Tânia Maria Ribeiro Monteiro de Figueiredo[I]

Tereza Cristina Scatena Villa[II]

Lúcia Marina Scatena[II]

Roxana Isabel Cardozo Gonzales[III]

Antonio Ruffino-Netto[IV]

Jordana de Almeida Nogueira[V]

Arleusson Ricarte de Oliveira[VI]

Sandra Aparecida de Almeida[VI]

Performance of primary healthcare services in tuberculosis control

ABSTRACT

OBJECTIVE: To assess the access to tuberculosis treatment in healthcare services with *Programa Saúde da Família* (PSF - Family Health Program) and at a reference outpatient clinic.

METHODS: A descriptive inquiry was carried out in 2007 with 106 patients who received tuberculosis treatment through the PSF or the reference outpatient clinic in Campina Grande, Northeastern Brazil, from July 2006 to August 2007. To assess the health services, the instrument Primary Care Assessment Tool was used, validated and adapted to assess tuberculosis care in Brazil. The main variables analyzed referred to the transportation and distance to the service and patients' supervision.

RESULTS: Of the 106 patients, 83.9% performed self-administered treatment and 16.0% received supervised treatment. The indicators from the PSF units and from the reference outpatient clinic that were similar (p>0.05) were: 65.1% "losing half work day to attend the medical visit"; 65.0% "having to use motorized transport"; 50.0% "always having to pay for motorized transport"; and 69.0% "not receiving treatment at healthcare units near home". The indicators "using motorized transport", "paying for transport to attend the medical visit" and "receiving treatment near home" were statistically different (p<0.05) between the services. Standardized and non-standardized Cronbach's alpha coefficients were, respectively, 0.7275 and 0.7075, based on the eight items of the questionnaire.

CONCLUSIONS: Although the city has 85 PSF teams, supervised treatment was carried out by few health workers. Although the tuberculosis treatment is offered by the public health service, it still represents a cost to the patients, due to the distance to the healthcare service and losing half work day in order to attend medical visits.

DESCRIPTORS: Tuberculosis, prevention & control. Delivery of Health Care. Health Services Accessibility. Family Health Program. Health Services Evaluation.

[I] Departamento de Enfermagem. Núcleo de Estudos e Pesquisas Epidemiológicas. Universidade Estadual da Paraíba. Campina Grande, PB, Brasil

[II] Departamento de Enfermagem em Saúde Pública. Escola de Enfermagem de Ribeirão Preto. Universidade de São Paulo. Ribeirão Preto, SP, Brasil

[III] Departamento de Enfermagem. Universidade Federal de Pelotas. Pelotas, RS, Brasil

[IV] Departamento de Medicina Social. Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo. Ribeirão Preto, SP, Brasil

[V] Departamento de Enfermagem em Saúde Pública. Universidade Federal da Paraíba (UFPB). João Pessoa, PB, Brasil

[VI] Programa de Pós-Graduação em Enfermagem. UFPB. João Pessoa, PB, Brasil

Correspondence:
Tânia Maria Ribeiro Monteiro de Figueiredo
Universidade Estadual da Paraíba
NEPE/Núcleo de Estudos e Pesquisas Epidemiológicas
Campus Universitário
Prédio Administrativo da Reitoria – 2º Andar
Av. das Baraúnas; no 351 – Bairro Bodocongó
58109-753 Campina Grande, PB, Brazil
E-mail: taniaribeiro_2@hotmail.com

INTRODUCTION

Brazil registered 94 thousand new tuberculosis (TB) cases in 2006, occupying the 16th position among the 22 countries with the highest rate of TB infected patients notified in the world. Although it can be cured, TB still causes the death of 5.1% of the diagnosed cases in the country. The percentage of cure is of 77% and the treatment dropout rate is around 9%.[23]

These data represent a great challenge to Brazil. According to the World Health Organization (WHO), TB is a worldwide emergency. WHO recommends the

adoption of the strategy of Directly Observed Treatment, Short-course (DOTS). Concerning the targets agreed to with WHO, Brazil intends to reach 85% treatment success, 70% case detection and reduction in treatment dropout by 5%.[22]

The DOTS strategy, officially released in 1993, proposes "the integration of primary healthcare and continuous adaptation of reforms within the health sector".[21] It is constituted by five targets: "case detection through bacillus testing among respiratory symptomatic patients who demand the general healthcare services; short-term standardized treatment, its evolution being directly observed and monitored (DOTS or supervised treatment); regular supply of drugs; recording and reporting system that ensures treatment assessment; government's commitment, considering TB control as a priority among the health policies".[a] In Brazil, the strategy was incorporated into *Plano Nacional de Controle da TB* (PNCT – National Plan for TB Control) in 1998, when new work guidelines were established to include TB control actions in the scope of primary care. Therefore, it has been proposed that the healthcare services are organized in such a way as to allow the family health teams to incorporate in their activities the responsibility for the development of actions for the disease diagnosis, treatment and prevention.[13,17]

WHO emphasizes that the organizational and performance dimension of the healthcare services is more important than the forms of detection and treatment of the TB cases.[20] This idea is complemented when it understands that "the strategy is not simply a clinical approach; rather, it is a policy for TB control that is included in the healthcare system".[12]

Therefore, organizing services in accordance with the primary healthcare components requires, among others, the fulfillment of the "access" dimension. Access is a multidimensional concept that expresses a set of characteristics of the offer that facilitates or limits people's capacity to use the healthcare services when they need them.[16] It depends, at the same time, on the combination of the available human and physical resources and on the administrative and financing systems that determine which individuals will receive the healthcare services and in what conditions. Thus, access is associated with factors like: type of required care based on the user's need, access and admission criteria, workers' allocation, distance, working time, and quality of the provided assistance.[5]

Therefore, access is an important indicator of the impact of primary healthcare and assessing to what extent this component has been reached has become an important tool to improve Brazil's *Sistema Único de Saúde* (SUS – National Health System).

Healthcare services assessment focuses on the relationship between the population's healthcare need and the provided service, its efficiency and efficacy, aiming to produce reliable data concerning the population's health problems and to improve their performance.[18]

Assessment is being currently seen in a cross-disciplinary perspective, using theories, concepts and instruments from several other knowledge areas, both to indicate the efficacy of an intervention and to contribute to the decision-making process in order to reorganize the assessed actions. In this way, it produces a continuous flow of interactions for the production of competences that are needed in view of the identified problems, having as beneficiary the customer/user of the service/program or project, and not exclusively the person or entity that requested the assessment.[15]

In this direction, it is recognized that the decentralization of the TB control actions to the scope of the family health teams has been requiring the adoption of research and methodologies with which it is possible to evaluate the reach of this strategy and the impact of these innovations on the organization of the primary healthcare services.[11] The "assessment of the incorporation of new sanitary practices into the professionals' routine" enables to monitor the services' capacity to respond to health needs, monitor interventions' effects, identify and correct problems and provide feedback for health teams, managers, politicians and for the community.[3]

It is noted that state and municipal authorities do not respond adequately to the demographic realities, as they do not plan or finance programs to minimize the hidden costs of the access to free TB services.[b]

The aim of the present study was to analyze the access to TB treatment in healthcare services linked with *Programa Saúde da Família* (PSF – Family Health Program) and at a reference outpatient clinic.

METHODS

The study integrated the multicentric project developed by the Operational Research Area of the Brazilian Tuberculosis Research Network /REDE-TB,[c] conducted in five priority municipalities of the Southeast region

[a] Organización Panamericana de la Salud, Organización Mundial de la Salud. Reunión regional de directores nacionales de programas de control de la tuberculoses: informe final. Ecuador; 1997.
[b] Santos Filho ET. Política de TB no Brasil - Uma perspectiva da sociedade civil : tempos de mudanças para o controle da tuberculose no Brasil. Relatório de monitoramento da resposta brasileira em tuberculose. Rio de Janeiro: Open Society Institute; 2006.
[c] Project "Assessment of the organizational and performance dimensions of the primary healthcare services in TB control at urban centers from different regions of Brazil", developed by researchers from REDE/TB; School of Nursing and School of Medicine of Ribeirão Preto, Universidade de São Paulo; Faculdade de Medicina de São José do Rio Preto; Anna Nery School of Nursing of Universidade Federal do Rio de Janeiro; Universidade Estadual da Paraíba; Universidade Federal da Paraíba; Universidade Estadual de Feira de Santana (UEFS)/NUPISC.

(São Paulo and Rio de Janeiro) and Northeast region (Paraíba and Bahia). The inclusion criterion was: the DOTS strategy must have been implemented in the municipality for at least five years.

The municipality of Campina Grande, Northeastern Brazil, implemented the PSF in 1994 with five teams. In 2008, it had 85 family health teams, covering 71% of the population. In 1998, PNCT was implemented in the municipality and in 1999 the DOTS Strategy was put into effect. In the period of the study, DOTS was being carried out, during the first two months of the treatment, twice or three times a week; in the third month, it was performed on a weekly basis, and from the fourth to the sixth month, every two weeks.

The patient had to go to the reference outpatient clinic to perform the DOTS; in the PSF, the DOTS was performed by the health professionals during the home visit.

The study participants from the reference outpatient clinic were interviewed when they went there to perform the DOTS, to attend medical visits or to undergo examinations. Those from the PSF were interviewed at home and at the PSF health unit on the day they attended the medical visit. To conduct the interview at the patient's home, the community health worker helped in the identification of the household.

The dates scheduled for the patients' return visits, the days on which they performed the DOTS, and the patients' home addresses were provided by the healthcare services, as well as a room to conduct the interviews.

A descriptive inquiry into healthcare services assessment was carried out. The instrument Primary Care Assessment Tool (PCAT), proposed by Macinko & Starfield[8] (2003), was used. This instrument on each dimension of primary care was adapted and validated to Brazil by Almeida & Macinko[7] (2006), and was adapted for TB care by Villa & Ruffino-Netto[19] (2009). The TB patient questionnaire also included questions about the patient's profile, clinical-epidemiological information and current health condition. A pilot study was conducted with key informants.

The research focuses on the eight dimensions of primary care: access, entrance to the system, link, list of services, coordination (or services integration), focus on the family, community orientation, professional qualification. Our study presented only the results referring to the dimension access to treatment.

The interviewee answered each item of the questionnaire according to a Likert scale, ranging between zero and five. The value zero was attributed to the answer "I don't know" or "not applicable" and the values 1 to 5 recorded the degree of preference (or adhesion/agreement) in relation to the assertions.

The sample was composed of 106 TB patients who received treatment in the period from July 2006 to August 2007. Data collection was performed in the period from July to September 2007. The following inclusion criteria were elected: patients older than 18 years of age; living in the municipality of Campina Grande, Northeastern Brazil; who received treatment in the PSF units and at the reference outpatient clinic. The exclusion criteria were: adults with special problems and patients followed up in prisons.

The data were analyzed in three stages: frequency analysis and comparison of proportions; analysis of variance and composition of indicators; analysis of the questionnaire's reliability.

Initially, frequency tables were constructed for the application of the chi-square test for proportions. Possible data inconsistencies were monitored, like input errors or omission of answers by the respondents.

For analysis of variance and composition of indicators, the TB patients' access to treatment in the PSF health-care services and at the reference outpatient clinic was analyzed based on the questionnaire.[19] The items were used to compose eight indicators of access to treatment, which corresponded to the sum of the categories of the patients' answers to each item divided by the total of patients to obtain a mean value (Tables 1 and 2).

To assess the access to treatment at the PSF healthcare units and at the reference outpatient clinic, the data were submitted to analysis of variance with the use of the F-test. The analysis of variance was applied to the questionnaire items of access to treatment that fulfilled the presuppositions of independence, homocedasticity and normality. Homocedasticity was verified by means of the Levene test. For the analyses that indicated violation of the criteria for the use of Anova, the data transformation procedure was employed, and for the analyses that continued to violate the criteria for the use of Anova, non-parametric analysis of variance was employed, with the use of the Kruskall-Wallis test. The level of statistical significance adopted in all tests was 5%.[1]

The reliability of the items of access to treatment was analyzed by the Cronbach's alpha statistical technique. The minimum value for Cronbach's alpha should be 0.7 for preliminary research, 0.8 for basic research and 0.9 for applied research.[4] The value 0.7 is recommended as the ideal minimum value, but 0.6 could also be accepted for exploratory research.[10]

The analyses were developed with the program Statistica 8.0 (StatSoft).

The project was approved by the Committee for Research Ethics of *Escola de Enfermagem de Ribeirão Preto, Universidade de São Paulo* (EERP/USP).

RESULTS

Among the participants, 42.5% were women and 57.5% were men; 20.8% with no schooling and 57.5% with low level of schooling. Regarding the number of people who inhabited the same household, 64.2% reported they lived with four or more people, 30.2% with two to three people and 5.7% with only one person.

As for the type of treatment, 83.9% performed self-administered treatment and 16.1%, DOTS. A higher number of DOTS was observed in the PSF (n=12; 11.3%) than in the reference outpatient clinic (n=5; 4.7%). The chi-square test indicated that the DOTS was associated with the type of unit (χ^2=15.8; gl=1; p=0.00008). Regarding the frequency with which the bus fare card was offered to the patient by the team that monitors the treatment, 73.6% reported that it was never offered (26.4% from PSF and 47.2% from the reference outpatient clinic) and the remaining 26.4% selected the options: 2.8% almost never, 10.3% sometimes, 3.8% almost always and 9.5% always received it.

Concerning the offer of drugs during the TB treatment, 91.5% of the interviewees reported that there was no drug shortage and no differences were observed between the PSF units and the reference outpatient clinic (Table 1). The data show that the interviewees seem to be satisfied with the drug distribution.

As for being able to obtain an appointment within the following 24 hours, 67.9% were able to do it with higher frequency and 32.1% had difficulties. There was no significant difference between the PSF units and the reference outpatient clinic.

Considering the item of the questionnaire "losing half of a work day or an appointment to attend the medical visit", 65.1% answered affirmatively and the rest were not negatively affected in their work day or appointment. There was no significant difference between the PSF units and the reference outpatient clinic (Table 2).

In the questionnaire item "waiting during more than 60 minutes to receive assistance", 30.2% of the interviewees answered "always or almost always", 38.7% "sometimes" and 31.1% "almost never or never". There was no significant difference between the PSF units and the reference outpatient clinic (Table 2).

Of the interviewees, 65% needed to use motorized transport, 50% always paid for motorized transport and 69% did not undergo treatment in healthcare units near their homes. Tables 1 and 2 show that the following indicators presented a significant statistical difference: using motorized transport, paying for transport in order to attend the medical visit, undergoing treatment near the patient's home.

The item home supervision shows that 77.4% of the patients never received visits of the health professionals at their homes and 22.7% received visits with some frequency. According to Table 1, there were statistically significant differences, with home supervision occurring with higher frequency in the PSF units than in the reference outpatient clinic.

In the reliability analysis, the standardized and non-standardized Cronbach's alpha coefficients were, respectively, 0.7275 and 0.7075 based on the eight items of the questionnaire (Table 3), indicating good reliability.

Other information about the behavior of each item used in the calculation of the Cronbach's alpha coefficient is listed on Table 3. The item losing half of a work day or an appointment to attend the medical visit (Table 3) presented lower correlation with the total; when this item was disregarded a value of alpha of 0.7665 was obtained.

DISCUSSION

The results show why TB still is a social problem: the majority of the patients have a low level of schooling,

Table 1. Non-parametric analysis of variance of the variables of access to treatment in the Family Health Program and in the reference outpatient clinic. Municipality of Campina Grande, Northeastern Brazil, 2007.

Variable	Indicator				
	Family Health Program n = 32		Outpatient clinic n = 74		Kruskall-Wallis Test
	mean	SD	mean	SD	
Expenses with transport to receive treatment[a]	4.68	1.03	1.73	1.26	p < 0.0001[*]
Home supervision[b]	2.53	1.62	1.19	0.71	p < 0.0001[*]
Search for the nearest healthcare service to receive treatment[b]	4.43	1.01	1.13	0.69	p < 0.0001[*]
Drug shortage[a]	4.73	0.58	4.95	0.26	p = 0.1207

[a] Response categories: 1=always; 2=almost always; 3=sometimes; 4=almost never; 5=never.
[b] Response categories: 1=never; 2=almost never; 3=sometimes; 4=almost always; 5=always.
[*] Statistically significant

Table 2. Analysis of variance of the variables of access to treatment in the Family Health Program and in the reference outpatient clinic. Municipality of Campina Grande, Northeastern Brazil, 2007.

| Variable | Indicator | | | | |
| | Family Health Program n = 32 | | Reference outpatient clinic n = 74 | | F-test |
	mean	SD	mean	SD	
Medical visit < 24 hours[a]	4.34	1.18	3.86	1.36	P= 0.088
Loses half of a work day or an appointment to attend medical visit[b]	3.12	1.77	2.59	1.67	P= 0.1438
Use of motorized transport[b]	4.68	0.99	1.31	0.96	P<0.0001*
Waiting more than 60 minutes to attend the medical visit[b]	3.34	1.41	2.97	1.28	P= 0.1871

[a] Response categories: 1=never; 2=almost never; 3=sometimes; 4=almost always; 5=always.
[b] Response categories: 1=always; 2=almost always; 3=sometimes; 4=almost never; 5=never.
* Statistically significant

corroborating other studies.[6,14] They live with four or more people, and lose half of a work day to attend medical visits. The patient presents singularities that are inherent in his social context, which is generally unfavorable in physical, emotional and social terms.

Numerous families also show a direct relationship with TB, in view of the fact that the risk for developing the disease in households with four or more people was considered approximately three times higher when compared to households with two or fewer people.[9]

With the decentralization of the TB control actions to the primary care services in 2004, and also with the adoption of the DOTS strategy, the Brazilian PNCT recognizes the importance of extending the fight against TB to all the healthcare services of SUS. Therefore, it aims at the integration between TB control and the primary care services, including PSF in order to ensure the effective expansion of the access to diagnosis and treatment.

The study shows that the majority of the TB patients lose half of a work day to attend medical visits. Waiting long periods of time to receive assistance and the fact that the units' working time is incompatible with the patients' working hours are the main reasons why many individuals do not go to the healthcare service. Some of them even abandon the treatment, since patients are afraid of losing their jobs due to absences and delays.[2]

Considering the values of the indicators, the TB patients from the reference outpatient clinic were the ones who most used motorized transport, had to pay for transport in order to receive treatment, did not undergo treatment near their homes, unlike the PSF patients.

The studied municipality presents 71% of PSF coverage with professionals responsible for the execution of the TB actions. Even so, the TB patient prefers not to receive treatment near his home, which results in higher social and economic cost to him and his family.

Despite the expansion of PSF in the municipality of Campina Grande, it is noted that the family health teams have not assumed integrally the treatment of the TB patient.

The value of 0.7275 for Cronbach's alpha indicates that the instrument has an acceptable consistency, although it presents items (medical visit < 24 hours; losing half of a work day to attend the medical visit; adequate amount

Table 3. Correlation and internal consistency of the variables of access to treatment in the Family Health Program and in the reference outpatient clinic. Municipality of Campina Grande, Northeastern Brazil, 2007.

Variable	Item-total correlation	Cronbach's Alpha if the item is disregarded
Medical visit < 24 hours	0.1225	0.7512
Loses half of a work day or an appointment to attend medical visit	0.1203	0.7665
Use of motorized transport	0.7798	0.6043
Expenses with transport to attend medical visit	0.7734	0.6070
Adequate amount of drugs	0.2528	0.7327
Waiting more than 60 minutes to attend the medical visit	0.1779	0.7421
Home supervision	0.4747	0.6923
Search for the nearest healthcare service to receive treatment	0.7422	0.6196

of drugs; and waiting more than 60 minutes to receive assistance) with a modest contribution to the indicator, item-total correlation < 0.4. However, these items of low values for item-total correlation are also those to which there is no statistically significant difference between PSF and the reference outpatient clinic.

Our results show that the DOTS has been incorporated by the healthcare services or assumed by only a small fraction of the professionals of the PSF teams as a treatment strategy. Although the TB treatment is provided by the public healthcare service, it still represents a cost to the TB patient due to the distance to the healthcare service, as well as the need to lose half of a work day in order to attend the medical visit.

It is necessary to investigate the organizational aspects that would hinder the effective incorporation and sustainability of TB treatment actions in primary care, with qualified human resources involving the health managers and professionals, so as to effectively build a new paradigm to the TB patient's health.

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