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Knowledge, attitudes and practices regarding tuberculosis among transgender individuals in the city of São Paulo, Brazil

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Abstract *The aim of the present study was to evaluate knowledge, attitudes and practices regarding tuberculosis (TB) among transvestites and transsexual women. A cross-sectional study was conducted with a convenience sample (n = 124; 58 transvestites and 66 transsexuals) in the city of São Paulo, Brazil, in 2014 and involved the administration of the Knowledge, Attitudes and Practices questionnaire. Absolute and relative frequencies were calculated for all variables and the comparisons of percentage distributions between groups were performed using Pearson's Chi-square test, Fisher's exact test or its generalization, with a 5% significance level. Most participants were young and non-white. Transvestites had lower levels of schooling, reported more passages through the prison system and declared themselves to be sex workers more frequently. Little more than half of the participants were aware that treatment for TB was free of charge. Knowledge on TB was modest, permeated with misunderstandings regarding signs/symptoms, transmission and prevention, which influence attitudes and practices in relation to the disease. The findings demonstrate that health education actions do not achieve their goals in the control of tuberculosis.*

Key words *Tuberculosis, Health, Knowledge, Attitudes, Practice, Transgender persons, Health education*

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Introduction

Tuberculosis (TB) has advanced in the 21st century. This advancement is associated with poverty and the human immunodeficiency virus (HIV), which is the cause of acquired immunodeficiency syndrome (AIDS)[1]. Despite the numerous control efforts, TB continues to be a huge public health challenge[2]. According to the World Health Organization, TB was one of the main causes of mortality in 2016, with approximately 1.4 million deaths, 0.4 million of which resulted from the co-infection of TB and HIV/AIDS[3]. Moreover, a total of 5.8 million cases of TB occurred throughout the world between 2001 and 2011, 82% of which were concentrated in 22 countries, with Brazil occupying the 17th position[4].

Studies on the knowledge of TB among transgender individuals are rare in the international literature and practically nonexistent in Brazil. However, studies conducted with other populations reveal that a lack of knowledge on the disease is one main barriers to the perception of symptoms, early diagnosis, adherence to treatment and the cure[5,6].

Transgender individuals around the world experience stigma, discrimination and abuse throughout life. At greater risk due to the adoption of behaviors that are unfavorable to health, such individuals face difficulties with regard to access to information and care, which demonstrates inequities between transgender and cisgender individuals[7].

In Brazil, a large portion of transvestites and transgender individuals (TTs) live in unfavorable social conditions as a result of transgressing gender[8]. Excluded from the nuclear family and school at an early age, TTs often turn to prostitution as means of survival[9]. In this context permeated by violence as well as alcohol and drug abuse, many pass through the prison system[10] and shelters, whereas other are homeless[11], all of which are favorable conditions to the transmission of TB and co-infection by HIV[12].

Considering the conceptions of individual, social and programmatic vulnerability proposed by Ayres et al.[13] and the invisibility of the transgender population in official health[14] and sociodemographic[15] data, the aim of the present study was to evaluate knowledge, attitudes and practices regarding TB among transvestites and transsexual women in the city of São Paulo, Brazil.

Methods

A cross-sectional study was conducted with a convenience sample (n = 124) in the city of São Paulo between February and August 2014. The participants were adults (≥ 18 years) of the male biological sex who described their sexual identity as transvestite or transgender (trans)[16].

Interviews were conducted at the Integral Health Clinic for Transvestites and Transgender Individuals (IHCTT), the City of São Paulo Reference and Diversity Defense Center (RDDC) and in the community of *Largo do Arouche*. The IHCTT is part of the State of São Paulo STD/AIDS and Viral Hepatitis Reference and Training Center and receives TTs, with a multidisciplinary team that offers accompaniment throughout the gender transition process and other specific health demands[17]. The RDDC is a place for assisting in the social inclusion of intersex individuals, lesbians, gays, homosexuals, bisexuals, transvestites and transsexuals located in the central region of the city. It integrates the municipal social assistance network and performs social initiatives through the offering of services, benefits, programs and projects aimed at protecting populations in situations of social vulnerability, exclusion and risk[17].

The historical central region of São Paulo, especially the area in which Republic Square, Vieira de Carvalho Street and *Largo do Arouche* are located, has served as a meeting place for the homosexual group in São Paulo, which is facilitated by public transportation (municipal and inter-city bus lines, metro stations and railroad lines) that enable individuals from distant areas to reach the center of the city in search of entertainment, services and sexual encounters. The surrounding area has public restrooms, saunas, gay night clubs, internet cafés, movie houses, hotels/inns with high turnover and motels. The region is also known for both female and male prostitution due to the numerous night clubs, explicit sex/striptease shows and meeting places for call girls, call boys and transvestites[18].

The study was announced with the assistance of employees at the institutions involved and an open invitation was offered to all TTs who visited these places. Interviews were held at the institutions in an individual, private and voluntary manner. In *Largo do Arouche*, interviews were established through previous contact with the researcher at the RDDC with a community leader to sought condoms for a group who did not visit the center, thereby enabling access and inclusion

in the study. At this site, the interviews were also held an individual, private and voluntary manner.

Data collection involved the administration of the Guide to Developing Knowledge, Attitude and Practice Surveys[16], which has been translated and adapted to the language of the populations surveyed and is composed of 45 closed-ended questions and one open-ended question. All closed-ended questions and response options were read to the interviewees and the responses were recorded. Answers referring to knowledge on the prevention and transmission of TB were categorized as correct and incorrect, following the norms of the tuberculosis control guidelines in Brazil[19]. For the open-ended question ("What worries you the most when you think about TB?"), the answers were recorded based on the interviewees' statements considering only the first thing mentioned and classified as death, transmission, treatment/internment/cure, becoming ill, nothing and others.

The socio-demographic variables considered in the study were age group (18 to 29, 30 to 39, 40 to 49 and ≥ 50 years), skin color (white and non-white), schooling (0 to 4, 5 to 8, 9 to 11 and ≥ 12 years of study), passage through the prison system (yes or no) and sex worker (yes or no). If the latter response was "yes", time in the profession was categorized as < 1, 1 to 10, 11 to 20 and ≥ 21 years.

Data on knowledge regarding TB, forms of transmission and prevention, attitudes, practices and stigmas related to the disease were obtained as described below:

Knowledge on TB, forms of transmission and prevention: received information about TB (yes or no) and sources of information among those who received it (flyers/posters, TV/radio/internet, lectures/classes/health professional); opinion regarding the disease (very serious, serious, not serious, does not know); whether TB is curable (yes or no); how TB is cured (with treatment at a primary care center/medication with medical supervision and rest without medication, treatment with herbal medicines, prayer, blessings, does not know, others [which?]); cost of treatment (free, expensive [combined responses of expensive, reasonably expensive and very expensive], does not know); transmission of TB, classified as correct (airways) and incorrect (all other forms cited and does not know)[19]; prevention, categorized as correct (eat well, cover the mouth when coughing/sneezing, adequate ventilation and light, and use of a mask) and incorrect (other answers, does not know)[19]; contagiousness/who can get TB? (anyone, others, does not know; "others" category included only HIV+ individuals, children, old people, gays, smokers, whoever consumes cold beverages, whoever does not take care of himself/herself, whoever lives in unsanitary conditions and whoever lives in closed environments).

Attitudes, practices, stigmas and information regarding TB: feeling if affected by the disease (fear, sadness, none, others, does not know; "others" category included surprise, shame/embarrassment and despair); would talk about the disease (yes or no); to whom respondent would talk (doctor, steady partner, parents/relatives, close friend/work mates); action to be taken if symptoms of TB were suspected (seek a primary care service and others, such as seek a preacher, drugstore or self-medication); when respondent would seek a primary care service (when self-medication failed, having symptoms for more than two weeks, as soon as perceiving symptoms as TB, does not know); knows someone who had TB (yes or no); feeling toward individuals with TB (supportive with desire to help, supportive, but distant, indifferent, fear of infection, others; "others" category included no feelings, disgust and rejection); how someone with TB is considered by other people (many reject the person, are supportive, but avoid contact, many help, does not know, others). For the open question ("What worries you most when you think about TB?"), the answers were recorded based on the interviewees statements considering only the first thing mentioned and categorized as death, transmission, treatment/internment/cure, becoming ill, nothing and others, such as having to stop working, isolation, prejudice and discrimination. With regard to information, the questions "Do you feel well informed about TB?" and "Would you like to receive more information about TB?" were categorized as yes or no; desired sources of information were categorized as newspapers/magazines, radio/TV/internet, lectures/conversation/health professionals, pamphlets and others; the "other" category included posters, telegrams, classes, announcements and billboards). Information on the perception of the disease was collected through the question "Can you have TB?" (yes or no) and the reasons given by the interviewees.

Absolute and relative frequencies were calculated for all variables and the comparisons of percentage distributions between groups were performed using Pearson's Chi-square test, Fisher's exact test or its generalization, with a 5% significance level. The IBM Statistical Package for

Social Science (SPSS, version 16.0) was used for the analyses.

Individuals who did not answer the entire questionnaire, those with mental disorders, those who did not reside in the city of São Paulo and those under the effects of alcohol/drugs that impeded the conduction of the interview were excluded from the study.

This study received authorization from the administration of the RDDC and approval from the ethics committees of the School of Public Health of the University of São Paulo and State of São Paulo STD/AIDS and Viral Hepatitis Reference and Training Center. All participants were assured the confidentiality of the information and signed a statement of informed consent.

Results

One hundred twenty-four individuals participated in the present study, 58 transvestites (46.8%) and 66 transsexual women (trans) (53.2%). The majority of interviews were held at the RDDC (79.8%), followed by the IHCTT (11.3%) and in *Largo do Arouche* (8.9%).

Table 1 displays the socio-demographic characteristics of the interviewees according to sexual identity. Nearly half (49.2%) were between 18 and 29 years of age; 62.1% were non-white; 41.1% reported having ≤ eight years of schooling; and 25.0% had passages through the prison system. Approximately 72.0% reported being sex workers, with the majority (53.9%) having ≤ 10 years in the profession. Differences between groups were found with regard to schooling ($p = 0.008$), passage through the prison system ($p < 0.001$) and occupation ($p < 0.001$). The transvestites had lower levels of schooling, reported a greater frequency of passages through the prison system and had a higher proportion of sex workers (87.9%). When filling out the statement of informed consent, many interviewees reported residing temporarily in shelters or being homeless. This information was recorded and considered in the analyses (data not presented in table).

Regarding knowledge about TB as well as forms of transmission and prevention (Table 2), the majority of respondents had received information about the disease, the main sources of which were lectures, classes and health professionals. A total of 88.7% considered TB to be a serious/very serious disease; 95.8% stated that it was curable and 84.3% reported that the cure was achieved through medical treatment. A little more than half of the respondents (53.2%) knew that treatment was free of charge.

Regarding knowledge on transmission, 34.7% mentioned incorrect forms (kissing, sex, cold weather, sharing cigarettes or pipes, contact with saliva, mosquito bite, toilet seat, rat urine, shaking hands, touching doorknobs and sharing plates and cutlery) and 28.2% had no knowledge on forms of transmission. A total of 99.2% reported incorrect forms of preventing TB (separating plates and cutlery, praying, blessing oneself, avoiding contact with an affected individual, not smoking, taking medications, undergoing examinations, wearing a mask, avoiding the cold, avoiding closed environments, maintaining adequate hygiene, not taking illegal drugs, using a condom and basic sanitation) or were unable to respond. The majority of interviewees recognized that anyone could contract the disease (75.8%). No statistically significant differences between groups were found for any of these variables ($p > 0.05$) (Table 2).

When asked about the possibility of acquiring the disease, recognition was high in both groups (98.4% of trans and 93.1% of transvestites). The reasons reported by those who did not consider this possibility were the use of antiretroviral drugs, having had TB already and taking adequate care of one's health (data not presented in table). When asked why they could contract TB, 25.8% of the trans and 20.7% of the transvestites reported that anyone could contract the disease. During the interviews, 33.3% of the trans and 25.9% of the transvestites stated: *I'm exposed*. Other reasons included smoking, use of alcoholic beverages and illegal drugs, failure to take adequate care of oneself, contact with homeless people and prior pneumonia (data not presented in table).

Table 3 displays the data on attitudes, practices, stigmas and information regarding tuberculosis. In the entire sample, 32.3% reported that sadness would be the main feeling if they became ill with TB. The majority reported that they would talk about the disease, with a higher proportion among the transsexuals ($p = 0.039$). When asked what they would do if they presented symptoms of TB, 88.5% said they would seek a primary care service, whereas others stated they would seek a preacher, pharmacy or self-medication. More than 70.0% knew someone who had had the disease.

With regard to feelings toward people with TB, the majority reported they would be supportive and wish to help. The main perception attributed to others with regard to individuals with

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Table 1. Distribution of transvestites and transsexual women according to socio-demographic characteristics, São Paulo, 2014.

Variable/categories	Total		Transvestites (n=58)		Transsexuals (n = 66)		p
	n	%	n	%	n	%	
Age (years)							0.269*
18 to 29	61	49.2	30	51.7	31	47.0	
30 to 39	37	29.8	20	34.5	17	25.8	
40 to 49	21	17.0	6	10.3	15	22.7	
≥ 50	5	4.0	2	3.4	3	4.5	
Skin color							0.462
White	47	37.9	20	34.5	27	40.9	
Non-white	77	62.1	38	65.5	39	59.1	
Schooling (years of study)							**0.008***
0 to 4	12	9.7	10	17.2	2	3.0	
5 to 8	39	31.4	21	36.2	18	27.3	
9 to 11	44	35.5	19	32.8	25	37.9	
≥ 12	29	23.4	8	13.8	21	31.8	
Passage through prison system							**< 0.001**
Yes	31	25.0	23	39.7	8	12.1	
No	93	75.0	35	60.3	58	87.9	
Sex worker							**< 0.001**
Yes	89	71.8	51	87.9	38	57.6	
No	35	28.2	7	12.1	28	42.4	
Time in prostitution							0.183*
< 1 year	5	5.6	3	5.9	2	5.3	
1 to 10 years	43	48.3	22	43.2	21	55.3	
11 to 20 years	29	32.6	21	41.1	8	21.1	
≥ 21 year	12	13.5	5	9.8	7	18.4	

*Generalization of Fisher's exact test.

TB was rejection. The main concerns among the transvestites and trans when considering the disease were treatment/internment/cure and death, respectively, whereas 17.7% of the overall sample reported not having any concerns at all. The other concerns mentioned were sexual impotence, weight loss, having to stop smoking, having to stop working, lack of medication, the multi-resistance of TB and lasting effects. The majority of both groups did not consider themselves to be well informed about TB; 87.1% wished to receive more information about the disease and 50.0% reported wanting to receive information through lectures/conversations/health professionals or radio/TV/internet (Table 3).

Figure 1 displays the main symptoms reported for TB. Interviewees could mention more than one symptom. Dry cough was the most recognized symptom in both groups. Other symptoms were fever, fatigue, chest pain, weight loss, shortness of breath and back pain. The main symptom of the disease (cough for more than two weeks) was mentioned little in each group (32.8% of transvestites and 24.2% of trans). Symptoms not associated with TM, such as stomachache, bodily pain, sore throat, hoarseness, blindness, hair loss, tooth loss, loss of appetite, AIDS, phlegm, depression, dizziness and loss of locomotion, were mentioned often in both groups, which demonstrates a lack of knowledge regarding symptoms of the disease.

Discussion

The analysis of the socio-demographic data demonstrated a young, non-white profile with a low level of schooling, which is in agreement with previous studies conducted on this population[9,11]. Moreover, differences between transvestites and transsexuals were found with regard to schooling, passage through the prison system and occupation. San Pedro and Oliveira[20] report that socioeconomic indicators can reflect one's vul-

Table 2. Knowledge on tuberculosis and forms of transmission and prevention among transvestites and transsexual women, São Paulo, 2014.

Variables/categories	Total		Transvestites (n = 58)		Transsexuals (n = 66)		p
	n	%	n	%	n	%	
Received information on TB							0.169
Yes	68	54.8	28	48.3	40	60.6	
No	56	45.2	30	51.7	26	39.4	
Sources of information accessed[1]							0.874*
Pamphlets/posters	17	20.7	6	18.8	11	22.0	
TV/Radio/Internet	8	9.8	4	12.5	4	8.0	
Lectures/classes/health professional	57	69.5	22	68.8	35	70.0	
Opinion about TB							0.866
Very serious	54	43.5	27	46.6	27	40.9	
Serious	56	45.2	25	43.1	31	47.0	
Not serious	8	6.5	4	6.9	4	6.1	
Does not know	6	4.8	2	3.4	4	6.1	
TB curable							0.183**
Yes	115	95.8	52	89.6	63	95.4	
No	5	4.2	4	6.9	1	1.6	
Cure for TB							0.140
Medical treatment[2]	97	84.3	41	78.8	56	88.8	
Rest without medication	18	15.7	11	21.2	7	11.2	
Cost of treatment for TB							0.077
Free of charge	66	53.2	26	44.8	40	60.6	
Expensive[3]	21	16.9	15	19.0	6	4.5	
Does not know	37	29.8	17	29.3	20	30.3	
How TB is transmitted							0.884*
Correct forms	46	37.1	21	36.2	25	37.9	
In correct forms	43	34.7	21	36.2	22	33.3	
Does not know	35	28.2	16	27.6	19	28.8	
How TB is prevented							0.321*
Correct forms	1	0.8	1	1.5	-	-	
In correct forms	62	50.0	32	55.2	30	45.5	
Does not know	61	49.2	25	38.5	36	54.5	
Who can get TB?							0.310*
Anyone	94	75.8	41	70.7	53	80.3	
Others	18	14.5	9	8.6	9	7.6	
Does not know	12	9.7	8	13.8	4	6.1	

*Generalization of Fisher's exact test; ** Fisher's exact test. [1] Multiple-choice question; [2] Through treatment at primary care service/ medication with medical supervision; [3] Combination of responses of very expensive, reasonably expensive and expensive.

nerability to TB due to inequalities with regard to access to information and the benefits stemming from knowledge and purchasing power. The present findings suggest a relationship between socio-demographic characteristics and disparities between transgender and cisgender individuals in terms of access to information on health[7]. Thus, the modest knowledge encountered with regard to TB may be related to the barriers imposed on this subgroup in terms of health care associated with disrespect to gender identity and discriminating health practices stemming from homophobia and transphobia[21,22].

Thirty percent of the participants were living either on the streets or at shelters (data not presented in tables). In developed countries, despite the reduction in the incidence of TB in recent years, a high proportion of new cases are found among the homeless population[23]. There is little information on TB in this population in Bra-

Table 3. Attitudes, practices, stigmas and information regarding tuberculosis among transvestites and transsexual women, São Paulo, 2014.

Variables/categories	Total		Transvestites (n = 58)		Transsexuals (n = 66)		p
	n	%	n	%	n	%	
Would feel if had TB							0.317*
Fear	30	26.6	14	20.1	19	28.8	
Sadness	40	32.3	24	41.4	16	24.2	
Others	15	12.1	7	12.1	8	12.1	
No feeling	25	20.2	8	13.8	17	25.8	
Does not know	11	8.9	5	8.6	6	9.1	
Would talk about disease							**0.039****
Yes	89	73.6	36	64.3	53	81.5	
No	32	26.4	20	35.7	12	18.5	
To whom respondent would talk about disease[1]							0.153*
Doctor	12	13.3	7	12.1	5	7.6	
Steady partner	11	12.2	5	8.6	6	9.1	
Parents/relatives	39	43.8	15	25.9	25	37.9	
Close friend/work mate	27	30.0	10	25.0	17	25.8	
Action to take it symptoms of TB were suspected							0.256
Seek primary care service	108	88.5	49	84.5	59	92.2	
Others	14	11.5	9	15.5	5	7.8	
When respondent would seek primary care service							0.610*
Self-medication failed	23	19.2	8	13.8	15	22.7	
Symptoms for more than 2 weeks	7	5.8	4	6.9	3	4.5	
As soon as perceiving symptoms	84	70.0	40	69.0	44	66.7	
Does not know	6	5.0	4	6.9	2	3.0	
Know someone who had TB							0.321*
Yes	86	70.5	43	74.1	43	65.2	
No	36	29.5	14	24.1	22	33.3	
Feelings toward individuals with TB							0.661*
Supportive and wish to help	72	58.1	31	53.4	41	62.1	
Supportive, but distant	31	25.0	17	29.3	14	21.2	
Indifferent	9	7.3	3	5.2	6	9.1	
Fear of infection	7	5.6	4	6.9	3	4.5	
Others	5	4.0	3	5.2	2	3.0	
How other people consider someone with TB							0.651*
Many reject person	85	68.5	42	72.4	43	65.2	
Supportive, but avoid contact	14	11.3	6	10.3	8	12.1	
Many help	13	10.5	4	6.9	9	13.6	
Does not know/others	12	9.7	6	9.1	6	9.1	
Greatest concern about TB[2]							0.667*
Death	22	17.7	9	15.5	13	19.7	
Transmission	24	19.4	12	20.7	12	18.2	
Treatment/Internment/Cure	21	16.9	13	22.4	8	12.1	
Becoming ill	11	8.9	5	8.6	6	9.1	
None	22	17.7	9	15.5	13	19.7	
Others	24	19.4	10	17.2	14	21.2	
Feels well-informed about TB							0.063
Yes	33	26.6	20	34.5	13	19.7	
No	91	73.4	38	65.5	53	80.3	

it continues

Table 3. Attitudes, practices, stigmas and information regarding tuberculosis among transvestites and transsexual women, São Paulo, 2014.

Variables/categories	Total		Transvestites (n = 58)		Transsexuals (n = 66)		p
	n	%	n	%	n	%	
Would like more information about TB							0.416
Yes	108	87.1	49	84.5	59	89.4	
No	16	12.9	9	15.5	7	10.6	
Desired sources of information[1]							0.380*
Newspapers/magazines	4	2.8	1	1.6	3	3.9	
Radio/TV/Internet	33	23.2	11	17.5	22	28.9	
Lectures/Conversations/Health professional	38	26.8	21	33.3	17	22.4	
Pamphlets	21	14.8	10	17.5	11	14.5	
Others	46	32.4	20	40.8	26	44.1	

*Generalization of Fisher's exact test; ** Fisher's exact test. [1] Multiple-choice question; [2] Open-ended question with response categories based on first thing mentioned by respondents.

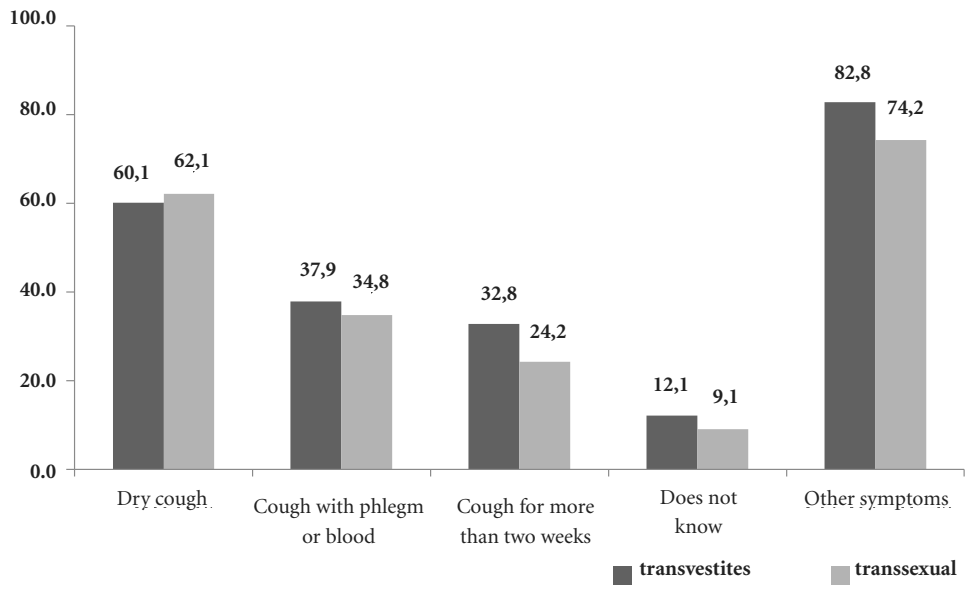

Figure 1. Symptoms of TB known among transvestites and transsexual women, São Paulo, 2014.

zil[24], but it is recognized the many transvestites and transsexuals live in such conditions[11]. These findings underscore the vulnerability of this population to TB and further studies are needed to assist in the planning of health education actions at shelters focused on controlling the disease.

The majority of participants in the present study had received information on TB, mainly through lectures and classes given by health professionals. In the Brazilian public healthcare system, these are considered health education actions delegated to the teams of the Family Health Strategy as one of the measures to control TB[25]. Health education actions are generally performed by the nursing staff at primary care services through lectures given to individuals in the waiting room and through the formation of educational groups. These actions are not specifically directed toward the control of TB and it should be mentioned that such actions are also not val-

ued within the care context[26]. Health professionals often fail to recognize the implicit educational nature of their actions and sometimes transmit knowledge in a vertical, impersonal manner[27]. It is therefore important to train these professionals regarding the dissemination of information on the disease to more vulnerable populations.

Knowledge on the risk of infection by TB was demonstrated mainly by feelings of being more exposed to the transmission of the disease. Moreover, the level of understanding with regard to curing the disease through treatment at a primary care service and medication with medical supervision was high in both groups. However, knowledge on free treatment was modest, which may affect access and adherence to treatment. It is therefore necessary to publicize this information through means of communication.

Less than half of the interviewees had correct knowledge on the forms of transmission of the disease and the majority did not know how to prevent it. Some believed in mistaken prevention practices. Similar results were found in a study conducted with an incarcerated population[28], in which a low level of clinical-epidemiological knowledge on the disease was encountered. Moreover, the presence of transvestites at male prison facilities is widely recognized[10].

No statistically significant differences between transvestites and transsexuals were found in terms of attitudes, practices, stigmas and information regarding TB. The only exception was that transsexuals would be more willing to talk about the disease than transvestites. In the overall sample, more than 25% would not talk about the disease, which may be related to the fear of associating the stigma of TB with that of HIV/AIDS, thereby financially compromising the exercise of prostitution. According to Ascuntar et al.[29], the stigma of TB may exert an influence on adherence to treatment. The stigmas of homosexuality and prostitution superimposed on the stigma of TB may increase difficulties in terms of access to healthcare services and affect the relationship between health professionals and patients, thereby compromising treatment.

Most of the participants reported that they would seek a primary care services as soon as the signs and symptoms of TB became evident. However, this is questionable when one considers the results with regard to knowledge of the signs and symptoms of the disease.

The most frequent concerns the interviewees reported when thinking about TB were treatment/internment/cure, death and becoming ill. These data may be related to barriers to healthcare services created by prejudice as well as the need to stop working, which weighs heavily on survival. The fact that 18% reported having no concerns may reflect a lack of knowledge about the disease, which could exert a negative influence on the early diagnosis of TB.

The present study has limitations that should be considered. The cross-sectional design only enables the evaluation of associations among the variables. However, this is the best type of study design for the characterization of a population profile. Since the participants were selected by convenience, the findings may not represent the population of transvestites and transsexuals who reside in the city. Moreover, the small sample size may have restricted the power of the study to identify differences between the two groups. The use of the attitude assessment tool has been criticized due to the possibility of obtaining biased responses involving opinions and feelings (the interviewee may give responses he/she believes to be acceptable or appreciated)[30], which could lower the validity of the information regarding the questions "How do you feel about people with TB?" and "How do others view a person who has TB?" Launiala[31] recognizes the usefulness of the assessment tool for collecting general data on public health issues related to treatment and prevention, but, considering the uniqueness of the context in which the study was conducted and the profile of the interviewees (transvestites and transsexuals), the use of quantitative and qualitative methods would be more appropriate for measuring the feelings, attitudes and practices of the interviewees. Despite these limitations, the present results characterize a subgroup for which little data are available.

For a sample of transvestites and transsexual women in the city of São Paulo, insufficient knowledge on TB exerts an effect on attitudes and practices with regard to the disease. The findings seem to demonstrate that health education actions focused on TB have not achieved their goals in this population and greater efforts are required. From the epidemiological standpoint, primary prevention is of the utmost importance. The stratification of the population based on risk enables greater focus on priority subgroups so that educational actions (knowledge) that take socioeconomic factors and context into consideration[32] can indeed promote the adoption of specific preventive practices for TB.

Conclusion

The present findings demonstrate that knowledge on TB among the transvestites and transsexuals interviewed in the city of São Paulo was modest and permeated with misunderstandings regarding the signs/symptoms, transmission and prevention of the disease. Considering the living conditions and health of this specific subgroup, which are aggravated by the combinations of stigmas related to TB, HIV/AIDS, homosexuality and prostitution, The National Tuberculosis Control Program should include the gender issue as a topic in the training of health professionals and the planning of heath education actions. Such actions could reduce the occurrence of prejudice and discrimination at public healthcare services and broad access on the part of this subgroup to information and healthcare services, thereby favoring the early diagnosis, adherence to treatment and curing of TB.

Collaborations

S Ferreira Júnior worked on the conception, realization of the research and the final writing; PMSB Francisco in the statistical analyzes and in the final writing; PA Nogueira in the orientation of the research and in the final writing.

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