

# Knowledge, attitudes and practices on tuberculosis in prisons and public health services

## *Conhecimento, atitudes e práticas sobre tuberculose em prisões e no serviço público de saúde*

### **Abstract**

There are few studies about tuberculosis (TB) knowledge among prisoners, penitentiary system workers and public health network (PRN). Those carried with other populations, point out that the lack of knowledge about the illness is one of the main barriers to the perception of the symptoms, early diagnosis, treatment adherence and cure. Objective: To analyze the knowledge, attitudes and practices about TB in a prison and in public health services (PHS). Methods: A cross sectional study was carried out and KAP (knowledge, attitudes and practices) questionnaire was applied to 141 prisoners, 115 prison's employees and 158 PHS workers. Epi-Info version 6.04 was used for comparison of proportions with statistic significance at  $p < 0.05$ . Results: Mistaken concepts on TB were observed among the three searched groups. PHS also showed basic errors on TB knowledge thus pointing out imperfections on training. Conclusion: KAP revealed efficient for data collection of general knowledge items but was limited on practices and attitudes and so its use as the only tool for data collection about knowledge, attitudes and practices on TB is not advisable. It is suggested its regular use to aid educational activities and considering the high prevalence of TB among prisoners, it is noted the need to involve the Departments of Health in the supervision of educational activities in the prison system.

**Keywords:** Tuberculosis. Prisons. KAP. Knowledge. Attitudes. Practices. Public Health Service.

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## Resumo

São poucos os estudos sobre o conhecimento da tuberculose (TB) entre os detentos, trabalhadores do sistema penitenciário e da rede pública de saúde (RPS), e aqueles realizados com outras populações apontam a falta do conhecimento sobre a doença como uma das principais barreiras para a percepção dos sintomas, diagnóstico precoce, adesão ao tratamento e cura. **Objetivo:** Analisar o conhecimento, atitudes e práticas sobre a TB em uma unidade prisional e na rede pública de saúde (RPS). **Metodologia:** Foi realizado estudo transversal com aplicação do questionário KAP (knowledge, attitudes and practices) na coleta de dados. Participaram 141 detentos, 115 funcionários do presídio e 158 da RPS. O programa Epi-Info versão 6.04 foi utilizado para comparação de proporções com significância estatística para  $p < 0,05$ . **Resultados:** Foram observados conceitos equivocados sobre a doença entre os três grupos pesquisados. Na RPS foram detectados erros básicos sobre o conhecimento da TB, concluindo-se que há falhas nos treinamentos. O KAP mostrou-se eficaz na coleta de dados gerais sobre conhecimento, porém foi limitado e frágil nas informações sobre práticas e atitudes, não sendo aconselhável a sua utilização como instrumento único na coleta de dados sobre conhecimento, práticas e atitudes em TB. É sugerida sua utilização periódica como auxiliar nas atividades educativas e, considerando a elevada prevalência de TB entre detentos, aponta-se para a necessidade do envolvimento das Secretarias de Saúde na supervisão destas atividades educativas no sistema prisional

**Palavras-chave:** Tuberculose. Prisões. KAP. Conhecimento. Atitudes. Práticas. Serviço Público de Saúde.

## Introduction

Confined populations, especially those comprised of incarcerated individuals, represent a serious problem in the control of infectious and contagious diseases, such as tuberculosis (TB) and AIDS.<sup>1</sup> Even when surrounded by prison walls, these individuals are never entirely isolated from society. Bonds with the outside world continue through contact with both visitors and prison workers. Inmates also inter-relate with the community in general through releases to work, granted leaves, escapes and return to society when sentences have been served. In addition, prison workers maintain contact with their own families and the community in general,<sup>2</sup> and this represents a double risk of contamination. In other words, an uncontrolled epidemic of TB in a prison facility may represent a serious risk to individuals and to society at large. In the opposite direction, TB brought in from the outside community can trigger off an epidemic among inmates.<sup>3</sup>

Moreover, rules related to prison environments influence the relationship of TB patients with this disease. In this regard, TB can affect the social<sup>4</sup> interaction between individuals with TB and other inmates, thus reducing awareness of the seriousness of its symptoms.

Among both the general population and incarcerated groups, TB is a topic that is not easily discussed nowadays. It is associated with poverty, isolation, social exclusion, irregular and immoral behavior, as well as with social deprivation. These values are strongly present in the stigmatization of TB patients.<sup>5-8</sup>

Currently, treatment is usually conducted in outpatient clinics, where health workers are exposed to infection. For this reason, and due to these individuals' vulnerability, it is essential that they have considerable knowledge about the disease.<sup>9</sup>

Very few studies have been published on knowledge about TB among inmates, prison workers and public health workers, and even these indicate the lack of information about this disease as one of the major barriers to greater awareness of symptoms,

early diagnosis, adherence to treatment, and cure.<sup>10,11</sup>

The KAP (Knowledge, Attitudes and Practices) Questionnaire<sup>12</sup> has been used for gathering data on knowledge, attitudes and practices about many different health problems and diseases<sup>13</sup> in terms of what is known, believed and done about specific topics. This instrument was constructed in the 1950s and it was originally designed to estimate resistance against the idea of family planning among different populations.<sup>13</sup>

KAP-TB surveys can be especially designed to gather information on topics related to TB. This may include questions about general health practices and beliefs regarding the disease. The purpose is often to identify knowledge, patterns of gaps, and cultural or behavioral beliefs that facilitate understanding and action. They can also detect problems, barriers and obstacles that arise with the efforts to control TB.<sup>14</sup> Data can be analyzed quantitatively or qualitatively, depending on the study objectives.<sup>12</sup>

The use of this instrument has fostered a certain amount of social mobilization as well as investigations of the knowledge, practices and attitudes about TB in the population. Some of these studies have been conducted in the context of control programs in different countries with high rates of occurrence of this disease, aiming to strengthen interventions for behavioral changes.<sup>12</sup> One increasingly important use of the KAP Questionnaire has been to provide essential data on the impact of activities related to advocacy, communication and social mobilization (ACSM).

The present study was based on the assumption that, due to their access to training programs, public health workers and prison workers would have adequate knowledge about TB. The study was thus specifically designed to compare knowledge, attitudes and practices about TB among three distinct groups, namely, inmates, prison workers, and public health workers.

## Methodology

A cross-sectional study was carried out on

a sample consisting of inmates and workers of P-III Penitentiary which is a closed prison, and public health workers, in the city of Hortolândia, State of São Paulo, Brazil. This penitentiary was selected because it had had no participants in any projects involving educational intervention for TB.

It was not possible to obtain a statistically valid sample of inmates due to the penitentiary conditions and security requirements. The inmates were chosen at random, according to the routine and the institution's criteria for transferring them to a meeting room. Participants from among the prison employees and public health workers were selected on the basis of their own interest.

An adapted semi-structured version of the KAP Questionnaire<sup>12</sup> was designed and applied. It consisted of closed questions organized into four sections dealing with the socio-demographic situation of respondents and the following aspects related to TB: history of the patient's disease, knowledge, behavior toward the possibility of contracting TB, and attitudes toward patients with TB. The adapted questionnaire was pre-tested in the PI Penitentiary, located in the same complex.

The instrument was applied individually by an interviewer to both inmates and prison workers. The questionnaire for health workers was distributed to all professionals working at the selected public health units and each participant filled it out individually.

Data were entered into the Epi-Info Program, version 6.04. The frequencies of variables were analyzed, with occupational factors (inmates and prison workers/public health workers) being the independent variable. To compare the categories of dependent variables according to the independent variable, the Chi-square test was used with a statistical significance of  $p < 0.05$ . Several questions allowed more than one response. Comparisons were made between the results from inmates and prison workers, and between those from prison workers and public health workers.

### Ethical Issues

Prior to application, the present research project was authorized by the State of São Paulo Department of Penitentiary Administration and by the City of Hortolândia Department of Health and approved by the Research Ethics Committee of the State University at Campinas, under official expert opinion 942/2009 of the National Board of Health Research Ethics Committee, pursuant to Resolution 196/96. All participants signed an informed consent form and confidentiality of information was guaranteed.

Authors declared there were no conflicts of interest.

### Results

At the time of the application of the questionnaire, 233 prison workers were assigned to the PIII Penitentiary. Of these, 88 were on leaves of absence for medical reasons, temporary transferences, vacations or bonus leaves. A total of 115 were interviewed (79.3% of those 145 actively working). According to prison authorities, 1,153 male inmates were under detention at the time, 141 (12.2%) of whom were interviewed. For security reasons, the data collected from inmates had to be discontinued.

According to the Department of Human Resources, there were 1,216 active workers in the Department of Health at the time of the survey. Of these, 208 were on leaves of absence and 158 of the 508 (31.1%) working in the participating units were interviewed.

Emergency units, the municipal hospital, and the adult and child mental health outpatient clinics were not included in this study.

The respondents in one group of 35 inmates (24.8%) stated that their last arrest had been less than one year before, while 11 (7.8%) reported that it was more than six years before (data not shown). *Table 1* shows that inmates and prison workers were different in terms of age, ethnicity, gender and level of education ( $p < 0.001$ ). Among prison workers and public health workers, differences were related to age,

gender, length of work ( $p < 0.001$ ) and level of education ( $p = 0.041$ ).

In the investigation of respiratory symptoms, the inmates had cough with phlegm in a higher proportion than prison workers (15.6% vs. 2.6%,  $p = 0.0012$ ). A greater percentage of inmates reported having been treated for TB previously (13.5% vs. 2.6%  $p = 0.007$ ).

### Knowledge about Tuberculosis

A higher proportion of prison workers than public health workers (63.5% vs. 29.8%,  $p < 0.001$ ) reported they had received information about TB (data not shown). According to *Table 2*, there were significant differences in knowledge about symptoms between inmates and prison workers, and between prison workers and public health workers. According to the inmates, TB can be transmitted by air (49.6%), by sharing cigarettes (12.1%) and by sharing cutlery (10.6%). Additionally, 22.0% were not aware of forms of infection. Prison workers (44.3%) and public health workers (39.9%) mentioned transmission by sharing dishes and cutlery.

When asked “*How can a person avoid TB?*” 38.3% of the inmates did not know the answer. A total of 40.9% of prison workers and 46.8% of public health workers mentioned “*Do not share dishes or cutlery*” as one of their responses (*Table 3*).

TB was considered a curable disease by all three categories studied. The difference was found in the item “*How to cure TB*”, when the alternative “*Treatment with medical supervision*” was checked by 36.9% of inmates and 75.6% of prison workers ( $p < 0.001$ ). Only 24.1% of inmates said that the treatment for TB is provided free of charge. This same response was given by 58.3% of prison workers and 84.8% ( $p < 0.001$ ) of public health workers (*Table 3*).

### Behavior and attitudes toward the possibility of contracting tuberculosis

*Table 4* shows that 24.7% of the public health workers believe that being in contact with persons in closed places is considered

**Table 1** - Sociodemographic characteristics and variables related to tuberculosis between prisoners, prison unit employees and public health workers. Hortolândia, 2010.

**Tabela 1** - Características sociodemográficas e variáveis relacionadas à tuberculose entre detentos, funcionários de unidade prisional e rede pública de saúde. Hortolândia, 2010.

Socio-demographic characteristics and variables related to TB	Inmates		Prison workers		Public health workers		p value <sup>a</sup>	p value <sup>b</sup>
	N=141		N=115		N=158			
	N	%	N	%	N	%		
<b>Age (in years)</b>							<0.001	0.005
18-29	83	58.9	20	17.4	31	19.6		
30-39	47	33.3	51	44.4	42	26.6		
40-49	9	6.4	32	27.8	48	30.4		
≥50	2	1.4	12	10.4	37	23.4		
<b>Ethnicity</b>							<0.001	0.161
White	75	53.2	91	79.1	112	70.9		
Non-white	66	46.8	24	20.9	46	29.1		
<b>Gender</b>							<0.001	<0.001
Male	141	100.0	92	80.0	33	20.9		
Female	-	-	23	20.0	125	79.1		
<b>Level of education (in years)</b>							<0.001	0.041
0-4	31	22.0	-	-				
5-8	74	52.5	-	-	9	5.7		
9-11	34	24.1	51	44.3	64	40.5		
12-16	2	1.4	54	47.0	65	41.1		
≥17	-	-	10	8.7	20	12.7		
<b>Length of work (in years)</b>							-	<0.001
<1	-	-	10	8.7	50	31.6		
1-9	-	-	69	60.0	80	50.6		
10-19	-	-	31	27.0	26	16.5		
≥20	-	-	5	4.3	2	1.3		
<b>Presence of cough with phlegm</b>							0.0012	0.627
Yes	22	15.6	3	2.6	4	2.5		
No	119	84.4	112	97.4	154	97.5		
<b>Previous or current TB treatment</b>							0.007	0.202
Yes	19	13.5	3	2.6	1	0.6		
No	120	85.1	111	96.5	157	99.4		
In treatment	2	1.4	1	0.9	-	-		

<sup>a</sup>p-value - Comparison between inmates and prison workers. <sup>b</sup>p-value - Comparison between prison workers and public health workers

<sup>a</sup>valor de p - Comparação entre detentos e funcionários do presídio. <sup>b</sup>valor de p - Comparação entre funcionários do presídio e rede pública de saúde

to be a factor that increases contamination. In this group, 22.1% could not respond "Because you can catch TB."

One question in the KAP Questionnaire was "How would you feel if you had TB?" The objective of this question was to investigate feelings aroused by the disease. Many inmates answered "sad" (39.7%) and "worried"

(16.3%); while prison workers mentioned "sad" (41.7%) and "afraid" (26%); and health workers, "afraid" (25.9%) and "surprised" (22.8%).

All (100%) inmates and prison workers answered affirmatively when asked if they would talk about the disease, whereas 135 (85.4%) (p<0.001) public health workers

**Table 2** - Knowledge about tuberculosis (Part I) between prisoners, prison unit employees and public health workers. Hortolândia, 2010.

**Tabela 2** - Conhecimento sobre a tuberculose (Parte I) entre detentos, funcionários de unidade prisional e rede pública de saúde. Hortolândia, 2010.

Knowledge about TB (Part I)	Inmates		Prison workers		Public health workers		p value <sup>a</sup>	p value <sup>b</sup>
	N=141		N=115		N=158			
	N	%	N	%	N	%		
<b>Opinion about TB</b>							0.140	0.354
Very serious	53	37.6	51	44.4	72	45.6		
Serious	83	58.9	61	53.0	83	52.5		
Not serious	5	3.5	1	0.9	3	1.9		
Do not know	-	-	2	1.7	-	-		
<b>TB Symptoms <sup>c</sup></b>								
Dry cough	89	63.1	73	63.5	56	35.4	0.953	<0.001
Two-week cough	7	5.0	76	66.1	137	86.7	<0.001	<0.001
Cough with phlegm	40	28.4	67	58.3	83	52.5	<0.001	0.381
Cough with blood	26	18.4	64	55.6	89	56.3	<0.001	0.911
Fever	36	25.5	60	52.2	63	39.9	<0.001	0.044
Fever without cause for over seven days	-	-	39	33.9	59	37.3	<0.001	0.560
Headache	17	12.1	18	15.6	11	7.0	0.405	0.021
Fatigue	32	22.7	56	48.7	82	51.9	<0.001	0.601
Nausea	1	0.7	18	15.6	10	6.3	<0.001	0.012
Chest pains	35	24.8	57	49.6	48	30.4	<0.001	0.0013
Weight loss	14	9.9	59	51.3	107	67.7	<0.001	0.006
Shortness of breath	6	4.3	51	44.4	69	43.7	<0.001	0.911
Night sweating	23	16.3	6	5.2	-	-	0.005	0.013
No appetite	13	9.2	1	0.9	-	-	0.003	-
Do not know	13	9.2	4	3.5	2	1.3	0.067	0.416
Others <sup>c</sup>	11	7.8	3	2.6	2	1.3	0.069	0.719
<b>How persons contract TB <sup>d</sup></b>								
Through handshakes	9	6.4	11	9.6	5	3.2	0.345	0.026
Through the air	70	49.6	102	88.7	150	94.9	<0.001	0.056
Sharing dishes and cutlery	15	10.6	51	44.3	63	39.9	<0.001	0.459
Eating from the same dish	1	0.7	40	34.8	39	24.7	<0.001	0.069
Sharing cigarettes	17	12.1	2	1.8	-	-	0.002	-
Cold shower /cold floor	12	8.5	-	-	-	-	0.001	-
Contact with TB patient	6	4.3	9	7.8	-	-	0.226	0.273
Through saliva	5	3.6	1	0.9	2	1.3	0.321	0.781
Touching doorknobs	-	-	14	12.2	13	8.2	<0.001	0.281
Do not know	31	22.0	6	5.2	4	2.5	<0.001	0.401
Others <sup>d</sup>	6	4.3	4	3.5	2	1.3	0.996	0.416

<sup>a</sup> p-value - Comparison between inmates and prison workers. <sup>b</sup> p-value - Comparison between prison workers and public health workers. Variables c and d allowed for more than one response. Others (c) Diarrhea, abdominal pains, vomiting, flu, dizziness, ganglia, impotence, depression. Others (d) Drug use, kissing, contaminated food

<sup>a</sup> valor de p - Comparação entre detentos e funcionários do presídio. <sup>b</sup> valor de p - Comparação entre funcionários do presídio e rede pública de saúde. As variáveis c, d permitiram mais de uma resposta. Outros (c) Diarréia, dor abdominal, vômitos, gripe, tontura, gânglios, impotência, depressão. Outros (d) Uso de drogas, beijo, alimentos contaminados.

**Table 3** - Knowledge about tuberculosis (Part II) between prisoners, prisional unit employees and public health workers. Hortolândia, 2010.

**Tabela 3** - Conhecimento sobre a tuberculose (Parte II) entre detentos, funcionários de unidade prisional e rede pública de saúde. Hortolândia, 2010.

Knowledge about TB (Part II)	Inmates		Prison workers		Public health workers		p value <sup>a</sup>	p value <sup>b</sup>
	N=141		N=115		N=158			
	N	%	N	%	N	%		
<b>How a person should avoid being contaminated with TB<sup>c</sup></b>								
Avoid handshakes	2	1.4	7	6.1	9	5.7	0.094	0.892
Cover one's mouth when coughing or sneezing	5	3.6	61	53.0	129	81.6	<0.001	<0.001
Avoid sharing dishes and silverware	15	10.6	47	40.9	74	46.8	<0.001	0.327
Wash hands, good hygiene	7	5.0	48	41.7	66	41.8	<0.001	0.996
Close the windows	-	-	7	6.1	2	1.3	0.010	0.063
Good nutrition	5	3.5	54	47.0	59	37.3	<0.001	0.111
Stay away from patients	24	17.0	13	11.3	1	0.6	0.196	<0.001
Avoid the cold	12	8.5	-	-	-	-	0.0013	-
Avoid closed-in /unventilated places	7	5.0	12	10.4	3	1.9	0.097	0.002
Avoid sharing cigarettes	6	4.3	-	-	-	-	0.068	-
Isolate patients /wear a mask	7	5.0	11	9.6	-	-	0.152	<0.001
Medication	6	4.3	-	-	-	-	0.068	-
No prevention	6	4.3	-	-	-	-	0.068	-
Pray	-	-	7	6.1	1	0.6	0.010	0.023
Do not know	54	38.3	12	10.4	3	1.9	<0.001	0.002
Others <sup>c</sup>	8	5.7	10	8.7	2	1.3	0.347	0.003
<b>Who can contract TB<sup>d</sup></b>								
Anybody	98	69.5	100	87.0	157	99.4	<0.001	<0.001
Only poor people / homeless / alcohol or drug users / persons with HIV/only in prisons	5	3.6	3	2.6	7	4.0	0.946	0.841
Smokers	6	4.3	2	1.7	-	-	0.430	-
Weak persons	11	7.8	6	5.2	1	0.6	0.409	0.048
Persons who have contact with patients	6	4.3	4	3.5	-	-	0.996	0.064
Do not know	10	7.1	1	0.9	-	-	0.033	-
Others <sup>d</sup>	5	3.6	4	3.5	-	-	0.755	-
<b>How TB is cured<sup>e</sup></b>								
Medication at health center	104	73.8	86	74.8	106	67.1	0.852	0.169
Treatment with medical supervision	52	36.9	87	75.6	128	81.0	<0.001	0.285
patient isolation	8	5.7	1	0.9	-	-	0.083	-
Prayer	5	3.6	4	3.5	2	1.3	0.755	0.416
Do not know	6	4.3	4	3.5	2	1.3	0.996	0.416
Others <sup>e</sup>	1	0.7	6	5.2	4	2.5	0.070	0.40
<b>How much TB treatment costs</b>								
It is free	34	24.1	67	58.3	134	84.8	<0.001	<0.001
It is expensive	23	16.3	17	14.8	6	3.8		
Do not know	84	59.6	31	26.9	18	11.4		

<sup>a</sup> p-value - Comparison between inmates and prison workers. <sup>b</sup> p-value - Comparison between prison workers and public health workers. Variables c, d, and e allowed more than one response. Others (c) Avoid alcoholic drinks and cigarettes, avoid dust, be vaccinated, have routine exams /physical activity. Others (d) Who do not need to prevent, seniors, children. Others (e) There is no cure, medicinal herbs, rest, ventilation

<sup>a</sup> valor de p - Comparação entre detentos e funcionários do presídio. <sup>b</sup> valor de p - Comparação entre funcionários do presídio e rede pública de saúde. As variáveis c, d, e permitiram mais de uma resposta. Outros (c) Evitar bebidas alcoólicas e cigarro, evitar poeira, tomar vacina, fazer exames periódicos/atividade física. Outros (d) Quem não se previne, idosos, crianças. Outros (e) Não tem cura, ervas medicinais, repouso, ventilação.

**Table 4** - Behavior and attitudes between prisoners, prisional unit employees and public health workers in front of the possibility to catch tuberculosis. Hortolândia, 2010.

**Tabela 4** - Comportamento e atitudes, diante da possibilidade de contrair a tuberculose, entre detentos e funcionários de unidade prisional e rede pública de saúde. Hortolândia, 2010.

Behavior and attitudes	Inmates		Prison workers		Public health workers		p value <sup>a</sup>	p value <sup>b</sup>
	N=141		N=115		N=158			
	N	%	N	%	N	%		
<b>How one can contract TB <sup>c</sup></b>								
Contact with TB patients	36	25.5	25	21.7	21	13.3	0.479	0.066
Contact with persons in closed-in places	21	14.9	27	23.5	39	24.7	0.080	0.818
Environment Unfavorable /cold air/ tobacco smoke	22	15.6	10	8.7	-	-	0.096	<0.001
Workplace	-	-	28	24.3	10	6.3	<0.001	<0.001
Exposed to air	12	8.5	6	5.2	6	3.8	0.305	<0.001
Anybody can contract it	35	24.8	15	13.0	36	22.8	0.018	<0.001
I do not prevent	4	2.8	3	2.6	1	0.6	0.784	0.406
Do not know	6	4.3	3	2.6	35	22.1	0.711	<0.001
Others <sup>c</sup>	7	5.0	-	-	7	4.4	0.041	0.058
<b>How you would feel if you had TB <sup>d</sup></b>								
Afraid	15	10.6	30	26.1	41	25.9	0.0012	0.980
Surprised	13	9.2	28	24.3	36	22.8	0.0010	0.763
Ashamed	-	-	3	2.6	5	3.2	0.178	0.925
Embarrassed	6	4.3	17	14.8	13	8.2	0.003	0.087
Desperate	5	3.5	15	13.0	9	5.7	0.005	0.034
Sad	56	39.7	48	41.7	35	22.1	0.743	<0.001
Worried	23	16.3	17	14.8	5	3.2	0.737	<0.001
Would feel "normal"	7	5.0	-	-	1	0.6	0.042	-
Would not feel anything	15	10.6	20	17.4	26	16.5	0.118	0.838
Do not know	10	7.1	6	5.2	21	13.3	0.538	0.027
Others <sup>d</sup>	2	1.4	5	4.3	4	2.5	0.296	0.627
<b>Who you would talk to <sup>e</sup></b>								
Doctor	25	17.7	72	62.6	143	90.5	<0.001	<0.001
Spouse	13	9.2	81	70.4	103	65.2	<0.001	0.361
Parents	10	7.1	85	73.9	93	58.9	<0.001	0.010
Children	6	4.3	78	67.8	95	60.1	<0.001	0.192
Other family member	17	12.1	68	59.1	62	39.2	<0.001	0.0012
Friend	71	50.4	87	75.6	74	46.8	<0.001	<0.001
Persons close to me	23	16.3	22	19.1	2	1.3	0.556	<0.001
Anybody	30	21.3	12	10.4	1	0.6	0.020	<0.001
Do not know	-	-	3	2.6	3	1.9	0.178	0.982
Others <sup>e</sup>	2	1.4	-	-	1	0.6	-	-
<b>What you would do if you thought you had TB symptoms <sup>f</sup></b>								
Would go to health center	134	95.0	111	96.5	157	99.4	0.784	0.099
Would treat myself (herbs, etc.)	1	0.7	1	0.9	8	5.1	-	0.116
Do not know	2	1.4	2	1.7	1	0.6	0.764	0.781
Others <sup>f</sup>	3	2.1	2	1.7	2	1.3	0.818	0.850



**Table 4** - Behavior and attitudes between prisoners, prisional unit employees and public health workers in front of the possibility to catch tuberculosis. Hortolândia, 2010. (continuation)

**Tabela 4** - Comportamento e atitudes, diante da possibilidade de contrair a tuberculose, entre detentos e funcionários de unidade prisional e rede pública de saúde. Hortolândia, 2010. (continuação)

Behavior and attitudes	Inmates		Prison workers		Public health workers		p value <sup>a</sup>	p value <sup>b</sup>
	N=141		N=115		N=158			
	N	%	N	%	N	%		
<b>At what point you would go to a health center</b>							<0.001	<0.001
When symptoms persisted for more than 15 days	10	7.1	33	28.7	92	58.2		
As soon as I realized that the symptoms were of TB	119	84.4	80	69.6	57	36.1		
Do not know	5	3.5	2	1.7	8	5.1		
Others <sup>g</sup>	7	5.0	-	-	1	0.6		
<b>Main concern when you think about TB<sup>h</sup></b>								
Access to treatment / cure	29	20.6	25	21.7	44	27.8	0.819	0.251
Transmitting the disease to my family	21	14.9	23	20.0	14	8.9	0.281	0.008
Contracting it	17	12.1	18	15.6	25	15.8	0.405	0.969
Falling ill	29	20.6	18	15.6	15	9.5	0.312	0.123
Dying	18	12.8	6	5.2	4	2.5	0.393	0.401
Staying healthy	17	12.1	10	8.7	10	6.3	0.384	0.459
Lack of information about TB	-	-	-	-	14	8.9	-	0.0011
Do not think about it	9	6.4	7	6.1	5	3.2	0.922	0.245
Do not know	1	0.7	2	1.7	26	16.5	0.859	<0.001
Others <sup>h</sup>	2	1.4	13	11.3	3	1.9	<0.001	0.0011

<sup>a</sup> p-value - Comparison between inmates and prison workers. <sup>b</sup> p-value - Comparison between prison workers and public health workers. Variables c, d, f and h allowed for more than one response. Other (c) I already had TB, took drugs, God might want this. Other (d) I am predestined, I would face it, find treatment. Other (e) I would talk to God, talk with somebody I trust, would not talk to anybody. Other (f) Would stop smoking, obtain more information, go to a drugstore, go to God. Other (g) When self-treatment did not work, when you are weak, would not go to a health center. Other (h) TB-MDR, to be sick and not to know it, isolation, epidemic

<sup>a</sup> valor de p - Comparação entre detentos e funcionários do presídio. <sup>b</sup> valor de p - Comparação entre funcionários do presídio e rede pública de saúde. As variáveis c, d, f, h permitiram mais de uma resposta. Outro (c) Já tive TB, usei drogas, Deus pode querer. Outro (d) Estou predestinado, enfrentaria, procuraria tratamento. Outro (e) Falaria com Deus, falaria com quem confio, não falaria para ninguém. Outro (f) Pararia de fumar, procuraria mais informações, procuraria farmácia, procuraria Deus. Outro (g) Quando tratamento por conta não funcionasse, quando estivesse fraco, não iria ao posto. Outro (h) TB-MDR, estar doente e não saber, isolamento, epidemia.

gave the same answer (data not shown).

The greatest concern about TB among inmates is contracting it and how to obtain treatment and be cured. Death was mentioned by 12.8% of respondents in this group.

#### Attitudes regarding tuberculosis patients

Regarding the question "How is a TB patient regarded by other persons?" (see Table 5), 41.1% of inmates said that "Many people reject them." The answer "Many people are friendly but they try to avoid patients," was given by 25.2% of prison workers and 22.8% of public health workers.

When asked why a person who has HIV may also have tuberculosis, 44.3% of prison workers mentioned low immunity, but this same answer was given by a much greater number of public health workers (61.4%) (p = 0.005). It should be noted that 21.5% of public health workers said they "Do not know."

## Discussion

Increased drug use is one of the factors that has contributed to the increase in violence in Brazil and, consequently, to the greater number of incarcerated persons.<sup>15</sup>

**Table 5** - Attitudes from prisoners, prison unit employees and public health workers related to sick people with TB. Hortolândia, 2010.

**Tabela 5** - Atitudes em relação a doentes com TB, de detentos e funcionários de unidade prisional e da rede pública de saúde. Hortolândia, 2010.

Attitudes toward patients	Inmates		Prison workers		Public health workers		p value <sup>a</sup>	p value <sup>b</sup>
	N=141		N=115		N=158			
	N	%	N	%	N	%		
<b>Knows someone who had TB</b>							0.025	0.656
Yes	116	82.3	80	69.6	115	72.8		
No	25	17.7	35	30.4	43	27.2		
<b>Feelings about TB patients</b>							0.027	0.036
Supportive and want to help	85	60.3	81	70.4	124	78.4		
Supportive but would rather keep a distance	19	13.5	12	10.4	11	7.0		
Am afraid to be infected	-	-	4	3.5	11	7.0		
Feel sorry	12	8.5	4	3.5	-	-		
Feel sad	8	5.7	-	-	1	0.6		
No feelings	11	7.8	10	8.7	11	7.0		
Do not know	1	0.7	1	0.9	-	-		
Others <sup>c</sup>	5	3.5	3	2.6	-	-		
<b>How patients are considered by other persons</b>							0.105	0.019
Many reject them	58	41.1	37	32.2	43	27.2		
Many are friendly but try to avoid them	28	19.9	29	25.2	36	22.8		
Many help	53	37.6	42	36.5	78	49.4		
Do not know	2	1.4	7	6.1	1	0.6		
<b>Can a person with HIV also have TB?</b>							0.026	0.255
Yes	123	87.2	110	95.7	151	95.6		
No	4	2.9	3	2.6	1	0.6		
Do not know	14	9.9	2	1.7	6	3.8		
<b>If YES, how can a person with HIV contract TB <sup>d</sup></b>								
Low immunity	76	53.9	51	44.3	97	61.4	0.128	0.005
People with HIV are more vulnerable	26	18.4	49	42.6	34	21.5	<0.001	<0.001
Anybody can contract TB	13	9.2	4	3.5	2	1.3	0.665	0.416
Transmitted in the air /opportunistic	4	2.8	5	4.3	6	3.8	0.755	0.934
Do not know	6	4.2	8	7.0	34	21.5	0.344	<0.001
Others <sup>d,e</sup>	4	2.8	2	1.7	4	2.5	0.871	0.982

<sup>a</sup> p-value - Comparison between inmates and prison workers. <sup>b</sup> p-value - Comparison between prison workers and public health workers. Variable d allowed for more than one response. Other (c) It is their problem, loss, discrimination, anger. Other (d) I already take the medicine, do nothing to prevent, risk of HIV <sup>e</sup> valor de p - Comparação entre detentos e funcionários do presídio. <sup>b</sup> valor de p - Comparação entre funcionários do presídio e rede pública de saúde. A variável d permitiu mais de uma resposta. Outro (c) É problema deles, perda, discriminação, raiva. Outro (d) Já toma medicamentos, não se previne, risco para HIV.

Inmates come from social classes characterized by poverty and difficulties in accessing health services, education and information. Consequently, this population usually has a low level of education, a characteristic also

found in the populations most affected by TB. These conditions tend to perpetuate beliefs concerning the disease and the lack of information as to its existence, forms of transmission, infection and control.

In this study, 53.2% of the population of inmates was white, similar to the ethnic proportion found in the city of São Paulo,<sup>16</sup> 22% having fewer than five years of education. According to the National Health Plan for the Penitentiary System,<sup>17</sup> the Brazilian prison population is usually comprised of single white men under the age of 30 years. Few are literate and many had no definite profession before their arrest by the police. This means that the majority were in a situation of social exclusion prior to prison. Therefore, one might consider that the prison population studied in Hortolândia has a higher level of formal education than the national Brazilian average, since 78% had at least five years of education.

It is a well-known fact that knowledge can influence people's practices regarding prevention.<sup>18</sup> Many inmates and prison workers had not received information about TB and several responses regarding its prevention given in the questionnaire were incorrect, as observed in studies by other authors.<sup>19</sup> This suggests that the forms of communication and the strategies used to transfer knowledge in prisons fail to attain their objectives. Additionally, it indicates the absence of health education programs in general, particularly those aimed at TB control, in prison institutions.<sup>20</sup>

In one study<sup>21</sup> on the knowledge of the Brazilian population about TB, 34% of the respondents reported that they were acquainted with someone who had the disease or had previously had it. In the present study, 82.3% of inmates and 69.6% of prison workers also responded affirmatively to this same question. This result suggests that many persons in all three groups are familiar with the disease, at least to some degree. Even so, their knowledge is permeated with unfounded beliefs and mistaken information. Even many public health workers, despite their greater knowledge about TB, made basic conceptual mistakes when asked about vulnerability when sharing objects. Similar results appeared in studies on workers in the area of nursing<sup>9</sup> involved in family health teams,<sup>22</sup> although this information can easily

be found in manuals and guidelines on the Internet and in departments of epidemiologic surveillance.<sup>23</sup> This fact is indicative of deficiencies in instructions about TB provided to public health workers. It also shows the serious need to disseminate information about TB among other professionals, using an interdisciplinary and intersectoral approach.<sup>9,10</sup> Training programs are important strategies to increase knowledge and practices of employees in TB tracking<sup>24</sup> and supervised treatment.<sup>25</sup>

Many studies that use the KAP Questionnaire fail to present the results obtained about attitudes, due to the risk of falsely generalizing the opinions and feelings of a given population sector. The attempt to measure attitudes and feelings through studies has been criticized for a number of different reasons. One reason is that respondents tend to give answers they believe to be correct, acceptable or otherwise considered relevant. More delicate questions are especially vulnerable to this tendency, and the context of an interview can strongly influence the results.<sup>26</sup> This situation was present during the application of the questionnaire in this study. A vague discomfort could be felt in some participants when asked certain sensitive questions, and they tended to simply respond something they thought to be correct, accepted or appreciated. This behavior, for example, was noted among the inmates and prison workers for the two following questions: "*How do you feel about people with TB?*" and "*How is a person with TB considered by others?*" For the first question, the high number of interviewees who answered "*I feel supportive and want to help,*" led researchers to suspect that this was an assertion that the participants believed to be meaningful for the context of the interview, although it might not be reflecting their true attitude. To the second question, inmates answered that "*Many are rejected,*" while prison workers stated that "*Many people help others.*" But some in the latter group also reported that "*Many people reject them.*" Participants might have been unaware of the topic and considered

the questions strange, answered them with what they felt was an appropriate answer at the moment of the interview, even if it did not reflect the truth.

With regard to how they would feel if they were infected with TB, inmates reported they would feel “*sad*,” but this feeling could be simply associated with their condition of imprisonment and with safety- and survival-related problems, factors that would negatively affect their relationships with other inmates.<sup>4</sup> Prison workers and public health workers mentioned sadness, surprise and fear. Once again, responses might not have reflected reality, but rather shown the fragility of the instrument for gathering information about attitudes. The feeling of fear is the most common cause of stigma in regard to TB.<sup>27</sup> For Ascuntar et al.,<sup>28</sup> this feeling is closely related to a complex set of attitudes that could interfere with the interpersonal relationships and increase risky behavior. This, in turn, might suggest the generation of stigma and discrimination, thus limiting access to treatment and reducing adhesion.

Most of the inmates and prison workers expressed confidence in questionable preventive practices regarding TB, such as having good habits of cleanliness, good nutrition, washing one’s hands, avoiding the cold and not sharing dishes and cutlery. Better results from public health workers were expected in terms of their knowledge of forms of prevention, but some mentioned danger of infection from sharing dishes and cutlery. These findings are not clear in terms of what logic should be present in deciding ways to prevent infection, but they do indicate deficiencies in the knowledge of these individuals about the clinical and epidemiological management of this disease among the studied groups.<sup>13</sup>

In regard to attitudes, the act of talking about TB and who they could talk to if they had TB, inmates mentioned the need to notify their cell mates or any other individuals who might listen to them about the possibility of falling ill. This behavior can be explained in view of the fragility that TB

represents in the context of prisons.<sup>4</sup> Patients can put their cell mates at risk, and talking about the disease could lead these cell mates to pressure to have the patients transferred in order to lower the chances of infecting others and speed up access to the prison health service. Prison workers reported that they would talk about the disease to a friend or family member, while public health workers would talk to a doctor and relatives. This difference in findings reflects a relationship between knowledge about TB and access to health services.<sup>18</sup>

Another source of uncertainty is that the data obtained from KAP studies are often used to plan activities focused on behavioral changes related to certain health issues, based on the false premise that there is a direct relationship between knowledge and behavior. A number of studies have shown that knowledge is only one of the factors that influence practice. Therefore, for there to be changes in behavior, health programs must join socioeconomic, environmental and structural factors with practices when planning prevention programs.<sup>18</sup>

## Conclusion

In the present study, the use of the KAP questionnaire presented a number of problems, difficulties and drawbacks. It proved to be weak to interpret the data gathered on attitudes, thus hindering the understanding of the information obtained. Therefore, if the objective is to study behavior, practice and attitudes in regard to a given context, combinations of qualitative and quantitative methods would be more indicated.

Since the KAP questionnaire revealed major aspects of mistaken concepts about tuberculosis not only among prison inmates but also among prison workers and health workers, it would seem important to suggest its routine use to aid educational activities. The high prevalence of TB among inmates is a clear indication of the need to involve state and local departments of health in the supervision of educational activities in the prison system.

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Received: 29/09/11  
Final version: 19/12/11  
Approved: 08/02/12