Original Article

Monitoring and assessment of outcome in cases of tuberculosis in a municipality of Southern Brazil

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Avaliação do acompanhamento e desfecho de casos de tuberculose em município do sul do Brasil

Seguimiento y evaluación de los resultados de los casos de tuberculosis en el municipio del sur de Brasil

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ABSTRACT

Objectives: To monitor and assess the outcome of treatment for pulmonary tuberculosis in the tuberculosis control program in a prioritized municipality in Southern Brazil.

Methods: a quantitative study, descriptive, documentary, using records of people with tuberculosis in treatment between 2009-2013, the collection took place between June and July 2014 in the Tuberculosis Control Program. Descriptive statistics was used.

Results: The average number of consultations among the 629 patients was 7.2 per patient, with a mean interval of 1.03 months between visits. The average of smears was 2.7 tests per patient during the study period. The outcome of treatment was a cure rate of 87.8%, an abandonment rate of 8.3% and 6.5% of deaths.

Conclusions: despite the cure rate, abandonment is still high, thus, it is necessary to explore strategies for better adherence to treatment, and the commitment of the municipal administration in articulating monitoring in primary health care.

Keywords: Process evaluation (health care). Tuberculosis Health services / prevention & control.

RESUMO

Objetivos: avaliar o acompanhamento e desfecho do tratamento de casos de tuberculose pulmonar no programa de controle da tuberculose de um município prioritário do Sul do Brasil.

Métodos: estudo quantitativo, descritivo, documental, utilizando prontuários das pessoas com tuberculose em tratamento entre 2009-2013, a coleta ocorreu entre junho e julho de 2014 no Programa de Controle da Tuberculose. Utilizou-se estatística descritiva.

Resultados: a média de consultas, entre os 629 pacientes, foi de 7,2 por paciente, com intervalo médio de 1,03 meses entre as consultas. A média de baciloscopias foi de 2,7 exames por paciente, durante o período estudado. O desfecho do tratamento foi 87,8% de cura, 8,3% de abandono e 6,5% de óbitos.

Conclusões: apesar do alcance da taxa de cura, o abandono ainda é elevado**,** sendo necessário explorar estratégias para melhor a adesão ao tratamento, e o comprometimento da gestão municipal em articular o acompanhamento na atenção primária à saúde.

Palavras-chave: Avaliação de processos (cuidados de saúde). Tuberculose. Serviços de saúde/prevenção & controle.

RESUMEN

Objetivo: evaluar el seguimiento y tratamiento de la tuberculosis pulmonar en el programa de control de la tuberculosis en una ciudad prioridad en el sur de Brasil.

Método: estudio cuantitativo, descriptivo, documental, usando los registros de personas con tuberculosis tratados entre 2009-2013, los datos fueron recogidos entre junio y julio de 2014 en el programa de control de la tuberculosis. Se utilizó estadística descriptiva.

Resultados: entre los 629 pacientes el número medio de visitas fue de 7,2 por paciente, con un intervalo medio de 1,03 meses entre las visitas, y la media fue de 2,7 microscopías por paciente, no periodo del estudio. El resultado del tratamiento fue del 87,8% de curación, el 8,3% de deserción y 6,5% de muertes.

Conclusión: a pesar de la tasa de curación, el abandono es aún elevado, siendo necesario explorar estrategias para mejorar la adherencia al tratamiento, así como el compromiso de la gestión municipal en el seguimiento conjunto de los pacientes con tuberculosis por la atención primaria.

Palabras clave: Evaluación de procesos (atención de salud). Tuberculosis. Servicios de salud/prevención & control.

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INTRODUCTION

Tuberculosis (TB) is a global health problem, with 82% of the infections concentrated among 22 countries considered priorities for TB control. Brazil is in nineteenth place on the list, and in 2011 had an incidence rate of 36 cases per 100,000 inhabitants, while for the state of Rio Grande do Sul, the rate was higher than the national rate, with 46.1 cases per 100 000 inhabitants [1].

The Tuberculosis Control Program (PCT) in Brazil determines the scope of minimum goals for disease control, 85% of adherence to treatment and at most 5% of cases of abandonment. Thus, the treatment of active tuberculosis cases is considered priority activity of TB control, as it allows to interrupt the chain of transmission [2].

However, there are challenges to meeting these goals and the consequent TB control, the main one being the abandonment of treatment, which may be related to characteristics of the person with TB and the organization of health services [3-4]. The consequences of abandonment are of concern to health services, as this increases in the incidence rate of the disease and its mortality, and induces bacterial multidrug resistance [4]. It is known that the basic principles for successful treatment include choosing the appropriate treatment regimen in correct doses, and compliance with the time of treatment, besides conducting clinical follow-ups with the adoption of health education practices and observing treatment strategy (DOTS) [4-5].

It is observed that there are updated publications on the monitoring of patients with TB, on laboratory and radiological tests [6-7] and on the outcomes of treatment, showing that, globally, cure rates have not been reached, and that the abandonment rates are higher than expected [3-8]. However, there is a need to increase production regarding the follow-up actions, as well as to know the outcome of treatment for TB in southern Brazil, when considering the epidemiological importance of the disease in this setting. Therefore, it is crucial to elucidate knowledge about the theme, since the available and socialized results contribute in decision making and policy formulation to control the disease.

It is recognized that health services have a fundamental role in the success of TB control interventions, aiming to reach the targets set with individual actions and monitoring that impact the community. From this perspective, this study was designed to evaluate the monitoring and treatment outcome of pulmonary tuberculosis in the PCT of a priority municipality in Southern Brazil.

METHOD

This is a quantitative, descriptive, documental study with the purpose of assessing and monitoring the outcome of treatment of cases of pulmonary TB in adults in the PCT of a priority municipality in Southern Brazil. Such an assessment was based on the recommendations and indicators set out in the Recommendations Manual for TB control of the Ministry of Health (MS) [2].

The sample of this study was comprised of the records of people with pulmonary TB who started treatment in the period between 2009 and 2013 in the PCT of a municipality considered as a priority for TB control in Brazil. Inclusion criteria used the beginning of the treatment period selected for the study (2009-2013); having a pulmonary TB diagnosis; and being 18 years of age. The study excluded the records of institutionalized patients (prison, mental hospital and hospitals), since the monitoring is carried out in the institution, without consultations with the PCT clinic, as well as those patients who had not completed treatment until the data collection period.

Data collection took place between June and July of 2014. Data were collected using a structured, pre-coded form. The variables studied were: consultations during treatment; interval between consultations; smear performed during treatment; performing smear in the second, fourth and sixth month of treatment; laboratory tests and imaging; conducting testing for Acquired Immunodeficiency Virus (HIV); TB-HIV co-infection; outcome of treatment by healing, death and abandonment. Due to the given time period for data collection, five years, a same patient may have performed more than one follow-up during the period. In these cases, they have been recorded as retreatment and the outcomes of each treatment were considered.

According to the Recommendations Manual for TB Control [2], the treatment lasts six months, in general. To be considered cured, the patient must have two negative sputum smears, one during follow-up and the other at the end of treatment, along with radiological examinations which do not show signs of disease. Medical release by abandonment refers to patients who are absent of health services during treatment, for 30 consecutive days or more, after the scheduled date of return.

The collected data were coded and entered into a database built in Excel® Office suite. Data analysis was performed in a Statistics software by STATSOFT®, using descriptive statistics with frequency distribution, measures of central tendency (mean) and dispersion (standard deviation).

The PCT, which accompanies an average of 120 patients per month, has a team composed of two pulmonologists, a secretary and a social worker. There is no nurse.

The capture of respiratory symptoms is carried out by the health services network in the municipality, with suspected or diagnosed cases of TB being referred to the PCT by referencing. The other way to capture the SR is the spontaneous pursuit of these individuals by the PCT, using it as a gateway to SUS [Unified Health System], for having knowledge of the service specialty, and recognizing in the symptoms that suggest TB themselves. The public care network has a reference laboratory to carry out the smear, and a support service for the HIV, hepatitis and syphilis rapid tests. X-rays are performed by the Unified Health System (SUS) through its partner network. The PCT holds the monthly dispensation of antimicrobials for the treatment, and performs the follow-up of people with TB and their families at this time, until the end of treatment. It is worth mentioning that The treatment strategy directly observed in people during follow-up is not offered, therefore, the treatment is self-administered following the recommendation of the MS to perform monthly follow-ups of the cases. Thus, the person with TB travels monthly to the PCT clinic to withdraw antimicrobials for treatment during the next thirty days. For this reason, a transport voucher for the trip between the patient's residence and the PCT is occasionally offered as an incentive.

The sample was distributed over the five years of study as follows: in 2009, there were 178 cases of pulmonary TB; in 2010, there were 133; in 2011, there were 109; in 2012, 130 cases; in 2013, information was collected from those who had already completed treatment during the data collection period, totaling 79 cases of pulmonary TB.

Of the 629 TB patients included in this study, males predominated with 68.8% of cases (433), ages between ages 18-59 were the most prevalent, with 81.9% (515). The predominant occupation was janitorial services, 49.3% (310), with health professionals present portion of the cases 2.4% (15). In the sample of this study, it was observed that HIV (14.6%), and diabetes mellitus (10.4%) are among the main pathologies, although the greater number of patients did not register comorbidities (62%).

In this study, we have been complied with the ethical precepts of the Resolution 466/12 of the National Health Council [9]. With the submission of the project [10] Plataforma Brasil (Brazil Platform) for consideration by the Research Ethics Committee, it received favorable opinion, number 702,283.

RESULTS

The study sample consisted of 629 patients who underwent treatment from 2009 to 2013, with only those who obtained the outcome of discharge after cure, death of treatment abandonment being considered. As for the clinical follow-up, it was identified that there is are monthly visits to the PCT for medical consultations, being the average number of visits during the study period, 7.2 ± 2.7 per patient. Among those who complete treatment (n = 543), the interval between queries averaged 1.03 ± 0.46 months, with 99% of cases having a thirty-day interval between appointments.

It was observed that, of the total number of cases monitored during the study period, 7.6% (n = 48) were of TB retreatment, the average times of retreatment being 1.4 ± 0.54. The study subjects who underwent a new treatment cycle did so due to abandonment, or the return of the disease after a few months of discharge by cure.

Table 1 shows the distribution of follow-up examination requests per year.

Table 1 – Follow-up examinations in the Tuberculosis Control Program of Pelotas / RS from 2009 to 2013, distributed by year of request. Pelotas / RS, 2014

Ordered tests	Frequency n=629 (%)
Sputum smear	
2009	178 (28.3)
2010	133 (21.1)
2011	109 (17.3)
2012	130 (20.7)
2013	79 (12.6)
Chest x-ray	
2009	175 (27.8)
2010	133 (21.1)
2011	109 (17.3)
2012	130 (20.7)
2013	79 (12.6)
HIV test	
2009	172 (27.9)
2010	132 (21.4)
2011	107 (17.3)
2012	127 (20.6)
2013	79 (12.8)

Source: Survey data, 2014.

Chest x-rays were requested for 99.5% (n = 626) of monitored patients. As for laboratory tests, the average of sputum smears performed per patient was 2.7 ± 1.9 ranging from 1 to 9, with a median of 2. The second month smears were performed in 96.7% (n = 551) of cases, while the fourth month smears were performed in 63.2% (n = 360) and the sixth month smears in 47.9% (n = 273) of cases. HIV test were requested from 98.1% (n = 617) of patients with pulmonary TB at the PCT during the period of this study. Of this total, 68% (n = 419) were examined. The TB / HIV coinfection was present in 13.4% (n = 84) of patients with pulmonary TB monitored in the period.

Table 2 brings the distribution of the outcomes of cases followed by the PCT during the study period.

Regarding the outcome of treatment between the years 2009 and 2013, an 87.8% (n = 552) cure rate was achieved, 8.3% (n = 52) of abandonment and 6.5% (n = 41) deaths, of these 36.1% (n = 13) had the TB / HIV co-morbidity. Among the patients who abandoned treatment (n = 52), 51.9% (n = 27) did not return. Of those who resumed treatment (n = 25), 60% were discharged by cure, 16% of deaths and 24% of new abandonments.

Table 2 – outcomes of tuberculosis treatment in the Tuberculosis Control Program of Pelotas / RS from 2009 to 2013, distributed by year of request. Pelotas / RS, 2014

Treatment outcome	Frequency (n=629)
Discharge by cure	
2009	153 (86)
2010	114 (85,7)
2011	94 (86,2)
2012	125 (96,2)
2013	66 (83,5)
Death	
2009	17 (9,6)
2010	5 (3,8)
2011	7 (6,4)
2012	6 (4,6)
2013	6 (7,6)
Treatment abandonment	
2009	8 (4,5)
2010	14 (10,5)
2011	8 (7,3)
2012	15 (11,5)
2013	7 (8,9)

Source: Survey data, 2014.

DISCUSSION

This research presents new results on the monitoring and outcome of TB treatment for the southern region of Brazil, highlighting the thematic discussion based on the reality studied, which has features common to large urban centers of the country. The results are satisfactory according to current scientific production, and largely fall within the proportions recommended by the MS [2].

In settings where TB treatment is performed in the reference outpatient clinic, and in a self-administered therapeutic modality, features of this local study, monthly consultations are held for clinical evaluations and drug delivery. In these cases, the query generally becomes unique and critical for interventions that mediate successful treatment. Authors argue that the query should be widely explored by the healthcare team for explanations about the disease, treatment and transmission. Therapeutic success, abandonment and even multidrug resistance rely heavily on information provided by the team during consultations [11]. Thus, the preparation of professionals in health communication strategies can maximize treatment adherence [12].

However, the information to be provided to the TB patient and his family is numerous, and requires continued meetings to facilitate the absorption of information and to give room for asking questions, with monthly meeting being insufficient, even if put to good use. This may be contributing to the treatment abandonment rate being above the recommended at the study site.

The opportunity for staff to be face-to-face with the person being treated for TB becomes unique, also because it enables health professionals to monitor the reactions to treatment, adjust dosages and identify adverse effects to drugs [2]. Scholars argue that the evaluation of weight gain, reduced symptoms and improved x-ray of the chest, when combined, are more sensitive than the isolated use of sputum smear microscopy to evaluate the clinical outcome [6]. Therefore, it is important to provide direct contact between the health team and the person in treatment, either at the clinic or in the home, optimizing the monitoring of TB cases.

The absence of the scheduled visit to the patient is an indication that there may be an intention to abandon treatment [11]. In these cases, it is essential for to team to take immediate action by carrying out an active search

for the absentees. Researchers showed that a favorable factor to treatment adherence is provision of care by a full team consisting of physician, nurse, nursing assistant, social worker and visitor, and are related to the scope of the recommended percentage of adherence to treatment, which is over 85 % [2.13]. The health team responsible for the treatment of TB cases in the investigated scenario, does not have the nursing professionals and visitors, however, they achieved the expected cure rate, and the interval between queries meets the thirty days recommended by the TB control program, averaging seven visits per patient during the study period.

Another important issue in monitoring the clinical course of TB are follow-up examinations. Under current regulation in Brazil, sputum smear microscopy is used as a control treatment, and is held during the second, fourth and sixth month of follow-up. For the patient who is initially bacillus positive to be discharged, they need to have two negative smears verifying the cure, one in the follow-up phase and another at the end of treatment. In the absence of sputum, the recommendation is that a chest X-ray be used periodically to monitor the progress of the lesions in the pulmonary form of the disease [2]. In this study, a high frequency (99.5%) in the realization of chest X-rays to monitor the progress of treatment was observed.

Periodic inspections with sputum smears are an essential component in monitoring the disease, being the smear in the second month of treatment an important result of its evolution, and beacon for decisions about drug therapy [7]. Failure to perform the control smears can bring consequences such as a delay in identifying patients who do not adhere to treatment, or do not respond to drug therapy, and can hinder early detection of bacterial multidrug resistance [14].

It is observed that the follow-up of patients with the performance of sputum smear microscopy in this study occurred in the average of 2.7 per patient, being superior, except for that of the sixth month, to those found in a study conducted in the province of Santa fé / Argentina. In that study, of the 196 patients monitored, the sputum smear was performed in 79.1% at the end of the second month, 57.6% by the end of the fourth month and 70.1% at six months [7]. Scholars point lack of cough or sputum of patients, incomplete or inadequate information given by the health team about the need to undergo the sputum test [14], and the centralization of examination in reference laboratories far from the patient's home as possible reasons for the failure to undertake follow-up smear [7]. The importance of the accountability of the service that monitors the TB patient for the collection and delivery of the sample to the laboratory, which reduces travel costs for the patient and ensures the agility of operations is ratified.

Another examination recommended in face of a TB diagnosis is HIV testing, since early detection of TB / HIV allows the adoption of appropriate therapeutic measures, such as the initiation of antiretroviral therapy, prophylaxis of opportunistic infections and reducing the chances of HIV transmission, favoring the reduction of morbidity and mortality, and thereby restricting costs of hospital admissions and providing opportunities for better quality of life for patients [2.15]. MS [2] estimates the offering of HIV testing to be 70% and access to test results, 50%. In this study, superior results were yielded, since the number of requests was close to 100% and access to serology was in the range of 70% of patients with pulmonary TB. In a cross-sectional study using the national system database information (SINAN / TB) between the years 2007-2011, it was shown that, of the total of 429,567 patients with TB, only 56.73% had known a known HIV status [16]. The satisfactory results achieved on the testing of patients refers to the availability of rapid tests, being performed by the testing and counseling center in the city, located in the same building of the PCT clinic, and signals the good coordination between these services. It also demonstrates the quality of the approach and clarifications offered by the PCT on the importance of testing.

The prevalence of HIV positivity in the study sample was 13.4%, with this result being within the range estimated by MS, which is 15% [2]. However, on a national baseline study (SINAN / TB), it was found that of 46,466 patients with a known TB and HIV status, 19% were coinfected [16]. The association between HIV and extra pulmonary TB is highly prevalent [13], this fact may have influenced the proportion of co-infection identified in this study.

The cases of discharges in this study were for cure, treatment abandonment and death. Cure rates throughout the study period were higher than the 85% recommended by the MS [2]. In similar studies, lower rates were yielded, with a 75.3% cure rate in a study held in Argentina [7], a 71% cure rate in a study conducted in Recife / PE [4] and a 67.5% cure rate in research conducted in Goiânia / GO [8]. It is considered that this result is a positive mark for the service under study. However, regarding the treatment abandonment in the sample, negative results are revealed in the study period, with the abandonment rate being higher than the 5% recommended by the MS [2]. However, the results were better than those observed in Goiânia / GO (17,5%) [8] and Recife / PE (15%) [4].

Studies on treatment abandonment point to causes associated with patient characteristics, such as being male,

having work commitments [3], low education and a previous record of abandonment [4]. However, the health service also has responsibilities in this process. And yet, the form of organization of care to TB treatment, centralized in a single health service, which is distant from households, may be acting as a problem in access to treatment and providing the increase in this rate, which in the city under study is over the 5% recommended. Abandonment constitutes one of the barriers to TB control, encouraging bacterial multidrug resistance, which increases the costs of treatment and hospitalization, as well as leading to the rise in TB mortality rates [4].

Of the patients who abandoned treatment, only 48.1% resume, and yet, of these, 24% left again, and 16% resulted in deaths. Faced with these results, we see the need to review the strategy adopted by the team, with regard to the maintenance of treatment adherence. The involvement of a multidisciplinary team, with the construction of treatment plans aimed at the health of each patient's needs, can favor bonding and an integral approach, going beyond the pathology, considering the individual abandonment risks (cultural, social, economic and related to the stigma of the disease) [17].

In this study the death rate was similar to that identified in a study conducted in Chile [18], with a 6.1% deaths rate. The same authors found that patients with HIV have 3.9 times the risk of death compared those who are HIV-negative. It is noteworthy that in this sample of deaths, there was a TB / HIV presence in 36.1%.

When considering with the recognition of the aforementioned features, it is added that, in the context studied, management investments in strategies to improve the treatment outcome indicators has not been verified. It is believed that the scope of the proposed cure rate provides a false belief that it is achieving disease control. However, abandonment rates are high and leverage the continued transmission of TB, the rise of deaths in this group of patients and the perpetuation of the disease as a social problem.

To achieve better results, articulation between PCT, primary health care and the HIV / AIDS department, promoting communication between these services, continuity of care for patients with TB and the development and assessment of strategies that allow the health team to approach the reality of patients in order to promote bonding and co-responsibility between the patient and the healthcare team for successful treatment.

STUDY LIMITATIONS

Limitations of this study were related to the use of secondary data that are often incomplete and have inconsistencies.

CONCLUSIONS

When considering the evaluation of the follow-up treatment of 629 cases of tuberculosis in the PCT, it was observed that there is clinical follow-up being performed with an interval of thirty days between appointments, resulting in an average of 7.2 consultations per patient. As for laboratory tests, the smear average was 2.7 per patient, with the performance of smears in the second (96.7%), fourth (63.2%) and sixth months (47.9%). The performance of chest x-rays and HIV tests was carried out in virtually the entire sample. As for the outcomes, an 87.8% cure rate was obtained, 8.3% abandonment rate and 6.5% death rate.

Despite the fact that the service analyzed does reach the cure rate and positive results, when considering the interval between follow-up examinations and HIV testing, the abandonment rate for the treatment is still higher than that recommended by MS. This result is an important mark about the service studied, and is shared in other settings in the country, as seen in the literature cited.

Therefore, it is necessary to explore effective treatment monitoring strategies for people with TB, to promote adherence to treatment, among which one can infer the implementation of existing policies, such as TDO, replacing the self-administered treatment. Compliance with the effective participation of patients in follow-up visits should also be considered, and investment in a complete health team, now reduced in the service under study. The need for commitment by municipal management to the articulation of intersectional actions aimed at the achievement of comprehensive care, rethinking the provision of treatment and care for TB, aiming at creating a line of care for this topic is also highlighted.

REFERENCES

1. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde. Especial tuberculose. Bol. Epidemiol. 2012;43:1-12 [cited 2014 mar 20]. Available at: http://portal.saude.gov.br/portal/arquivos/pdf/bolepi_v43_especial_tb_correto.pdf
2. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de Vigilância Epidemiológica. Manual de recomendações para o controle da tuberculose no Brasil. Brasília: Ministério da Saúde; 2011.
3. Gust DA, Mosimaneotsile B, Mathebula U, Chingapane B, Gaul Z, Pals SL, et al. Risk factors for non-adherence and loss to follow-up in a three-year clinical trial in Botswana. Plos One. 2011;6(4):e18435.
4. Silva CCAV, Andrade MS, Cardoso MD. Fatores associados ao abandono do tratamento de tuberculose em indivíduos acompanhados em unidades de saúde de referência na cidade do Recife, Estado de Pernambuco, Brasil, entre 2005 e 2010. Epidemiol Serv Saúde. 2013;22(1):77-85.

5. Paz LNF, Ohnishi MDO, Barbagelata CM, Bastos FA, Oliveira JAFO, Parente IC. Efetividade do tratamento da tuberculose. Rev Bras Pneumol. 2012;38(4):503-10.
6. How SH, Kuan YC, Ng TH, Razali MR, Fauzi AR. Monitoring treatment response in sputum smear positive pulmonary tuberculosis patients: comparison of weight gain, sputum conversion and chest radiograph. Malaysian J Pathol. 2014;36(2):91-6
7. Stoffel C, Lorenz R, Arce M, Rico M, Fernández L, Imaz MS. Tratamiento de la tuberculosis pulmonar en un área urbana de baja prevalencia: cumplimento y negativización bacteriológica. Medicina (Buenos Aires). 2014;74:9-18.
8. Ferreira ACG, Silva Júnior JLR, Conde MB, Rabahi MF. Desfechos clínicos do tratamento de tuberculose utilizando o esquema básico recomendado pelo Ministério da Saúde do Brasil com comprimidos em dose fixa combinada na região metropolitana de Goiânia. J Bras Pneumol. 2013;39(1):76-83.
9. Ministério da Saúde (BR), Conselho Nacional de Saúde. Resolução nº 466, de 12 de dezembro de 2012. Diretrizes e normas regulamentadoras de pesquisas envolvendo seres humanos. Diário Oficial da União [da] República Federativa do Brasil. 2013 jun 13;150(112 Seção 1):59-62.
10. Antunes ML, Cardozo-Gonzales RI. Acompanhamento da evolução da tuberculose em adultos tratados no período de 2009-2013 [monografia]. Pelotas (RS): Faculdade de Enfermagem, Universidade Federal de Pelotas; 2014.
11. Siqueira HR, Andrade ET, Andrade IM, Chauvet PR, Capone D, Rufino R, et al. O essencial na orientação do paciente com tuberculose. Pulmão RJ. 2008;17(1):42-45.
12. Vermund SH, Lith LMV, Holtgrave D. Strategic roles for health communication in combination HIV prevention and care programs. J Acquir Immune Defic Syndr. 2014;66(3):S237-40.
13. Souza MSPL, Pereira SM, Marinho JM, Barreto ML. Características dos serviços de saúde associadas à adesão ao tratamento da tuberculose. Rev Saúde Pública. 2009;46(6):998-1005.
14. Satyanarayana S, Nagaraja SB, Kelamane S, Jaju J, Chadha SS, Chander K, et al. Did successfully treated pulmonary tuberculosis patients undergo all follow-up sputum smear examinations? Public Health Action. 2011;1(2):27-9.
15. Silva HO, Gonçalves MLC. Prevalência da infecção pelo HIV em pacientes com tuberculose na atenção básica em Fortaleza, Ceará. J Bras Pneumol. 2012;38(3):382-5.
16. Prado TN, Miranda AE, Souza FM, Dias ES, Souza LKF, Arakaki-Sanchez D, et al. Factors associated with tuberculosis by HIV status in the Brazilian national surveillance system: a cross sectional study. BMC Infect Dis. 2014;14:415.
17. Franco TB, Franco CM. Linha de cuidado integral: uma proposta de organização da rede de saúde. In: Pessôa LR, coordenadora. Manual do gerente: desafios da média gerência na saúde. 1. ed. Rio de Janeiro: Fiocruz. 2011. p. 60-75.
18. Rios JL, Aris RS, Herrera AU, Rios MS. Vigilancia de tuberculosis en el servicio de salud Viña del Mar-Quillota entre los años 1999-2008: estudio longitudinal de tendencia. Rev Chil Enf Respir. 2011;27(3):196-202.

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