

## Nursing practices in the attention to a chronic condition (tuberculosis): analysis of secondary sources

*Atuação da enfermagem na atenção a uma condição crônica (tuberculose): análise de fontes secundárias*

*La práctica de enfermería en la atención a una condición crónica (tuberculosis): análisis de fuentes secundarias*



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### ABSTRACT

**Objective:** To analyze nursing practiced in the treatment of tuberculosis, based on secondary data records.

**Method:** Descriptive study of the retrospective survey kind, conducted in Ribeirão Preto, from August to December 2013. The data of 109 electronic and clinical medical records, and a TB reporting system in the state of São Paulo for residents in the municipality monitored in the reference clinics. Descriptive statistic techniques were used.

**Results:** The median of 46.0 (IQ: 17.0 to 96.0) calls throughout the treatment shows the patient's proximity to the health service and professionals, of which the primary persons responsible for follow-ups were nursing assistants (99.1%), which perform the House Visits (71.5%) for patients under a supervision regime (75.2%).

**Conclusion:** The actions developed with the patients were mostly focused on the nursing staff, making the importance of this category to achieve the indicators related to the Millennium Development Goals for tuberculosis visible.

**Keywords:** Tuberculosis, Nursing, Health Services Evaluation, Chronic Disease. Millennium Development Goals.

### RESUMO

**Objetivo:** Analisar a atuação da enfermagem no tratamento da tuberculose a partir de registros de dados secundários.

**Método:** Estudo descritivo do tipo levantamento retrospectivo, realizado em Ribeirão Preto-SP, de agosto a dezembro de 2013. Utilizaram-se dados de 109 prontuários eletrônicos e clínicos e o sistema de notificação da tuberculose do Estado de São Paulo para residentes no município, acompanhados nos ambulatórios de referência. Utilizaram-se técnicas de estatística descritiva.

**Resultados:** A mediana de 46,0 (IQ: 17,0-96,0) atendimentos ao longo do tratamento mostra a proximidade do paciente com o serviço de saúde e os profissionais. Destes, os principais responsáveis pelo acompanhamento foram os auxiliares de enfermagem (99,1%) que realizam a Visita Domiciliar (71,5%) para doentes sob regime de supervisão (75,2%).

**Conclusão:** As ações desenvolvidas junto aos pacientes eram majoritariamente centradas na equipe de enfermagem, tornando perceptível a importância desta categoria para o alcance dos indicadores relacionados aos Objetivos do Milênio para tuberculose.

**Palavras-chave:** Tuberculose. Enfermagem. Avaliação de serviços de saúde. Doença crônica. Objetivos de Desenvolvimento do Milênio.

### RESUMEN

**Objetivo:** Analizar la actuación del equipo de enfermería en el tratamiento de la tuberculosis (TB) por medio de los registros de datos secundarios.

**Método:** Estudio descriptivo del tipo levantamiento retrospectivo consumado en Ribeirão Preto-SP, agosto-diciembre 2013. Los 109 datos de los manuales electrónicos y clínicos y el sistema de notificación de la TB del Estado de São Paulo fueron usados para los residentes en el distrito municipal acompañados en los cuatro ambulatorios de referencia. Para el análisis fueron usadas las técnicas de estadísticas descriptivas.

**Resultados:** La mediana de 46,0 (CI: 17,0 – 96,0) citas a lo largo del tratamiento mostró la proximidad del paciente con el servicio de salud y los profesionales, de los cuales, los principales responsables por la asistencia eran los auxiliares de enfermería (99,1%), estos que hacían la visita domiciliaria (71,5 %) para los pacientes de TB bajo el régimen de supervisión (75,2 %).

**Conclusión:** Las acciones desarrolladas a los pacientes son centradas en su mayor parte en el equipo de enfermería, haciendo perceptible la importancia de esta categoría para el alcance de los indicadores relacionados con los Objetivos del Milenio para la TB.

**Palabras clave:** Tuberculosis. Enfermería. Evaluación de los servicios de salud. Enfermedad crónica. Objetivos de Desarrollo del Milenio.

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## ■ INTRODUCTION

Of the eight goals set in the year 2000 by the World Health Organization for the development of the Millennium Goals, those related to the fight against HIV/Aids and other neglected diseases, among them tuberculosis, draw attention to the health care sector. The goals to be achieved by the year 2015 would involve, among a number of actions, reducing the prevalence of TB and its consequent deaths around the world, and increasing the cure and detection of cases under Directly Observed Treatment (DOT) <sup>(1)</sup>.

Ranking as one of the most mortal infectious diseases, TB infects about nine million people and leads to 1.5 million deaths worldwide. In Brazil, one of the 22 countries with the highest numbers of the disease in 2013, more than 83,000 cases were reported, of which 72% were cured and about 15% abandoned treatment, with a mortality rate of 2.2 / 100 thousand inhabitants. These indicators show that there is still difficulty in achieving cure rates and reducing treatment abandonment in the Brazilian reality, since the goal would be an 85% cure rate and a 5% rate for treatment abandonment <sup>(2)</sup>.

TB control is part of the measures to achieve the Millennium Development Goals and calls for the improvement in the assistance, managerial and educational approaches, from the early identification of the case until treatment, which should not be interrupted in order to ensure a successful outcome <sup>(1)</sup>, actions through which the nurse can act and contribute to achieving these goals.

Studies conducted in Brazil show that important aspects related to implementation of control measures and treatment of TB move through the practices developed by nurses <sup>(3)</sup>, regardless of the level of care in which such activities take place, showing the relevance of the category for obtaining and reaching the target of a successful treatment <sup>(4)</sup>.

TB poses as an important chronic condition that requires time and commitment from authorities and health professionals <sup>(5)</sup>, such as the nursing staff. It is the responsibility of these professionals to: search for respiratory symptoms for the early detection of cases, advise on the disease, supervise and guide the medication process, as well as to answer questions and identify potential contacts for the patient among family and the community <sup>(6,7)</sup>.

Eliminating barriers related to the flow of information within and between services and health professionals is key to the integration of activities and services <sup>(8)</sup>, as this is a significant advance to the measures that must be enhanced to improve assistance to the carriers of TB, such as

registration, monitoring and surveillance, as outlined in the World Health Organization (WHO) <sup>(1)</sup>.

Considering that much or most of the existing record systems in the country are managed by nurses, it is necessary to understand how such records are made and used by these professionals, as these data are essential for the management of the clinical case, supply of inputs, resource request and planning of care <sup>(9)</sup>.

Therefore, what would the nursing activities be in face of TB control and the relevance of those records as part of the technology applied to the systematization of care and monitoring of cases connected to the improvement of indicators related to the Millennium Development Goals?

In this sense, the present study aimed to analyze the performance of the nursing teams in the attention to treatment of a chronic condition (TB), according to data from secondary sources in a large city of southeastern Brazil, considered as being of considerable importance in the epidemiological scenario of TB in Brazil.

## ■ MATERIALS AND METHODS

Epidemiological study, exploratory, descriptive, of a retrospective survey type, with a quantitative approach carried out in Ribeirão Preto, located in the northeastern state of São Paulo, which has an estimated population of 619,746 inhabitants <sup>(10)</sup>. The municipality's health system consists of an Emergency Care Unit (UPA), five Basic District Health Units (BHU) and 32 Basic Care Units, and 14 Family Health Units with 29 teams, resulting in a 13% coverage by the program <sup>(11)</sup>.

In 2013, 213 cases of TB were treated, of which 85.9% (183) were new cases, 11.3% (24) were recurrences and 2.8% <sup>(6)</sup> were retreatment. With regard to the outcomes, the cure rate was 79% among new cases, with a 13.6% death rate and a 3.5% abandonment rate <sup>(11)</sup>.

During the data collection period, which took place from August to December of 2013, the attention given to TB patients was distributed into four Reference Outpatient Clinics (A, B, C and D) and carried out by specialized teams that were not, however, exclusive to the Program for Tuberculosis Control (PCT). The composition of the teams varied due to issues such as a deficit of human resource or even the very involvement of professionals in the actions against TB. Such teams were composed, minimally, by a doctor, two nursing assistants, a health visitor (clinic C) and a nurse (only clinic A and D counted with one nurse each that was actually involved in TB control actions).

As team assignments, the following should be highlighted: completing the diagnosis, reporting cases and

evaluating those who report them, monitoring treatment through medical consultations, nursing care and performance of DOT, which consists in daily supervision of the patient's intake of TB medication, which can be performed in a monitored outpatient setting or at home. Each vehicle has an ambulance available for four hours per day for the implementation of DOT at the home of patients.

It is important to emphasize the role held by the nursing staff in the monitoring and control of TB patients in these clinics, which in addition to performing care activities, such as supervising medication, searches for missing patients and provides nursing care, undertaking full responsibility for case management and completing the instruments used for record keeping, in order to feed the surveillance systems.

In this study, data from treatment record systems of TB patients that were residents of Ribeirão Preto, monitored in the four TB reference clinics, and do not belong to the prison system, with medical release between January 2012 and July, 2013 were used. The study excluded the records of TB patients who have had a change of diagnosis or transfer as their final situation.

In order to define the number of registries to be analyzed, the sample calculation was carried out in August 2013 through an initial survey on the number of persons afflicted with TB in the period between January 1, 2012 and July 31, 2013 using the Notification and Monitoring System for Cases of Tuberculosis (TB – WEB – exclusive electronic notification system implemented in 2006 that belongs to the state of São Paulo and is used for monitoring TB cases), which identified 152 patients who underwent TB monitoring in the municipal reference outpatient clinics.

After this survey, the sample size was calculated, considering parameters such as: sampling error of 0.05; confidence interval of 95% and P (population percentage) of 50%, obtaining:

$$n_0 = \frac{p(1-p)Z^2}{e^2} = 384$$

Because the study population is a finite population, the calculated minimum sample was corrected using the equation:

$$n = \frac{n_0}{1 + (n_0 - 1/N)} = \frac{384}{1 + (384/152)} = 109$$

Thus, a sample of 109 registry instruments of TB patient records to be reviewed was achieved.

Through systematic sampling using proportional sharing, the number of records to be reviewed by health service (Chart 1) was obtained:

A structured questionnaire was used to collect data, with 42 questions divided into four sections according to the record source (*Notification and Monitoring System of TB-Cases or TB-WEB; Registration card of the Directly Observed Treatment - TDO (Yellow Sheet), Log Book and Treatment Monitoring of Tuberculosis Cases (Green Paper) and Medical Record*). For this study, only the last section was used, where the actions offered by the health services for TB control were defined according to the specific cases and requirements of each.

Through the electronic medical records system of the municipality (Hygia-WEB), information was obtained regarding the health services used by the TB patients, as well as the actions taken during treatment, among them, the number of visits, type of service and professional who patients met with during treatment. Based on the entries made in this system, it was possible to verify the participation of the nursing staff in the care of patients registered and treated in the health services of the public health system of Ribeirão Preto.

Data related to treatment outcomes of patients monitored in the municipality were collected through TB-WEB.

Reference outpatient clinics*	Number of TB patients (%)	Calculation M1/39=M2/31=M3/48=M4=109/152, ou seja:	Sample
Service A	39 (25,7%) M1	M1/39=109/152 => M1=39x109/152= 28	28
Service B	31 (20,4%) M2	M2/31= 109/152 => M2=31x109/152= 23	23
Service C	48 (31,6%) M3	M3/48= 109/152 => M3= 48x109/152= 34	34
Service D	34 (22,3%) M4	M4/34=109/152 => M4= 34x109/152= 24	24
<b>Total</b>	<b>152 (100%)</b>	-----	<b>109 (100%)</b>

**Chart 1** – Distribution of tuberculosis patients and sample calculation for data collection in Ribeirão Preto reference outpatient clinics

Key: M = Medium / Source: TB-WEB (August 2013)

\*to protect the identity of the health services studied, it was decided they would be identified through the letters of the alphabet A, B, C and D.

For this study, the following dimensions of analysis were considered <sup>(12)</sup>:

- **Demand:** refers to the demand for health services, contemplating health services sought by the TB carrier and the type of service provided (scheduled or spontaneous);
- **Resources:** refers to health professionals involved in caring for persons with TB in the services demanded during treatment;
- **Process / Product:** is comprised of the implementation dynamics used for activities intended to develop TB control, related to the way health services that attend the carrier of the disease during treatment are organized;
- **Results:** refers to indicators focused on the impact and repercussions of actions taken during the treatment of TB, such as their results.

Data were analyzed using descriptive statistics, such as frequency, median and interquartile range (IQ), through the Statistica 9.0 software from Statsoft.

It is noteworthy that a semi-structured observational script to analyze some aspects of the work process, structure and interaction between staff and health services was drawn up, and some notes were used in the discussion of the findings of this research.

In compliance with resolution 466/12, which governs research involving human subjects, the study was approved by the Ethics Committee of the Ribeirão Preto College of Nursing, under protocol CAAE 15671713.9.1001.53.93 in 2013.

## ■ RESULTS

Chart 2 shows the results obtained by analyzing the variables collected in the Hygia-WEB and TB-WEB systems, and the records selected for the study.

A similar distribution among TB patients monitored at three referral centers (A, B and D) is observed, with clinic "C" standing out, attending the largest number of TB cases.

There was a median of 6.0 (IQ: 6.0-7.0) months of treatment for the disease (*Dimension "Processes / Products"*), with a median of 46.0 (IQ: 17.0 to 96.0) for medical treatment recorded in the Hygia-WEB system, among which 4.0 (IQ: 2.0-6.0) were queries of the "Return-RT type" and 10.0 (IQ: 4.0 to 32.0) were "Possible-EVs" (*"Demand" Dimension*) which are usually held due to any complication during the treatment without prior scheduling. Of the TB patients selected for the study, 79.8% had a VD registered in the Hygia-WEB system. Remember that there is evidence that the VD were registered in the Hygia-Web system as "Possible-EVs" in at

least one of the clinics (A), which may have overestimated the median of this type of service and underestimated the median home visits.

As for the performance of the actual nursing staff, there was massive participation of technicians and nursing assistants in the service to TB patients during treatment (99.1%) in activities such as VD (71.5%) in detriment of the service provided by the nursing professional (33%). It is noteworthy that even in Clinic C, which covers the largest number of patients in the city, there is a problem regarding the commitment of the Health Unit Management to dispose of and appoint a professional nurse for such activities, therefore opting to allocate professionals in activities such as the Center for Testing and Counseling (CTA) and emergency care rather than the PTC.

Among the main activities carried out by the nursing staff and recorded in the medical records are: guidance regarding follow-up consultations (84.4%) and pre / post-medical consultation (69.7%).

The results showed that 75.2% of TB patients were under the TDO regime, which was conducted mainly in the patient's home (57.8%). It is noteworthy that 26.6% of the records of TB patients monitored in the period analyzed had no records regarding the location where TDO was performed.

Regarding the treatment results, it is registered that 96.3% of TB patients were cured.

## ■ DISCUSSION

The dimensions of analysis were structured in relation to demand, resources, processes / products and results.

Regarding the "Demand" dimension, the results show the contingent of TB patients that were assisted by teams of specialized clinics. Observe that Clinic C serves the largest number of patients in that municipality. Over the six months of treatment of the disease, there was a considerable number of assistance that included RT and EV consultations, which can be considered as a sign of proximity between the TB patient and health service, acting as an open door and easy access for service according to the needs of users. It is noteworthy that at least one follow-up consult per month is recommended over the six-month TB treatment <sup>(9)</sup>.

Moreover, such proximity to health services may indicate a strengthening of the relationship between professionals and users, facilitating satisfactory adherence to treatment in order to obtain a cure as it portrays the bond and trust between both parties <sup>(13)</sup>.

Attention should be given to the variable that shows the offering of VD registered during TB treatment for the selected patients. Identifying the context in which these

Dimension	Variables	Results (N = 109)
		N (%)
Demand	<b>Service unit</b>	
	A	28 (25,7)
	B	23 (20,4)
	C	34 (31,6)
	D	24 (22,3)
	<b>Proportion of TB patients with Home Visits recorded during treatment</b>	87 (79,8)
Resources	<b>Proportion of patients attended by a technical / nursing assistant</b>	108 (99,1)
	<b>Proportion of patients attended by a nurse</b>	36 (33,0)
	<b>Professionals who perform Home Visits providing Directly Observed Treatment</b>	
	Nurse assistant / technician	78 (71,5)
	Health visitor / nurse technician	6 (5,5)
	Health Visitor	2 (1,8)
	Nurse assistant / technician and doctor	1 (0,9)
	Not applicable	22 (20,2)
Processes / products	<b>Guidelines performed and recorded by the nurses in medical records throughout treatment</b>	
	General guidelines	34 (31,2)
	Exams	63 (57,8)
	Consult follow-ups	92 (84,4)
	<b>Procedures performed by nurses and registered in medical records throughout treatment</b>	
	Pre-post nursing consultation	76 (69,7)
	Collection of material for examination	21 (19,3)
	Prescription:	0 (0,0)
	Referrals	2 (1,8)
	Exame requests	2 (1,8)
	Proportion of TB patients in Directly Observed Treatment	82 (75,2%)
	<b>Location of the Directly Observed Treatment</b>	
	Domicile	63 (57,8)
	Health Unit	9 (8,3)
No registry	29 (26,6)	
Not applicable	8 (7,3)	
Results	<b>Cure</b>	105 (96,3)
	<b>Death</b>	1 (0,9)
	<b>Abandonment</b>	2 (1,8)
	<b>Treatment failure</b>	1 (0,9)

**Chart 2** – Description of analysis variables of nursing care actions for a chronic condition (TB) according to the analysis dimensions, Ribeirao Preto, 2012-2013

\* General guidelines include: regarding the disease, treatment and side effects, drug interactions, medication dose intake, the importance of adherence to treatment.

\*\* Number of visits refers to all types (return visit, possible consultation tests, dressings, medication, minor surgery, home care).

patients live, their living conditions and family and personal relationships, is essential for monitoring and completion of treatment <sup>(7)</sup>, for both drug supervision and knowledge of the social context and vulnerability to which patients are exposed, given the importance of this action against a disease that is still a social problem and priority among the goals set by the Millennium Development Goals.

Analysis of the “Resources” dimension expresses the service provided by the nursing team to TB patients throughout their treatment. In the municipality of the study, it was found that most of the visits during treatment are performed by nursing assistants and technicians. These results reinforce the responsibility and role of nurses in the disease control measures and monitoring of patients and families <sup>(4,5)</sup>. Despite recent findings that show the important involvement of the category in the treatment of TB, there is a management disengagement regarding the disease which is now in second place among the priorities of the health service, as observed in some hospitals.

The absence of professional nurses in direct assistance to TB patients is noteworthy, however, such a result can be explained by the context of the organization's knowledge of the health services where the data was collected. In most clinics, there is little or no involvement of nurses in activities related to TB, either due to the lack of commitment from management, as explained, or the range of administrative and managerial activities that nurses take on before the health service in which they operate.

According to the “Processes / Products” dimension, during the six months of treatment, some specific actions have been recorded, however, the fact that in the “guidelines” field, the nursing staff restricted such records to the RT consultation date and, in the “procedure” field, they focused on the pre and post medical consultations, their notes are used specifically to measure the patient's weight on the day of the medical consultation.

As in other studies <sup>(14,15)</sup>, the nursing prescription in this research is incipient or even absent. The nursing prescription is exclusive to nurses and is part of the Systematization of Nursing Assistance (SAE) <sup>(14)</sup>. It is not always put into practice in the health services due to reasons related to absence and lack of professional commitment, involvement in activities other than assistance, as well as the claim that it demands a long period with notes that other professionals deem unimportant and do not turn into useful information for assistance. Professionals do not see themselves as participants in the generation of usable indicators such as the assessment of the health service and provided care <sup>(15)</sup>, making filling out official forms and even computerized systems a merely bureaucratic activity.

As noted above, the problem of lack of nurses heading the organization of PCTs subsequently leaves a gap in the development of an individual care plan and even in coordinating teams <sup>(16)</sup> who work with the sick, often reflecting in the disarray of operational actions related to direct care, and even the completion of registries and information system updates made available to the TB assistance systemization.

Another study <sup>(15)</sup> showed that when there are notes made by nurses within the medical records of patients, they are also limited to the description of patients' clinical aspects and medical developments, in detriment of the inherent aspects of care performed by these professionals. To achieve the goals set out by the Millennium Development Goals, such as identifying and promptly treating TB patients, means that nurses must fully lead the care, being expected of them to undertake management of the care planning process <sup>(17)</sup> provided to the patient, enhancing the various shades that treatment of this disease can present.

A considerable percentage of patients in TDO and most at home emphasized that, despite the difficulties in terms of human resources and even vehicles for transport over long distances, the municipality and teams still try their best to offer such services to users, considering that TDO is one of the tools for success in TB treatment, limiting the possibility of treatment abandonment <sup>(13,17)</sup>.

The reality of the local scenario, with the lack of nurses, refers to reflection on everyday issues related to the labor division in health care, as well as the operation of the PCT itself, which consequently leads to the withdrawal and little involvement of the nurse in planning, discussion and implementation of activities related to the monitoring of cases. Once again, attention is drawn to the vital and important role that the nursing team has with regard to drug supervision, during which relationships, bonds and trust between the parties can be strengthened, encouraging patients and families in the completion of treatment indicated <sup>(13)</sup>. Thus, the nursing professional must take the leading role in planning interventions, either in the prevention or treatment, or in the individual or collective scope <sup>(18)</sup>.

The significant percentage of patients without medical records in relation to the treatment regimen, in which it was not possible to identify whether they were in TDO or in self-administered treatments, is also emphasized. As such, the importance of nursing records for coordination and continuity of care for all members of the health team is reinforced <sup>(15)</sup>.

Studies have indicated <sup>(15,16)</sup> that the failure or absence of records can greatly affect the development and evaluation of the care provided, as well as being a legal mechanism in the event of a lawsuit. In addition, the barriers

imposed by the difficulties of the flow of information between professionals hurt the interactive dimension of the team, ie the communication that hinders the management of care and services as well as management models <sup>(19)</sup>.

In view of the amounts presented in the previous dimensions, the "Results" dimension brings indicators that serve as a reflection of the care provided to TB patients. In this case, regarding the patients who had records selected for the study, the city reached its target to obtain a cure rate above 85% and an abandonment rate of less than 5%, pursuant to the goals recommended by WHO <sup>(2)</sup>.

It is possible to perceive the relevant participation of nursing in regards to control actions of one of the Millennium Goals and that even with the barriers that involved intersectoriality, the care for the TB patient requires proximity from nurses in order to obtain success in treatment.

Renewing and improving views / care tools for the assistance of chronic conditions such as TB is a reality for nursing practices today. Use and knowledge of records and information systems to integrate actions and services between different areas and professionals is essential for a comprehensive approach to the service provided.

## ■ FINAL CONSIDERATIONS

Regarding the goals set as a priority for achieving the Millennium Development Goals, among them the control of TB, one of the diseases that most affects individuals with HIV / AIDS and others that are socially vulnerable, the findings showed the notorious nursing practice in monitoring TB patients in a municipality considered a priority for the control of the disease.

The closeness of the actions developed with the patient's, in special, those in TDO or VD, pre or post consult, are majorly centered on the nursing team, which makes the importance of this category perceptible in establishing the link between the medical team and the patient, the increase in success rates in the treatment and, subsequently, the improvement of indicators related to the Millennium Goals

The importance of the professional nurse's greater involvement not only in management actions, assistance and supervision of the teams for handling the case, and even for the proper completion and use of monitoring systems and records, aimed at satisfactorily integrating actions and services among different levels of care, is evident.

One cannot say the flaws in the records alone, related to the monitoring of treatment, could harm the set of actions provided to TB patients, as this was one of the limitations of this study, which presumes that different approaches and

sources of information can suppress possible gaps not answered by this research.

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