ORIGINAL ARTICLE

Tuberculosis: health care and surveillance in prisons

Tuberculose: vigilância e assistência à saúde em prisões

Tuberculosis: control y asistencia a la salud en prisiones

Manuela Filter Allgayer[I]
ORCID: 0000-0002-9170-8594

Karine Zenatti Ely[I]
ORCID: 0000-0002-1692-5556

Graziela Hamann de Freitas[II]
ORCID: 0000-0003-2815-7272

Andréia Rosane de Moura Valim[I]
ORCID: 0000-0001-9611-3103

Roxana Isabel Cardozo Gonzales[III]
ORCID: 0000-0001-7180-897X

Suzane Beatriz Frantz Krug[I]
ORCID: 0000-0002-2820-019X

Lia Gonçalves Possuelo[I]
ORCID: 0000-0002-6425-3678

[I]*Universidade de Santa Cruz do Sul.*
Santa Cruz do Sul, Rio Grande do Sul, Brazil.
[II]*Superintendência de Serviços Penitenciários.*
Santa Cruz do Sul, Rio Grande do Sul, Brazil.
[III]*Universidade Federal de Pelotas.*
Peloras, Rio Grande do Sul, Brazil.

Corresponding Author:
Lia Gonçalves Possuelo
E-mail: liapossuelo@unisc.br

ABSTRACT

Objective: To identify tuberculosis-related health care and surveillance actions in Prison Health Units. **Method:** Cross-sectional study, of quantitative, exploratory and descriptive character. We visited 13 Teams of Prison Health, and nurses and technicians were interviewed regarding epidemiological surveillance instruments, physical structure and materials. **Results:** Search for respiratory symptoms in admission was reported by 6 (46.2%) of the teams, and the smear microscopy was the most requested test. The Logbook of Respiratory Symptoms and the Logbook for Monitoring Tuberculosis Cases were used in 7 (53.8%) institutions. Two of them (15.4%) had a location for sputum collection and 1 (7.7%) had a radiographer. The Directly Observed Therapy was reported in 7 (53.8%) units. **Conclusion:** Health care actions related to the search for respiratory symptoms and Directly Observed Therapy should be expanded, as well as surveillance actions and recording in official documents of the National Tuberculosis Control Program.

Descriptors: Tuberculosis; Prisons; Public Health Surveillance; Delivery of Health Care; Cross-sectional Studies.

RESUMO

Objetivo: Identificar ações assistenciais e de vigilância relacionadas à tuberculose em Unidades de Saúde Prisional. **Método:** Estudo transversal, de caráter quantitativo, exploratório e descritivo. Foram visitadas 13 Equipes de Saúde Prisional e entrevistados enfermeiros e técnicos de enfermagem com relação à instrumentos de vigilância epidemiológica, estrutura física e materiais. **Resultados:** A busca de sintomáticos respiratórios na admissão foi relatada por 6(46,2%) equipes, sendo a baciloscopia o exame mais solicitado. O Livro de Registro de Sintomáticos Respiratórios e o Livro de Registro de Acompanhamento dos Caso de Tuberculose eram utilizados em 7(53,8%) instituições. Duas (15,4%) apresentavam local para coleta de escarro e 1(7,7%) possuía radiógrafo. O Tratamento Diretamente Observado foi referido em 7(53,8%) unidades. **Conclusão:** As ações assistenciais relacionadas à busca de sintomáticos respiratório e Tratamento Diretamente Observado deveriam ser ampliadas, bem como as ações de vigilância e registro nos documentos oficiais do Programa Nacional de Controle da Tuberculose.

Descritores: Tuberculose; Prisões; Vigilância em Saúde Pública; Assistência à Saúde; Estudos Transversais.

RESUMEN

Objetivo: Identificar acciones asistenciales y de control de la tuberculosis en Unidades de Salud en Prisiones. **Método:** Estudio transversal, de tipo cuantitativo, exploratorio y descriptivo. Se visitaron a 13 equipos de Salud en Prisiones, de los cuales participaron enfermeros y técnicos de enfermería de una entrevista sobre los instrumentos de control epidemiológico, la estructura física local y los materiales. **Resultados:** La búsqueda de sintomáticos respiratorios durante la admisión fue relatada por 6 (un 46,2%) equipos, siendo la baciloscopía el examen más solicitado. El Libro de Registro de Sintomáticos Respiratorios y el Libro de Registro de Seguimiento de los casos de Tuberculosis son utilizados en 7 (un 53,8%) instituciones. Dos (un 15,4%) de ellas contaban con un local para recolección de esputo y 1 (un 7,7%) tiene radiógrafo. El Tratamiento Directamente Observado se mencionó en 7 (un 53,8%) unidades. **Conclusión:** Las acciones asistenciales relacionadas con la búsqueda de sintomáticos respiratorios y el Tratamiento Directamente Observado deberían ser ampliadas, así como las acciones de control y registro en los documentos oficiales del Programa Nacional de Control de la Tuberculosis.

Descriptores: Tuberculosis; Prisiones; Vigilancia em Salud Pública; Prestación de Atención de Salud; Estudios Transversales.

INTRODUCTION

The World Health Organization (WHO) estimates that 10.4 million people contracted tuberculosis (TB) in 2016, leading to 1.3 million deaths among HIV seronegative patients and 374 among seropositive ones, thus being characterized as one of the leading causes of death in the world[1]. The weakening of the immune system, caused by the co-infection with the *Human Immunodeficiency Virus* (HIV), promotes its development. Social factors as unhealthy living conditions, malnutrition, and low income lead to greater vulnerability to the disease[2]. Lack of bonds and support, prejudice on the part of professionals, and difficult access to examinations, consultations and treatments are bottlenecks on the control of TB in primary health care[3].

Among the vulnerable groups, one may highlight the indigenous peoples, street populations, and people deprived of their liberty (PPL). Health professionals also have a higher risk of TB infection and development[4]. Brazil has the fourth-largest prison population in the world, in which the TB incidence is 28 times higher than in the general public, and the lack of disease management becomes a risk factor for the community[5]. TB is a persistent disease in prison systems, mainly due to the late diagnosis, high prevalence of antimicrobial-resistant bacteria, improper treatment, use of illicit drugs, overcrowding of prison systems, poor infrastructure conditions, high prisoner turnover and low socioeconomic power[6-8]. The TB is a second penalty for the detainees and the high risk of developing the disease is shared with security and health professionals, visitors, and the general public[9-10].

Screening TB in prisons is a challenge; hence, early diagnosis and proper treatment must be prioritized[11]. The PPL with active TB must be monitored through the health network, thus minimizing the chances of treatment interruption and recurrence. The development of policies, programs and strategies, such as the search of respiratory symptoms (BSR), contacts' examination, culture, susceptibility testing, co-infection diagnosis, directly observed therapy (DOT) and educational actions are essential to achieve the goals of "The Global Plan to Stop TB 2016-2020" to eradicate the disease until 2030[4-6,11-12].

The Ministry of Health (MS) established in 2003 the National Health Plan for the Prison System (PNSSP), to ensure access to health for the convicts, offering primary health care services within prison units[13]. In 2014, the National Policy of Integral Attention to Health for People Deprived of their Liberty in the Prison System (PNAISP) extended the health care to all people deprived of their freedom, including provisional prisoners; however, technical and bureaucratic barriers still persist, and so do prejudice and discrimination[14].

The PNAISP advocates the comprehensiveness of health care in the prison systems, as well as multi-professional teams consisting of doctor, nurse, dentist, social worker, psychologist, nursing assistant, and dental office assistant. Each team should be responsible for 100 to 500 prisoners, and in units with less than 100 detainees the health care is the responsibility of the Basic Health Unit in the territory[13-14].

Municipalities that adhere to the PNAISP receive financial incentives to perform health care within the prison system; however, this system lacks monitoring and evaluation on the actions taken.

OBJECTIVE

To identify tuberculosis-related health care and surveillance actions developed in Prison Health Units of Rio Grande do Sul.

METHOD

Ethical aspects

The study was approved by the School of Penitentiary Service of the Superintendence of Prison Services (SUSEPE) and subsequently submitted for evaluation and approval of the Research Ethics Committee of the University of Santa Cruz do Sul (CAEE 48170715.0.0000.5343). In this study, the Informed Consent Form (ICF) was used and all participants had their identity preserved and guaranteed at all times.

Study design, location, and period

This is a cross-sectional study, of quantitative, exploratory and descriptive character, conducted in Prison Health Units of Rio Grande do Sul from August to October 2015.

Population and sample: inclusion and exclusion criteria

At the time of study, the RS featured 18 prison health units, distributed into 15 municipalities, and five (38.4%) of those units have more than one health team. Units that bear only female prison population, units difficult to access, and those in which the professional contacted was not found at the time of the visit were excluded from the study. Thus, 13 (72.2%) prison health units were part of the study, being 4 (30.8%) of them located in the city of Charqueadas (Figure 1).
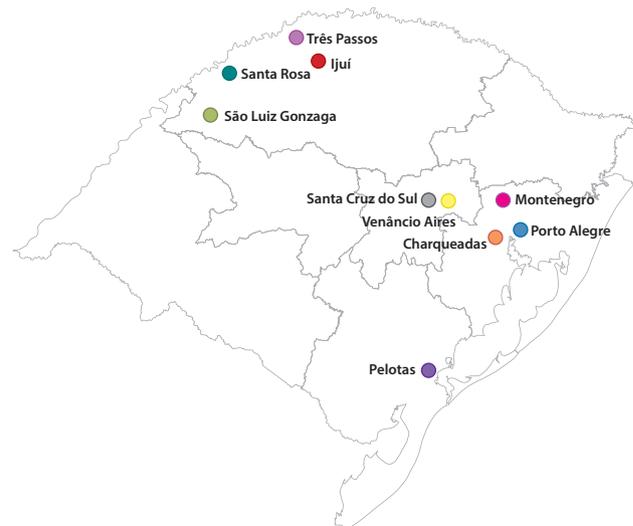

Figure 1 – Municipalities visited that feature prison health units , Rio Grande do Sul, Brazil

Study protocol

Visits were scheduled in advance, through a prior telephone contact with the unit's nurse. Two instruments were used for

data collection: a questionnaire addressing general data on the penitentiary and its health unit, human resources, and health care; and a *check-list type instrument*, structured based on the document prepared by the Operational Study Group on TB of the University of São Paulo (USP). This, in turn, was referenced on the *Primary Care – Assessment Tool (PCAT),* proposed and validated in Portuguese for the Primary Health Care (PHC), aimed at identifying epidemiological surveillance instruments, physical structure and materials[15]. The Logbook of Respiratory Symptoms (LRSR) and the Logbook for Monitoring TB Patients and Cases Treatment were instruments also evaluated. Professionals interviewed were nurses or nursing technicians, as they are responsible for managing the prison health teams.

Analysis of the results and statistics

Data tabulation was performed in an electronic database in Microsoft® Excel 2010 (Windows 2010 Operating System, Microsoft Corporation Inc.). Descriptive and univariate analyses were carried out using the software *Statistical Package for the Social Sciences* (v. 20.0). Values were expressed as mean and standard deviation or absolute numbers and percentages.

RESULTS

The prison health teams of this study are composed of health professionals from the municipality and the Superintendence of Prison Services (Susepe). Twelve (92.3%) of the prison health units had a minimal health team, consisting of a doctor, nurse, dentist, social worker, psychologist, nursing technician and dental office assistant. Professionals such as a physical therapist, occupational therapist, psychiatrist and bio-medic were present in 1 (7.7%) health unit. The number of professionals ranged from 6 to 34, as some of the units visited had more than one health team. Nursing professionals and social workers have a higher weekly workload compared with the other professionals.

The study was conducted with 10 (79.6%) nurses and 3 (23.1%) nursing technicians of the health teams. All prison units studied were male prisons of closed or semi-opened regime; 10 (76.9%) were overcrowded (Table 1), and their demographic composition was predominantly young men, with low education and socio-economic levels.

It was not possible to evaluate whether penal institutions with higher occupancy rates also presented a higher TB prevalence, as the Penal Institution No. 12, which had the second highest occupancy rate, did nor report on the number of TB cases at the time of the study.

In the units visited, the spontaneous demand was identified as the most common form of TB detection. The most frequent diagnostic methods in prison units were the smear microscopy, sputum culture, and chest x-ray. The Rapid Molecular Detection for Tuberculosis (RMD-TB) was found in one (7.7%) prison located in the State capital (Table 2).

The BSR at the admission to the prison system was reported by 7 (53.8%) teams, and 6 (46.2%) teams performed screening up to 6 days after admission; whereas one of them (7.7%) did not use time standardization for screening on admission.

As for the DOT, in 7 (53.8%) of the units it was conducted will all patients and in 2 (15.4%) it was performed only when there was no adherence to treatment; 4 (30.8%) units reported using the monitoring file of daily intake of medication. In most units, the DOT was conducted by the nursing professional.

Regarding interventions in the TB transmission chain, one can see that 3 (23.1%) units chose to isolate ill prisoners, and all of them state the summons for diagnosing the contacts are paramount; contacts inside the walls of the prison are evaluated at the own unit and contacts outside are forwarded to the municipal reference. Guidance to visitors of positive cases were carried out by the health team professional in 4 (30.8%) units.

In one (7.7%) unit, the LRSR had been replaced by an own tool of monitoring, one (7.7%) interviewee did not know what the book was about, and 4 (30.8%) did not use it. On the other hand, it became evident throughout the check-list that the Logbook for Monitoring TB Cases Treatment was replaced by own instruments in 3 (23.1%) units, one (7.7%) interviewee did not know what to answer and 2 (15.4%) did not use this instrument. The compulsory disease notification was evidenced in all units, as well as the existence of medical records of the detainees. The monitoring file of the daily intake of medications was not used in 9 (69.2%) of the units visited (Table 3).

Table 1 – Characteristics of the 13 Prison Health Units analyzed in Rio Grande do Sul, Brazil, 2015

Nº	Capacity	Full Capacity	Occupancy Rate	Full Capacity of the Cells	TB Cases under Treatment	TB Prevalence per 1000 Prisoners
1	250	397	158%	4 a 20	3	7.55/1000
2	529	529	100%	8	9	17.1/1000
3	1,372	2,400	174%	12 a 20	44	18.33/1000
4	976	1,301	133%	4	5	3.84/1000
5	288	260	90%	1	0	0
6	336	670	199%	15 a 20	4	5.97/1000
7	1,824	4,335	237%	2 a 18	169	38.98/1000
8	138	131	95%	2 a 4	1	7.63/1000
9	162	250	154%	5 a 10	0	0
10	466	528	113%	3 a 4	7	13.26/1000
11	288	360	125%	6 a 16	0	0
12	472	1,039	220%	10	n/i*	–
13	976	1,500	145%	4 a 5	5	3.33/1000

*Note: * Not informed at the time of the study. TB - Tuberculosis.*

As to the existence of a specific location for sputum collection, 11 *84.6%) of the units visited did not have this structure and 4 (30.8%) had no refrigerator for storing biological material. Regarding the transport of biological material, one (7.7%) unit did not had Styrofoam boxes for transporting samples to the laboratory (Table 4)

Table 2 – Actions related to the search for cases and diagnosis of tuberculosis in the Prison Health Units of Rio Grande do Sul, Brazil, 2015

Actions	No. of Prison Health Units	%
BSR* in admission	7	53.8
Annual BSR*	4	30.8
TB Diagnosis Methods**		
Smear Microscopy	13	100.0
Cell Culture	11	84.6
Radiography	11	84.6
RMD-TB***	1	7.7

*Note: * Search for Respiratory Symptoms; ** Tuberculosis; ***Rapid Molecular Detection.*

Table 3 – Epidemiological surveillance instruments used for the control of tuberculosis in the 13 Prison Health Units of Rio Grande do Sul, Brazil, 2015

Epidemiological surveillance instruments	No. of Prison Health Units	%
LRSR*	7	53.8
cases LR**	7	53.8
SINAN*** file	13	100.0
Health Record	13	100.0
Inspection record for taking medication	4	30.8

*Note: * Logbook of Respiratory Symptoms; ** Logbook for Monitoring TB Cases; *** File of the Information System for Notifiable Diseases (SINAN).*

Table 4 – Physical structure and availability of material resources in the 13 Prison Health Units of Rio Grande do Sul, Brazil, 2015

Physical Structure	No. of Prison Health Units	%
Location for sputum collection	2	15.4
Bottles for sputum collection	13	100
Refrigerator for packaging of biological material	9	69.2
Styrofoam boxes for transport	12	92.3
Radiographers	1	7.7

DISCUSSION

The interviews held show the insufficient implementation of the TB Program in prisons, where the recommendations of the Ministry of Health are partially followed by the prison health teams. TB diagnostic exams require better implementation, especially in the performance of sputum culture for all suspected TB, BSR strategy at admission to the prison system, and DOT for all cases diagnosed.

Overcrowding and unsanitary confinement conditions are factors that contribute to the maintenance of the TB transmission chain within the prison system. Agglomeration and poor dwelling conditions were also factors evidenced in other Brazilian prisons, which came to contribute to the PPL illness, becoming an obstacle in the fight against TB[16]. Prison systems are a high-risk environment for the transmission of TB between contacts and communities outside the walls. In Brazil, 25% of the TB cases occur among prisoners, who represent less than 1% of the population. In Mato Grosso do Sul, people who had been arrested had 23% more TB cases than the general population[17].

Strategies adopted for TB control in prisons remain essentially biomedical (case identification and treatment) and educational, and have a limited effectiveness if not associated with measures for improving environmental conditions, seldom implemented[18-19]. The functional dynamics of penal institutions difficult the integration of health routines, and may limit the actions to control TB and other diseases[20]. Scarce and inefficient health services are a source of great dissatisfaction among the prisoners[21].

The TB identification form through spontaneous demand occurs when the prisoners voluntarily seek medical care with acute symptoms of the disease[16]. Communication deficiency between health and security teams, the high turnover of prisoners, and the large number of admissions are factors regarded by the professionals as weaknesses in screening the disease. The National Program of Tuberculosis Control (PNCT) recommends that new TB cases are detected through spontaneous demand, questioning on cough in the entryway of the penitentiary system, annual systematic active search, treatment supervision, and information/awareness of PPL and prison security teams[22]. Another Brazilian penitentiary performs the BSR in up to 7 days after admission, and the exams most frequently requested are the smear microscopy, sputum culture, and antimicrobial susceptibility testing (SRT), in addition to the offer of HIV serology[16]. Decentralization at the prisoners' entrance in the prison system was a harmful factor in realizing the BSR.

The RMD-TB test is still seldom present in penitentiaries of Rio Grande do Sul (RS). The RMD-TB sensitivity is about 90% (whereas the smear microscopy is 65%), the specificity is 99%, and the result is released is just two hours, favoring the timely start of the treatment. In addition, the RMD-TB also detects resistance to rifampicin, one of the main drugs used in TB treatment, making it possible to identify cases of resistance to the basic scheme, reducing the time required for starting the treatment with second-line drugs[23]. Triage performed by radiological exams allows for greater TB detection when compared to the detection through clinical symptoms, but is little used in the prison system[24].

The DOT is not developed in its fullness by the prison health units studied, despite the PPL belong to the risk group of treatment discontinuation. The DOT aims at contributing to the greater adherence to treatment and consists in the observation of TB medicines intake, preferably every day, by health professionals. Such strategies allow for a higher probability of healing and less risk of bacterial resistance, establishing links between patient and professional[4]. In Colombia, the DOT implementation has significantly contributed to TB healing when compared with the period in which it was not performed in the units researched. When analyzing determining factors for treatment abandonment, most cases are related to how the health services are organized to develop disease control strategies. Reasons related to treatment

abandonment can be solved with continuing education actions, active search of cases, and strengthening of the strategy of daily observation of medication intake[25].

Isolation is a factor much discussed among health professionals. Most teams do not isolate TB patients, following the MS guidelines. There is no need for isolation for those patients already inserted into the prison system because the inmates have already been widely exposed to infection risks and the infectiousness tents to decrease rapidly after the onset of treatment[4]. In Bangladesh, it was evidenced that the BSR, immediate isolation, and treatment of people with pulmonary TB resulted in a decreased transmission within prisons[26]. In Espírito Santo, the detainee is forwarded to respiratory isolation in a specific cell from the suspicion of disease, until it is confirmed or not through laboratory exams[27].

The control of contacts is an important tool to prevent illness and to diagnose early active cases of disease, and must be established by TB control programs. Such coexistence environment can be the home, work environments, long-stay institutions, and prison units[28]. The guidance to external contacts, such as family and visitors, is not directly addressed by health professionals for the most part, and the prisoner itself must guide them[18]. In several units, the ill convict was responsible for guiding their own visitors. A study conducted in Ribeirão Preto/SP showed the knowledge of families on TB was unsatisfactory since they knew the predisposing factors to illness, transmission forms, and disease symptoms, but some associated the disease transmission to the sharing of clothing and cutlery, contaminated food, and sexual intercourse, which can lead to patients' discrimination and social exclusion[29]. Thus, continuing education and awareness of the entire prison population, including family members and professionals, on the importance of early diagnosis and adherence to treatment would be of paramount importance[30].

Logbooks are used for epidemiological monitoring of the disease within the population, but few teams used them. Data on the investigation, diagnosis, and monitoring of TB cases are recorded in various collection tools that are used for evaluating control actions at a local level, according to PNCT recommendations. The LSRS and the Logbook for Monitoring TB Cases Treatment are some of the data collection instruments routinely used by health units[4].

The Logbook for Monitoring TB Cases Treatment is an official information tool of the PNCT and should be used for the basis of calculation for operational and epidemiological indicators. Data provided by the book shall feed the TB Notification/Investigation file and the Bulletin of TB Cases Monitoring, both of the Information System for Notifiable Diseases (SINAN)[31-32]. The SINAN subsidizes prevention and control actions for diseases whose notification is mandatory, and must be fed with trusted data. Among the diseases that require a database to support the prevention and control actions, the TB should be highlighted due to its magnitude and prevalence[31]. In 2007, the MS introduces in the SINAN file the information on the prison source, which contributed to a better understanding on the disease information in the prison system[32].

Regarding the existence of a location for sputum collection, teams reported that collection occur in the bathroom, cell, gallery, the own infirmary, or in a well-ventilated spot. A study on Primary Health Care (PHS) services, conducted in the countryside of São

Paulo, verified that none of the units had a suitable location for sputum collection[33]. In 2003, the PNSSP established that prison health units should have a collection room with natural ventilation, refrigerator for storing the biological material collected for laboratory tests and thermal boxes for sending samples to the reference laboratory[34].

Despite specific legislation determining the same minimum workload for all professionals of prison health teams, namely: 6 weekly hours for each professional of the type I Prison Primary Health Care Team (EABP), 20 weekly hours for type II EABP, and 30 hours a week for type III EABP; in practice, nursing professionals and social workers are present most of the time in prison health teams[35].

Study limitations

This study was limited to evaluating tuberculosis health care and surveillance actions in penal institutions and has not evaluated HIV data and co-infection. Actions of training, continuing education, information, and awareness of PPL and health and security professionals are still incipient. It should be noted that interviews were carried out with one member of each health team, not representing the entirety of professionals of Prison Primary Health Care teams. Furthermore, they represent the picture of a particular time, which can be modified by the replacement of some professional of changes in the work process. Thus, the continuous monitoring and evaluation of surveillance and care actions developed by prison health teams is recommended.

Contributions to the field of Nursing and Public Health

This study contributed to a diagnosis related to tuberculosis health care and surveillance actions in penal institutions with Prison Primary Health Care teams in Rio Grande do Sul. Tuberculosis control in penitentiaries can have repercussions in decreasing the incidence of cases in the community. In the field of Nursing, research involving health surveillance are of paramount importance, considering that in the course of academic education the nurse is prepared to act in epidemiological research. This professional is on the front lines of health care, in direct contact with used and the multidisciplinary team, actively participating in the health-disease process of the population. Recognizing such scenario of TB in Prison Health Units, the nurse can act in conducing public health actions, which acquires significant importance in implementing disease control activities.

CONCLUSION

Regarding health care actions, the spontaneous demand is the main means of care, the isolation of confirmed cases is applied by some health teams, there is a lack of materials and equipment, and the DOT is seldom used. As to epidemiological surveillance actions, the positive points are related to the laboratory and radiological confirmation of suspected cases, the SINAN notification, registry in the patient records, and evaluation of contacts. The BSR, guidance to family members, and use of specific registration tools should be extended by prison health units. The BSR is an activity that requires planning, strategies and

support of the prison security team. Destruction of logbooks and limited registration on them reflects on the health care and, consequently, on the prognosis of the ill prisoner. One can also question whether the absence and reduced number of TB cases in some of the units visited may be related to failures in information records. The registry is extremely important because they underlie indicators and favor the development of action plans. Nurses are responsible for contributing to the development and TB health care and surveillance actions, improving conducts relating to records held in the units and increasing the identification of respiratory symptoms and cases diagnosed.

FUNDING / ACKNOWLEDGEMENTS

REFERENCES

1. World Health Organization-WHO. Global Tuberculosis Report 2017[Internet]. Geneva : WHO; 2015 [cited 2018 Jun 25]. Available from: https://www.who.int/tb/publications/global_report/MainText_13Nov2017.pdf?ua=1

2. Biadglegne F, Rodloff, AC, Sack U. A first insight into high prevalence of undiagnosed smear-negative pulmonary tuberculosis in northern Ethiopian prisons: implications for greater investment and quality control. PLos ONE. 2014];9(9):e106869. doi: https://doi.org/10.1371/journal.pone.0106869

3. Pinheiro PGOD, Sá LD, Palha PF, Oliveira RCC, Nogueira JA, Villa TCS. Critical points for the control of tuberculosis on primary health care. Rev Bras Enferm [Internet]. 2017[cited 2018 Feb 22];70(6):1296-304. Available from: http://www.scielo.br/pdf/reben/v70n6/pt_0034-7167-reben-70-06-1227.pdf

4. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Departamento de Vigilância Epidemiológica. Manual de recomendações para o controle da tuberculose no Brasil. Brasília (DF): [Internet] 2011[cited 2018 Mar 28]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/manual_recomendacoes_controle_tuberculose_brasil.pdf

5. Sacchi FPC, Praça RM, Tatara MB, Simonsen V, Ferrazoli L, Croda MG, et al. Prisons as reservoir for community transmission of tuberculosis, Brazil. Emerg Infect Dis [Internet]. 2015[cited 2018 Feb 16];21(3):452-5. Available from: https://wwwnc.cdc.gov/eid/article/21/3/pdfs/14-0896.pdf

6. Dara M, Acosta CD, Melchers NVSV, Al-darraji HAA, Chorgoliani D, Reyes H, et al. Tuberculosis control in prisons: current situation and research gaps. Emerg Infect Dis [Internet]. 2014[cited 2018 Feb 16];32(2015):111-7. Available from: www.ijidonline.com/article/S1201-9712(14)01747-0/pdf

7. Rueda Zv, López L, Marin D, Vélez LA, Arbeláez MP. Sputum induction is a safe procedure to use in prisoners and MGIT is the best culture method to diagnose tuberculosis in prisons: a cohort study. Int J Infect Dis [Internet]. 2015[cited 2018 Feb 16];33:82-8. Available from: www.ijidonline.com/article/S1201-9712(15)00007-7/pdf

8. Telesinghe L, Fielding K, Malden JL, Hanifa Y, Churchyard GJ, Grand AD, et al. High tuberculosis prevalence in a South African prison: the need for routine tuberculosis screening. PLos ONE. 2014;9(1):e87262. doi: 10.1371/journal.pone.0087262

9. Sanches A, Massari V, Gerhardt G, Espinola AB, Siriwardana M, Camacho LAB, et al. X ray screening at entry and systematic screening for the control of tuberculosis in a highly endemic prison. BMC Public Health [Internet]. 2013[cited 2018 Feb 12];13(983):1-7. Available from: https://bmcpublichealth.biomedcentral.com/track/pdf/10.1186/1471-2458-13-983

10. Larouzé B, Ventura M, Sánchez AR, Diuana V. Tuberculosis in Brazilian prisons: responsibility of the State and double punishment for the inmates. Cad Saúde Pública [Internet]. 2015[cited 2018 Feb 22];31(6):1127-30. Available from: http://dx.doi.org/10.1590/0102-311XPE010615

11. Harris JB, Siyambango M, Levitan EB, Maggard KR, Hatwiinda S, Foster EM, et al. Derivation of a tuberculosis screening rule for sub-Saharan African prisons. Int J Tuberc Lung Dis. 2014;18(7):774-80. doi: https://doi.org/10.5588/ijtld.13.0732

12. World Health Organization. WHO. Stop TB Partnership. The paradigma shift 2016-2020: global plan to end TB [Internet]. Geneva: WHO; 2015[cited 2017 Nov 25]. Available from: http://www.stoptb.org/assets/documents/global/plan/GlobalPlanToEndTB_TheParadigmShift_2016-2020_StopTBPartnership.pdf

13. Ministério da Saúde (BR). Portaria nº 1, de 2 de janeiro de 2014. Institui a Política Nacional de Atenção Integral à Saúde das Pessoas Privadas de Liberdade no Sistema Prisional no âmbito do Sistema Único de Saúde. Brasília (DF): Diário Oficial da União; 2014.

14. Barsaglini R. Do plano à política de saúde no sistema prisional: diferenciais, avanços, limites e desafios. Physis: Rev Saúde Coletiva [Internet]. 2016[cited 2018 Feb 23];26(4):1429-39. Available from: http://www.scielo.br/pdf/physis/v26n4/1809-4481-physis-26-04-01429.pdf

15. Ministério da Saúde (BR). Secretaria de Atenção em Saúde. Departamento de Atenção Básica. Manual do instrumento de avaliação da atenção primária à saúde: primary care assessment tool-pcatool [Internet]. Brasília (DF); 2010[cited 2018 Feb 28]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/manual_avaliacao_atencao_primaria.pdf

16. Oliveira LGD, Natal S, Camacho LAB. Analysis of the implementation of the tuberculosis control program in Brazilian prisons. Cad Saúde Pública [Internet]. 2015[cited 2018 Feb 22];31(3):543-54. Available from: http://www.scielo.br/pdf/csp/v31n3/0102-311X-csp-31-03-00543.pdf

17. Sacchi FPC, Praça RM, Tatara MB, Simonsen V, Ferrazoli L, Croda MG, et al. Prisons as reservoir for community transmission of tuberculosis, Brazil. Emerg Infect Dis [Internet]. 2015[cited 2018 Jun 28];21(3):452-55. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4344267/pdf/14-0896.pdf

18. Abebe DS, Biffa D, Bjune G, Ameni G, Abebe F. Assessment of knowledge and practice about tuberculosis among eastern Ethiopian prisoners. Int J Tuberc Lung Dis [Internet]. 2011[cited 2018 Feb 20];15(2):228-33. Available from: https://www.ncbi.nlm.nih.gov/pubmed/21219686

19. Santos M, França P, Sánches A, Larouzé B. Manual de intervenções ambientais para o controle da tuberculose nas prisões[Internet]. 2012[cited 2018 Feb 18]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/manual_intervencoes_ambientais_controle_tuberculose_prisoes.pdf

20. Valença MS, Cezar-Vaz MR, Brum CB, Silva PEA. O processo de detecção e tratamento de casos de tuberculose em um presídio. Ciênc Saúde Colet [Internet]. 2016 [cited 2018 Feb 23];21(7):2111-22. Available from: http://www.scielo.br/pdf/csc/v21n7/1413-8123-csc-21-07-2111.pdf

21. Minayo MCS, Ribeiro AP. Condições de saúde dos presos do estado do Rio de Janeiro (RJ), Ciênc Saúde Colet [Internet]. 2016[cited 2018 Feb 10];21(7):2031-40. Available from: http://www.scielo.br/pdf/csc/v21n7/1413-8123-csc-21-07-2031.pdf

22. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Departamento de Vigilância Epidemiológica. Programa Nacional de Controle da Tuberculose. Brasília (DF): 2010[cited 2018 Feb 12]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/ProgramaTB.pdf

23. Reid SE, Topp SM, Turnbull ER, Hatwiinda S, Harris JB, Maggard KR, et al. Tuberculosis and HIV control in Sub-Saharan African prisons: "Thinking outside the prison cell". J Infect Dis. 2012;205(Suppl 2):265-73. doi: https://doi.org/10.1093/infdis/jis029

24. Valença MS, Possuelo LG, Cezar-Vaz MR, Silva PEA. Tuberculose em presídios brasileiros: uma revisão integrativa da literatura. Ciênc Saúde Colet [Internet]. 2016[cited 2018 Feb 10];21(7):2147-60. Available from: http://www.scielo.br/pdf/csc/v21n7/1413-8123-csc-21-07-2147.pdf

25. Couto DS, Carvalho RN, Azevedo EB, Moraes MN, Pinheiro PGOD, Faustino EB. Fatores determinantes para o abandono do tratamento da tuberculose: representações dos usuários de um hospital público. Saúde Debate [Internet]. 2014[cited 2018 Feb 12];38(102):572-81. Available from: http://www.scielo.br/pdf/sdeb/v38n102/0103-1104-sdeb-38-102-0572.pdf

26. Ministério da Saúde (BR). Secretaria de Vigilância em Saúde. Departamento de Vigilância Epidemiológica. Tratamento Diretamente Observado (TDO) da tuberculose na atenção básica: protocolos de enfermagem [Internet]. Brasília (DF): 2011[cited 2018 Feb 12]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/tratamento_diretamente_observado_tuberculose.pdf

27. Banu S, Rahman MT, Uddin MKM, Khatun R, Khan SR, Rahman M, et al. Effect of active case finding on prevalence and transmission of pulmonary tuberculosis in Dhaka central jail, Bangladesh. PLos ONE. 2015;9(9):01-10. doi: https://doi.org/10.1371/journal.pone.0124976

28. Macedo LR, Macedo CR, Maciel ELN. Epidemiologic surveillance of tuberculosis in prisons of Espírito Santo. Rev Bras Promoç Saúde [Internet]. 2013[cited 2018 Feb 22];26(2):210-16. Available from: http://periodicos.unifor.br/RBPS/article/view/2907/pdf_1

29. Freitas IM, Crispim JA, Pinto IC, Villa TCS, Brunello MEF, Pinto PFPS, et al. Knowledge and perception about tuberculosis of patients' families under directly observed treatment at a health service in Ribeirão Preto-SP. Texto Contexto Enferm [Internet]. 2012[cited 2018 Feb 13];21(3):642-49. Available from: http://www.scielo.br/pdf/tce/v21n3/en_v21n3a20.pdf

30. Ely KZ, Algayer MF, Leão J, Valim ARM, Hermes VB, Becker D, et. al. Brazil. TB-free prisons in Southern Brazil. In: World Health Organization. Good Practices in the prevention and care of tuberculosis and drug-resistant tuberculosis in correctional facilities. Geneva: WHO[Internet]. 2017[cited 2018 Mar 15]. Available from: http://www.euro.who.int/__data/assets/pdf_file/0003/360543/TB-prisons-9789289052917-eng.PDF?ua=1

31. Ministério da Saúde (BR). Registro de pacientes e acompanhamento de tratamento dos casos de tuberculose: Programa Nacional de Controle da Tuberculose [Internet]. Brasília (DF): 2006[cited 2018 Mar 18]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/registro_pacientes_acompanhamento_casos_tuberculose.pdf

32. Araújo LNF, Vieira AN, Oliveira GWS. Avaliação dos registros das fichas do sistema de informação de agravos de notificação para tuberculose. Rev Baiana Saúde Pública [Internet]. 2013[cited 2018 Feb 24];37(4):969-78. Available from: http://files.bvs.br/upload/S/0100-0233/2013/v37n4/a4490.pdf

33. Balderrama P, Vendramini SF, Santos MLSG, Ponce MAZ, Oliveira IC, Villa TCS, et al. Porta de entrada para o diagnóstico da tuberculose: avaliação da estrutura dos serviços. Rev Eletr Enferm [Internet]. 2014[cited 2018 Feb 24];16(3):511-9. Available from: https://www.fen.ufg.br/fen_revista/v16/n3/pdf/v16n3a03.pdf

34. Ministério da Saúde (BR). Secretaria de Atenção à Saúde. Departamento de Ações Programáticas Estratégicas. Plano Nacional de Saúde no Sistema Penitenciário. Brasília (DF); 2004[cited 2018 Mar 15]. Available from: http://bvsms.saude.gov.br/bvs/publicacoes/cartilha_pnssp.pdf

35. Ministério da Saúde (BR). Portaria nº 482, de 1 de abril de 2014. Institui normas para a operacionalização da Política Nacional de Atenção Integral à Saúde das Pessoas Privadas de Liberdade no Sistema Prisional no âmbito do Sistema Único de Saúde. Brasília (DF): Diário Oficial da União [Internet]. 2014 [cited 2018 Mar 15]. Available from: http://www.saude.df.gov.br/wp-conteudo/uploads/2018/04/8.-Portaria-Ministerio-da-Saude-n-482-2014-Institui-Normas-para-a-Operacionalizacao-da-PNAISP-no-SUS.pdf