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Regional coordinators of Sao Paulo State prisons in tuberculosis and HIV coinfection care

Coordenadorias regionais das unidades prisionais paulistas na atenção à coinfecção tuberculose e HIV

Coordinadores regionales de prisiones paulistas en la atención a la coinfección tuberculosis y VIH

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ABSTRACT

Objectives: to analyze the care provided to individuals with Tuberculosis (TB)-HIV coinfection in prison units in the state of São Paulo, according to the regional coordination of prisons. **Methods:** cross-sectional study conducted between 2016 and 2018. A structured questionnaire was applied to 112 directors or health professionals from 168 prison units. Data were analyzed by frequency distribution and multiple correspondence analysis. **Results:** 92.9% of participants reported active search for respiratory symptoms, 89.3% offer the directly observed treatment (DOT) for all TB cases, 95.5% anti-HIV testing for all inmates, 92.9% offer HIV follow-up in specialized care services and 59.8% antiretroviral drugs for cases of coinfection. An association was identified between the Northwest and Central regional coordinations and deficient human resources and low performance of actions for the diagnosis and follow-up of cases. **Conclusions:** although most prison units perform planned actions for the care of coinfected persons, some places need support to guarantee access to these actions.
Descriptors: Delivery of Health Care, Prisons, Coinfection, Tuberculosis, HIV.

RESUMO

Objetivos: analisar a assistência prestada aos indivíduos com coinfecção Tuberculose-HIV em unidades prisionais do estado de São Paulo, segundo Coordenadoria Regional. Métodos: estudo transversal realizado entre 2016 e 2018. Aplicou-se um questionário estruturado a 112 diretores ou profissionais de saúde de 168 unidades prisionais. Os dados foram analisados por distribuição de frequência e análise de correspondência múltipla. **Resultados:** 92,9% dos participantes referiram busca ativa de sintomáticos respiratórios, 89,3% oferta de tratamento diretamente observado para todos os casos de tuberculose, 95,5% teste anti-HIV para todos os detentos, 92,9% acompanhamento do HIV em serviços especializados e 59,8% antirretrovirais para os casos de coinfecção. Identificou-se associação entre as Coordenadorias Noroeste e Central e deficiência de recursos humanos e baixa realização de ações para o diagnóstico e acompanhamento dos casos. **Conclusões:** Apesar da realização das ações previstas para o cuidado aos coinfectados na maioria das unidades, alguns locais necessitam apoio para garantir o acesso a estas ações.
Descritores: Assistência à Saúde, Prisões, Coinfecção, Tuberculose, HIV.

RESUMEN

Objetivos: analizar la atención brindada a las personas con coinfección Tuberculosis (TB)-VIH en unidades penitenciarias del estado de São Paulo, según la coordinación regional. Métodos: estudio transversal realizado entre 2016 y 2018. Se aplicó un cuestionario estructurado a 112 directores o profesionales de la salud de 168 unidades penitenciarias. Los datos se analizaron mediante distribución de frecuencias y análisis de correspondencia múltiple. **Resultados:** el 92,9% de los participantes refirió búsqueda activa de síntomas respiratorios, el 89,3% ofrece el tratamiento de observación directa (DOT) para todos los casos de TB, el 95,5% prueba anti-VIH para todos los internos, el 92,9% ofrece seguimiento del VIH en servicios de atención especializada y 59,8% de fármacos antirretrovirales para casos de coinfección. Se identificó asociación entre las agencias de coordinación Noroeste y Centro y el deficiente recurso humano y el bajo desempeño de las acciones de diagnóstico y seguimiento de casos. **Conclusiones:** si bien la mayoría de las unidades penitenciarias realizan acciones planificadas para la atención de personas coinfectadas, algunos lugares necesitan apoyo para garantizar el acceso a estas acciones.
Descriptores: Prestación de Atención de Salud, Prisiones, Coinfección, Tuberculosis, VIH.

INTRODUCTION

The 2018 incarceration report revealed more than 10.7 million people in this situation worldwide[1]. In 2016, Brazil came to occupy the third position in the ranking with the largest population of Persons Deprived of Liberty (PDL) in the world and 726,712 prisoners distributed in approximately 1,400 prison units (PU), indicating an occupation of 197.4% and a deficit of 358,663 places[2].

In 2016, the state of São Paulo had the largest (240,061 inmates - 33.1%) prison population in the country[2]. It is organized into five Regional Coordination areas: Central, West, Northwest, Capital and Coast, composed of Centers for Penitentiary Progression, Centers for Provisional Detention, Resocialization Centers, Differentiated Disciplinary Regime Unit, Penitentiaries and Custody Hospitals. Despite being in the same state, the Regional Coordination of prisons have heterogeneous peculiarities and configurations, mainly in relation to the number of inmates, physical structure, professional team training and health care. Knowing about these differences would support health services in the organization of actions to qualify the care of PDL.

The precarious conditions of the environment and access to health services in prison units increase the exposure to infection and illness from tuberculosis (TB)[3] and to HIV infection[4]. As a result, the risk of acquiring TB is 28 times greater in PDL and in people living with HIV than in the general population[5]. Between 2007 and 2013, 38,083 cases of TB were registered in PDL in Brazil, with an incidence rate of 852.8/100,000 inhabitants and a mortality rate of 15.5/100,000 inhabitants[6]. Despite the high incidence of both conditions in the prison system, the prevalence of coinfection in PDL (15.9%) between 2009 and 2014 appeared to be lower than in the general Brazilian population (17.4%)[7].

To face this situation, there is a worldwide recommendation that prioritizes the guarantee of equity in the provision of health services for people living in prisons, and more specifically with regard to HIV, the expansion of prevention, treatment and support services is recommended[8]. In Brazil, prison units must provide care for cases of TB-HIV coinfection and other diseases under conditions according to the programmatic guidelines of the National Health System (Brazilian SUS), thereby linking the spheres of health, justice and civil society[9].

In relation to the rationale and state of the art of the theme under investigation, a study identified some factors related to prison units that increase the transmission of HIV and TB among inmates, such as inadequate financing, overcrowding, poor ventilation, incomplete health teams, limited access to preventive interventions and health care, late detection of cases and treatment interruptions[10]. Furthermore, individuals affected by TB and HIV in prison have less access to diagnostic tests and medications, which results in treatment failure[11].

The following were identified as strengths: adoption of guidelines for the diagnosis of TB-HIV coinfection in the prison system based on the search for cases, treatment and partnership with health services[12]; acceptance of HIV testing in prisons, when combined with TB testing[13]; clinical improvement of cases during detention, and release from prison through continuous and integrated care of TB-HIV actions[14].

In light of the above, this study sought to analyze the care provided to people with TB-HIV coinfection in prison units of the state of São Paulo and to identify the Regional Coordination of prisons of the state that need to qualify the management of cases.

OBJECTIVES

To analyze the care provided to people with TB-HIV coinfection in prison units of the state of São Paulo and identify the Regional Coordination of prisons of the state that need to qualify the management of cases.

METHODS

Ethical aspects

This project was approved by the Research Ethics Committee of the School of Public Health – University of São Paulo (*protocolo* nº CAEE 56065516.0.3001.5563) e the Ribeirão Preto College of Nursing - University of São Paulo (protocol number CAEE 79872217.7.0000.5393). Due care was taken to maintain the confidentiality of information provided and the anonymity of research part0icipants and prison units.

Design, study location and period

Cross-sectional study conducted in the state of São Paulo between May 2016 and August 2017 through a survey guided by the STROBE tool[15]. The state of São Paulo has the largest prison population in the country and a prison system divided into five Regional Coordinations. Until 2018, the system consisted of 168 Prison Units, 15 Centers for Penitentiary Progression, 43 Centers for Provisional Detention, 22 Resocialization Centers, one Differentiated Disciplinary Regime Unit, 84 Penitentiaries and three Custody Hospitals.

Population and study protocol

Data collection took place through a structured questionnaire called "Environmental and health service access conditions in the prison system of the state of São Paulo", developed for this study based on technical and scientific materials[3], addressing questions about environmental conditions, architectural characteristics and the access to health services in prison units.

The content validation of the instrument was performed by specialists in TB, HIV/AIDS, Public Health and Health Care in the prison system. The semantic validation was performed with application of a pilot test of the structured questionnaire in three Centers for Provisional Detention, two Penitentiaries and one Resocialization Center. The coordinators of prison units were the respondents of the instrument.

Data collection was performed in agreement with the Division of the Prison System of the state of São Paulo, and the Prison Health Coordinators of the five Regional Coordination of prisons were invited to participate in the study as data collection supervisors. They agreed to supervise data collection, except for the Regional Coordination of the Northwest and West regions that were supervised by two researchers. The modalities of Differentiated Disciplinary Regime Unit and Custody Hospital were not part of the study because of the small number of units and the low number of TB-HIV coinfection cases registered.

In 2016, during data collection, 164 active prison units were invited to participate in the study, and 12 prison unit coordinators refused to participate, while 40 did not answer the questionnaire, even after three attempts to convince them, totaling 31.7% of losses. Thus, the 112 questionnaires received were reviewed by two researchers in order to identify inconsistencies and blank data. When necessary, a new contact with the prison unit was made for possible corrections.

The questionnaires were typed in Excel by two researchers independently. The discordant fields were identified in a review of automatic correspondence (VLOOKUP function) and corrected by checking the original questionnaire.

In the present study, questions from sessions I - Identification and IV - Access to health services - TB and HIV were used. Thus, the variables used in the study were: population of inmates (male and female); prison unit category (penitentiaries, Center for Provisional Detention, Resocialization Center and Center for Penitentiary Progression); regime (closed, semi open, provisional); conviction (convicted, provisional and mixed); security level (high, medium and not applicable); health team members (nursing assistant, nurse, doctor, dentist, nursing technician, psychologist, social worker and laboratory technician); availability of information on TB and HIV cases in the prison unit (number of cases diagnosed with TB, HIV and HIV treatment records); type of TB screening (active, passive, active and passive); when active screening, in what location/situation is performed; type of case search (spontaneous demand, campaign, cough and symptoms of TB, X-ray, people with HIV, contact); tests offered for TB diagnosis (smear, GeneXpert MTB/RIF, culture, sensitivity test, X-ray, HIV test); performance of Directly Observed Treatment (DOT) (for everyone, depends on the regime, not performed, open regime); type of rapid HIV test (rapid test, serology, oral fluid test, offered for all TB cases and campaign within the prison unit) and follow-up of cases (offer of antiretroviral therapy-ART, specialized care service, specialist in the prison unit, examination of prison cell contacts, isolation and guidance provided to family members in the Basic Health Center).

Analysis of results

Initially, the variables were analyzed by means of absolute and relative frequency distribution. To check the association between the Coordination of prisons and the variables of care provided to people living with HIV in the prison system of the state of São Paulo, was performed the multiple correspondence analysis (MCA), considering the Regional Coordination of prison as a supplementary variable and the other variables as active variables.

In MCA, the higher percentage of variability in the data set was explained by the combination of variables with greater stability in the multidimensional space, characterized by a factorial space for the set of categories of variables where it is possible to interpret their derived dimensions and their associations. The interdependence pattern between the variables was analyzed through standardized and adjusted residual analysis (difference between the observed and the expected), and only the categories of responses of variables with residuals above 1.96 remained in the factorial plane, as these indicated a statistically significant association between them.

Thus, the response categories of the following variables remained in the factorial plane: type of prison unit; conviction; nurse; nursing technician; nursing assistant; individuals undergoing HIV treatment according to the number of prison unit; annual TB campaign; current provisional regime; scheduled TB screening; GeneXpert MTB/RIF; X-ray; DOT; ART to individuals with TB/HIV coinfection. The level of statistical significance adopted for all analyzes was 5%.

RESULTS

Out of the 112 prison units, most (35 - 31.3%) were from the Central Regional Coordination, 102 (91.1%) were male prison units and 51 (45.5%) were penitentiaries. Some prison units had more than one sentence-serving regime and their level of security was mostly classified as high (70.5%) (Table 1).

The health teams of prison units (Table 2) were composed predominantly of nursing professionals, with 239 (36.2%) nursing assistants and 201 (30.4%) nurses, followed by 96 (14.5%) doctors and 62 (9.4%) dentists.

In 2016, the highest number of TB cases was diagnosed in the West region (31.1%); and the highest number of cases of HIV diagnosis (46.2%) and undergoing HIV treatment (38.6%) were in the Central region (Table 3).

Of the 112 prison units, 92.9% reported that the detection of TB cases was performed in campaigns at least twice a year concomitantly with 86.6% of detection by spontaneous demand. Tests for TB diagnosis are offered when the person has suggestive symptoms in 98.2% of prison units, and the sputum smear microscopy is the most requested test (97.3%). As for treatment, 89.3% reported offering DOT for all diagnosed cases. Regarding HIV in prison units, the offer of tests to identify the infection (95.5%), ART (59.8%) and the follow-up in specialized care services (92.9%) were reported (Table 4).

Table 1 - Characterization of the prison units participating in the study according to Regional Coordination of the state of São Paulo, Brazil, 2017

		Central n(%)	West n(%)	Northwest n(%)	Capital* n(%)	Coast** n(%)	Total n(%)
Population	M	30(85.7)	25(100.0)	21(95.4)	18(90.0)	8(80.0)	102(91.1)
	F	5(14.3)	-	1(4.6)	2(10.0)	2(20.0)	10(8.9)
Type of unit	P	15(42.9)	16(64.0)	10(45.5)	7(35.0)	3(30.0)	51(45.5)
	CDP	7(20.0)	4(16.0)	6(27.3)	13(65.0)	5(50.0)	35(31.3)
	RC	10(28.6)	2(8.0)	4(18.2)	-	1(10.0)	17(15.2)
	CPP	3(8.6)	3(12.0)	2(9.1)	-	1(10.0)	9(8.0)
Regime§	Closed	22(62.9)	20(80.0)	18(81.8)	20(100.0)	9(90.0)	89(79.5)
	SO	23(65.7)	14(56.0)	18(81.8)	18(90.0)	5(50.0)	78(69.6)
	Prov.	14(40.0)	19(76.0)	18(81.8)	17(85.0)	8(80.0)	76(67.9)
Conviction	Conv.	24(68.6)	18(72.0)	11(50.0)	5(25.0)	5(50.0)	63(56.3)
	Prov.	7(20.0)	3(12.0)	5(22.7)	13(65.0)	5(50.0)	33(29.5)
	Mixed	4(11.4)	4(16.0)	6(27.3)	2(10.0)	-	16(14.3)
Level of security	High	15(42.9)	20(80.0)	16(72.7)	19(95.0)	9(90.0)	79(70.5)
	Medium	7(20.0)	4(16.0)	3(13.6)	1(5.0)	1(10.0)	16(14.3)
	N/I	13(37.1)	1(4.0)	3(13.6)	-	-	17(15.2)

*Note: *Comprises capital and Metropolitan region of São Paulo; **Comprises coastline and Vale do Paraíba region; §This variable had more than one answer option; M – Male; F – Female; P – Penitentiary; CPD – Center for Provisional Detention; CPP – Center for Penitentiary Progression; RC – Resocialization Center; Clo. – Closed; SO – Semi open; Prov. – Provisional; Conv. – Convicted; N/I – not informed.*

Table 2 - Mean value of health professionals available in the prison units participating in the study, according to Regional Coordination of the prison of the state of São Paulo, Brazil, 2017

	Central n(%)	West n(%)	Northwest n(%)	Capital* n(%)	Coast** n(%)	Total n(%)
Nur. Ass.	62(38.3)	68(36.6)	33(28.7)	61(39.4)	15(34.9)	239(36.2)
Nurse	34(20.9)	66(35.5)	36(31.3)	50(32.3)	15(34.9)	201(30.4)
Doctor	26(16.0)	28(15.1)	18(15.7)	20(12.9)	4(9.3)	96(14.5)
Dentist	20(12.3)	17(9.1)	10(8.7)	13(8.4)	2(4.7)	62(9.4)
Nur. Tec.	17(10.5)	3(1.6)	13(11.3)	3(1.9)	6(13.9)	42(6.4)
Psychologist	1(0.6)	1(0.5)	-	4(2.6)	1(2.3)	7(1.1)
Social Ass.	1(0.6)	2(1.1)	1(0.9)	3(1.9)	-	7(1.1)
Lab. Tec.	1(0.6)	1(0.5)	4(3.5)	1(0.6)	-	7(1.1)
TOTAL	162	186	115	155	43	661

*Note: *Comprises capital and metropolitan region of São Paulo; **Comprises coastline and Vale do Paraíba region; Nur. Ass. – Nursing Assistant; Nur. Tec. – Nursing Technician; Social Ass. – Social Assistant; Lab. Tec – Laboratory Technician.*

Table 3 - Number of cases diagnosed with tuberculosis, HIV, and undergoing HIV treatment according to the Regional Coordination of prison of the state of São Paulo, Brazil, 2016

	Central n(%)	West n(%)	Northwest n(%)	Capital* n(%)	Coast** n(%)	Total n(%)
TB Diag.	423(22.4)	588(31.1)	246(13.0)	421(22.3)	212(11.2)	1890 (100.0)
HIV Diag.	211(46.2)	44(9.6)	39(8.5)	120(2.6)	43(9.4)	457(100.0)
HIV Treat.	687(38.6)	391(21.9)	251(14.1)	304(17.1)	149(8.4)	1782(100.0)

*Note: *Comprises capital and metropolitan region of São Paulo; **Comprises coastline and Vale do Paraíba region; TB Diag. – Tuberculosis diagnosis; HIV diag. – HIV diagnosis; HIV treat. – Undergoing HIV treatment.*

The MCA favored dimensions 1 and 2 with eigenvalues of 0.29278 and 0.23137. Dimension 1 explains 11.2% of the variability of data, while dimension 2 explains 8.8%. In quadrants II and III of the factorial plane (Figure 1), unsatisfactory conditions were identified in the Northwest and Central Regional Coordinations regarding care provided to individuals with TB-HIV coinfection in prison units that included deficient human resources (nurses) and the low performance of actions for the diagnosis and follow-up of cases (programmed TB screening, ART to individuals with coinfection, GeneXpert MTB/RIF, X-ray, DOT). In quadrant I (Figure 1), the West Regional Coordination was associated with a greater number (4) of nursing assistants per health center and with the lack of information on annual campaigns of active TB case finding. In quadrant IV, are the Capital and the Coast Regional Coordinations associated with a smaller number of units with people undergoing HIV treatment (11 to 20), a greater number of nurses (4 to 5) and a smaller number of nursing technicians (1). The Capital, Coast and West Regional Coordinations are on the opposite side of quadrants I and II (worst evaluations) hence, their performance was the most satisfactory.

Table 4 - Actions offered in the care provided to people with tuberculosis and HIV coinfection according to Regional Coordination of the prison system of the state of São Paulo, Brazil, 2017

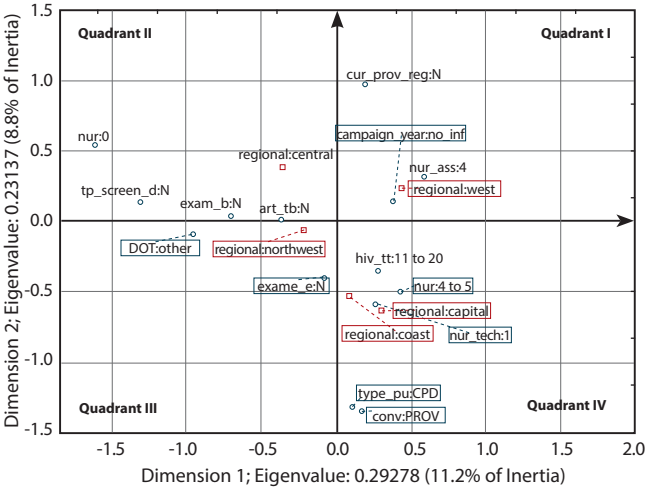
	Central n(%)	West n(%)	Northwest n(%)	Capital* n(%)	Coast** n(%)	Total n(%)
Screening***						
Active	5(14.3)	2(8.0)	2(9.1)	4(20.0)	1(10.0)	14(12.5)
Passive	1(2.9)	-	2(9.1)	-	-	3(2.7)
Active and passive	29(82.9)	23(92.0)	18(81.8)	16(80.0)	9(90.0)	95(84.8)
Entry (all)	9(25.7)	10(40.0)	11(50.0)	6(30.0)	4(40.0)	40(35.7)
Entry (symptoms)	26(74.3)	15(60.0)	15(68.2)	17(85.0)	7(70.0)	80(71.4)
Spontaneous demand	28(80.0)	24(96.0)	18(81.8)	18(90.0)	9(90.0)	97(86.6)
Campaign	34(97.1)	23(92.0)	17(77.3)	20(100.0)	10(100.0)	104(92.9)
Cough and TB symptoms	34(97.1)	25(100.0)	22(100.0)	19(95.0)	10(100.0)	110(98.2)
X-ray	13(37.1)	14(56.0)	11(50.0)	4(20.0)	3(30.0)	45(40.2)
People with HIV	24(68.6)	22(88.0)	14(63.6)	18(90.0)	7(70.0)	85(75.9)
Contact	30(85.7)	25(100.0)	22(100.0)	19(95.0)	10(100.0)	106(94.6)
Investigation of contatcs***						
Examination of all cellmates	25(75.8)	16(64.0)	17(77.3)	17(85.0)	9(90.0)	84(75.0)
Examination of symptomatics	5(15.2)	9(36.0)	5(22.7)	2(10.0)	1(10.0)	22(19.6)
Isolation in the PU	31(88.6)	23(92.0)	19(86.4)	19(95.0)	10(100.0)	102(91.1)
Guidance to family in Heath Center	27(77.1)	20(80.0)	18(81.8)	17(89.5)	7(70.0)	89(79.5)
Cough time						
1 week	12 (34.3)	5 (20.0)	2(9.1)	5(25.0)	1(10.0)	25(22.3)
2 weeks	13(37.1)	16(64.0)	14(63.6)	8(40.0)	5(50.0)	56(50.0)
3 weeks	1(2.9)	1(4.0)	4(18.2)	3(15.0)	1(10.0)	10(8.9)
Any duration	8(22.9)	2(8.0)	1(4.6)	3(15.0)	2(20.0)	16(14.3)
Exams***						
Sputum smear microscopy	34(97.1)	24(96.0)	22(100.0)	19(95.0)	10(100.0)	109(97.3)
GeneXpert MTB/RIF	12 (34.3)	19(76.0)	15(68.2)	13(65.0)	6(60.0)	65(58.0)
Culture	31(88.6)	24(96.0)	19(86.4)	18(90.0)	8(80.0)	100(89.3)
Sensitivity test	23(65.7)	24(96.0)	15(68.2)	16(80.0)	8(80.0)	86(76.8)
X-ray	24(68.6)	19(76.0)	14(63.6)	6(30.0)	6(60.0)	69(61.6)
HIV testing	31(88.6)	25(100.0)	22(100.0)	20(100.0)	9(90.0)	107(95.5)
Type of HIV Testing***						
Rapid test	24(72.7)	25(100.0)	20(90.9)	18(90.0)	8(88.9)	95(84.8)
Serology	25(75.8)	19(76.0)	20(90.9)	13(65.0)	8(88.9)	85(75.9)
Oral Fluid Test	24(72.3)	21(84.0)	13(9.1)	19(95.0)	7(77.8)	84(75.0)
For all TB cases	29(82.9)	24(96.0)	19(86.4)	20(100.0)	8(88.9)	100(89.3)
Campaigns in PU	29(82.9)	21(84.0)	22(100.0)	16(80.0)	6(66.7)	94(83.9)

To be continued

Table 4 (concluded)

	Central n(%)	West n(%)	Northwest n(%)	Capital* n(%)	Coast** n(%)	Total n(%)
DOT***						
For everybody	30(85.7)	24(96.0)	22(100.0)	17(85.00)	7(70.0)	100((89.3)
Not performed	4(11.4)	-	-	2(10.0)	-	6(5.4)
Open regime (Health Center)	21(60.0)	20(80.0)	16(72.7)	11(55.0)	5(50.0)	73(65.2)
LTB						
People with HIV	25(71.4)	19(76.0)	14(63.6)	13(65.0)	8(80.0)	79(70.5)
ART						
Offers	17(48.6)	21(87.5)	12(54.6)	13(65.0)	4(40.0)	67(59.8)
HIV follow-up						
SCS	33(94.3)	23(95.8)	21(100.0)	17(85.0)	10(100.0)	104(92.9)
Specialist in PU	-	1(4.2)	-	3(15.0)	-	4(3.6)
Not performed	2(5.7)	-	-	-	-	2(1.8)

*Note: *Comprises capital and metropolitan region of São Paulo; **Comprises coastline and Vale do Paraíba region; ***The question had more than one answer option; LTB - Latent Mycobacterium Tuberculosis infection; DOT - Directly Observed Treatment; ART - Antiretroviral Therapy; SCS - Specialized Care Service.*



Note: type_pu - type of prison unit: CPD - Center for Provisional Detention; conv - conviction: PROV – provisional; nur - nurse: 0; nur: 4 to 5; nur_tech - nursing technician: 1; nur_ass - nursing assistant: 4; hiv_tt - HIV treatment:11 to 20 prison units; campaign_year - TB annual campaign: no_inf - no information; cur_prov_reg - current provisional regime; tp_screen_d - programmed TB screening: N – no; exam_b - GeneXpert MTB/RIF: N – no; exam_e - X-ray: N – no; DOT - Directly Observed Treatment: other and art_tb - Antiretroviral Therapy to individuals with TB who tested positive for HIV: N - no.

Figure 1 - Factorial analysis plane of the Regional Health Coordinations of the prison system regarding actions offered in the care provided to people with TB-HIV coinfection, São Paulo, Brazil, 2017

DISCUSSION

In this study, the provision of health actions on TB and HIV to PDL occurs heterogeneously among the health coordination of prisons of the state of São Paulo. Although all of them have teams with a higher number of nursing assistants, followed by nurses, doctors and dentists and still have multidisciplinary health care teams, some prison units did not have doctors, and others had a larger number of nursing staff than expected. Additionally, most prison units of the state of São Paulo offer the recommended health services for the care of people with TB-HIV coinfection, with emphasis on active TB screening, HIV testing and HIV follow-up in specialized care services. However, there are differences in health actions between the several Regional Coordination of prisons.

The structure and organization of prison units can compromise the access to health actions[9], since prison health teams are defined by the type and regime of sentence in the prison unit, disregarding the occupancy rate that operates above the structural capacity. In this case, there is a low dimensioning of human resources that generates work overload for the health teams responsible for the care of a population with high and complex needs and disease loads[16-17].

In the study, despite the existence of multidisciplinary health care teams, investments are needed to qualify the team in terms of care to people living with TB-HIV in the prison system, mainly regarding actions for the control of both infections[9]. The literature review demonstrated that structural barriers and insufficient resources prevent the provision of ideal clinical care for HIV and TB in the prison context. The necessary criminal justice reforms and partnerships between prisons and public health services will contribute to an overall decline in TB and HIV transmission between inmates and the community[11].

Another point observed in the study was that the number of diagnosed TB cases exceeded the number of HIV diagnostics in prison units of the state of São Paulo in 2016. Such a situation may be a reflection of the prison cells conditions – overcrowded, poorly ventilated and lit[3,10], which favors TB transmission -, and of the periodic search for TB cases. In addition, most prison units in the study were of male individuals, who are more exposed to factors associated with TB, such as alcohol and tobacco use. The risk of acquiring HIV infection should not be neglected either, given the considerable prevalence of HIV cases and the presence of risky behavior in the daily life of prisons, such as drug use and unprotected sexual intercourse[4]. Thus, the presence of TB and HIV is a challenge for prison health teams, who need to offer health actions and services[9] in a coordinated, continuous and integrated way with referral services of the community for the prevention and treatment of these diseases[14].

TB actions are developed in Regional Coordinations of prisons of the state of São Paulo through screening and active case finding strategies such as programmatic campaigns, spontaneous demand or by examining cellmates. Such activities, together with the treatment of TB, are essential for breaking the chain of disease transmission and are in line with the recommendations proposed in the new TB control manual[5], namely TB screening in these environments regardless of the duration of cough, allowing to dimension and sensitize the authorities and the prison

community about the problem. There is an effort to perform the actions foreseen by the Ministry of Health, and these are often inconsistent with the reality of other countries, such as Ethiopia, where, between years 2013 and 2014, half of TB cases remained undiagnosed and untreated in prisons[18].

In most prison units investigated, when a TB case is diagnosed, there is isolation, investigation of all cellmates and the instruction that families seek a basic Health Center. In this case, the performance of prison health teams is an important measure for controlling the disease, including in the community, since the PDL is in frequent contact with family members and professionals in the prison system.

The sputum smear microscopy is still the most requested by all prison units, even after the introduction of GeneXpert MTB/RIF. The culture is indicated for PDL due to cases of recurrence and drug resistance[5]. No prison unit has an X-ray machine and a trained professional, hence the need to establish partnerships with other services in the health care network.

With advances related to the universal offer of HIV testing and treatment in the whole health system, including prison units, and the improvement of tools for TB screening and molecular diagnosis, including GeneXpert MTB/RIF, there is a window of opportunity to bring such innovations to prison environments and reformulate TB and HIV prevention, treatment and care as unique, coordinated and continuous[14].

For confirmed TB cases, HIV testing should be offered to everyone[5], whether through rapid testing or serology. In the prison units analyzed, the sporadic screening campaign strategy was also used, thereby allowing the identification of coinfection cases in this population and the beginning of treatment. The unique methods of HIV prevention together with the offer of a single test method can represent low adherence of users. The offer of testing options will contribute to achieve the first objective of the ambitious 90-90-90 target[19]. The combination of TB and HIV testing is a high-value, client-centered approach of significant impact on public health[13].

As for DOT, the interviewees informed its performance for all cases of TB diagnosis. In Brazil, DOT is performed exclusively by a health professional, which strengthens the bond and guarantees access to the health service[5]. A study in Iran indicated that this type of supervision was performed by trained inmates, directed at TB cases and individuals with HIV on ART, and had a positive impact on the control of these infections[12].

For HIV cases, an investigation of latent TB infection is conducted. A study performed in the largest prison in Malaysia showed a high prevalence of active tuberculosis, particularly in people living with HIV, and that more than 80% of prisoners and prison staff were infected with latent TB[20].

For confirmed cases of TB-HIV coinfection, about 60% refer the provision of ART, being incipient in the prison context, since it must be offered to all people living with HIV[21]. In South Africa, short-term interventions involving the training of nurses in TB diagnosis and treatment, as well as the increase in number of facilities with decentralized HIV services have been recommended to allow the prescription and administration of ART by nurses[10].

In the present study, HIV cases are monitored in specialized care services, while TB cases are monitored in the prison system in collaboration with specialized care services, when needed. TB and HIV services have historically been provided through vertical programs, which may compromise comprehensive care, despite the evidence showing superior results from care in these services, when provided with continuous, integrated and comprehensive approaches[22]. In addition to HIV follow-up in specialized care services, the ART is offered in pharmacies outside the prison units, which could also explain the low availability of ART in the prison system.

Health teams in the prison environment also face difficulties that can compromise the integration of HIV health actions and services, among which the need for military police escort for any displacement of PDL for HIV follow-up, with availability of the resource from the optimization and selection of legal and health nature priority demands[21].

Thus, strengthening and integrating communication between prison health services and other points of care within the care network is essential to ensure comprehensive care, monitor clinical conditions and adherence to treatment, which are goals of the care cascade[23].

In the study, the Capital, Coast and West Regional Coordinations showed better performance than the Northwest and Central Coordinations, which have a low number of health professionals and low detection of TB cases per unit, so they should improve the offer and conduction of health actions for individuals with TB-HIV coinfection. The performance of Regional Coordinations of the Capital and the Coast, with a high percentage of Centers for Provisional Detention suggests that care seems to be focused on the time of entry of inmates. The technical support of the teams and of one of the management dimensions is relevant as it concerns the provision of resources and infrastructure necessary.

Despite the structural and organizational weaknesses that challenge the organization of health care in the prison context, it was possible to see that prison units constitute important points of care in the health network, since they provide access to TB and HIV diagnosis for a considerable number of inmates, and are committed to ensuring continuity of care offered in specialized care services.

Limitations of the study

The limitation of the study was a possible information and selection bias, since participants were mostly health directors and only individuals who agreed to participate in the study.

Contributions to the area

The study highlights potentialities in the care of TB-HIV coinfection in prison units of the state of São Paulo and enables the identification of challenges faced for the effective care of these populations in the prison environment.

CONCLUSIONS

Most prison units of the state of São Paulo offer the recommended health services in relation to the care provided to people with TB-HIV coinfection, with emphasis on active TB screening, HIV testing and HIV follow-up in specialized care services. This study allows a reflection on the heterogeneous organization of prison units in the state of São Paulo, requiring that public policy makers, health

managers and the prison system develop and plan strategies for the prevention and control of TB-HIV coinfection. It was also identified that the Northwest and Central Regional Coordinations need to make efforts towards the completion of their health teams and the diagnosis and follow-up of TB-HIV coinfection cases. Among the actions that need to be improved, regular TB screening stands out, as well as the availability of ART, GeneXpert MTB/RIF, X-ray and DOT.

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REFERENCES

1. Walmsley R. World Prison Population List [Internet]. London: Institute for Criminal Policy Research; 2018 [cited 2019 Oct 3]. Available from: https://www.prisonstudies.org/sites/default/files/resources/downloads/world_prison_population_list_11th_edition_0.pdf
2. Ministério da Justiça e Segurança Pública (BR). Levantamento nacional de informações penitenciárias: atualização – junho de 2016 [Internet]. Brasília: Ministério da Justiça e Segurança Pública; 2017 [cited 2019 Oct 3]. Available from: http://depen.gov.br/DEPEN/depen/sisdepen/infopen/Infopenjun2016.pdf
3. Urrego J, Ko AI, Carbone ASS, Paião DS, Sgarbi RV, Yeckel CW, et al. The impact of ventilation and early diagnosis on tuberculosis transmission in Brazilian prisons. Am J Trop Med Hyg. 2015;93(4):739-46. doi: 10.4269/ajtmh.15-0166
4. Getahun H, Gunneberg C, Sculier D, Verster A, Raviglione M. Tuberculosis and HIV in people who inject drugs: evidence for action for tuberculosis, HIV, prison and harm reduction services. Curr Opin HIV AIDS. 2012;7(4):345-53. doi: 10.1097/COH.0b013e328354bd44
5. Ministério da Saúde (BR). Manual de Recomendações para o Controle da Tuberculose no Brasil [Internet]. Brasília: Ministério da Saúde; 2019 [cited 2019 Oct 3]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/manual_recomendacoes_controle_tuberculose_brasil_2_ed.pdf
6. Macedo LR, Maciel ELN, Struchiner CJ. Tuberculosis in the Brazilian imprisoned population, 2007-2013. Epidemiol Serv Saúde. 2017;26(4):783-94. doi: 10.5123/s1679-49742017000400010
7. Estevan AO, Oliveira SMVL, Croda J. Active and latent tuberculosis in prisoners in the Central-West Region of Brazil. Rev Soc Bras Med Trop. 2013;46:515-8. doi: 10.1590/0037-8682-1441-2013
8. United Nations Office on Drugs on Crime (UNODC). Consulta global do UNODC para prevenção e tratamento para o HIV/Aids, atenção e suporte às pessoas vivendo com HIV/Aids em sistemas prisionais [Internet]. Viena: UNODC; 2014 [cited 2019 Oct 3]. Available from: https://www.unodc.org/documents/lpo-brazil/Topics_aids/Publicacoes/Consulta_global_do_UNODC_em_Prevencao.pdf
9. Carvalho NGO. Política Nacional de Atenção Integral à Saúde das Pessoas Privadas de Liberdade no Sistema Prisional: Uma análise sobre a evolução normativa. Cad Ibero Am Direito Sanit. 2017;6(4):112-129. doi: 10.17566/ciads.v6i4.434
10. Keehn EN, Nevin A. Health, human rights, and the transformation of punishment: South African litigation to address HIV and tuberculosis in prisons. Health Hum Rights [Internet]. 2018 [cited 2019 Oct 3];20(1):213-24. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6039737/pdf/hhr-20-213.pdf
11. Rich JD, Beckwith CG, Macmadu A, Marshall BDL, Brinkley-Rubinstein L, Amon JJ, et al. Clinical care of incarcerated people with HIV, viral hepatitis, or tuberculosis. Lancet [Internet]. 2016 [cited 2019 Oct 3];388(10049):1103-14. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5504684/pdf/nihms865972.pdf
12. Farhoudi IB, SeyedAlinaghi S, Tabarsi P, Mohraz M, Golrokhy R, Farnia M, et al. Revision and Implementation of "Clinical Guideline for Tuberculosis and HIV in Prisons". Infect Disord Drug Targets. 2018;18(1)72-80. doi:10.2174/1871526517666170518093529
13. Nijhawan AE, Princess AI, Porsa E. Acceptability of HIV testing among jail inmates when combined with a blood test for tuberculosis. J Correct Health Care. 2018;24(2):120-6. doi: 10.1177/1078345818762107.
14. Herce ME, Muyoyeta M, Topp SM, Henostroza G, Reid SE. Coordinating the prevention, treatment, and care continuum for HIV-associated tuberculosis in prisons: a health systems strengthening approach. Curr Opin HIV AIDS. 2018;13(6)492-500. doi: 10.1097/COH.0000000000000505
15. Von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. J Clin Epidemiol. 2008;61(4):344-9. doi: 10.1016/j.jclinepi.2007.11.008
16. Oliveira LGD, Natal S, Camacho LAB. Analysis of the implementation of the Tuberculosis Control Program in Brazilian prisons. Cad Saude Publica. 2015;31(3):543-54. doi: 10.1590/0102-311x00042914
17. Larouzé B, Ventura M, Sánchez AR, Diuana V. Tuberculosis in Brazilian prisons: responsibility of the State and double punishment for the inmates. Cad Saude Publica. 2015;31(6):1127-30. doi: 10.1590/0102-311XPE010615
18. Adane K, Mark S, Semaw F, Tsehaye A, Markos A, Geert-Jan D. Half of pulmonary tuberculosis cases were left undiagnosed in prisons of the tigray region of ethiopia: implications for tuberculosis control. PLoS One. 2016;11(2):e0149453. doi: 10.1371/journal.pone.0149453
19. Kelvin EA, Cheruvillil S, Christian S, Mantell JE, Milford C, Rambally-Greener L, et al. Choice in HIV testing: the acceptability and anticipated use of a self-administered at-home oral HIV test among South Africans. Afr J AIDS Res. 2016;15(2):99-108. doi: 10.2989/16085906.2016.1189442

20. Bick J, Culbert G, Al-Darraji HA, Koh C, Pillai V, Kamarulzaman A, et al. Healthcare resources are inadequate to address the burden of illness among HIV-infected male prisoners in Malaysia. Int J Prison Health. 2016;12(4):253-69. doi: 10.1108/IJPH-06-2016-0017

21. Ravanholi GM, Catoia EA, Andrade RL, Lopes LM, Brunello ME, Bollela VR. People living with HIV/AIDS in prison: regular use of antiretroviral therapy. Acta Paul Enferm. 2019;32(5):521-9. doi: 10.1590/1982- 0194201900073

22. Villarinho MV, Padilha MI, Berardinelli LMM, Borenstein MS, Meirelles BHS, Andrade SR. Public health policies facing the epidemic of AIDS and the assistance for people with the disease. Rev Bras Enferm. 2013;66(2):271-7. doi: 10.1590/S0034-71672013000200018

23. Subbaraman R, Nathavitharana RR, Mayer KH, Satyanarayana S, Chadha VK, Arinaminpathy N, et al. Constructing care cascades for active tuberculosis: a strategy for program monitoring and identifying gaps in quality of care. PLoS Med [Internet]. 2019 [cited 2019 Oct 3];16(2):e1002754. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6392267/pdf/pmed.1002754.pdf