healthcare services or to neglect in the active search for subjects with respiratory symptoms⁽¹⁾. Some studies suggest that attrition and the loss of connections between patients and healthcare service teams might also

represent barriers to treatment even when a wide range of services is offered to the population⁽¹⁴⁻¹⁵⁾.

Because healthcare services are widely offered and because the incidence of TB still persists in this area, this study sought to characterize the sociodemographic and clinical profile of patients, to identify the flow of patient care, and to record the opinions of the professionals in charge of the Tuberculosis Control Programs in the counties corresponding to the Region III Health Department (DRSIII) of the state of São Paulo. Thus, the present study is expected to contribute to the advancement of knowledge on this complex subject to inform TB control activities in São Paulo.

METHODS

This is a descriptive, quantitative study conducted with TB cases registered in the counties of the Central Region (São Carlos, Ibaté, Porto Ferreira, Descalvado, Dourado and Ribeirão Bonito) of the Region III Health Department, which is located in the central area of the state of São Paulo. The counties were randomly identified by the letters A, B, C, D, E, and F to preserve their anonymity.

This study followed the recommendations of Resolution n° 196/96 of the National Health Council regarding research on human beings, and it was approved by the Research Ethics Committee of the Federal University of São Carlos (CEP-UFSCar) ruling n° 351/2008.

This study was performed in two stages. In Stage A, data were collected from the TBWEB between 2007 and 2008 to characterize the epidemiological profile of 122 registered cases of TB. For this stage, a collection tool was designed based on the information supplied by the notification forms. The data were stored in a *Microsoft Office Excel 2003* database for subsequent descriptive statistical analyses.

In Stage B, interviews were performed with the six professionals in charge of the TB programs after participants signed informed consent forms. The interviews were performed to investigate the flow of care for TB patients in the area and to identify the opinions of the professionals on the strong or weak aspects of the programs.

RESULTS

A total of 122 patients were identified in stage A. Among these patients, 84 (69%) were males, and the average age was 40 years old. At the time of notification, 29% of the patients were retired, 32% were in charge of a household, and 35% were unemployed. Approximately 70% had at least one year of education, and 9% had 12 or more years.

Among the patients identified in stage A, 86% had pulmonary TB, 85% had pulmonary disease for the first time, 8% were relapses, and 5% were cases of retreatment.

Regarding the place of notification, 82 patients (67%) were diagnosed and notified at Health Basic Units and

Family Health Units, 21 patients (17%) at emergency and urgent care services, 11 patients (9%) at hospitals, and 4 patients (3%) postmortem. A total of 101 radiographies, 94 smear microscopy tests, and 25 sputum cultures were performed for diagnostic purposes.

A specific anti-TB drug regimen was reported in approximately 94% of cases. However, only 48 cases (39%) reported on the type of treatment, and among these reports, treatment was supervised in 26% of cases and self-administered in 13% of cases.

Treatment outcome information was reported in 90 cases (74%); of these cases, 53% reported cure, 11% death, 8% dropout, and 1% the transfer of care. In 1% of these cases, the diagnosis was changed.

The most common comorbidities associated with TB were alcohol use (25%), AIDS (18%), diabetes (6%), and mental illness (3%).

Anti-HIV serology was performed in 112 patients (92%). Sixty-five percent were negative, 18% positive, and 17% were still being processed at the time of data collection.

A total of 22 patients required hospitalization. The average length of stay was 53 days, and the most frequent indications for hospital admission were social causes, diagnostic clarification, and lack of compliance with treatment.

Stage B identified healthcare units to assist with suspected cases, investigate respiratory symptomatic subjects, and follow-up TB cases in all six investigated counties. In addition, each county has a small hospital and a central hospital where radiological diagnostic tests were performed. Only four of the investigated counties had laboratories performing microbiological and anatomopathological diagnostic analyses. Patient samples collected in towns E and F were sent to county A for analysis.

The follow-up of cases was centralized in the reference units, and the professionals in charge of the Tuberculosis Control Programs in all the investigated counties were nurses,

In five of the investigated counties, the reference units for TB control were included as part of a county healthcare unit. County A had a specific unit allocated to the program.

The active search for respiratory symptomatic individuals could be performed by any healthcare unit in the six investigated counties. However, procedures for sputum collection varied by county. Counties E and F referred the samples to counties A and D. Sputum collection was performed at a later stage, when patients came back for medical consultation three to seven days after the initial appointment.

Patients were referred to the county TB reference unit for notification and treatment initiation when smear microscopy was positive. Notification was performed at the reference unit in county A. All patients were then referred for follow-up to the reference unit at county A, which also provided the medication. Supervision of the treatment was the responsibility of

the teams at the healthcare units where patients were originally notified.

The six interviewed professionals reported the following favorable aspects of the program: involvement with the community, strategies used to enhance compliance, and ease of requesting diagnostic tests. The unfavorable aspects reported by the professionals included the following: lack of skilled teams, lack of vehicles, lack of rooms suitable for the care of respiratory symptomatic subjects, delays in obtaining laboratory results, difficulty with scheduling radiographies, and a lack of specialized doctors and nurses exclusively allocated to the program. The centralization of control activities and the lack of autonomy of the healthcare units were not reported as problematic.

DISCUSSION

It is important to acknowledge the difficulties associated with assessing the quality and accuracy of data in any study that uses secondary data, including the present study, which used data from TBWEB. Nevertheless, despite the potential flaws inherent to the chosen methodology, the systematic use of secondary data allows for tracing the impact of disease and contributes to an understanding of the trends of the problem.

This study found that the TB rate in males was 3.2 times the rate in females, which is above the national average of 2 males per female⁽¹⁶⁾. At the national level, this rate is attributed to males being more active in the labor market and thus also more exposed to TB⁽¹⁷⁾. The present study was performed in the São Paulo area, where female labor force participation is possibly lower than the national average.

The average age reported here is similar to that reported in studies that suggest that TB is shifting towards the older segments of the population due to the efficacy of the BCG vaccination, a reduction in the risk of infection in the community, and the overall ageing of the population⁽⁴⁾.

In addition, low education levels imply low professional qualifications, which might restrict access to both the labor market⁽¹⁸⁾ and healthcare services. Moreover, low education levels may be strongly associated with TB deaths due to the failure of individuals to perceive or understand the state of their disease^(5,17).

The high incidence of pulmonary TB found in this study was expected, as the pulmonary system is the most manifestation site of this disease^(6,13,19). The clinical assessment and the diagnostic tests employed are the most common and least expensive techniques to identify pulmonary TB⁽²⁰⁻²¹⁾.

However, in 26% of the investigated cases, disease notification was performed outside of the primary care context, which suggests possible flaws in early detection. These findings corroborate those of a study performed in 2007 in the same geographical area, where the rate observed was 36%⁽²²⁾.

Adequate chemotherapy appears to be the most powerful tool against TB⁽²³⁾; however, poor treatment compliance due to multiple treatment interruptions contributes to the development of resistant bacilli⁽²⁴⁾. Supervised treatment, which was reported in only 26% of the cases investigated in the present study, had a positive impact on both cure and dropout outcomes because it ensures regularity in the use of medication and the maintenance of treatment for the recommended duration⁽²³⁾.

The cure rate (53%) and dropout rate (8%) reported here are below the World Health Organization (WHO) recommendations for cure rate and dropout rate of 85% and 5%, respectively^(11,25).

Alcohol use (25%) was the most frequent comorbidity reported in the present study. Alcohol use and other forms of chemical dependency hinder treatment compliance due to the lifestyles adopted by the affected individuals⁽²⁶⁾. AIDS (18%) is considered the most severe comorbidity because it increases the incidence of infection and disease complications⁽²⁷⁾. The high number of HIV serologic tests performed in the investigated cases (92%), which is close to the recommended goal⁽²⁸⁾, is an indication of the concern with AIDS.

Hospital admissions associated with social causes point to possible flaws in the support networks for this population, which make it impossible for individuals to complete treatment as outpatients.

Nurses play a major role, as they are the professionals responsible for the TB program in many cities. The number of nurses involved in healthcare management has increased due to the nurses' good performance as supervisors, managers, and coordinators. The duties of these nurses include the planning and development of activities focused on assisting patients and meeting the goals established by the healthcare programs⁽²⁹⁾. As a result, the responsibilities and activities of the nurses in the different healthcare facilities have grown. This increases in the nurses' responsibilities was confirmed during the interviews, where the nurses emphasized the inadequate number of professionals exclusively allocated to the TB programs.

Regarding the flow of patient care, suspected TB cases might be identified at any healthcare facility in the investigated counties. Consequently, the programmatic expectations regarding the identification of active cases can be met by anyone, regardless of professional training or function in the healthcare units⁽³⁰⁾. Conversely, the activities corresponding to the later stages of diagnosis and treatment are still centralized in a single specialized unit in county A.

Such centralization explicitly conflicts with the recommendations of the National Program for the Control of Tuberculosis. An acknowledged strategy for TB control requires follow-up activities to be performed by the healthcare teams of the source units to strengthen the bonds with patients^(1,15).

The interviewed nurses acknowledged programmatic flaws in both infrastructure and logistics. These flaws result in delayed diagnoses and represent obstacles to program success, and they also favor the risk of TB transmission at the occupational level⁽³¹⁻³³⁾. Nevertheless, nurses did not report as problematic the centralization of activities or the lack of autonomy of the local units.

The decentralization of the anti-TB activities has extends beyond the mere supervision of drug intake or supervised treatment. The development of bonds between patients and the healthcare team is noted as a significant factor for compliance with treatment because patients are important in the care process, and they appreciate having a certain degree of autonomy in decision making⁽¹⁵⁾.

In many cities in Brazil, TB control efforts led to a reorganization of the healthcare model and health facilities, which are now based on a decentralized and integrated network for diagnosis and treatment. These changes were aimed at making horizontal the actions of surveillance and the prevention and control of disease and at enhancing the bonds between the population and healthcare providers. In this context, the Family Health Strategy plays a major role because it represents the entrance to the healthcare system and promotes the development of bonds between healthcare professionals and users through supportive listening and co-responsibility for treatment⁽¹³⁾.

CONCLUSION

Although the Central Region of the Region III Health Department provides many healthcare services, TB cases remain in this region. Cure rates and dropouts are below the WHO goals, and some patients have social risk factors, such as low education levels and unemployment.

Many TB control activities in the investigated area are centralized in a single county, which may result in delayed diagnosis and treatment, particularly due to the multiple steps required for users to receive care upon accessing the healthcare system.

Nurses play a major role, as they are responsible for the TB control activities in all counties. The nurses who were interviewed for this study reported the following favorable points of the program: the involvement with the community, the use of strategies to enhance compliance, and the ease of requesting diagnostic tests.

The nurses also noted several weak points of the program: the lack of training of the teams, the lack of rooms suitable for care, delays in receiving test results, and a lack of specialized doctors and nurses exclusively allocated to the program. The centralization of activities was not perceived as a hindrance to the efficacy of TB control activities.

Studies assessing the local conditions and the perceptions of the participating healthcare teams are essential to transcend the purely biological and reductionist view of TB and to inform assessments of the ongoing applied strategies.

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