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Primary Health Care and tuberculosis: services evaluation

Atenção Primária à Saúde e tuberculose: avaliação dos serviços

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ABSTRACT: *Introduction:* In order to control tuberculosis, the Brazilian Ministry of Health recommends the decentralization of control actions directed to the Primary Health Care, and there are few studies on the performance of the Tuberculosis Control Program in decentralized contexts. *Objective:* To evaluate the performance of Primary Health Care services in tuberculosis treatment. *Methods*: This is an evaluative study with cross-sectional approach conducted in 2011. Two hundred and thirty-nine health professionals from Primary Health Care units were interviewed using a structured instrument based on the evaluation reference of the health services quality (structure – process – results). The performance of these services was analyzed applying techniques of descriptive statistics, validation, and construction of indicators and by determining the reduced variable "Z". *Results*: The indicators "participation of professionals in tuberculosis patients' care" (structure) and "reference and counterreference" (process) had the best evaluations, whereas "professional training" (structure) and "external actions for tuberculosis control" (process) had the worst results. *Conclusion*: The decentralization of tuberculosis control actions has been taking place in a vertical manner in Primary Health Care. The challenge of controlling tuberculosis involves overcoming constraints related to the engagement, training, and turnover rates among health professionals, which is a coordination between services and monitoring of control actions in Primary Health Care.

Keywords: Tuberculosis. Public health. Health evaluation. Health services evaluation. Primary Health Care. Patient care team.

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RESUMO: *Introdução*: Visando controlar a tuberculose, o Ministério da Saúde recomenda a descentralização das ações de controle para a Atenção Primária à Saúde, sendo escassos os estudos acerca do desempenho do Programa de Controle da Tuberculose em contextos descentralizados. *Objetivo*: Avaliar o desempenho dos serviços da Atenção Primária à Saúde no tratamento da tuberculose. *Métodos*: Estudo avaliativo, realizado de maneira transversal em 2011. Foram entrevistados 239 profissionais de saúde da Atenção Primária à Saúde utilizando um instrumento estruturado com base no referencial de avaliação da qualidade dos serviços de saúde (estrutura, processo e resultado). O desempenho de tais serviços foi analisado mediante técnicas de estatística descritiva, validação e construção de indicadores e cálculo da variável reduzida Z. *Resultados*: Os indicadores "participação de profissionais no atendimento aos pacientes com tuberculose" (estrutura) e "referência e contrarreferência" (processo) foram os melhores avaliados, enquanto "capacitação dos profissionais" (estrutura) e "ações externas para o controle da tuberculose" (processo) tiveram os piores resultados. *Conclusão*: A descentralização das ações de controle da tuberculose vem ocorrendo de maneira verticalizada na Atenção Primária à Saúde. O desafio de controlar a tuberculose perpassa pela superação de fragilidades relacionadas ao envolvimento, à capacitação e à rotatividade profissional, que é a articulação entre os pontos de atenção e monitoramento das ações de controle na Atenção Primária à Saúde.

Palavras-chave: Tuberculose. Saúde pública. Avaliação em saúde. Avaliação de serviços de saúde. Atenção Primária à Saúde. Equipe de assistência ao paciente.

INTRODUCTION

Tuberculosis (TB) planning and control strategies have been elaborated by national and international health agencies over the years, which confirms the evidence that the disease is characterized as a persistent public health problem. However, epidemiological TB indicators remain unsatisfactory. In 2011, 9 million new cases of the disease were estimated worldwide, with 1.4 million deaths owing to the disease[1,2].

Aiming at overcoming access barriers and amplifying the assistance to patients with TB in Brazil, the decentralization of the Tuberculosis Control Program (TCP) to Primary Health Care (PHC) has been considered as an essential organizational arrangement to control the disease, and it is an important element in the recommendations adopted by the Ministry of Health[2].

Thus, potential of PHC as structurer and organizer of the health services network, with the responsibilities of solvability, coordination, and accountability, is rescued[3]. However, management of TB as a chronic disease requires reflections on the organizational and operational contexts of the health system in Brazil, as the health care is provided in a fragmented, reactive, and episodic manner[3].

In this scenario, health care network is challenged to be restructured so it can incorporate TCP responsibilities into the various providers of the health system[4].

Despite scientific contributions to the development of guidelines for the TB control[5-13], there are few studies on the operational performance of TCP in a context of decentralization. Moreover, aspects related to the context and to health services, which affect the performance of disease control actions, are not clear; therefore, questions on the effectiveness of decentralization emerge. Consequently, the potential of evaluative studies to provide information and knowledge enhancement concerning changes in health scenarios is recognized, raising the need to evaluate PHC services for TB control in a context of decentralization. Such studies are believed to possibly support the development of strategies to strengthen population's access to disease control actions, in accordance to the recommendations of the Ministry of Health[14]. In this context, this study aimed at evaluating the performance of PHC services related to treatment of TB.

METHODS

This is an evaluative study which is part of the multicenter project named "Evaluation of Primary Care for the treatment of tuberculosis in the perspective of health professionals and patients in Brazilian municipalities". This project was carried out transversally in São José do Rio Preto, a large municipality of São Paulo State, which, in 2010, had an estimated population of 408,258 inhabitants[15], with human development index of 0.834 and Gini index of 0.50.

In 2011, the city had a municipal health network organized by region in five health districts, consisting of 13 Basic Health Units (BHU); 12 Family Health Units (FHU), which corresponded to a 21.2% coverage of the population by the strategy; 5 emergency units; 1 regional specialty outpatient clinic with TCP; 1 specialized outpatient clinic for sexually transmitted diseases (STD/AIDS), and 6 hospitals. The assistance to patients with TB was responsibility of the PHC generalist teams, during business hours. Such care was performed by doctors, nurses, assistants/nursing technicians, and community health workers (CHW), who were references for TB and who were supported by specialized municipal TCP staff. Program coordinator also performed medical assistance functions on a weekly workload of 20 hours.

Data were collected from July to December 2011 by means of interviews with key respondents (stakeholders), who were health professionals (doctors, nurses, assistants/nursing technicians, and CHW) implementers of TB control actions at the 25 PHC units in São José do Rio Preto (observation units). In addition to the interviews, information related to human resources and TB treatment outcomes was collected using the National Registry of Health Establishments (acronym in Portuguese – CNES) and the State System for Tuberculosis Notification (TBWEB), respectively.

For the interviews, a structured questionnaire was elaborated based on the methodological framework for assessing the quality of health services (structure, processes, and

outcomes)[16]. The items of the questionnaire were developed based on bibliographic contents concerning the most relevant actions for the TB treatment at health care units in national and international levels[17-21]. In order to verify the adequacy and consistency of the questionnaire items, a validation by consensus was performed by the nominal group technique, and the interviews were conducted only after adjustments for the suggestions made by the subject-matter technical and operational experts.

For the sample calculation of the number of interviews to be carried out, the number of professionals working at PHC services was retrived from CNES. On the basis of that total population (n = 633) and considering 0.05 sampling error, 95% confidence interval, and p-value (population proportion) of 50%, the minimum sample of 384 professionals was obtained by the equation $n_0 = \dfrac{p.(1-p).Z^2}{e^2}$. The minimum sample was adjusted for the total population of professional, which totaled 239 interviews. Proportionate stratified sampling was applied according to the professional category. Simple random sampling was used for the selection of PHC units. Key respondents who agreed to participate in the study were interviewed after signing the informed consent form. Health services were drawn until the expected number of professionals in the sample calculation was reached.

In the data analysis, key respondents were characterized by descriptive statistics. Analysis of performance of PHC services was carried out by validation of the following nine indicators, according to the evaluative components of structure and processes: five structure indicators – engagement of professionals in the assistance to patients with TB, professional training, access to recording tools, availability of supplies, and coordination with other care levels[22]; and four processes indicators – information about TB, directly observed treatment (DOT), external TB control actions, and reference and counterreference to other health services.

To evaluate the performance of PHC services in TB treatment, a standardized value named "reduced variable Z" was calculated for each validated indicator by the following equation: $Z = \dfrac{P_i - \mu}{\sigma_P}$ (where P_i is the proportion of each health service with the studied characteristics), considering the reference values (mean value – considering μ = P; proportion of all health services with the characteristics studied and standard deviation), and calculated based on the results of 1,037 health professionals interviewed in the multicenter project.

As a comparison standard, a Z value = 1 was adopted as reference, that is, a standard deviation to observe differences between P_i and μ. Thus, PHC services whose indicators had Z value between -1 and 1 achieved the same performance than the overall mean ("good"); services with Z > 1 were considered satisfactory, and Z < -1 were considered unsatisfactory.

To analyze the association between the variables that composed the indicators and PHC services (BHU and FHU) that cared for the patient with TB, c^2 test or Fisher's exact test was

used. For analysis of the "outcome", conventional indicators of cure, treatment abandonment, and death were used.

The project was approved by the Ethics Committee of the *Faculdade de Medicina de São José do Rio Preto*, under the protocol number 3747/2011.

RESULTS

Among the 239 health professionals (11.3% – nurses, 15.1% – doctors, 20.5% – assistants/nursing technicians; 53.1% – CHW), 74.5% were employed by the health institution directly. More than half of the doctors (52.8%) and nurses (57.1%) of the FHU did not take civil service examinations. Doctors (61.1%) had more than one job and mean tenure in the current health service of 1.5 years.

PHC services performance in the indicators "structure" and "processes" in the attention to TB are shown in Figure 1. The proportions of BHU and FHU according to the performance in the evaluated indicators are presented in Tables 1 and 2, which also show the evaluation criteria (variables) that composed each indicator.

The indicator "professional training" to care for TB patients had the worst performance in the municipality (Z = -2.2; Figure 1) both at BHU and FHU (Table 1), with low proportion of training for TB care for the assistants/nursing technicians, doctors, and CHW during the last three years, especially at the BHU (Table 2). "Reference and counterreference" was the best indicator evaluated in the municipality (Figure 1), mainly among BHU (Table 1), despite the low proportion of counterreferences (Table 2).

There was statistically significant association between FHU and engagement of doctors and CHW in the care for patients with TB, training on TB for doctors and assistants/nursing technicians in the past three years, access to the notification form, medical records, and monthly follow-up forms, discussion with TB patient about the location for providing DOT and offering of home visits, as shown in Table 2. Cure rate was lower at BHU in comparison to that of FHU between 2008 and 2010. An increase of TB treatment abandonment was observed in 2011, with such rate being higher at BHUs between 2008 and 2011. BHU had higher proportion of deaths in 2009 and 2011 (Table 3).

DISCUSSION

National literature covering post-decentralized scenarios of TCP control actions at primary services shows discrepancies. Favorable conditions for the achievement of TB treatment outcome indicators[10,12] are opposed to the decrease in adherence to treatment and cure rates[6], poor access[8,9], and poor integration between health actions and services in the planning of care to patient[13], and do not indicate better results between services with different forms of organization (decentralized PHC

Structure indicators

Participation of professionals in the care for patients with TB: composed by the variables "engagement of assistants/nursing technicians; doctors, and community health workers with care for TB patients"; with reference values – n = 1,037, mean = 84.15%, and standard deviation = 3.29%. Professional training: training conducted by the Municipal TB Control Program in the last 12 months; and doctors, nurses, assistants/nursing technicians, and community health workers trained in the past three years, with reference values – n = 1,037, mean = 56.00%, and standard deviation = 4.50%. Access to the recording tools: access to the notification form, medical records, monthly follow-up form, daily record of DOT, green book by professionals with reference values – n = 1,037, mean = 72.00%, and standard deviation = 4.05%. Availability of supplies: sputum collection containers, request for bacilloscopy and culture, with reference values – n = 1,037, mean = 92.16%, and standard deviation = 2.42%. Coordination with other levels of care: coordination with other health services if the patient need medical appointments owing to comorbidities, coinfection with HIV, treatment complications, and difficulties in providing DOT, with reference values – n = 1,037, mean = 85.75%, and standard deviation = 7.62%.

Process indicators

Information about TB: composed by the variables "information on route of transmission of the disease, schedule of medication, adverse drug reactions, need to investigate TB contacts, and importance of adherence to treatment,"with reference values – n = 1,037, mean = 97.70%, and standard deviation = 1.35%. DOT: discussion with the patient on completion of DOT, location to provide DOT, and day of the week to provide DOT; offering of DOT at home, offering of DOT at health care facilities, with reference values – n = 1,037, mean = 78.24%, and standard deviation = 3.72%. External TB control actions: conducting home visits and educational activities routinely and during campaigns, with reference values – n = 1,037, mean = 74.83% and standard deviation = 3.91%. Reference and counterreference: assistance in scheduling examinations and medical appointments, provision of written information, conterreference of information about medical appointments, with reference values – n = 1,037, mean = 70.52%, and standard deviation = 4.11%.

HR: human resources; PR: physical resources; SO: service organization; TB: tuberculosis; DOT: directly observed treatment.
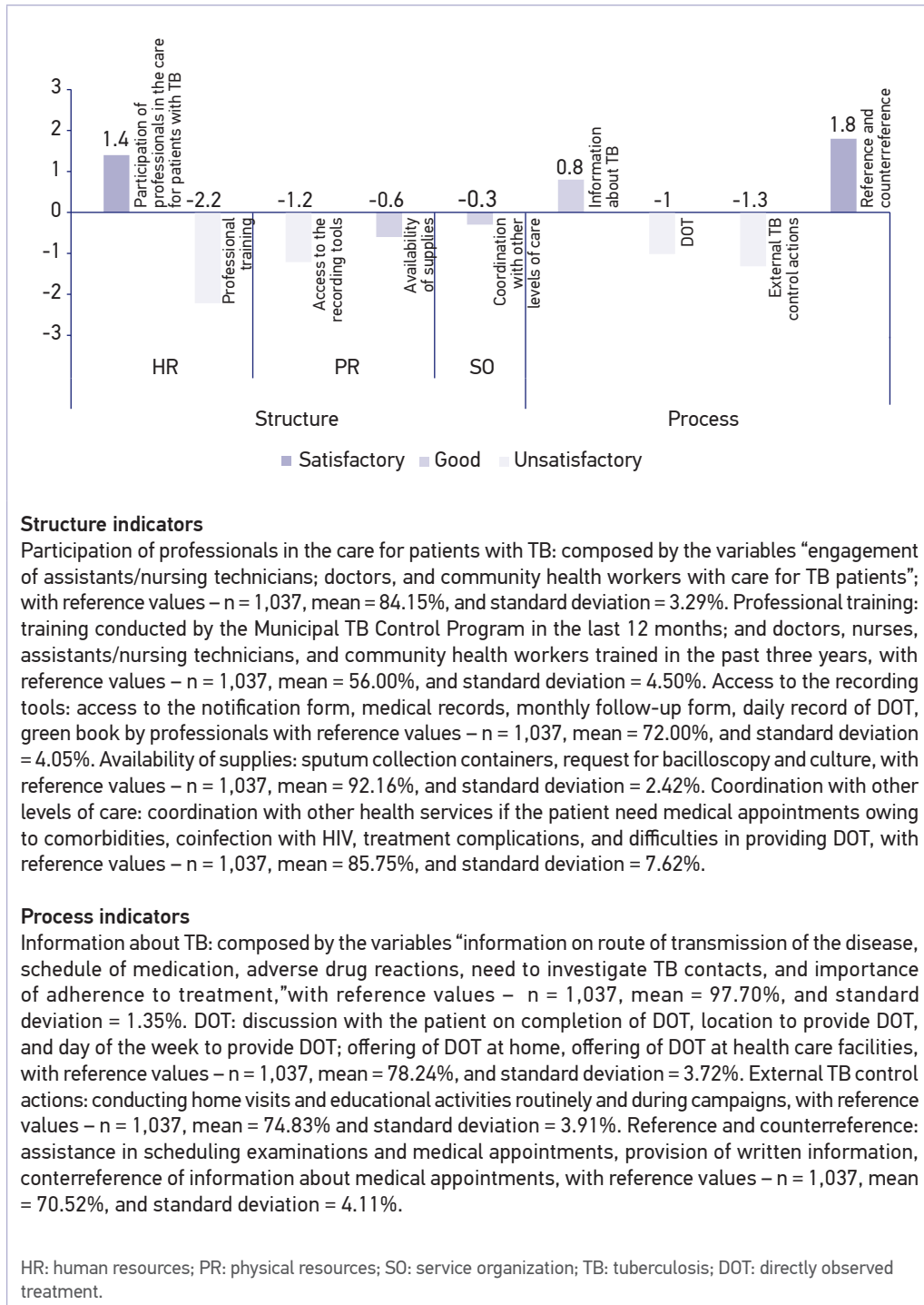
Figure 1. Structure and process of care indicators for tuberculosis patients in Primary Health Care services, São José do Rio Preto, Brazil, 2011.

or centralized specialized services)[5,6,11]. Therefore, intrinsic organizational aspects of different scenarios and health services were found to interfere in the ability to operationalize decentralization.

Boundaries of the incorporation of TCP actions to PHC services are rooted in aspects related to the current health care model, to resistance and turnover of professionals, to overload and lack of qualified human resources[23], similar to what was observed in this study. In fact, despite the possibilities of the PHC to trigger actions based on preventive medicine with a focus on teamwork, satisfactory engagement of the team in TB control actions observed in this study is opposed to control actions carried out from the logic of the biomedical work, in a fragmented manner, by PHC health teams that are poorly committed to collective work and are poorly integrated with each other[3].

Table 1. Proportion of Primary Health Care services' performance according to the evaluated indicators, São José do Rio Preto, Brazil, 2011.

Evaluative component		Indicator	BHU			FHU		
			Unsatisfactory (%)	Good (%)	Satisfactory (%)	Unsatisfactory (%)	Good (%)	Satisfactory (%)
Structure	HR	Professionals' engagement with care for TB patients	8.4	58.3	33.3	–	7.7	92.3
		Professional training	66.6	16.7	16.7	46.2	30.8	23.0
	PR	Access to recording tools	58.3	–	41.7	38.5	38.5	23.0
		Availability of supplies	41.7	16.6	41.7	38.5	23.0	38.5
	SO	Coordination with other levels of care	25.0	41.7	33.3	30.8	53.8	15.4
Process		Information about TB	8.3	–	91.7	7.7	30.8	61.5
		DOT	50.0	8.3	41.7	30.8	23.0	46.2
		External TB control actions	66.6	16.7	16.7	53.8	23.1	23.1
		Reference and counterreference	–	16.7	83.3	7.7	38.5	53.8

HR: human resources; PR: physical resources; SO: service organization; BHU: Basic Health Units; FHU: Family Health Units; TB: tuberculosis; DOT: directly observed treatment.

Table 2. Distribution of tuberculosis treatment variables evaluated according to indicators, evaluative components, and type of evaluated Primary Health Care services, São José do Rio Preto, Brazil, 2011.

Evaluative component		Indicator	Evaluative criteria (variables)	BHU (n = 82)	FHU (n = 157)	p-value
Structure	HR	Professionals' engagement with care for TB patients	Assistant/nursing technician	66 (80.5%)	132 (84.1%)	0.4847
			Doctors	78 (95.1%)	156 (99.4%)	0.0296[a]
			Community health worker	64 (78.0%)	147 (93.6%)	0.0003
		Professional training	Nurses	46 (56.1%)	103 (65.6%)	0.1498
			Assistant/nursing technician	15 (18.3%)	61 (38.9%)	0.0011
			Doctors	27 (32.9%)	86 (54.8%)	0.0013
			Community health worker	28 (34.1%)	69 (43.9%)	0.1428
			Training conducted by PHC in the last 12 months	35 (42.7%)	68 (43.3%)	0.9257
	PR	Access to recording tools	Notification form	53 (64.6%)	125 (79.6%)	0.0116
			Medical records	59 (72%)	144 (91.7%)	< 0.001
			Monthly treatment follow-up report	47 (57.3%)	110 (70.1%)	0.0487
			Daily DOT records	45 (54.9%)	102 (65.0%)	0.1280
			Green book	29 (35.4%)	66 (42.0%)	0.3169
		Availability of supplies	Sputum collection containers	79 (96.3%)	153 (97.5%)	0.6287[a]
			Form to request sputum smear microscopy	72 (87.8%)	147 (93.6%)	0.1225
			Form to request sputum culture	65 (79.3%)	129 (82.2%)	0.5864
	SO	Coordination with other levels of care	In cases of comorbidity	63 (76.8%)	124 (79.0%)	0.7019
			In cases of co-infection with HIV	62 (75.6%)	128 (81.5%)	0.2819
			In cases of complications in the treatment	73 (89.1%)	133 (84.7%)	0.3590
			In case of difficulties to provide DOT	72 (87.8%)	123 (78.3%)	0.0731

Continue...

Table 2. Continuation.

Evaluative component	Indicator	Evaluative criteria (variables)	BHU (n = 82)	FHU (n = 157)	p-value
Process	Information about TB	As for the route of TB transmission	81 (98.8%)	156 (99.4%)	0.6388[a]
		Information about TB As for the medication schedule	80 (97.6%)	155 (98.7%)	0.5050[a]
		As for the adverse drug reactions	80 (97.6%)	152 (96.8%)	0.7455[a]
		As for the need to investigate TB contacts	80 (97.6%)	154 (98.1%)	0.7864[a]
		As for the importance of adherence to treatment	80 (97.6%)	156 (99.4%)	0.2348[a]
	DOT	Need for DOT provision	53 (64.6%)	119 (75.8%)	0.0681
		Location to provide DOT	48 (58.5%)	125 (79.6%)	0.0005
		Day to provide DOT	54 (65.9%)	121 (77.1%)	0.0630
		Offering of DOT at home	39 (47.6%)	92 (58.6%)	0.1035
		Ofering of DOT at HCF	75 (91.5%)	138 (87.9%)	0.4006
	External TB control actions	Offering of home visits to priority TB cases	73 (89%)	152 (96.8%)	0.0149[a]
		Routine educational actions on TB	18 (22%)	52 (33.1%)	0.0716
		Educational activities during TB campaigns	74 (90.2%)	136 (86.6%)	0.4158
	Reference and counterreference	Assistance in scheduling examinations and medical appointments	76 (92.7%)	137 (87.3%)	0.2012
		Provision of written information	79 (96.3%)	143 (91.1%)	0.1332
		Counterreference of information	41 (50%)	74 (47.1%)	0.6737

HR: human resources; PR: physical resources; SO: service organization; [a]: Fisher's exact test; BHU: Basic Health Units; FHU: Family Health Units; TB: tuberculosis; DOT: directly observed treatment; HCF: health care facility.

In contrast, initiative of nurses can be observed in TB control actions in PHC, especially in the management of cases, leading to reflections about the management of the disease in such services. If, on the one hand, this centralization of information on monitoring of cases by nurses enables faster assistance to patients, accessibility to recording tools, and

control of information, on the other hand, the limits of such performance should be evaluated so that health team do not become unaware of the actions for TB control in health services, as observed.

Although studies indicate better performance of professionals in TB control actions after participating in training sessions[24], the low performance of professional training indicator reveals the fragility of educational activities focused on health workers, especially among assistants/nursing technicians and physicians[25]. This confirms the limited participation of professionals in trainings, which involve only nurses in most cases. Although the work process of the FHU teams values the conduction of ongoing trainings, it seems that the organization dynamics of these units has not allowed time for this trainings, as noted by the low proportion of FHU with satisfactory performance on the professional training indicator, which reinforces the compartmentalized actions that are focused on a single PHC professional. Therefore, there is a need to establish new working relationships, redistributing functions and responsibilities among each health professional so that the centralization of the management of patients with TB by nurses may be overcome and shared with other team members[26].

Along with poor engagement and lack of professional training identified, the multiple types of professional employment arising from political and partisan discontinuity of the municipal management may have been used as political control over the teams, contributing to high staff turnover and short tenure at the same PHC unit, as observed in this study. The impact of these issues and of employment insecurity to discontinued health actions[6,25] becomes evident by the significant worsening of treatment outcome indicators in 2011, when civil service examinations were launched in the municipality. Therefore, the professional disengagement owing to the discontinuity of jobs in the PHC may have compromised the performance of these professionals, including in TB control actions.

Table 3. Indicators of cure, treatment abandonment, and death among tuberculosis patients followed-up by the Primary Health Care services in São José do Rio Preto, Brazil, from 2008 to 2011.

Indicators	2008 (n = 87)		2009 (n = 71)		2010 (n = 54)		2011 (n = 74)	
	BHU	FHU	UBS	BHU	BHU	USF	BHU	USF
Proportion of cure	51 (89.5%)	30 (100%)	43 (82.7%)	18 (94.7%)	26 (78.8%)	21 (100%)	39 (79.6%)	18 (72%)
Proportion of abandonment	2 (3.5%)	0 (0%)	4 (7.7%)	1 (5.3%)	3 (9.1%)	0 (0%)	8 (16.3%)	6 (24%)
Proportion of TB-related and not TB-related deaths	4 (7%)	0 (0%)	5 (9.6%)	0 (0%)	4 (12.1%)	0 (0%)	2 (4.1%)	1 (4%)
Total	57	30	52	19	33	21	49	25

BHU: Basic Health Units; FHU: Family Health Units.

However, the situation involving doctors is peculiar owing to the lack of professionals and the short tenure of these professionals in PHC services. Therefore, in 2009, along with the initiative of the Ministry of Health which allowed a more flexible working schedule in the PHC[27] and trying to retain these professionals in the services, the city of São José do Rio Preto regulated the gratification to doctors according to their productivity. However, such initiative did not improve the low tenure of those professionals in the PHC services, the multiple employments, and the differences in employement contracts (hired with or without civil service examinations), which are commom among these professionals and were corroborated by the findings of this study. This situation may have occurred owing to the lack of career planning and salary differences within the PHC, which are also observed in other scenarios[28]. This scenario encourages the professionals to prioritize activities performed to private health care plans at the expense of the performance in PHC and also compromises their engagement in actions to manage chronic conditions that require constant monitoring in PHC, such as TB.

The unsatisfactory performance on the indicator of access to recording tools is indicated by the centralization of the records in a cabinet dictint from the others used by the health professionals, which is intended to facilitate the access by nurses. Therefore, while, on the one hand, the recording of daily medication is facilitated, on the other hand, there are difficulties in the planning of care by all team members, who did not participate in the elaboration of a common care plan that is shared with other members. This aspect corroborates the lack of integration among professionals from the same health care unit and reveals weaknesses in the use of recording forms for TB treatment[29]. At FHU, the better performance on this indicator may result from increased use of recording tools by CHW, who maintain the recording forms together with the medical records. By doing so, CHW manipulated the medical records to take notes of their production at work, which is not always related to patients with TB followed-up by the health service.

Restrictions related to access to recording tools, mainly medical records and monthly treatment follow-up reports is linked to the difficulties revealed on recording information and using registered information[30] in the PHC services. These actions are considered bureaucratic, nonpriority, and secondary to the incorporation of program activities to the health service. This leads to losses in the qualification of work processes and, consequently, to completeness and continuity of care, which hinders the planning of interventions by the health team based on the information generated at the PHC[24,26,31].

Another observed aspect that negatively impacted the improvement of care quality by means of the self-monitoring strategy by the health team is the lack of access and lack of review of the report book on control of TB treatment (green book), which needs to be periodically carried out by the health team[10]. Therefore, as management of TCP at the studied city remained centralized, although TB control activities have been decentralized to the PHC, only the Central Program Coordinator carried out the follow-up and monitoring of TB indicators. Therefore, there are indications on the use of TB information by the PHC teams only to prepare monthly follow-up reports to meet the requests of the TCP manager, and not as a strategy for the management of the case or team's organization.

In this study, although the supplies to perform TB treatment follow-up and control were available at the health units, which is indicated by the good performance on this indicator, such availability did not necessarily guarantee the accomplishment of TB follow-up tests[5,19]. Therefore, we can assume that the commitment of health professionals is essential to the accomplishment of care activities.

The distribution of health work and the centralization of information concerning the TB cases with nurses in the studied PHC units are evidenced by the variation of performance on the indicator of availability of supplies, which enable the understanding that the performance of CHW and assistants/nursing technicians on TB follow-up is secondary and occasional, and therefore they are not aware of such supplies in health units, revealing again the unawareness of the full assistance provided to patients with TB.

Although the analysis of the integration of PHC services with other health units has been positive, it is actually not formal, usually carried out by telephone, and unregistered. Consequently, as unregistered information on follow-up of patients is lost owing to the absence of nurses in the health services, which is aggravated by staff turnover rates in PHC, the continuity of care provided to patients with TB by health teams become deficient, compromising the effectiveness of the program[30,32]. Furthermore, the incipient observed usage of counterreference in the PHC service is a concern, as the effectiveness of care coordination relies on a well-defined regulatory structure of care[32]. In addition, the absence and nonuse of micromanagement technologies by the PHC in São José do Rio Preto, such as clinical protocols and integrated information systems, hamper the incorporation of effective reference and counterreference systems, also contributing to the lack of integration of control actions for chronic diseases in the health services.

Therefore, it is necessary to reflect on possible contradictions related to the performance on the indicator "reference and counterreference," which was satisfactorily evaluated owing to the high number of referrals, to the assistance in scheduling examinations and appointments, and to the provision of written information. The tendency to refer and the incipient actions on counterreference of information, which are considered as a critical node of the Brazilian health system, were observed[32].

Despite the importance of conducting home visits and educational activities to patients with TB, to their families, and to the community in order to drive changes in the diagnostic process, to promote self-care, and adherence to treatment[33], these have not been part of work routine of the PHC teams, given the unsatisfactory performance on the indicator of external actions, possibly owing to overlapping of tasks and responsibilities, physical environment barriers, lack of community interest, and training and commitment of the health team[34]. At FHU, the use of home visits as a tool to follow-up families seems to have favored a better assessment of the service on this indicator.

Similarly, despite the importance of individual guidance on the disease to educate and empower the TB patient[18], it has been carried out occasionally by PHC services teams with a focus on technical clarifications of the treatment, which corroborates the fact that although the indicator of information about TB have achieved good performance, along

with other well-evaluated indicators, it did not guarantee favorable indicators of treatment outcome.

Consistent with the unsatisfactory rating of the DOT indicator, there was a decrease in the accomplishment and effectiveness of drugs monitoring in BHU, which impacted directly and negatively on increasing the proportion of treatment abandonment and deaths between 2008 and 2009. Other studies have shown that depreciation of DOT[30] and resistance of PHC professionals to incorporate this activity into health services[22] may result from the history of DOT conduction, which was initially centralized and implemented only by professionals of the TCP, as well as from the turnover of professionals, weakness of training, and unavailability of material resources for the provision of DOT at home of patient[18]. These facts are confirmed by the conduction of DOT only in PHC services.

At FHU, from 2008 to 2010, and at BHU, from 2009 to 2010, treatment abandonment and death showed the same negative trend, although the completion of DOT has increased in the corresponding periods. This reveals that adherence to treatment is not guaranteed by the availability of free drugs, or by offering incentives[6,14]. Issues related to the organizational structure of services, limitation of the DOT, observation of patients' drug taking, and coordination between the health service professionals, the PHC services, and program coordination, may have influenced this result. Moreover, we recognize that aspects related to patients with TB may also have motivated them to abandon the treatment, although it was not the aim of this study. In this regard, the need to perform evaluations with all stakeholders in the process should be emphasized.

CONCLUSION

The results indicate awareness of the following limiting issues to TB control in the PHC services: fragility of the professionals' engagement with the disease control actions; hierarchical and centralized control actions in the PHC; staff turnover; weaknesses in the professional training process; need to further coordinate between the health care services, and weaknesses of the monitoring strategies of TB control actions developed in the context of PHC.

The achievement of better TB treatment indicators depends on the improvement of structural and organizational aspects of PHC. The challenge to decentralize TB control actions to PHC is revealed, and reinforces the need to reorganize and strengthen this level of care, supported by the assumptions of political commitment and management capability. Therefore, a better coordination between the TCP management and the PHC services to empower them to implement disease control measures is recommended.

Overcoming deficiencies in the performance of these services in TB control requires that key stakeholders operating at the meso and micro levels of the Health System become involved and articulate to overcome the fragmentation and centralization of current care process.

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