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# Tuberculosis Control Program and patient satisfaction, Rio de Janeiro, Brazil

## Programa de Controle da Tuberculose e satisfação dos usuários, Rio de Janeiro

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### ABSTRACT

**OBJECTIVE:** To evaluate factors associated with users' satisfaction in the Tuberculosis Control Program.

**METHODS:** A cross-sectional study of 295 patients aged  $\geq 18$  years, with two or more outpatient visits in the Tuberculosis Control Program, in five cities in the metropolitan region of Rio de Janeiro, RJ, Southeastern Brazil, in 2010. Considering an estimated population of 4,345 patients, the sampling plan included 15 health care units participating in the program, divided into two strata: units in Rio de Janeiro City, selected with probability proportional to the monthly average number of outpatient visits, and units in the other four cities. In the units, four temporal clusters of five patients each were selected with equal probability, totaling 300 patients. A questionnaire investigating the users' clinical and sociodemographic variables and aspects of care and service in the program relevant to user satisfaction was applied to the patients. Descriptive statistics about users and their satisfaction with the program were obtained, and the effects of factors associated with satisfaction were estimated.

**RESULTS:** Patients were predominantly males (57.7%), with a mean age of 40.9 and with low level of schooling. The mean treatment time was 4.1 months, mostly self-administered (70.4%). Additionally, 25.8% had previously been treated for tuberculosis. There was a high level of satisfaction, especially regarding medication provision, and respect to patients by the health professionals. Patients who were younger ( $\leq 30$ ), those on self-administered treatment, and with graduate level, showed less satisfaction. Suggestions to improve the services include having more doctors (70.0%), and offering exams in the same place of attendance (55.1%).

**CONCLUSIONS:** Patient satisfaction with the Tuberculosis Control Program was generally high, although lower among younger patients, those with university education and those on self-administered treatment. The study indicates the need for changes to structural and organizational aspects of care, and provides practical support for its improvement.

**DESCRIPTORS:** Tuberculosis. Antitubercular Agents, supply & distribution. Patient Satisfaction. Program Evaluation. Communicable Disease Control. Cross-Sectional Studies.

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Received: 2/23/2013

Approved: 2/3/2014

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## RESUMO

**OBJETIVO:** Avaliar fatores associados à satisfação de usuários do Programa de Controle de Tuberculose.

**MÉTODOS:** Estudo transversal realizado com 295 pacientes  $\geq 18$  anos que tiveram duas ou mais consultas no Programa de Controle da Tuberculose em cinco municípios da região metropolitana do Rio de Janeiro, RJ, em 2010. Contemplando população estimada de 4.345 pacientes, o desenho da amostra incluiu 15 unidades com o programa, divididas em dois estratos: unidades da cidade do Rio de Janeiro, selecionadas com probabilidade proporcional à média de consultas mensais, e unidades dos outros quatro municípios, incluídas com certeza. Nas unidades, quatro conglomerados temporais com cinco pacientes cada foram selecionados com equiprobabilidade, totalizando 300 pacientes. Utilizou-se questionário que investigou variáveis clínicas e sociodemográficas dos usuários e aspectos dos serviços e do atendimento no programa relevantes na percepção de satisfação desses. Estatísticas descritivas e a satisfação com o programa foram obtidas e os efeitos dos fatores associados à satisfação foram estimados.

**RESULTADOS:** Predominaram pacientes do sexo masculino (57,7%), com média de 40,9 anos e baixa escolaridade. O tempo médio de tratamento foi 4,1 meses, majoritariamente do tipo autoadministrado (70,4%). Ainda, 25,8% já tinham realizado tratamento prévio de tuberculose. Houve elevado nível de satisfação, sobretudo com relação à provisão de medicamentos e respeito aos pacientes pelos profissionais de saúde. Mostraram-se mais insatisfeitos: pacientes mais jovens ( $\leq 30$  anos), submetidos a tratamento autoadministrado e com nível superior. Sugestões de melhoria dos serviços incluíram aumento da quantidade de médicos (70,0%) e realização de exames no local do atendimento (55,1%).

**CONCLUSÕES:** A satisfação dos pacientes do Programa de Controle da Tuberculose mostrou-se, em termos gerais, elevada, mas é menor entre os mais jovens, aqueles com nível superior e aqueles submetidos ao tratamento autoadministrado. São necessárias mudanças estruturais e organizacionais no cuidado, e este estudo provê subsídios práticos para a sua melhoria.

**DESCRITORES:** Tuberculose. Antituberculosos, provisão & distribuição. Satisfação do Paciente. Avaliação de Programas e Projetos de Saúde. Controle de Doenças Transmissíveis. Estudos Transversais.

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## INTRODUCTION

Although highly effective treatment has been available for decades and there were significant reductions in disease load between 1990 and 2010, tuberculosis (TB) remains a serious public health problem. Estimates for 2010 indicate that there are 8.5-9.2 million cases worldwide (approximately 128 cases per 100,000 inhabitants) and 1.2-1.5 million deaths (including deaths of those with an HIV co-infection), making tuberculosis the second most common cause of death from infectious disease.<sup>17</sup> In the global agenda, efforts have been made and goals set for reducing the disease, a highlight being the Stop TB Strategy, consisting of six components: expanding and strengthening the directed-observed treatment strategy – DOTS); facing up to

the challenges of multi-resistant tuberculosis and the TB-HIV co-infection epidemic; strengthening health care systems; commitment on the part of health care providers to controlling tuberculosis and caring for patients; increasing the empowerment of those with TB, and of the community, through partnerships; and investing in research and development of new forms of diagnosis, medicines and vaccines.<sup>17</sup>

Brazil currently occupies 19<sup>th</sup> place on the list of the 22 countries responsible for 81.0% of tuberculosis cases in the world<sup>17</sup> and has placed the disease on its strategic agenda, with decreases recorded in incidence (from 42.8 to 36.0/100 thousand inhabitants) and mortality (from

3.1 to 2.4/100 thousand inhabitants) rates between 2001 and 2011.<sup>8</sup> In 2010, Brazil detected 88.0% of estimated cases, exceeding the goal of 70.0% proposed by the World Health Organization (WHO).<sup>8</sup> However, the observed cure rate, at just over 70.0%, remains well below the recommended 85.0% goal. Tuberculosis is the third most common cause of death from infectious disease, and is the most common among AIDS patients. Between 2008 and 2010, an increase was observed in multi-drug resistant tuberculosis (MDR-TB), from 365 to 605 reported cases. This situation poses a challenge in coping with the disease, as such cases often involve individuals with a history of abandoning treatment, requiring treatment for longer periods of time, using stronger drugs that have more side effects and are associated with less favorable results.<sup>a</sup>

In 2011, the state of Rio de Janeiro, Southeastern Brazil, had the second highest incidence and the highest mortality rate for tuberculosis in the country. There were 9,273 recorded new cases and 889 deaths, corresponding to an incidence rate of 57.6 per 100,000 inhabitants, and a mortality rate of 5.6 per 100,000 inhabitants, more than twice the national rate.<sup>8</sup>

Given that the rate of tuberculosis cure in Brazil remains low, patients' adherence to treatment poses a challenge, indicating the importance of evaluating patient satisfaction regarding care received and of identifying obstacles leading to treatment being abandoned.

Satisfaction is understood as the convergence between patients' prior expectations of care and the perception of care actually received from the services,<sup>4,10,15</sup> highlighting the following aspects: prompt care, being dealt with courteously and respectfully by health care professionals, accurate diagnosis and hope of a good prognosis, continuity and coordination of care, the absence of costs constituting a burden to the individual's budget and, lastly, the technical quality of the medical care received.<sup>2,16</sup> Patients also value the physical structure and organization of the health care services, the availability of human resources and materials and, where relevant, the operation logic of the care program.<sup>3,16</sup>

Irrespective of variation in the concepts and methods used, studies evaluating health care service user satisfaction tend to have an effect of "elevating" satisfaction rates, shown to be high, even when expectations regarding health care services are negative.<sup>3</sup> If this has led, on the one hand, to the studies' validity being questioned, on the other, it has raised speculation including, for example, access to services themselves or establishing links with health care professionals as explanatory factors of the satisfaction shown.<sup>3,7</sup> The elevated levels of satisfaction observed also raise questions about possible gradients in the apparent homogeneity of the evaluations.

There have been several studies of tuberculosis patient satisfaction regarding treatment received,<sup>1,7,10</sup> with descriptive national findings consistent with the observed trend of elevated satisfaction. Although these national studies suggest explanations or factors influencing user satisfaction, they are restricted to specific contexts, not based on probability samples and lacking analytical approaches capable of differentiating between levels of satisfaction.

The aim of this study was to evaluate the factors associated with Tuberculosis Control Program patient satisfaction.

## METHODS

A cross-sectional study was conducted on the survey population comprising patients aged  $\geq 18$ , with at least two consultations in the Tuberculosis Control Program (TCP), and treated in the municipalities of Duque de Caxias, Nova Iguaçu, Rio de Janeiro, Sao Joao de Meriti, and Sao Gonçalo, all with high prevalence of the disease and together accounting for 86.0% of new cases of tuberculosis in the metropolitan region of Rio de Janeiro, RJ, in 2009.

The survey population, accessible through the health facilities taking part in the TCP, was measured in terms of total monthly visits to the TCP in these municipalities and the number of patients was estimated at 4,345, according to a survey conducted in 2009, that allowed the selection of the sample and determination of the inclusion probabilities in the sample. Assuming one monthly consultation per patient on the TCP, estimates of consultations have been considered as a proxy of the patients treated.

The survey population was divided into two geographic strata: the city of Rio de Janeiro and the remaining municipalities. As the latter stratum included only five health care units, all were included in the sample, meaning that each health clinic is a primary sampling unit. In the capital (Rio de Janeiro city) geographic stratum, the health care units were selected with probability proportional to their mean number of consultations per month and are therefore the primary sampling units.

In the health care units included in the sample, temporal clusters with equal probabilities were selected. They were defined by 'day shift of service', if there was only one doctor on a 'day-shift', or by 'day-shift-doctor', if there was more than one doctor working the 'day-shift', and it was assumed that the number of patients per doctor and shift was approximately the same. Thus, the temporal clusters were the secondary sampling units in the capital geographic stratum and the primary sampling units in the other stratum. In those temporal clusters, patients were also selected with equal probability.

<sup>a</sup> Secretaria de Estado de Saúde do Rio de Janeiro. Programa de controle de tuberculose. Informe epidemiológico. Rio de Janeiro; 2011.

The total sample size was calculated at 300 patients, based on the proportion maximum variance, to produce estimates with a maximum error of 5.66% for a 5% level of significance or a maximum error of 4.75% for a 10% level of significance.<sup>b</sup> In order to determine the sample size of the temporal clusters and health facilities, the following parameters were fixed: (i) five patients per temporal cluster and (ii) four temporal clusters per health facility. Thus, the sample included 20 patients per health care unit and 15 units. As the second demographic stratum had five health care units included in the sample, the other 10 units were selected from the capital stratum.

Five patients were systematically selected in each temporal cluster, on site, considering the list of scheduled patients and the predefined random start for each health facility and temporal cluster. Finally, the weight of the sample was calculated as the inverse of the inclusion probabilities in each stage of the sample.

It is, therefore, a complex sample design with stratification and clustering, with three stages in the capital stratum (health facility, temporal cluster and patient) and two stages in the stratum of the remaining municipalities (temporal cluster and patient).

The variables of selection in the stratum (capital geographic stratum or health facility in the other municipalities) and primary selection unit (health facility in the capital and the temporal cluster in the remaining municipalities) were used together with the sample weight to produce variance estimates through the primary cluster method,<sup>11</sup> using the *surveyfreq*, *surveymeans*, *surveyreg* and *surveylogistic* procedures of SAS version 9.1.

The final sample consisted of 295 patients, as one of the health facilities selected in the capital had only three consultation shifts per week for patients on the TCP. There was no loss in the patient selection and the few who refused were replaced by the next patient on the list of scheduled consultations in the temporal cluster selected.

A semi-structured questionnaire was developed and patients interviewed individually after signing a consent form. The questionnaire investigated the clinical and sociodemographic characteristics of the patients and aspects of the TCP services related to patient satisfaction. It incorporated simple questions, extensively validated in studies of patient satisfaction and highly relevant to the context of tuberculosis treatment.<sup>1</sup> At the beginning of the fieldwork, a pilot study was conducted in order to detect any problems of understanding and to make any necessary adjustments to the tool. The

interviews for the questionnaires were conducted by trained researchers in the health care units where treatment took place, from February to July 2010, either before or after medical attendance. The choice of the patients to be interviewed respected the sample design.

The study was approved by the Research Ethics Committee of the *Escola Nacional de Saúde Pública* of the *Fundação Oswaldo Cruz* (Protocol 125/2009) and the Rio Janeiro Municipal Health and Civil Defense Secretariat (Protocol 10/2010), on 9/12/2009 and 1/2/2010, respectively.

## RESULTS

Table 1 shows the distribution of monthly tuberculosis consultations according to patients' demographic and clinical variables. Of the total consultations, 57.7% were with males, and age varied between 18 and 78 years old, with mean of 40.9, and standard error of 0.7 years. With regards to schooling, almost 40.0% had no schooling or had not finished secondary education. Length of time being treated by the TCP at the time of the interview varied between 1.0 and 24.0 months, with a mean of 4.1 months and standard error of 0.2 months. Of the total consultations, 25.8% were with patients who had already undergone treatment for tuberculosis, of which 32.0% had not concluded the previous course of treatment. Those who reported having previously been treated for tuberculosis were then asked, using an open-ended question, the reason for abandoning treatment. The reported reasons included the belief that they had been cured before treatment finished, lack of knowledge of the severity of the disease, operational problems in remaining under treatment for a prolonged period, including difficulties accessing health care services and side effects of the drugs.

Table 2 shows perceived satisfaction of TCP users and indicates an overall high level of patient satisfaction with the aspects covered.

Aspects of care with the highest rates of satisfaction, considering the sum of "excellent" and "good" classifications, were: provision of medicines in the unit; respect from the health care professionals; clarification regarding the disease and treatment in the first consultation; opportunity given by the professional to ask questions and clarify doubts, the method in which the treatment was administered; doctor availability during the consultation and privacy during attendance, in descending order. The rating for these aspects, summing "excellent" and "good" responses, were above 89.0%.

<sup>b</sup> If  $p = (1-p) = 0,05$  then  $n = \frac{P(1-P) \times z_{\alpha/2}^2}{d^2} = \frac{0,25 \times z_{\alpha/2}^2}{d^2}$  or  $n = \frac{z_{\alpha/2}^2}{4d^2}$

**Table 1.** Distribution of monthly tuberculosis consultations by sociodemographic and clinical characteristics of patients. Metropolitan Region of Rio de Janeiro, RJ, 2010. (N = 4,345)

Variable	n	%	SE
Age (in complete years) <sup>a</sup>	40.9 (EP = 0.7); Min = 18; Max = 78		
Sex			
Female	1,839	42.3	3.2
Male	2,506	57.7	3.2
Education			
Illiterate	165	3.8	1.0
Can read and write	237	5.5	1.8
Elementary/secondary education incomplete	1,312	30.2	2.9
Secondary education complete	1,144	26.3	2.0
High school	1,274	29.3	3.7
Undergraduate education	213	4.9	2.0
Treatment time (months) <sup>a</sup>	4.1 (EP = 0.2); Min = 1.0; Max = 24.0		
Previous treatment for tuberculosis			
No	3,210	73.9	3.7
Yes	1,120	25.8	3.7
No information	15	0.3	0.3
Completion of previous treatment (N = 1,120)			
No	359	32.0	5.4
Yes	709	63.4	5.9
No information	52	4.6	2.7
Current type of treatment			
Self-administered	3,059	70.4	7.5
DOTS	1,286	29.6	7.5

SE: Standard error of estimate; DOTS: Directed-observed treatment strategy

<sup>a</sup> Values expressed in average, standard error, minimum and maximum.

Waiting times for a scheduled appointment, cleanliness within the unit and the possibility of diagnosis exams within the same care facility were classified as “excellent” and “good” in more than 50.0% of evaluations, but were associated with more responses indicating dissatisfaction.

Table 3 shows suggestions made by patients for improving services, and are consistent with the results shown in Table 2. Increasing the number of doctors, making appointments for consultations and conducting diagnosis exams within the same facility would make the care process quicker and more efficient, while improving the comfort and cleanliness of the units would meet expectations regarding basic health care service structures.

Self-administered treatment predominated, with this being the only type of treatment on offer in six of the 15 units, and only one unit used supervised treatment (DOTS) exclusively. Overall, it was estimated that, of patients receiving tuberculosis treatment in primary health care units in the Metropolitan Region of Rio de Janeiro, 70.4% received self-administered treatment, compared with 29.6% who received DOTS.

Regarding the distribution of patients according to treatment method (self-administered *versus* DOTS), no statistically significant differences were observed with having previously undergone tuberculosis treatment, sex or schooling. Nor did patient satisfaction differ between those on self-administered treatment and those on DOTS in relation to type of treatment specifically.

Table 4 shows the bivariate analyses of the dichotomous variable differentiating more and less satisfied patients, considering nine or more and fewer than nine “excellent” and “good” responses, in the 11 items evaluated (Table 2), and potential explanatory variables for its variation. Patient satisfaction was not shown to be associated with the indicator variable of previous treatment for tuberculosis or with gender. Associations with the level of satisfaction were observed for the following variables: age – less satisfaction among patients up to 30 years old; schooling – higher satisfaction among illiterate patients or those who could read and write but had no formal education and lower satisfaction among patients with undergraduate education; and treatment method – greater satisfaction among patients on DOTS.

**Table 2.** Distribution of monthly consultations for tuberculosis by degree of patient satisfaction. Metropolitan Region of Rio de Janeiro, RJ, 2010. (N = 4,345)

Variable	n	%	SE
General satisfaction <sup>a</sup>	9.2 (EP = 0.2); Min = 2.0; Max = 11.0		
Information and clarification about the disease and treatment during first consultation			
Excellent	1,589	36.6	3.9
Good	2,416	55.6	4.2
Regular	232	5.3	1.6
Poor	58	1.3	0.8
Very poor	50	1.2	0.4
Opportunity for questions/express concerns			
Excellent	1,372	31.6	3.8
Good	2,600	59.8	3.9
Regular	264	6.1	1.3
Poor	59	1.4	0.6
Very poor	50	1.1	0.5
Supply of medication by the clinic			
Excellent	2,208	50.8	4.3
Good	1,929	44.4	4.3
Regular	124	2.9	1.2
Poor	27	0.6	0.4
Very poor	48	1.1	0.7
No information	9	0.2	0.2
Form of administration of medication and their treatment			
Excellent	1,519	35.0	3.9
Good	2,405	55.3	4.3
Regular	225	5.2	1.4
Poor	104	2.4	1.0
Very poor	79	1.8	0.9
No information	13	0.3	0.3
Privacy during attendance			
Excellent	1,562	36.0	4.7
Good	2,307	53.1	5.5
Regular	290	6.7	1.8
Poor	76	1.7	0.7
Very poor	83	1.9	0.9
No information	27	0.6	0.4
Ease of making first appointment			
Excellent	1,725	39.7	5.1
Good	1,914	44.1	5.4
Regular	423	9.7	3.0
Poor	171	3.9	1.4
Very poor	112	2.6	1.1
Waiting time for appointment			
Excellent	679	15.6	3.4
Good	1,821	42.0	5.1
Regular	1,023	23.5	4.3
Poor	467	10.7	2.2
Very poor	318	7.3	1.9
No information	37	0.9	0.6

Continue

## Continuation

Cleanliness of the clinic			
Excellent	546	12.6	3.0
Good	2,211	50.9	4.1
Regular	917	21.1	3.1
Poor	287	6.6	1.7
Very poor	370	8.5	1.5
No information	14	0.3	0.3
Respect on the part of the professionals			
Excellent	1,882	43.3	4.2
Good	2,214	51.0	4.3
Regular	157	3.6	1.3
Poor	66	1.5	0.8
Very poor	26	0.6	0.4
Accessibility of doctor during the consultation			
Excellent	1,764	40.6	4.7
Good	2,154	49.6	5.2
Regular	248	5.7	1.7
Poor	86	2.0	0.7
Very poor	93	2.1	1.2
Availability of facilities to do examinations in the clinic			
Excellent	784	18.0	3.2
Good	2,242	51.6	4.6
Regular	605	14.0	2.5
Poor	441	10.2	2.5
Very poor	228	5.2	1.4
No information	45	1.0	0.5

SE: Standard error of estimate

<sup>a</sup> Values expressed in average, standard error, minimum and maximum.

Table 5 ratifies the results in Table 4, indicating that the chances of patients in the age groups 31-40, 41-50, 51-60 and > 60 years being more satisfied, versus less satisfied, were, respectively, 2.3, 5.3, 4.5 and 4.1 times as much as those observed in patients aged between 18 and 30 years old. For education, it was observed

that individuals who had finished high school tended to have more chance (OR = 2.1; p = 0.0853), and those with undergraduate education had less chance (OR = 0.3; p = 0.0314) of being among the more satisfied, compared to patients who had, at the most, reached the end of secondary level education. The chances of

**Table 3.** Distribution of monthly consultations for tuberculosis by suggestions for improving services. Metropolitan Region of Rio de Janeiro, RJ, 2010. (N = 4,345)

Suggestion for improvement of services	n	%	SE
Increased number of doctors	3,040	70.0	3.3
Increased number of nurses	1,744	40.1	5.3
Extended opening hours	1,626	37.4	5.3
Consultation by appointment	2,244	51.6	4.7
Assistance with transport	1,971	45.4	5.2
Increase in security of the clinic	1,065	24.5	4.9
Examinations in the same place as attendance	2,394	55.1	5.5
Reduction in the number of medicines	892	20.5	3.6
Improvement in the comfort of the clinic	2,328	53.6	5.8
Improvement in the cleanliness of the clinic	2,268	52.2	6.7

SE: Standard error of estimate

patients receiving supervised treatment being among the more satisfied were 1.9 times as much as those figures observed for patients under the self-administration method.

## DISCUSSION

In general, the evaluation showed patient satisfaction with the TCP to be high and only a few suggestions for the improvement of care were more expressively indicated. This is consistent with the idea of an effect of 'elevation' of the rates of satisfaction measured, regardless of the variability of concepts and methods employed.<sup>3,5,7,10</sup>

Aspects related to the interpersonal behavior dimension (respect from professionals, clarification about disease and treatment, opportunity to ask questions and remove doubts) were considered highly satisfactory<sup>3,16</sup> coinciding with the results of a study in a health care unit in Itaboraí, a municipality located in the metropolitan region of Rio de Janeiro, where positive assessments of the reliability, availability and guidance provided by the healthcare team were observed.<sup>7</sup> However, these

were also among the reasons for dropping out of treatment by some patients who had had previous treatment, exposing the existence of negative and disruptive experiences in this dimension.

Lower levels of satisfaction were observed for the dimensions accessibility/convenience (waiting time for a scheduled consultation, ease of making the first appointment) physical environment (comfort and cleanliness of the facility) and availability of resources (availability of diagnosis exams in the facility). Dissatisfaction with the unavailability of exams coincides to some extent with findings presented by Palha et al,<sup>10</sup> and is a problem that needs to be addressed within the context of tuberculosis care, irrespective of whether based on the Family Health Program or reference outpatient unities.<sup>9,13</sup> Access to treatment is an attribute that is highly valued by public health service users, who, particularly in situations of socioeconomic vulnerability, have no other health care alternatives.

There was no association between satisfaction level and previous treatment for tuberculosis, treatment duration or gender, unlike a study conducted in Uganda

**Table 4.** Bivariate analysis between satisfaction and socio-demographic and clinical characteristics. Metropolitan Region of Rio de Janeiro, RJ, 2010.

Variable	More satisfied			Less satisfied			$\chi^2$ (p)
	n	%	SE	n	%	SE	
Received previous treatment for tuberculosis							0.2739
No	2,202	68.3	4.4	1,023	31.7	4.4	
Yes	850	75.9	5.6	270	24.1	5.6	
Sex							0.6779
Female	1,267	68.9	4.7	572	31.1	4.7	
Male	1,785	71.2	4.5	721	28.8	4.5	
Age (years)							0.0025
18 to 30	672	53.3	6.8	589	46.7	5.8	
31 to 40	600	66.6	5.9	301	33.4	5.9	
41 to 50	853	83.5	4.6	169	16.5	4.6	
51 to 60	627	80.8	7.4	149	19.2	7.4	
61 to 70	235	78.6	8.4	64	21.4	8.4	
> 70	65	75.8	20.6	21	24.2	20.6	
Education							0.0086
Illiterate/ Can read and write	338	84.1	8.3	64	15.9	8.3	
Elementary/secondary education incomplete	912	69.5	4.1	400	30.5	4.1	
Secondary education complete	776	67.9	6.9	368	32.1	6.9	
High school	968	76.0	5.3	306	24.0	5.3	
Undergraduate education	58	27.4	9.8	155	72.6	9.8	
Type of treatment							0.0253
Self-administered	2,036	66.6	4.3	1,023	33.4	4.3	
Supervised treatment (DOTS)	1,016	79.0	4.6	270	21.0	4.6	

SE: Standard error of estimate; DOTS: Directed-observed treatment strategy



**Table 5.** Analysis of logistic regression of factors associated with higher levels of satisfaction. Metropolitan Region of Rio de Janeiro, RJ, 2010.

Variable	Intercept	Standard Error	P	Odds ratio	
				Estimate	95%CI
Age (ref: 18 to 30 years)	-0.33	0.41	0.4233		
31 to 40 years	0.84	0.41	0.0415	2.33	1.03;5.24
41 to 50 years	1.66	0.46	0.0003	5.26	2.15;12.87
51 to 60 years	1.51	0.59	0.0105	4.51	1.42;14.31
> 60 years	1.42	0.65	0.0291	4.14	1.16;14.83
Education (ref: up to secondary level)					
High school level	0.73	0.43	0.0853	2.08	0.9;4.8
Undergraduate level	-1.33	0.62	0.0314	0.27	0.08;0.89
Type of treatment (ref: self-administrated)					
Supervised - DOTS	0.64	0.32	0.0440	1.90	1.02;3.55

DOTS: Directly observed treatment strategy  
Concordant percentage: 68.5;  $c = 0.719$ .

that found that patients undergoing treatment for longer periods and women were more satisfied with the program.<sup>1</sup> It was observed that younger and more educated patients reported lower satisfaction levels, which may be related to higher standards of expectations, and, surprisingly, patients with high school reported higher satisfaction levels than those that had, at the most, reached the end of secondary education.

Overall satisfaction was higher among patients under DOTS, suggesting greater adherence to the program with this type of treatment. This may also indicate that other organizational aspects related to the provision of DOTS have a positive effect on satisfaction. This finding is consistent with other studies linking the use of DOTS to other strategies that improve the structure and process of tuberculosis care, as well as to better results,<sup>5,14</sup> reinforcing the importance of expanding this and other internationally recommended strategies for tuberculosis treatment.

Some methodological aspects may have influenced the findings of this study. Low adherence to the suggestion of 'less medicine' could have resulted from the fear of not receiving all the medication necessary for the treatment due to economizing on resource. Besides this, the low valorization of subsidized transport could be attributed to the low number of patients undergoing the DOTS treatment method, which requires the patient to go to the health care unit to take his or her medicine.

Patients undergoing retreatment, about a quarter of the interviewees, claimed that they abandoned the program as they believed they were cured before the treatment had been completed, because of a lack of knowledge of the severity of the disease and due to operational difficulties for maintaining treatment for long periods, including difficulties in accessing the health services

and the side effects of the medication. These results are similar to those found in a study of Kaona et al,<sup>6</sup> conducted in Ndola, Zambia, which identified factors contributing to tuberculosis patients' non-adherence to treatment, based on a household survey conducted in six randomly selected areas, including 400 recruited patients and 726 patients who had been in treatment for the last six months. The results presented here for the metropolitan region of Rio de Janeiro confirm a trend of higher incidence of tuberculosis among relatively young men (average age approximately 41 years old) and with low level of education, in accordance with other studies conducted in Brazilian municipalities.<sup>7,10</sup>

More than 70.0% of treatments were self-administered, which is inconsistent with the recommendations for treating tuberculosis. The DOTS strategy is recommended as the main strategy for treatment, especially in cases of retreatment, corresponding to slightly more than 25.0% of the patients in this study. This result is a counterpoint to the study by Palha et al,<sup>10</sup> in which patients were predominantly under supervised treatment, although some adjustments to contextual specificities of the patients are needed, such as considering the cost of transportation, the relevance of the proximity of the service and the journey time.

Finally, the difficulty in identifying studies able to offer benchmarks compatible to our findings should be highlighted, suggesting the need for further studies on patient satisfaction with tuberculosis care in less specific contexts and based on more rigorous scientific methods.

Studies of patient satisfaction within public services can bring to light users' needs, perceptions and expectations,<sup>15</sup> although health services had long remained distant from the possibility of review by

users, alleging that they would be devoid of technical knowledge, and therefore unprepared for evaluation.<sup>12</sup> From the present study we captured the need for improvements in the structure of health services (cleanliness, comfort, availability to complete

examinations in the facility and having more doctors) and in the organization of care (reduction in waiting times for scheduled consultations), which also constitutes a practical finding for improving the TCP, aimed at increasing its effectiveness.

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This study was supported by the Global Fund contracted by the *Fundação para o Desenvolvimento Científico e Tecnológico em Saúde* (FIOTEC), Process ENSP-039-LIV-08.

Study presented at the 29<sup>th</sup> International ISQua's Conference, Geneva, Switzerland, in 2012.

The authors declare that there is no conflict of interest.

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## HIGHLIGHTS

The aim of the study was to discover user satisfaction with the Tuberculosis Control Program, identifying factors associated with variation in levels of satisfaction and suggestion to improve the care provided.

Despite falling rates of incidence and mortality for the disease and increases in capacity to detect cases in recent years, the percentage of cures is still well below the recommended 85.0%. In Brazil, tuberculosis is the third most common cause of death from infectious disease and the most common cause of death in AIDS patients. Faced with the low levels of cure still being recorded, patient adherence to treatment is still a challenge, indicating the importance of assessing patient satisfaction with the care received and identifying obstacles that may lead to them abandoning treatment.

Mean treatment time was 4.1 months, and the majority was self-administered treatment (70.4%). In 25.8% of cases, the patient had already received treatment for tuberculosis. There was a high rate of satisfaction, especially as regards provision of medicines and the respect shown to patients by health care professionals. The patients who tended to be most dissatisfied were younger patients ( $\leq 30$  years old), those whose treatment was self-administered and those with higher levels of education.

The quantitative increase in doctors, scheduling appointments with a set time and doing the examinations in the same place as the appointment would lead to a faster and more efficient care process, while an improvement in the comfort and cleanliness of the unit would meet expectations regarding basic health care service structural conditions.

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