Patients with multidrug-resistant tuberculosis in a reference center: sociodemographic and clinical-epidemiological profile*, **

PORTADORES DE TUBERCULOSE MULTIRRESISTENTE EM UM CENTRO DE REFERÊNCIA: PERFIL SÓCIO-DEMOGRÁFICO E CLÍNICO-EPIDEMIOLÓGICO

PORTADORES DE TUBERCULOSIS MULTIRRESISTENTE EN UN CENTRO DE REFERENCIA: PERFIL SOCIODEMOGRÁFICO Y CLÍNICO-EPIDEMIOLÓGICO

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ABSTRACT

The objective of this is quantitative, descriptive, retrospective and sectional study was to describe the sociodemographic and clinical-epidemiological profile of the patients with Multidrug-Resistant Tuberculosis (MRTB) enrolled in the State of São Paulo Reference Center for Tuberculosis (TB). Data was collected from notification forms and medical records of subjects registered between August 2002 and December 2009. Data collection was performed February to June 2010, using a structured instrument, and then systematized using *Excel* and *Epi Info*. It was identified 188 people, 74.2% from the municipality of São Paulo; 93.1% in the productive age group; 61.6% were unemployed; 64.4% men; 34.6% had 4 to 7 years of education; 98.9% with prior TB treatment; 98.4% with pulmonary MRTB; 71.4% with bilateral lesion cavity and all tested for antimicrobial sensitivity. The findings evidenced that subjects developed MRTB mainly due to living conditions and accessibility to health services. Insufficient data from notification forms and files limited an extensive approach as required by TB, a disease proven to be socially determined.

DESCRIPTORS

Tuberculosis multidrug-resistant
Population surveillance
Epidemiologic surveillance

RESUMO

Objetivou-se descrever o perfil sócio-demográfico e clínico-epidemiológico de portadores de Tuberculose Multirresistente (TBMR), matriculados em Centro de Referência para Tuberculose (TB) do Estado de São Paulo. Estudo quantitativo, descritivo, retrospectivo e seccional. Levantaram-se dados de fichas de notificação e de prontuários de sujeitos matriculados de agosto de 2002 a dezembro de 2009. Os dados foram coletados de fevereiro a junho de 2010, com instrumento estruturado, e sistematizados no *Excel* e *Epi Info*. Identificaram-se 188 sujeitos, 74,2% do Município de São Paulo; 93,1% na faixa etária produtiva; 61,6% desempregados; 64,4% homens; 34,6% com 4 a 7 anos de escolaridade; 98,9% com tratamentos anteriores para TB; 98,4% com TBMR pulmonar; 71,4% com lesão bilateral cavitária e todos realizaram teste de sensibilidade aos antimicrobianos. Os achados evidenciam pistas de que os sujeitos desenvolveram TBMR principalmente devido às condições de vida e acesso aos serviços de saúde. A limitação dos dados de fichas de notificação e prontuários limitou abordagem ampla como requer a TB, enfermidade consagradamente socialmente determinada.

DESCRITORES

Tuberculose resistente a múltiplos medicamentos
Vigilância da população
Vigilância epidemiológica

RESUMEN

Se objetivó describir el perfil sociodemográfico y clínico-epidemiológico de portadores de Tuberculosis Multirresistente (TBMR), matriculados en Centro de Referencia para Tuberculosis (TB) del Estado de São Paulo. Estudio cuantitativo, descriptivo, retrospectivo, seccional. Se recabaron datos de fichas de notificación e historias clínicas de sujetos matriculados entre agosto 2002 y diciembre 2009. Datos recolectados entre febrero y junio 2010, con instrumento estructurado, sistematizados en *Excel* y *Epi Info*. Se identificaron 188 sujetos, 74,2% del Municipio de São Paulo, 93,1% en faja etaria productiva, 61,6% desempleados, 64,4% hombres, 34,6% con 4-7 años de escolaridad, 98,9% tratados anteriormente por TB, 98,4% con TBRM pulmonar, 71,4% con lesión bilateral cavitaria; todos realizaron test de sensibilidad a antibióticos. Los hallazgos evidencian que los sujetos desarrollaron TBMR principalmente por condiciones de vida y acceso a servicios sanitarios. La limitación de fichas e historias impidió un abordaje tan amplio como el requerido por TB, enfermedad socialmente determinante.

DESCRIPTORES

Tuberculosis resistente a múltiples medicamentos
Vigilancia de la población
Vigilancia epidemiológica

* Study awarded a prize at the Poster Session, 2º Simpósio Internacional de Políticas e Práticas em Saúde Coletiva na Perspectiva da Enfermagem – SINPESC, School of Nursing, University of São Paulo. São Paulo, Oct. 9th-11th, 2011. ** Extracted from the dissertation "Tuberculose multirresistente em um Centro de Referência do Estado de São Paulo: perfil e trajetória de pacientes", Graduate Program, School of Nursing, University of São Paulo, 2011.

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Received: 10/30/2011
Approved: 11/29/2011

INTRODUCTION

The tuberculosis (TB) panorama in the world and in Brazil is critical in view of the growing Multi-drug Resistant Tuberculosis (MDR-TB) problem, as it is a threat to TB control because it increases the death rates, and makes the treatment longer, more expensive and difficult, in addition to reducing the expectation of cure[1]. According to the World Health Organization (WHO), in 2008, there were 440,000 estimated TB cases in the world[2]. In 2009, 411 new TMTB cases were reported in Brazil[3].

Considering that TB, as well as MDR-TB, are related to social inequalities, it is important that interventions be founded not only on the clinical- epidemiological profile of the population, but also on the sociodemographic profile, in order to make the interventions pertinent and effective. With the purpose of contributing with the knowledge regarding MDR-TB and improving the disease control measures, this articles presents the results of a study performed with the objective to describe the sociodemographic and clinical-epidemiological profile of individuals with MDR-TB, enrolled at *Instituto Clemente Ferreira* – a Reference Center for TB control in the State of São Paulo, between August 2002 and December 2009.

METHOD

This is a quantitative, descriptive, retrospective and sectional study developed at a Reference Center for TB Control in the State of São Paulo, which is also a reference for the care for individuals with MDR-TB. The data used were obtained from computerized forms for disease notification of the National MDR-TB Information System and the medical records of the subjects, who were older than 18 years and had a first diagnosis for MDR-TB notified at the institution between August 2002 and December 2009.

The MDR-TB concept used in Brazil until the year 2009 was adopted in this study, which considers MDR-TB confirmed as: every TB case with a confirmed diagnosis by culture and identification of *Mycobacterium tuberculosis*, and a sensitivity test, showing resistance to Rifampicin, Isoniazid and one additional drug[4].

Data were collected between February and June 2010, using a structured instrument that permitted to obtain information regarding the sociodemographic and clinical- epidemiological profile of the subjects. The instrument was first submitted to a pre-test. The data were stored and systemized using *Microsoft Office Excel* 2007 and *Epi Info* 2.000. All the data on the *Excel* were carefully reviewed by one of the researchers before exporting to *Epi Info 2.000*, in order to avoid any possible flaws when feeding the database.

The study was approved by the Research Ethics Committee at the University of São Paulo School of Nursing (Process number 797/2009), as well as by the Administration Department of the Institution were the study was held.

RESULTS

An analysis was performed of the notification forms and patient records of 188 subjects. Regarding their sociodemographic profile, it was found that most were: male (64.4%); 93.1% belonged to economically active age group (18-55 years), with a greater number of subjects between 36-40 years; 34.6% had between four and seven years of education, though some subjects has twelve or more years of education (9.6%), and others had none or one year of education (1.1%).

Regarding their employment situation, a significant rate (61.6%) of unemployment was identified, of which 41.5% did not have any other individual source of income, e.g. support from Social Security (*Instituto Nacional do Seguro Social* - INSS).

As to the subjects' city of residence, regarding the first diagnosis for MDR-TB, most were originally from São Paulo (74.2%) and had been referred from municipal health care services (72.6%), mostly (40.9%) from Basic Health Units (BHUs)

Regarding the clinical-epidemiological profile of the subjects, in terms of the year of the first MDR-TB notification, Table 1 shows there was a higher rate of cases in the years of 2005 and 2009.

Table 1 - Distribution of subjects according to the year of the first MDR--TB notification - São Paulo, 2010

Year of the 1st MDR-TB notification	Number	%
2002*	7	3,7
2003	26	13,8
2004	24	12,8
2005	33	17,6
2006	25	13,3
2007	23	12,2
2008	20	10,6
2009	30	16,0
Total	188	100,0

* Data regarding the period from August to December 2002.

Of these subjects, 98.9% has a history of TB treatment before the first notification for MDR-TB, with two (37.6%) and three (31.2%) treatments, and two subjects had nine and ten treatments, respectively. Nearly all (98.9%) presented secondary MDR-TB; however, there was only one register of 79.2%[a] of secondary MDR-TB on the notification forms.

[a]The under-reporting of secondary MDR-TB occurred due to possible failures when feeding the MDR-TB System, which contain the computerized MDR-TB notification forms.

Regarding the outcomes of the treatments performed before the MDR-TB, abandonment was identified in the following schemes: I (23.0%), IR (21.4%), III (8.7%) an in the modality *others* (38.9%). Failure was identified in the schemes: I (45.1%), IR (61.1%), III (88.5%) and *others* (50.0%).

Regarding the co-morbidities, before the notification and/or at the time of the first MDR-TB notification, most subjects (59.0%) presented some form of TB-associated disease, including smoking (28.2%) and alcoholism (22.9%).

In Table 2, it is observed that most subjects presented pulmonary MDR-TB and bilateral cavitary lesion.

Table 2 - Distribution of subjects, according to the clinical and radiologic diagnosis of the MDR-TB - São Paulo, 2010

Type of Tuberculosis	**Nº**	**%**
Pulmonary	183	97,3
Pulmonary + pleural	02	1,1
Extrapulmonary	03	1,6
Total	188	100,0
Result of the Chest X-ray	**Nº**	**%**
Unilateral cavitary	35	18,9
Unilateral non-cavitary	12	6,5
Bilateral cavitary	132	71,4
Bilateral non-cavitary	03	1,6
Normal	03	1,6
Total	185*	100,0

* The three subjects with extrapulmonary MDR-TB did not perform the Chest X-ray.

Regarding the modality of the MDR-TB treatment, 94.7% initiated the Cooperated Observed Treatment[b] soon after the first diagnosis, whereas 85.4% of the subjects performed the Directly Observed Treatment (DOT) in cooperation with the BHU.

Of all subjects, 41 (21.8%) did not have an outcome for the MDR-TB treatment in the studied period: 83.0% were following the treatment and 17.0% were transferred to other institutions. On the other hand, 147 (78.2%) achieved an outcome in the studied period, 66.0% of which were cured and discharged, 17.7% abandoned the treatment, 9.5% died, and 6.8% failed. Of the 14 registered deaths, 50% were due to TB. The other cases did not specify the cause of death on the data sources.

[b]Because of the particular characteristic of the studied location, i.e., a Reference Center, the DOT is performed in cooperation with other health institutions. The Clemente Ferreira Institute is a pioneer in the use of the Cooperated DOT for TB in Brazil.

DISCUSSION

The data extracted from the notification forms and medical records permit to recognize the most affected population segment regarding the subjects' age, gender, education, employment situation, and place of residence. The sociodemographic profile found in the present study is similar to those of other investigations, which point out to the predominance of TB and MDR-TB among male subjects in the productive age-group, with low education level, with a precarious or no job, and affected by poverty[5,6-7].

Most subjects lived in the same city where the Reference Center and BHU were located, which made easier their referral, diagnosis, and MDR-TB care. It was found that the subjects used the Primary Care system as their entrance to health care, as recommended in the decentralization policies for TB control[3].

The results found regarding the subjects' clinical-epidemiological profile reveal that, in the addressed historical series, the number of new notified cases per year was always between 26 and 30, which implies there the TB and MDR-TB prevention measures were deficient, because most did not reach cure after more than two treatments before MDR-TB. Failure and abandonment are intrinsically related to the treatments being unsuccessful.

Studies have pointed the following causes for TB treatment failure and abandonment: inappropriate prescription, alcoholism, socioeconomic issues and adverse effects to drugs[8-9]. Therefore, treatment irregularities and non-adherence are key elements for the development of MDR-TB[3,7].

The present study found there were irregularities in the use of medication in treatments before TMBR. Treatment adherence is key for TB control, particularly in terms of multi-drug resistance[7].

The high rates of failure and abandonment identified in the study reveal the need to further address the causes. They also reveal the need to take care of the subjects under treatment, so they do not reach the extreme situation that is MDR-TB and/or so there is an early identification of MDR-TB cases, thus avoiding patient suffering and reducing the epidemiological chain of transmission, reducing unnecessary costs.

With the purpose of reducing the rates of treatment failure and, consequently, increasing cure rates, The National Program for TB Control established, as of 2009, the early diagnosis of MDR-TB through a sensitivity test all the antimicrobial drugs in every case of TB tracking[3].

Smoking and alcoholism, which are co-morbidities identified in the studied population, are pointed out as elements associated to the occurrence of MDR-TB[10-11]. In this sense, once they also express an important social determination, once again it is highlighted that it is necessary to use

the moment the subject attends the health service as an opportunity to talk and learn about their needs.

Clinical data, such as the type of TB and lesion, are important information included in the sources. This information is relevant for the clinical profile because they permit health care professionals to be more careful regarding individuals with large pulmonary cavities and/or bilateral lesion revealed in the chest X-ray, because resistance is a phenomenon fundamentally associated with large bacteria populations, because, the bigger the lesion, the greater the amount of bacilli and the higher the chances of becoming resistant, even before beginning the treatment (natural resistance-gene mutation)[6].

The present study permitted to verify that the information about irregularities in the treatment is registered on the notification form and on the medical records. However, the other key elements regarding the triggers for identifying TB and the Social Determinants of Health (SDH) are not registered on these instruments, although some (very few, actually) health care professionals described some related aspects. Knowing these elements permits to understand the subjects' vulnerability and needs, and allows health care professionals to work comprehensively. It is worth stating that treatment adherence is not limited to one's will,

> (...) disconnected from the reality of the patient, but dependent on a series of intermediations that involve the individual, the organization of working processes in health, and the accessibility in a broader sense, regarding the processes that lead (or not) to the development of a decent life[5].

In fact, adherence surpasses the limits regarding the subjects' attitudes or behaviors and extends towards their social inclusion[5,7]. Studies highlight the importance of considering social issues to guarantee treatment adherence, because they surely have an effect on treatment continuity. It is emphasized that, in this domain, knowing hot treatment support works, either from the family, or other possibilities, such as social networks, besides knowing other aspects, such as the availability of food, authorization to leave work for the ST, stigma, accessibility to information about the disease and health services, all of which are considered essential[7,12].

It is worth emphasizing that the DOT is a strategy recognized due to its importance in strengthening treatment adherence among subjects with TB and MDR-TB[3]. In this study, most individuals with MDR-TB were following TS. However, among those who completed the treatment, only 51.6% were cured and discharged, which reveals certain limitations that are not objectively identified when extracted from the source data, as those used in the present study.

Back to the SDH issue, according to the WHO, they refer to the social conditions of life and work that relate with the health condition[13]. Because of their importance, today, there is a global movement in course, initiated by the WHO in 2005, that aims at promoting, in the international level, awareness about the importance of social determinants in the health situation of individuals and the population[13]. Understanding the MDR-TB as an eminently social disease means that it is also associated to the forms of life and work of those affected.

The DSH are important to direct disease control and prevention measures that permit to improve the rates of cure, abandonment, and death due to MDR-TB, highlighting that the rates at the studied institution are far from adequate.

CONCLUSION

The surveyed data permitted to identify the sociodemographic and clinical- epidemiological profiles of the subjects, but with some limitations. It is necessary that any information regarding the SDH be registered so as to provide a better understanding of the sociodemographic and clinical-epidemiological profile, and support studies that clarify the life and work conditions with MDR-TB, to improve and expand the public policies, challenging health surveillance services to review the implemented practices, expanding and diversifying information techniques and interventions about the determinants of health-disease.

The SDH appear as potential aspects to improve TB and MDR-TB prevention and control measures. Therefore, health care professionals must be encouraged to identify and register them with the purpose to improve the knowledge about the sociodemographic and clinical-epidemiological profile of subjects with MDR-TB, as well as their needs, from the perspective of social determination.

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Acknowledgement

The authors thank the State of São Paulo Research Foundation (*Fundação de Amparo à Pesquisa do Estado de São Paulo* - FAPESP), process number º 2009/04766-2, for the financial support.

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