



Access barriers to comprehensive care for people affected by tuberculosis and human immunodeficiency virus coinfection in Peru, 2010–2015*

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ABSTRACT

Objective. Identify the programmatic barriers that hinder access to comprehensive care of patients with tuberculosis and human immunodeficiency virus (TB/HIV) coinfection.

Methods. This is a mixed-method study. Qualitative research was conducted via in-depth interviews with key actors and the quantitative component involved cross-sectional descriptive analysis of programmatic data from 2010–2015 on tuberculosis and HIV programs at health facilities in the cities of Lima and Iquitos.

Results. Twenty-two key actors in seven establishments were interviewed. The identified barriers were: little or no coordination between tuberculosis and HIV teams, separate management of tuberculosis and HIV cases at different levels of care, insufficient financing, limited or poorly trained human resources, and lack of an integrated information system. It was found that HIV screening in TB patients increased (from 18.8% in 2011 to 95.2% in 2015), isoniazid coverage of HIV patients declined (from 62% to 9%), and the proportion of deaths among TB/HIV coinfection cases averaged 20%.

Conclusions. There is poor coordination between HIV and TB health strategies. Management of TB/HIV coinfection is fragmented into different levels of care, which has an impact on comprehensive patient care. As a result of this research, a technical document was prepared to establish joint procedures that should be implemented to improve comprehensive care of TB/HIV coinfection.

Keywords

Coinfection; tuberculosis; HIV; Peru.

People infected with the human immunodeficiency virus (HIV) are 29 times more likely to develop tuberculosis than those who do not have HIV (1). Globally, the incidence of tuberculosis in people living with HIV (PLH) is 105.2 per 100 000 population, and in the

Andean region of Latin America it is 118.4 per 100 000 population (2). In contrast, the worldwide incidence of tuberculosis in people without HIV is 98.7 per 100 000 population (2), while in the Andean region of Latin America it is 117.9 per 100 000 population. Furthermore, PLH who do not receive antiretroviral therapy (ARVT) are at nine times greater risk of contracting tuberculosis than patients who do receive treatment (2). The difference is 15 times greater in individuals with CD4 counts of less than 200 cells/mL (2), so all AIDS patients, especially those with

CD4 counts below 200, need to receive prophylaxis with isoniazid, as recommended in various management guidelines (3–5).

In 2013, there were 1.1 million people with tuberculosis/HIV (TB/HIV) coinfection in the world (1). Deaths from tuberculosis in PLH dropped from 540 000 in 2004 to 360 000 in 2013 (6). However, tuberculosis remains the leading cause of death in PLH around the globe (6).

In Peru, 1,094 cases of TB/HIV coinfection (7) were reported in 2014—an overall TB/HIV coinfection rate of around 3% (8). The tuberculosis and HIV epidemics

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also have a shared epidemiological distribution (8). Programmatic data indicate that HIV and tuberculosis are concentrated mainly in urban areas along the coast and in the jungle region, and affect in particular men in the economically active population (7, 9). Accordingly, the proportion of TB/HIV coinfection is higher in the Loreto (6.4%), Callao (6.3%), and Northern Lima (5%) regions (8).

To reduce the problem of TB/HIV coinfection, since 2004, the World Health Organization (WHO) (10) and other international organizations (11) have recommended implementing collaborative activities on TB/HIV. The WHO recommendations focus on implementing (or strengthening) integrated services for TB/HIV coinfection, reducing the TB/HIV disease burden, and providing early ARVT (10). As a result, gains have been made around the globe, with access to ARVT for patients with TB/HIV coinfection rising from 47% in 2012 to 65% in 2013 (6). In Latin America, ARVT coverage was 76%; however, in the countries of this region, collaboration between tuberculosis and HIV programs has been hindered by the lack of joint national policies and the absence of integration activities at the operational level (12).

The Ministry of Health of Peru, through the national health strategies for tuberculosis and HIV/AIDS, is tasked with preventing and controlling these health problems. The National Tuberculosis Standard (13) and National HIV Standard (14) outline what interventions should be implemented for each of these diseases. However, reports show low coverage in the coinfection indicators, which suggests difficulties in implementing and coordinating care for patients with TB/HIV coinfection by the two programs (which are called “strategies” in Peru).

One of the main difficulties in caring for patients with TB/HIV coinfection is that care is provided separately for tuberculosis and HIV. Furthermore, most patients with TB/HIV coinfection are treated for tuberculosis in a primary care facility, but receive ARVT in another facility, generally at the secondary or tertiary level. There is not a detailed understanding of which elements prevent the tuberculosis and HIV health strategy teams from coordinating actions to improve care for patients with TB/HIV coinfection.

The objective of this research was to identify programmatic barriers to

comprehensive care of patients with TB/HIV coinfection. Information was gathered from services that provide care to tuberculosis and HIV patients, to identify any programmatic gaps in TB/HIV coinfection care. That information serves as input for preparing and implementing a joint national policy addressing the TB/HIV problem.

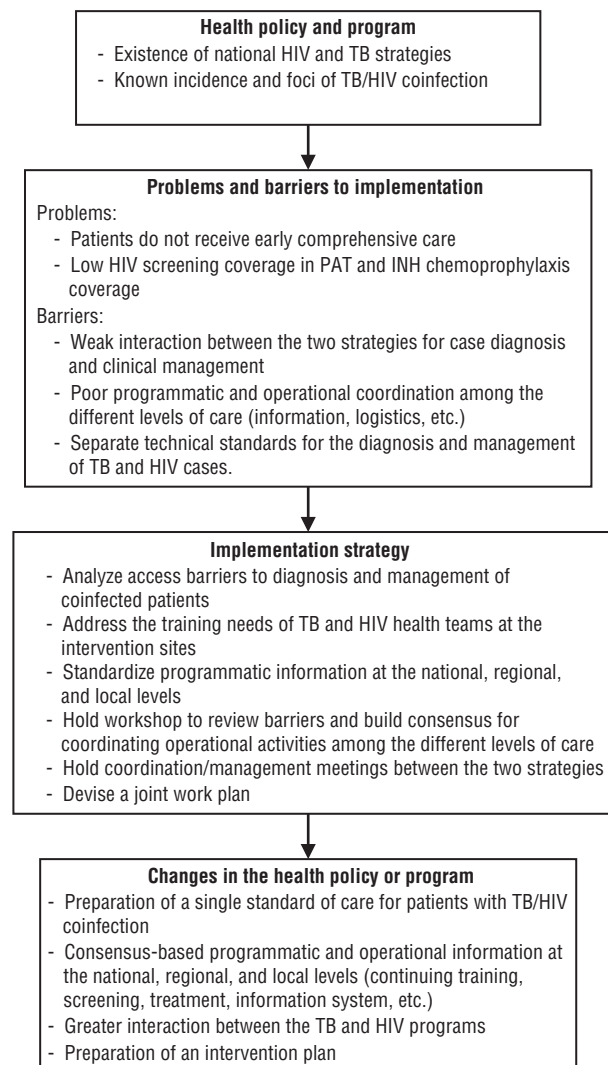
MATERIALS AND METHODS

This study is part of a new initiative: “Improving Program Implementation through Embedded Research (iPIER)”, developed by the Alliance for Health Policy and Systems Research (AHPSR), in collaboration with the Pan American Health Organization (PAHO). The iPIER model makes program implementers

key agents for research, to understand barriers in health systems that obstruct implementation as well as to identify solutions to these barriers. Embedded research on program implementation supports the effectiveness of existing processes and effective health policies through the utilization of research conducted as a part of the implementation process (Figure 1). A detailed description of implementation of the research methodology can be found in the iPIER concept paper on barriers to timely access to comprehensive care for people affected by TB/HIV coinfection in Peru.

A mixed-method study was conducted. It consisted of a qualitative component to identify barriers in caring for patients with TB/HIV coinfection, and a quantitative component to identify programmatic

FIGURE 1. Research flow chart



HIV, human immunodeficiency virus; TB, tuberculosis; INH, isoniazid; PAT, people affected by tuberculosis.

gaps. The study was conducted in Lima and Iquitos, two cities with high incidence of tuberculosis and HIV (8). Seven health facilities in the district of San Juan de Lurigancho (Lima) and three districts in Iquitos were selected (Figure 2), because they had the greatest number of tuberculosis or HIV patients. The characteristics of the facilities are described in Table 1.

The qualitative component was conducted via in-depth interviews with key actors in the care process. Health

facilities' tuberculosis and HIV strategy coordinators, physicians, nurses, obstetricians and people with TB/HIV coinfection were selected. Professionals on the technical teams for the health strategies at the national level were also interviewed. A semi-structured questionnaire was administered by an interviewer, differentiated for health providers and patients. All the interviews were audio recorded, then transcribed. The analysis used an iterative process of reading the transcriptions, selecting subjects, and

coding, using the ATLAS.ti version 7.2® software.

For the quantitative component, programmatic data on the tuberculosis and HIV strategies in the health facilities were inspected. Existing administrative and clinical registries for each health facility were consulted for 2010 to 2015. Additional information was requested from health workers to complement the foregoing. The data collection instrument was prepared by adapting the checklist from a similar project in Honduras (15). It

FIGURE 2. Location of health facilities in the study

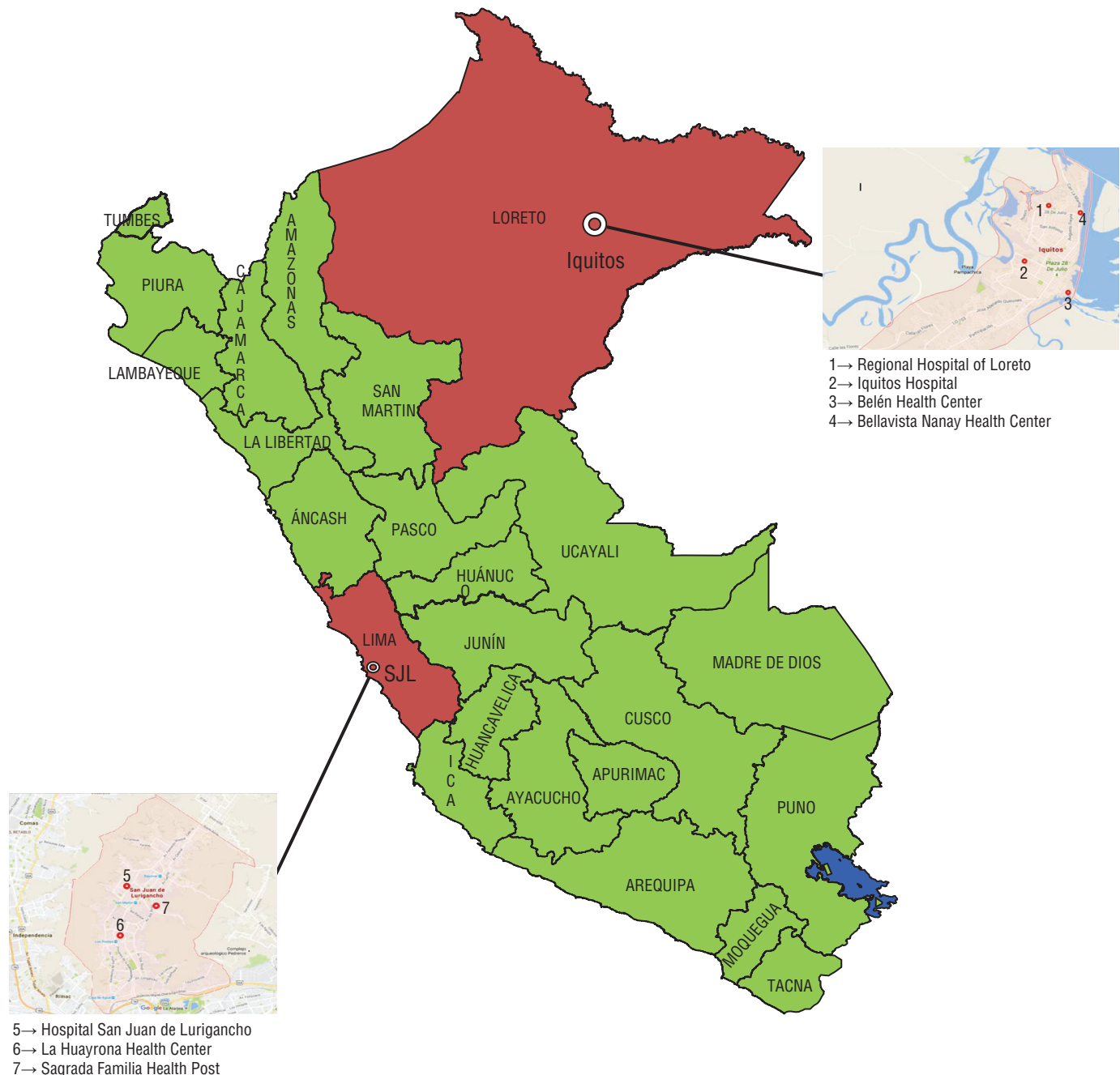


TABLE 1. Characteristics of the health facilities visited

Health facility	City	District	Level	TB Strategy		HIV Strategy	
				Bacilloscopy	DOT	Screening	ARVT
"Felipe Santiago Arriola Iglesias" Regional Hospital of Loreto	Iquitos	Punchana	III-1	Yes	Restricted ^a	ELISA	Yes
"César Garayar García" Iquitos Hospital	Iquitos	Iquitos	II-2	Yes	Yes	Rapid test	Yes
Belén Health Center of Villa Belén	Iquitos	Belén	I-3	Yes	Yes	Rapid test	No
Bellavista Nanay Health Center	Iquitos	Punchana	I-4	Yes	Yes	Rapid test	No
Hospital San Juan de Lurigancho	Lima	SJL	II-2	Yes	Restricted ^b	ELISA	Under accreditation
La Huayrona Health Center	Lima	SJL	I-3	Yes	Yes	Rapid test	No
Sagrada Familia Health Post	Lima	SJL	I-2	Only sample collection	Yes	Rapid test	No

DOT, directly observed treatment by mouth; ARVT, antiretroviral therapy; TB, tuberculosis; HIV, human immunodeficiency virus; ELISA, enzyme-linked immunosorbent assay.

^a. Only for patients in the surrounding areas and those who are hospitalized. Diagnosed cases are referred to primary care centers.

^b. Only for hospitalized patients. Diagnosed cases are referred to primary care centers.

consisted of the following sections: identification data, general considerations, tuberculosis and HIV care and data for constructing programmatic indicators. The information was analyzed in an Excel 2010® spreadsheet, using descriptive statistics.

The study was approved by the Ethics Committee of the Hipólito Unanue National Hospital (Ref. No. 059-2015-CIEI-HNHU) and the PAHO Ethics Review Committee (Ref. No. PAHO-2015-03-0015). Before collecting information, the objective and study procedures were presented to the chief or head of each health facility. Health workers from the facility's tuberculosis and HIV strategies were then invited to take part in the study. Patients were invited through the health workers. An informed consent form had to be read and signed to participate in the study.

RESULTS

Qualitative component

Twenty-two key actors (16 health providers, four patients, and two staff members) were interviewed. Several barriers to comprehensive care of patients with TB/HIV were identified.

The first barrier is little or no coordination of activities, such as HIV screening in tuberculosis patients or monitoring compliance with treatment. Health workers' experience and knowledge influence this relationship. Other factors are staff willingness and interest, physical proximity, and affinity among those responsible.

"Well, I do not know what activities our counterparts [in HIV] do; admittedly we are quite removed. I think we would have to provide the information, because the hospital does not know what patients are in other centers [...]." (IQT_02_Ic)

Comprehensive care of TB/HIV coinfection requires the services aimed at managing those pathologies to maintain fluid communication, so that the status of each patient is known. The principal results of this lack of coordination are that there is no linkage between the services, for example, patients who received reagent screening in TB services but who do not go to the HIV services, or patients lost to follow-up, in the case of people with HIV who were diagnosed with TB but do not seek treatment.

In Peru, TB/HIV coinfection tends to be treated at different health facilities, hampering coordination between the teams. This is because the TB and HIV care models differ in several ways. For TB, patients are seen in primary care facilities, close to home, where they receive directly observed treatment (DOT). HIV, in turn, is managed in some secondary- or tertiary-level health facilities that have trained professionals, where drugs are delivered every month or two months, according to patient needs. Because of this fragmentation, health professionals do not know the patient's status, there is lack of adherence to treatment, and patients experience financial problems.

"[...] There is a post near my house; the same pneumologist who sees me here [in the hospital] sees me there [...] because here it is more expensive. I only come here once a month for my antiretrovirals." ("H_IV)

Poor coordination is also seen at the programmatic level, as there is no policy document standardizing each strategy's procedures and responsibilities for managing TB/HIV coinfection, which creates uncertainty among health workers.

"There are patients who come on their own but I have adopted strategies outside of the legal standards or framework [...]. I

personally write the referral for the physician to sign, but the referral is not actually recorded. This has allowed me to see more people or give more timely treatment [...]." (IQT_02_Ic)

The absence of an integrated information system hinders monitoring of coinfecting patients and overall data analysis. Furthermore, cases are registered manually, so information can be lost. The absence of computer equipment and properly functioning Internet service contributes to this problem.

"We only handle files and case histories; there is no system; I would like it to be interconnected, but it is not [...] in the end it is empirical, everything is done manually, scrambling at the end of the month." (IQT_01_Ib)

This barrier is especially apparent at the central level, since when data are consolidated, they are found to be inconsistent. This, in turn, reflects the lack of coordination between the services and the fact that a single patient goes to different health facilities that use different IDs, which creates reporting duplications or omissions.

There are also barriers related to problems in the health system, such as insufficient funding for the strategies and lack of human resources. The workers interviewed agree that the real issue is not lack of money, but the quality of spending. The funds generally come from the results-based budget (RBB) and are not used for the tuberculosis and HIV strategies, since facility officials allocate these resources to other expenditures.

"[...] because the authorities use the budget for other things. It is a constant struggle to try to protect the funds we have; some support us, others don't; theirs is more of a welfare approach [...]." (IQT_01_III)

In Peru, the shortage of health workers is due not only to a lack of professionals, but also to their uneven distribution. Health professionals therefore have to split their time between administrative tasks and patient care. In the case of the TB and HIV strategies, the workers are not only in charge of the day-to-day care of patients, but also of activity programming, management, and reporting. The issue is compounded by high staff turnover because of a lack of labor incentives, which has an impact on all the activities of both strategies.

"[...] we have to provide care and do administrative work; and we also run the center's micro-network, so it is like we have two responsibilities." (S JL_01_IIa)

Personnel shortages are also related to insufficient funding, and the human resources lack regular and refresher training, particularly at the primary care level.

Quantitative component

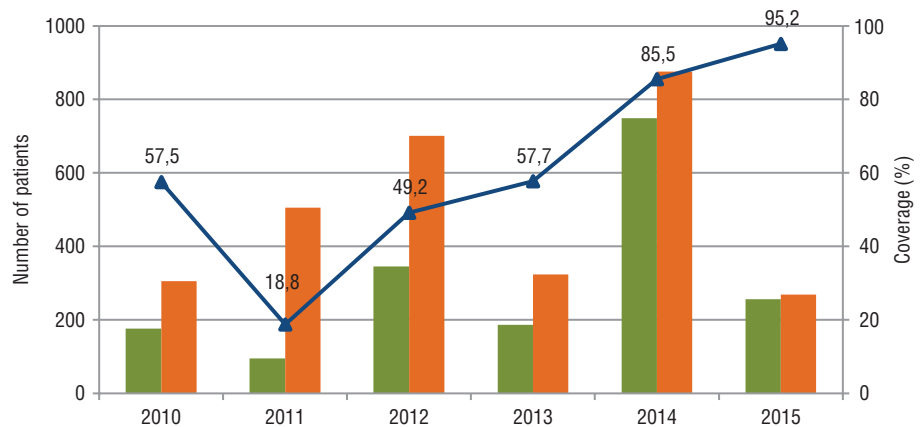
Screening coverage for HIV in tuberculosis patients steadily increased from 18.8% in 2011 to 95.2% in 2015 (Figure 3). No systematized information was found in HIV registries on ruling out a tuberculosis diagnosis.

Coverage of isoniazid preventive therapy (IPT) at the Regional Hospital stood at over 85% from 2010 to 2013, but fell to 37% in 2015. In Iquitos Hospital, IPT coverage dropped from 40% in 2012 to 11% in 2015 (Figure 4). No information integrated with the tuberculosis strategy on coinfecting patients who receive ARVT was found, since they tend to be served in different health facilities.

Of the 266 patients with TB/HIV coinfection (225 in Iquitos and 41 in Lima) from 2010 to 2015, the Iquitos Hospital reported one case of multidrug-resistant tuberculosis (MDR-TB) in 2012, while Hospital San Juan de Lurigancho had eight cases. Furthermore, two cases of monoresistant tuberculosis were reported in the Regional Hospital of Loreto, and two at the Sagrada Familia Health Post. No cases of extremely resistant tuberculosis were recorded.

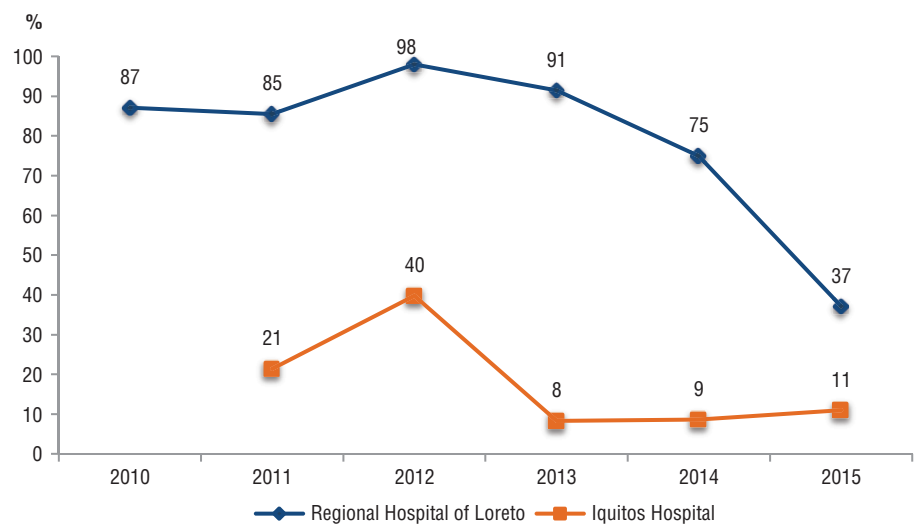
In total there were 52 deaths among the cases of TB/HIV coinfection (20%), from 2010 to 2015. This percentage was greater in Lima than in Iquitos (24% compared to 19%).

FIGURE 3. Coverage of HIV screening in patients with TB in all the health facilities in the study, 2010–2015



HIV, human immunodeficiency virus; TB, tuberculosis.

FIGURE 4. Percentage of patients with HIV who began IPT per year, Iquitos, 2010–2015



HIV, human immunodeficiency virus; IPT, isoniazid preventive therapy.

DISCUSSION

This study identified the programmatic barriers that hinder access to comprehensive care of patients with TB/HIV coinfection in seven health facilities in Lima and Iquitos, Peru. These barriers include difficulties coordinating between the tuberculosis and HIV strategies, fragmentation of care in different health facilities, the absence of policy documents for managing this condition and the lack of an integrated information system. Other barriers are insufficient funding for their work, the scarcity of health workers and their lack of training. Some indicators, such as screening tuberculosis patients for HIV,

have improved notably. However, isoniazid coverage in HIV patients is still well below the national target of 100%.

The most significant difference in the indicators evaluated in the Lima and Iquitos health facilities was IPT coverage. This could be due to current regulations not being implemented or weak supply of the drugs in the jungle region, among other possible reasons that could be explored further in another study.

Collaboration between tuberculosis and HIV programs has been analyzed in several studies, which found that lack of integration at the different levels is a problem common to several contexts (12, 16–19). Much like in our study, other

research has found that this lack of integration results in monitoring difficulty, loss of cases, fragmentation of care, and more missed opportunities (16, 19). These barriers have also been found to have effects on indicators, such as IPT coverage in patients with HIV and high mortality in patients with coinfection, in addition to the lack of data for constructing indicators, such as ARVT coverage in patients with tuberculosis.

Lack of financing and human resources are two more major barriers that tend to be present in the Peruvian health system (20, 21). As in our study, they limit the integration of joint tuberculosis and HIV activities (22, 23). Furthermore, lack of staff training is a key factor, since it would contribute to better management of TB/HIV coinfection, and of available mechanisms for streamlining the processes for patients. The technical document should provide a legal framework that prompts changes in administrative procedures and, in turn, facilitates human resources education and makes the health interventions sustainable.

This study did not examine barriers from the patient's standpoint. Other studies have found that personal factors, such as lifestyle, socioeconomic problems, social support, lack of understanding of the treatment, stigma and discrimination, and alcohol and drug use affect the treatment of TB/HIV coinfection (24–27). Although these factors are important, they are difficult to solve from a programmatic standpoint, since they require a multi-sectoral approach. Furthermore, better health system performance (measured by the context, integration, support services, human resources and service continuity and quality) is found to be related to better treatment outcomes

(cure or adherence to treatment) in patients with TB/HIV coinfection (28).

This study's principal limitation is possible social desirability bias, especially on the part of patients, since the interviews were conducted at the health facilities. There could also be participant selection bias, since those available at the time of the visit were the ones interviewed. However, the information obtained is consistent with the type of key actor interviewed, which gives us confidence that the barriers were adequately explored. The limitations of the quantitative component are related to the data source, since registries can underreport cases or activities. This bias is expected to be similar across the facilities and, therefore, does not affect comparisons. In spite of these constraints, this study contributes information that will enable decision-makers to identify weaknesses, from a system standpoint, in the care of TB/HIV coinfection.

Lastly, a barrier identified by this study is the lack of a technical document for TB/HIV coinfection care. Accordingly, during this research, a document was prepared standardizing comprehensive care processes for patients with TB/HIV coinfection, addressing the main barriers encountered. Furthermore, a meeting was organized between the tuberculosis and HIV teams at the central level and in some health facilities in Lima to discuss some elements of the technical document. The next steps (validation and subsequent implementation) should, however, involve all the actors; otherwise, it would run the risk of being ignored at the operational level (29).

CONCLUSIONS

There is poor coordination between HIV and TB health strategies in health facilities included in the study.

Management of TB/HIV coinfection is fragmented, which hinders comprehensive patient care. These findings point to the need for specific policies and regulations to address the problem of TB/HIV coinfection in Peru. As a result, a joint technical document on TB/HIV was prepared. It establishes health interventions and administrative procedures in health services at the national level and aims to reduce the incidence, morbidity, and mortality of people affected by TB and HIV in Peru.

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Declaration. The opinions expressed in this paper are the responsibility of the author and do not necessarily reflect the opinion or policy of the RPSP/PAJPH and/or PAHO.

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RESUMO

Barreiras no acesso à atenção integral de pessoas afetadas pela coinfeção por tuberculose e vírus da imunodeficiência humana no Peru, 2010 a 2015

Objetivo. Identificar as barreiras programáticas que dificultam o acesso à atenção integral de pacientes com coinfeção por tuberculose e vírus da imunodeficiência humana (TB/HIV).

Métodos. Estudo de métodos mistos. A pesquisa qualitativa foi realizada mediante entrevistas aprofundadas com atores-chave, e o componente quantitativo baseou-se na análise descritiva transversal de dados programáticos dos programas de tuberculose e HIV de estabelecimentos de saúde das cidades de Lima e Iquitos no período de 2010 a 2015.

Resultados. Foram entrevistados 22 atores-chave em sete estabelecimentos. As barreiras identificadas foram: pouca ou nenhuma coordenação entre as equipes de tuberculose e HIV, manejo separado dos casos de tuberculose e HIV em diferentes níveis de atenção, financiamento insuficiente, recursos humanos escassos ou pouco capacitados e ausência de um sistema de informação integrado. Constatou-se que o rastreamento de HIV em pacientes com tuberculose aumentou (de 18,8% em 2011 para 95,2% em 2015), a cobertura da profilaxia com isoniazida em pacientes com HIV diminuiu (de 62% para 9%) e a proporção média de óbitos entre os casos de coinfeção por TB/HIV foi de 20%.

Conclusões. Existe uma má coordenação entre as estratégias de saúde para HIV e tuberculose. O manejo da coinfeção por TB/HIV é fragmentada nos diferentes níveis de atenção, o que prejudica a atenção integral do paciente. Esta pesquisa resultou na elaboração de um documento técnico para estabelecer os procedimentos conjuntos que deverão ser implementados para melhorar a atenção integral da coinfeção por TB/HIV.

Palavras-chave Coinfeção; tuberculose; HIV; Peru.

RESUMEN

Barreras para el acceso a la atención integral de las personas afectadas por la coinfección por tuberculosis y virus de inmunodeficiencia humana en Perú, 2010–2015

Objetivo. Identificar las barreras programáticas que dificultan el acceso a la atención integral de pacientes con coinfección por tuberculosis y virus de la inmunodeficiencia humana (TB/VIH).

Métodos. Se trata de un estudio de métodos mixtos. La investigación cualitativa se realizó mediante entrevistas en profundidad a actores clave y el componente cuantitativo a través del análisis descriptivo de corte transversal de datos programáticos del período 2010–2015 sobre los programas de tuberculosis y VIH de establecimientos de salud de las ciudades de Lima e Iquitos.

Resultados. Se entrevistaron a 22 actores clave en siete establecimientos. Las barreras identificadas fueron: poca o ninguna coordinación entre los equipos de tuberculosis y VIH, manejo por separado de los casos de tuberculosis y de VIH en diferentes niveles de atención, financiamiento insuficiente, recursos humanos escasos o poco capacitados y ausencia de un sistema de información integrado. Se evidenció que el tamizaje para VIH en pacientes con tuberculosis se incrementó (de 18,8% en 2011 a 95,2% en 2015), la cobertura de isoniazida en pacientes con VIH disminuyó (de 62% a 9%) y la proporción de fallecidos entre los casos de coinfección por TB/VIH fue de 20% en promedio.

Conclusiones. Existe una débil coordinación entre las estrategias sanitarias sobre VIH y sobre tuberculosis. El manejo de la coinfección por TB/VIH es fragmentado en diferentes niveles de atención, lo que repercute en la atención integral del paciente. Como producto de esta investigación, se elaboró un documento técnico para establecer los procedimientos conjuntos, el cual deberá ser implementado para una mejora en la atención integral de la coinfección por TB/VIH.

Palabras clave Coinfección; tuberculosis; VIH; Perú.
