Assessment of tuberculosis treatment accessibility for patients co-infected or not with the human immunodeficiency virus[*]

AVALIAÇÃO DO ACESSO AO TRATAMENTO DE TUBERCULOSE POR COINFECTADOS OU NÃO PELO VÍRUS DA IMUNODEFICIÊNCIA HUMANA

EVALUACIÓN DEL ACCESO AL TRATAMIENTO DE TUBERCULOSIS POR COINFECTADOS O NO POR EL VIRUS DE INMUNODEFICIENCIA HUMANA

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ABSTRACT

This study aimed to evaluate accessibility to treatment for people with TB co-infected or not with HIV. This cross-sectional study addressed issues regarding accessibility to treatment in a city in the interior of São Paulo state, Brazil. The instrument Primary Care Assessment Tool was utilized with 95 people. To evaluate access to treatment, Student's t test was used. The mean scores of variables were analyzed separately and compared between two groups (people with TB co-infected with HIV and people with TB not co-infected with HIV). Mean scores showed that HIV co-infected people presented greater difficulties in gaining access than those not co-infected. Professionals visited co-infected people more often when compared to those not co-infected; the co-infected people almost never accessed treatment for their disease in the Health Unit nearest their home. There is, therefore, the need for greater integration and communication between the programs for treatment of Tuberculosis and STD/AIDS.

DESCRIPTORS
Tuberculosis
HIV
Health Services Accessibility
Patient rights
Public health nursing

RESUMO

Este estudo objetivou avaliar o acesso ao tratamento das pessoas com tuberculose tanto coinfectadas ou não pelo Vírus da Imunodeficiência Humana (HIV). Trata-se de estudo transversal – com utilização do instrumento Primary Care Assessment Tool aplicado a 95 pessoas – que abordou questões sobre o acesso ao tratamento em município do interior paulista. Para avaliação do acesso ao tratamento, utilizou-se o teste t de Student. Os escores médios das variáveis foram analisados individualmente e comparados entre os dois grupos (pessoas com TB e coinfectadas com HIV e pessoas com TB não coinfectadas pelo HIV). Os escores médios mostraram que as coinfectadas pelo HIV apresentaram maiores dificuldades na obtenção do acesso do que as não coinfectadas. Os profissionais visitavam mais vezes as coinfectadas quando comparadas às não coinfectadas; as coinfectadas quase nunca realizavam o tratamento da doença em posto de saúde perto de sua residência. Há, portanto, necessidade de maior integração e comunicação entre os Programas de Tuberculose e DST/aids.

DESCRITORES
Tuberculose
HIV
Acesso aos Serviços de Saúde
Direitos do paciente
Enfermagem em saúde pública

RESUMEN

Se objetivó evaluar el acceso al tratamiento de personas con tuberculosis, coinfectadas o no por Virus de Inmunodeficiencia Humana (VIH). Estudio transversal, utilizando el instrumento Primary Care Assessment Tool, aplicado a 95 personas; abordó cuestiones sobre acceso al tratamiento en municipio del interior paulista. Para dicha evaluación, se utilizó el test T de Student. Los puntajes medios de las variables se analizaron individualmente y fueron comparados entre los dos grupos (pacientes con TB coinfectadas y no coinfectadas con HIV). Los puntajes promedio expresaron que los coinfectados con HIV presentaron mayores dificultades de acceso que las no coinfectadas. Los profesionales visitaban más a los coinfectados en comparación con los no coinfectados; los coinfectados casi nunca realizaban tratamiento de su enfermedad en puestos sanitarios cercanos a su domicilio. Existe, consecuentemente, necesidad de mayor integración y comunicación entre los Programas de Tuberculosis y DST/SIDA.

DESCRIPTORES
Tuberculosis
VIH
Accesibilidad a los Servicios de Salud
Derechos del paciente
Enfermería en salud publica

INTRODUCTION

Tuberculosis (TB) is considered a neglected disease, although it represents an important cause of morbidity and mortality worldwide, especially after the appearance of HIV in 1981. This event changed the epidemiology of TB, resulting in greater difficulty in controlling it.[1] In addition to AIDS, other cumulative factors have enhanced the difficulty in treating TB, such as poverty, lack of education, non-existing or improper housing conditions, malnutrition, alcoholism, under financing of public health programs, multi-drug resistance to the organism causing TB, as well as the aging and large migrations of certain population[2].

The association of the TB virus and the HIV virus (human immunodeficiency virus) is of great concern to sanitary and governmental authorities, considering that the evolution from TB carrier status to the infection causing illness in immunocompromised patients is 10% throughout their lives. However, among HIV-infected patients, the risk of this evolution occurring reaches 8 to 10 % per year[1].

In 2008, in the city of São José do Rio Preto, the coefficient of TB occurrences reached 28.1/100,000 inhabitants, lower than the rate for the State of São Paulo (37.5/100,000 inhabitants) and the rate for the country (37.5/100,000 inhabitants). When HIV is regarded, the situation is inverted: 24.7/100,000 inhabitants, 19.5/100,000 inhabitants and 18.1/100,000 inhabitants, respectively [3-5]. These statistics demonstrate the importance of these disease epidemics to the city, considering that the combination of these two diseases represents an issue of concern to the local health authorities, since HIV increases TB epidemics and is the main cause of death of HIV carriers.

HIV testing for patients carrying TB is important due to the high prevalence of *Mycobacterium tuberculosis* and HIV co-infection, and also since its presence cannot be determined in co-infected patients based solely on their clinical history[6].

Primary Healthcare has been responsible for the actions of the National TB Control Program (NTBCP) since 2001, and these actions can be executed through services within the Family Health Program and in traditional clinic services with a vertical organization model and a specialized team. In 2006, TB was included as a strategic action in the National Plan of Primary Healthcare with monitored and evaluated indexes[7].

Throughout the country, the National TB Control Program is not totally integrated with the HIV Control Program, which concentrates its care network within the secondary and tertiary care levels. For this reason, since 2004, attempts to incorporate co-infection with TB/HIV within the TB control policies were developed, with a view to investing efforts in social mobilization and obtaining the same successful results achieved in HIV control programs[8]. However, there are still difficulties in achieving the TB control targets in face of the negative impact of one disease over the other, mainly due to the high death rates among HIV carriers undergoing TB treatment[9].

The organization of health services under the auspices of Primary Healthcare are requires the accomplishment of the *access* dimension. Access is a multidimensional concept that expresses a compound of features enhancing or limiting the ability of people to use health services when they need them[10]. It depends, at the same time, on the combination of available human and physical resources and on the financial and administrative systems that determine which individuals will receive these services and under which conditions. Thus, access is associated with factors such as: the type of care required in terms of the clients' needs, access and admittance criteria, labor allocation, functioning hours, and service quality[11]. Access is an important Primary Healthcare impact indicator. It allows for the ability to evaluate the extent to which this component has reached the clientele, constituting an important tool for improvement in the Unified Health System[12]. Therefore, in the described scenario, evaluating the access to treatment for clients with HIV and/or TB is viewed as a need, so that TB carriers who also have HIV are efficiently treated.

By exploring this situation, the objective of this present study was to evaluate the access to treatment of TB carriers co-infected (or not) with HIV.

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METHOD

This is a cross-sectional study performed in the Health Units of the National TB Control Program (NTBCP) in the city of São José do Rio Preto, between June of 2006 and July of 2007. The individuals selected were undergoing treatment during this period and fulfilled the inclusion criteria: 18 years old or over; confirmed TB diagnosis; and living in the city at the time of diagnosis. Afterwards, individuals who tested positive for HIV were selected, along with those who tested negative.

For data collection, the *Primary Care Assessment Tool* (PCAT)[10] questionnaire was used. This questionnaire was validated and deemed suitable for use in Brazil by Macinko and Almeida in 2006,[13] and afterwards adjusted for TB clients by Villa and Ruffino-Netto in 2008[14]. Interviewees answered the questionnaire, which included questions regarding each Primary Healthcare dimension: accessibility, entrance, attachment, range of services, coordination (or services integration), professional training, and general

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and socio-demographic information about the TB carrier. In this present study, only the results pertaining to access to treatment were considered.

Interviewees answered each questionnaire item according to a pre-established Likert scale, with possible answers ranging from zero to five. The zero value was attributed to the *I don't know* or *does not apply* answers, and the values from one to five registered an escalating preference (or agreement) to the statements. For each question, a mean score was determined corresponding to the sum of all scores (categories) from individuals answers, divided by the total number of interviewees. The mean scores were classified as: non-satisfactory (values near and between one and two); moderately satisfactory (near three) and satisfactory (near four and five). Regarding general and socio-demographic information about the TB carrier, the interviewees answered each question of the questionnaire according to a varied scale of answers.

In order to proceed with data collection, all patients co-infected with TB and HIV were investigated by means of TBWEB throughout the period of the study. Interviewees received training regarding the use of the instrument. Explanatory scripts were used regarding the instrument answer scales, directed to the individuals.

The general and socio-demographic information was analyzed using frequency tables. The Chi-Square test was employed in calculating the proportions between the variables *gender* and *living location* for the group of individual carriers of TB who were co-infected with HIV, and for the other group of individual carriers of TB not infected with HIV.

In order to evaluate access to treatment, data were submitted to the *Student t* test. The mean score of the variables were individually analyzed and compared between the two groups (individual carriers of TB co-infected with HIV and individual carriers of TB not infected with HIV).

All analyses were performed using the Statistics program 8.0 (Statsoft).

The study proposal was evaluated and approved (protocol number 0762/2007) by the Research Ethics Committee of the University of São Paulo at Ribeirão Preto College of Nursing, in accordance with Resolution 196/96 of the National Health Council. All participants voluntarily signed a Free and Informed Consent Form.

RESULTS

Of the 106 individuals with TB undergoing treatment throughout the described period, 11 (10.5%) were not tested for HIV.

All individuals not tested for HIV were excluded from the analysis. Thus, this present study included 95 participants. Among these participants 73(68.8%) had TB and were not co-infected with HIV; 22 (23.2%) had TB and were co-infected with HIV.

Regarding gender, 63 (66.3%) were males (64.4% were carriers of TB and 72.7% of the TB patients were co-infected by HIV) and 66 (69.5%) had a complete primary education. When the variables *gender* and *co-infection with HIV* or *no co-infection* present were analyzed, we observed that there was not a statistical association between them (p=0.468).

Regarding the housing situation of these individuals, 48 (50.5%) were living in their own houses; 26 (27.4%) in rentals; 15 (15.8%) in financed homes and 6 (6.3%) declared being homeless.

Type of housing was divided into the four following categories: brick built, wood, recycled material and others. Most individuals lived in housing built from bricks, no cases of recycled material housing or other types of housing were disclosed, and only one individual (1.1%) lived in a house made of wood.

There was no association between the individuals' co-infection status and the type of housing they lived in (p=0.970), since the fact that individual carriers of TB were living in his/her own homes, rentals, financed homes, or were homeless had no influence on being a TB carrier co-infected with HIV.

Table 1 presents mean scores, the standard deviation and the statistical significance p- value for the type I error probability of the variables that represent the access to treatment for individual carriers of TB who tested negative for HIV and those carriers of TB co-infected with HIV.

Individuals co-infected with TB and HIV presented lower mean scores compared to individual carriers of TB who tested negative for HIV for the following variables: obtaining information by phone from the health service center; difficulty in booking appointments by phone; the need to miss a whole day of work due to the appointment; the need to use special transportation to get to the appointment; expenditure needs for transportation for the appointment; lack of medication for treatment; waiting time of more than an hour prior to appointments; and receiving treatment in a health center near the housing location. These scores were classified non-satisfactory to moderately satisfactory. Moreover, the score regarding receiving treatment in a health center near the housing location variable was statistically significant.

Regarding carriers of TB not infected with HIV, the mean scores were lower than the scores for individual carriers of both TB and HIV for the following variables: booking an appointment within 24 hours in case of medication side effects and house calls by professionals for treatment follow-up. These scores were classified between non-satisfactory and moderately satisfactory. The score for house calls by a professional for treatment follow-up was also statistically significant.

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Table 1 – Mean standard deviation of the variables representing the access to treatment for individual carriers of TB co-infected or not with HIV

Variables	Tested negative for HIV "n=73"	Tested positive for HIV "n=22"	Student Test
	Mean and Standard Deviation	Mean and Standard Deviation	P Value
Booking an appointment within 24 hours in case of medication side effects	4.41±1.32	4.50±1.01	0.771
Obtaining information from the health center by phone	3.73±1.68	3.36±1.81	0.385
Difficulty in booking an appointment by telephone in the health center.	3.47±1.80	3.23±1.88	0.591
The need to miss a whole day of work due to an appointment in the health center	3.23±1.77	2.86±1.93	0.403
Need for special transportation to reach the health center	1.67±1.41	1.36±1.18	0.356
Expenditure needs for transportation to the health center	2.90±1.86	2.05±1.70	0.056
Medication failure in the treatment of the disease	4.93±0.30	4.91±0.29	0.760
Waiting time of over 60 minutes for the scheduled appointment	4.55±0.78	4.27±0.94	0.170
House calls by health professionals for follow-up on the treatment	2.75±1.60	3.82±1.30	**0.005**[*]
Treatment appointments in a health center near the housing location	3.10±1.73	2.23±1.38	**0.033**[*]

* P - value refers to the t test for independent samples. In bold, $p < 0.05$, statistics significance level adopted for the test.

DISCUSSION

Regarding sociodemographic characteristics of carriers of TB co-infected with HIV, there is a prevalence of male individuals: 64.4% are carriers of TB and 72.7% are co-infected with HIV.

These data corroborate the results from other studies that analyzed the gender variable associated with TB and HIV, and also the predominance of the male gender, confirming men's higher vulnerability to and prevalence of *Mycobacterium tuberculosis* and HIV co-infection[6,15].

Regarding education, results demonstrate primary education as being the main level achieved, both for carriers of TB and for HIV co-infection. Other studies demonstrate the same reality, showing that low educational levels may be reflected in their job positions, constraining these individuals to unfavorable life and employment conditions, maintaining their poverty status and therefore making health self- promotion difficult[6,16].

Regarding housing conditions, most individuals dwelled in brick housing. These data are congruent with other studies[16].

Regarding access to treatment, in analyzing the variables contained in this present study, the majority of scores are higher for individuals only infected with TB, excepting two variables. Co-infected individuals presented higher scores regarding booking an appointment within less than 24 hours for cases of medication side effects and when there were house calls made by professionals in order to follow up treatment given.

When individuals feel unwell, they tend to request health care around the clock, outside normal working hours. These services, due to their working hours, should provide easier access than other services, providing faster health care delivery[17].

The fact that only individual with TB received treatment near their homes may be related to internal organizational aspects of the health units and not due to geographic location. In addition, this fact may be related to the health unit schedule compatibility with the schedule availability of some individuals, quality of the service, the disease stigma, and the relationship between health professionals and individuals co-infected with HIV[18].

In both cases, satisfactory score levels were presented in regards to lack of medication and waiting times of more than 60 minutes prior to appointments.

Under this context, the lack of an appropriate organizational policy demonstrates the current status of the national health system. However, what can be seen does not always correlate with the lack of campaigns to disseminate information or the importance of performing the needed exams for diagnosis, therefore providing faster treatment, but also with people's feelings regarding the diagnosis and exams in terms of these diseases.

Diseases such as TB and HIV are historically stigmatized and the negative impact generates drastic consequences in terms of treatment dropouts and elevated mortality rates[19].

Studies reveal that these barriers are many times imposed by the carriers themselves. Since testing for HIV is considered discriminatory, individuals can choose not to

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be tested. This fact aggravates TB carrier dynamics, since 70 of the 165 individual carriers of TB (42.4%) were co-infected with HIV, contrasting other studies that demonstrate, in general, rates around 9% to 18%[15].

Moreover, another important factor that requires attention is the social condition of individuals infected with these two diseases. All variables studied considering access to treatment may be affected by these conditions. Most individuals living under unfavorable life and employment conditions demonstrate more difficulty in gaining access to treatment[6].

One factor that can be more critically analyzed is the fact that all individuals experienced difficulties regarding access to treatment, regardless of whether they had both diseases or one. In some cases, individuals co-infected with HIV presented easier access to appointments within 24 hours when experiencing medication side effects and, in addition, had home visits from health professionals more frequently for treatment follow-up. TB carriers do not always receive these services appropriately since the nature of HIV is its gravity, which is a presumption for this occurrence.

The strong interaction in these two disease distributions, with the occurrence of one affecting the other, demands cooperation in control interventions developed in HIV/TB programs. An articulated interaction of these two areas will allow for the improvement of the management of resources directed towards personnel training, diagnosis of both diseases or infections and respective treatment control. In addition, it will enable technical argumentation with enough strength to be considered at all political decision levels. An appropriate response that meets the needs of all challenges imposed must show the sustainability of the adopted strategies. Thus, planning of actions must be parallel to the incentive for the development of new therapeutic and diagnostic options, whether retrovirals, anti-TB medications or vaccines.

Controlling the treatment of individuals co-infected with TB/HIV is even more complex when compared to the treatment for individual carriers of TB alone, since these individuals have a poor life expectancy. This disease, despite technological progress in understanding the disease mechanism, has no cure; hence, treatment dropouts occur not only due to lack of faith in positive outcomes, but also due to lack of motivation in regards to treatment procedures. In addition, physical inability is another factor that creates higher number of treatment dropouts in HIV-infected individuals compared to TB treatment dropouts. Other factors include: little or no information on the part of professionals provided to people about TB treatment, little organization in the service geared toward the specific control of TB, HIV treatment is seen as a priority, physical structure that will not guarantee privacy, lack of team work, and the difficulty in accessing the service.

The lack of information about the disease, possible side effects, the importance in completing treatment pro-

tocols even when there is an improvement in patients' condition, and the severe consequences of treatment interruption are influencing factors on treatment dropout rates, since they are all connected to the individuals' feelings and beliefs about tuberculosis and its aggravations[20].

Regarding the treatment of individual carriers of TB/HIV in the public health network, some aspects deserve consideration, such as the structuring and geographic location of the treatment. Since co-infected people need complete and resolute care, TB and HIV care in differing locations affect and elevate costs in terms of access to care, contributing to a low treatment compliance rate [7].

The co-infected individual needs multidisciplinary care that includes medical, nursing and psychological care, social services, judicial/financial assistance and referrals to other specialties and support services which are, many times, available in the civil society organizations. In addition, these individuals need motivation to comply with both treatments, and a structure that is capable of preventing individuals from becoming dropouts and/or becoming non-compliant with medication regimens.

Hence, Brazil is practically the only country with a large number of co-infected individuals and a universal access policy to anti-retroviral therapy; therefore, it has the right conditions to establish strategies that will diminish TB morbidity and mortality associated with HIV. The primary measures for controlling these epidemics are early diagnosis, appropriate treatment for carriers of TB and the search for exposed/infected contacts[21].

CONCLUSION

The mean scores obtained regarding access to treatment demonstrate that co-infected individuals presented higher difficulties in accessing treatment than individuals who are not co-infected. Situations regarding patients' transportation to health services centers (transportation and expenditures associated with transportation) were the variables that presented lower scores, therefore they deserve greater attention from health profession managers.

Study limitations may be related to the sample size of carriers undergoing treatment, poor memory and information bias. However, the data found in this study are capable of providing results important to the discussion of the profile of individuals seeking treatment and the service organization of TB diagnosis, whether individuals are or are not co-infected with HIV.

Therefore, this present study may be used as a resource for municipal healthsystem planning, mainly regarding the integration and communication between the Tuberculosis Control Program and the Sexually Transmitted Diseases National Program, which is seen as a facilitating factor in the access to disease diagnosis and treatment.

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