Original Article

Syphilis prevalence among women in the prison system of a northeastern Brazilian capital

Prevalência de sífilis em mulheres do sistema prisional de uma capital do nordeste brasileiro

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ABSTRACT

The aim of this study was to investigate the prevalence of syphilis and associated factors in inmates of the women's prison of Teresina, Piauí, Brazil. This cross-sectional study was conducted in November 2013. The population consisted of inmates from the referred penitentiary (n=131). Data were collected through a form composed of closed-ended and mixed questions. The mean age was 33.1 years, 60.3% affirmed not having a stable relationship, and 93.1% had children. Alcohol use was reported by 70.8%, and the use of illicit drugs, by 56.2%. It was evidenced that 38.5% of women never use a condom during sexual intercourse, and that 62.2% do not know how the transmission of syphilis happens. The high prevalence of syphilis, 25.2%, is statistically associated with marital status, illicit drug use and their consumption before sex, demonstrating that unfavorable socioeconomic conditions are important risk and vulnerability factors to sexually transmitted diseases.

Descriptors: Syphilis; Prisons; Women; Community Health Nursing.

RESUMO

Esta pesquisa objetivou investigar a prevalência de sífilis e fatores associados em internas na penitenciária feminina de Teresina-PI, Brasil. Estudo de corte transversal, realizado em novembro de 2013. A população foi constituída pelas internas da referida penitenciária (n=131). Os dados foram coletados por meio de um formulário contendo questões fechadas e mistas. A média de idade foi 33,1 anos, 60,3% afirmaram não manter relacionamento estável e 93,1% possuíam filhos. O consumo de álcool foi referido por 70,8%, e o uso de drogas ilícitas por 56,2%. Evidenciou-se que 38,5% das mulheres nunca utilizam camisinha nas relações sexuais e que 62,2% não sabem como se dá a transmissão da sífilis. A alta prevalência da sífilis, 25,2%, está estatisticamente associada à situação conjugal, uso de drogas ilícitas e consumo antes das relações sexuais, demonstrando que condições socioeconômicas desfavoráveis são importantes marcadores de risco e de vulnerabilidade para as DST.

Descritores: Sífilis; Prisões; Mulheres; Enfermagem em Saúde Comunitária.

INTRODUCTION

The prison system is considered a public health problem worldwide, because in prisons there are conditions favorable to the spreading of sexually transmitted diseases (STDs), since these establishments are related to violence, limited physical space and inadequate or incomplete health care[1-2].

It is also important to note that the heterogeneity of the confined individuals in the prison environment propitiates greater exposure to physical and psychological risks[3]. Therefore, it is observed that HIV and STD rates among convicted prisoners are significantly higher than among the general population, due to risk behaviors before and during imprisonment. The prison population shows a high incidence of risk behaviors that may contribute to the greater spread of infection, especially with regard to the improper use of injectable drugs, which increases their exposure to the risk of acquiring blood-borne infections[4-5]. In addition to that, other high-risk behaviors and lifestyles are also observed, such as: unprotected sex, multiple sexual partners, homosexuality and the use of tattoos[6].

Women's participation in the Brazilian prison scenario is significantly low. However, due to their nature, they tend to suffer more intensely to imprisonment and are, thus, more vulnerable to acquiring health problems, both physical and psychological. Several factors work together for this susceptibility and include: biological characteristics; unfair relationships between men and women; lack of opportunity to talk about sexuality and explore their body; difficulty in negotiating safe sex; nonuse of condoms; socioeconomic and cultural conditions, which may limit access to health services; lack of actions and adequate information regarding prevention of STDs[3,7].

In view of these problems, a stronger emphasis is necessary on promoting the health of women deprived of freedom, because of the increased risks in the prison environment, and also due to the deficiency of preventive actions offered in the penitentiary health system[3]. Moreover, health services in prisons, when they exist, are mainly outside the prison system, usually with insufficient capacity, characterized by lack of staff and other resources[5].

Access to health care for women deprived of freedom is a civil right hardly observed in the Brazilian prison environment, which could be improved through health promotion, privileging preventive and promotional measures that seek to transform factors that put the collectivity in situations of iniquity and vulnerability[2-3]. In this perspective, the Federal Government created, in 2003, the National Plan for Health in the Prison System, which aims to guarantee access to health care for detainees by offering shares and primary care services within prisons[7].

In the state of Piauí, the situation of vulnerability of women in prisons is very similar to that existing in national and international levels. It is noteworthy that there are still not enough studies to determine the true prevalence of syphilis among women within the prison system. Thus, it is necessary to develop research focused on the health problems of this group of women in social disadvantage, who must have equal access to health services. This study may provide a basis for undertaking new strategies for promoting health and preventing sexually transmitted diseases, in a differentiated manner and in accordance with the singularities of the group in question.

In this perspective, the aim of this study was to investigate the prevalence of syphilis and associated factors in inmates of a female prison in Teresina, Piauí, Brazil.

METHODOLOGY

A cross-sectional study was developed through inquiry and serological marker research, with data collection conducted in a women's prison in a northeastern Brazilian capital, in November 2013. The sample consisted of inmates of the referred penitentiary (n=131).

The development of this study followed legal ethical principles based on resolution no. 466/12 of the National Health Council. The project was authorized by the Department of Justice and approved by the ethics committee of the Federal University of Piauí (CAAE: 17610613.4.0000.5214).

It was carried out in two steps. First, interviews were conducted through the use of a form with closed-ended and mixed questions regarding sociodemographic characteristics, use of alcohol and other drugs, parenteral exposure, sexual practices and information about STDs/AIDS. In the second step, rapid tests were performed through the immunochromatography method for detecting syphilis antibodies (treponemal), using the Bio-Manguinhos TR DPP® syphilis tests (Immunobiological Technology Institute, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil) and syphilis Rapid Check® (Center for Infectious Diseases, Federal University of Espírito Santo, Vitória, Brazil). The tests were performed by professionals from the Piauí State Health Department together with the authors, all duly qualified by the Ministry of Health through training focused on the execution and interpretation of the above tests. It is important to note that all the procedures for applying these tests followed the guidelines and recommendations of the Regulatory Ordinance no. 3242, of September 30, 2011.

Data were collected with the express consent of the participants, through a Free and Informed Consent Form. After that, they were inserted into Microsoft Excel and imported into the Statistical Package for the Social Sciences, version 19.0, where they were tabulated. Statistical analysis was descriptive, from the percentage of categories of the responses from the variables, and explored through univariate, bivariate and multivariate techniques, considering mean, standard deviation, 95% of confidence interval (CI), minimum and maximum[8]. Multivariate analysis was performed through binary logistic regression, using the adjusted odds ratio, with the respective 95% CI and significance level set at $p<0.05$. The absence of multicollinearity among the selected variables for the bivariate analysis was examined through the variance inflation factor (VIF), and the adopted cutting point for the existence of multicollinearity was $VIF \geq 4$[9].

RESULTS

The mean age of inmates was 33.1 years, with a range of 18–68, and 58% of them declared themselves as having mixed race. Of the inmates, 64.9% did not maintain a stable relationship, and were either single, separated or widowed; however, 95.4% had children, with a mean of 2.5 children per inmate. Regarding education, 87.8% went to school, with a mean of 7.1 years of schooling. A total of 82.4% of the respondents had a personal income at or below the minimum wage. A total of 85.5% did not have health insurance and 72.5% were Catholic. Of the 131 women, 90.8% lived in the state of Piauí, whereas only 77.1% were born in this state (Table 1).

Table 1: Sociodemographic and economic profile of the women in the study (n=131). Teresina, PI, Brazil, 2013.

Variables	n(%)	$\bar{x}$	±	95% CI	Min-Max
Origin					
Piauí	101(77.1)				
Maranhão	16(12.2)				
Others	14(13.7)				
Residence					
Piauí	119(90.8)				
Maranhão	07(5.3)				
Others	05(3.9)				
Age		33.1	11.9	31.1–35.2	18–68
Up to 30 years	71(54.2)				
31 or more	60(45.8)				
Color of the skin					
Mixed	76(58.0)				
White	24(18.3)				
Black	13(9.9)				
Other	10(7.6)				
Yellow	08(6.1)				
Marital status					
Single/separated/widowed	85(64.9)				
Married/stable union	46(35.1)				
Children					
Yes	125(95.4)				
No	06(4.6)				
Number of children		2.5	1.7	2.2-2.8	0–10
Up to 2	77(58.8)				
3 or more	54(41.2)				
Attended school					
Yes	115(87.8)				
No	16(12.2)				
Years of study		7.1	4.1	6.4–7.9	0–17
Up to 5	48(36.6)				
6 or more	83(63.4)				
Personal income		0.89	1.3	0.6–1.1	0–08
Up to 1 minimum wage	108(82.4)				
2 or more	23(17.6)				
Family income		1.76	2.5	1.2–2.3	0–20
Up to 1 minimum wage	78(59.5)				
2 or more	53(40.5)				
Health insurance					
Yes	19(14.5)				
No	112(85.5)				
Religion					
Catholic	95(72.5)				
Evangelical	22(16.8)				
None	11(8.4)				
Others	03(2.3)				

Legend: *x* = mean, ± = standard deviation, 95% CI = confidence interval, Min-Max = minimum and maximum.

Most study participants (51.9%) reported having some information about syphilis; however, 60.3% were not able to inform how the disease is spread. Women who reported knowing the process highlighted unprotected sex (89.8%) as the primary means of infection. As main sources of information, the participants ranked health services, with 56.6%, followed by television, with 52.5%. With regard to prevention of syphilis, 90.5% of inmates pointed the use of condoms as the most effective method. Of all participants, 95.4% confirmed being afraid

of contracting STDs, and highlighted, as main reasons, the fact that they have no cure (25.6%), death (24%) and illness (22.4%) (Table 2).

The prevalence of positive serological markers for syphilis observed in this group was 25.2% (95% CI = 16.3 – 28.3) (Table 3).

Table 2: Inmates' information about syphilis (n=131). Teresina, PI, Brazil, 2013.

Variables	N	%
Information about syphilis		
Yes	68	51.9
No	63	48.1
Knows how the transmission happens		
Yes	44	33.6
No	79	60.3
Partly	08	6.1
Syphilis transmission*		
Unprotected sex	44	89.8
Blood	15	30.6
Vertical transmission	04	8.2
Source of information about the transmission of syphilis*		
Health service	56	56.6
Television	52	52.5
Others	22	22.2
Reading	18	18.2
How to prevent syphilis		
Condom	95	90.5
Others	05	4.9
Avoid sexual intercourse	05	4.8
Fears contracting STDs		
Yes	125	95.4
No	06	4.6
Reason of fear		
Lack of cure/it is dangerous/critical/bad	32	25.6
Dying	30	24.0
Becoming ill/jeopardizing health	28	22.4
Others	13	10.4
Difficult to treat	02	1.6
Because in prison everyone has it	02	1.6

Legend: * = multiple answers

Table 3: Prevalence of positive results in the rapid test for syphilis in inmates of the women's prison (n=131). Teresina, PI, Brazil, 2013.

Variables	n	%	95% CI
Rapid test for syphilis			
Positive	33	25.2	16.3 – 28.3
Negative	98	74.8	71.7 – 83.7

The bivariate analysis showed statistically significant association between rapid test for syphilis with the variables: marital status (p≤0.03), illicit drug use (p<0.01) and drug use before sexual intercourse (p<0.01) (Table 4). The bivariate analysis showed a statistically significant association between rapid test for syphilis with the variables: marital status (p≤0.03), illicit drug use (p<0.01) and drug use before sexual intercourse (p<0.01) (Table 4).

In multiple logistic regression, the variables: marital status, use of illicit drugs and use of drugs before sexual intercourse remained statistically associated with positive results in the rapid test for syphilis (p≤0.05). (Table 5).

Table 4: Association of the sociodemographic data, use of alcoholic beverages and other drugs, sexual practices and information about syphilis with the result of the rapid test (n=131). Teresina, PI, Brazil, 2013.

Variables	Rapid test for syphilis		p value*
	Reactive	Non-reactive	
	n(%)	n(%)	
Age group			0.72
Up to 30 years	17(23.9)	54(76.1)	
31 or older	16(26.7)	44(73.3)	
Personal income			0.09
Up to 1 minimum wage	30(27.7)	78(72.3)	
2 or more	03(13.0)	20(87.0)	
Family income			0.97
Up to 1 minimum wage	22(28.2)	56(71.8)	
2 or more	11(20.7)	42(79.3)	
Marital status			**0.03**
Single	25(31.6)	54(68.4)	
Married	08(15.4)	44(84.6)	
Years of study			0.19
Up to 5	15(31.9)	32(68.1)	
6 or more	18(21.7)	66(78.3)	
Alcoholic beverage consumption			0.25
Yes	26(28.0)	67(72.0)	
No	07(18.4)	31(81.6)	
Illicit drug use			**<0.01**
Yes	26(35.1)	48(64.9)	
No	06(10.5)	51(89.5)	
Chooses sexual partner			0.23
Yes	22(22.0)	78(78.0)	
No	11(35.5)	20(64.5)	
Makes use of condom			0.19
Always	11(36.6)	19(63.4)	
Never / sometimes	22(21.8)	79(78.2)	
Usually consumes alcohol before sexual intercourse			0.31
Yes	17(24.3)	53(75.7)	
No	13(21.3)	48(78.7)	
Usually makes use of drugs before sexual intercourse			**<0.01**
Yes	25(47.2)	28(52.8)	
No	08(10.3)	70(89.7)	
Information about syphilis			0.41
Yes	15(22.1)	53(77.9)	
No	18(28.6)	45(71.4)	

Table 5: Multiple logistic regression of factors associated with the prevalence of positive serological marker for syphilis in the study population (n=131). Teresina, PI, Brazil, 2014.

Variables	Syphilis exam			
	Reactive	Non-reactive	O.R.a.**	CI 95%
	n (%)	n (%)	p value*	
Personal income			0.81	-2.5–0.1
Up to 1 minimum wage	26(26.0)	74(74.0)		
2 or more(*)	01(6.7)	14(93.3)		
Marital status			**3.4**	**1.2–4.5**
Single	25(31.6)	54(68.4)		
Married(*)	08(15.4)	44(84.6)		
Years of study			0.56	0.2–1.1
Up to 5	15(31.9)	32(68.1)		
6 or more(*)	18(21.7)	65(78.3)		
Alcoholic beverage consumption			2.1	0.7–2.2
Yes	26(28.0)	67(72.0)		
No(*)	07(18.4)	31(81.6)		
Illicit drug use			**4.4**	**2.7–5.6**
Yes	26(35.6)	47(64.4)		
No(*)	06(10.5)	51(89.5)		
Chooses sexual partner			1.7	0.3–2.7
Yes(*)	21(22.1)	74(77)		
No	09(33.3)	18(66.7)		
Makes use of condom			1.1	0.9–1.9
Always(*)	11(36.6)	19(63.4)		
Never / sometimes	22(21.8)	79(78.2)		
Usually makes use of drugs before sexual intercourse			**3.6**	**1.9–4.6**
Yes	22(51.2)	21(48.8)		
No(*)	06(8.7)	63(91.3)		
Fears contracting STDs			1.8	0.5–2.2
Yes(*)	30(24.2)	94(75.8)		
No	03(50.0)	03(50.0)		

* Reference category. The p value was obtained by logistic regression. The variables with p≤0.25 in the bivariate model were placed in the multivariate model. The level of statistical significance was set at p≤0.05.

DISCUSSION

Few Brazilian studies have analyzed the prevalence of syphilis in women deprived of freedom. Moreover, the comparison of the data found in this study with those obtained in other national and international studies is not simple, because there are a variety of diagnostic tests and many of these studies do not address the same diagnostic method, nor the DST included in this investigation. To enable the discussion, the obtained data were compared, considering the female population in general and from other vulnerable groups, also citing studies that did not use the same diagnostic method.

The use of rapid tests for diagnosis of syphilis has proved to be an effective strategy in the implementation of new approach measures for quick and accurate diagnosis and for the early treatment during the delivery of care for the population in general, especially to women during prenatal and delivery. It can also be used in specific situations, when there is difficulty of geographic access to services or laboratory supplies, like the context in which this study was carried out[10-11].

The high prevalence detected in this study (25.2%; 95% CI = 16.3% – 28.3%) can be explained by the lack of knowledge about the transmission of syphilis by the vast majority of the sample, which it can be related to the nonuse or irregular adherence to condoms, reported by a high proportion of the population studied. This finding is consistent with an international study conducted with a female prison population in Morocco, whose prevalence rate of syphilis was 23%, and which used the Treponema

Pallidum Haemagglutination Assay and the Venereal Disease Research Laboratory[12].

Nevertheless, it is observed that the prevalence of this study group is high when compared with the general population, like studies with new mothers in Brazil, with 1.02% (95% CI 0.84 – 1.25)[13], and a study developed in public maternity hospitals in Vitória, with 0.4% (95% CI 0.2 – 0.9)[10]. Our findings also disagree with studies of other vulnerable groups, such as studies developed with people living on the streets of São Paulo, also using rapid tests, with the prevalence of 7.0% (95% CI 2.6 – 9.4)[11]; with homeless people of São Paulo, 5.7%, using the Venereal Disease Research Laboratory[14]; with teenagers of the correctional system of the Greater Vitória, 7.8% (95% CI 2.6% – 12.8%)[15]; in male prisons of the State of São Paulo, 5.3% (95% CI 3.5 – 7.6)[4], and with prisoners of Pernambuco, 3.92% (95% CI 2.77 – 5.07%)[16].

When carrying out the bivariate analysis, the presence of the serological marker reagent for syphilis was statistically associated with marital status, use of illicit drugs and drug use before sexual intercourse. In the multivariate model, the aforementioned variables remained associated. This finding may be explained by the risk of exposure to infection throughout life, due to the indicated risk behaviors.

Some singular characteristics of women deprived of liberty, described in this study and in conformity with the national and international literature, denote that they have a disadvantaged socioeconomic status, with low education and low income. Moreover, the association found with marital status is closely related to the status of single women, who possibly have multiple sexual partners, and which makes them more vulnerable to STDs, especially when they do not use condoms consistently. In a study conducted in prisons in Ghana, it was observed that the use of intravenous drugs, sexual behaviors of high risk, and low socioeconomic status resulted in a high concentration of people infected with syphilis and other STDs[17].

When it comes to health, the use of alcohol and other drugs can cause a lot of damage. The reality detected in this study, in which most inmates reported frequent use of alcohol and drugs, is consistent with a study conducted in a women's prison in the city of São Paulo, which indicated marijuana (61%), cocaine (47%) and crack cocaine (43%) as being the drugs most used by the inmates[18]. This fact intensifies the vulnerability of these women, given that it triggers other risk behaviors, such as sharing of infectious materials for the use of injectable drugs and unprotected sexual practices[15].

The use of psychoactive substances can make people less aware or concerned about STDs and conventional health screening practices, which involve invasive examination in the genital tract, creating an estrangement toward this population[19]. Added to the fact that drug consumption encompasses broader issues, including activities directly related to its use, the exchange of sex for drugs and money, greater sexual freedom, multiple sexual partners and unprotected sexual practices reflect the high number of new cases of disease in this population[4,20].

The nonuse or irregular use of condoms sets the reality of the women's prison in this study. This finding is consistent with another study conducted in Ceará, in 2010[21], and highlights the need for health education strategies that seek to reflect about the knowledge promotion strategies provided by the main referred sources. Actions that promote sexual and reproductive health of inmates should also be carried out and encompass the complexity of the singularities experienced by female prisoners, and not only be limited to gynecological consultations and condom distribution[3,21].

In general, women reported some information about syphilis, however, most of them were unaware of how the disease is transmitted. The setting in which they live consists in a situation of vulnerability, since the lack of knowledge, asymptomatic presentations and difficulty of access to information slows access to health services. The

lack of information about the various STDs, regarding signs and symptoms and ways of infection are real limitations that hinder this access even more[15].

An international study conducted in Saudi Arabia, with 261 women, found that female prisoners have little knowledge about STDs and sexual risk behaviors[22], hindering the identification of STDs and causing underestimation of these bouts[3]. This generates the need for intensification of campaigns aimed at increasing awareness about STDs, especially among prison populations, since they are, generally, high-risk populations[22].

Information bias may have occurred in view of self-reported answers, especially related to issues considered stigmatizing, such as drug use and sexual partnership, because many participants may have not faithfully reported their answers for fearing that the information could provide them some kind of damage regarding their legal situation and/or fear of moral judgments about their behavior, even though the research objectives had been clarified, and it was made clear that the information was confidential.

CONCLUSION

The inmates participating in this study group consisted of women who did not maintain a stable relationship (64.9%), had children (95.4%), had a low educational level (7.1 years on average) and a low family income (59.5%). They also presented behaviors of syphilis-related risks, especially alcohol consumption (71.8%), and other drugs (56.5%), with emphasis on their use before sexual intercourse (44.3% and 40, 5%, respectively), nonuse of condoms (37.4%), and little knowledge about the transmission of syphilis (60.3%).

The high prevalence of positive results in the rapid test for syphilis found in the study (25.2%) showed that unfavorable socioeconomic conditions are important risk and vulnerability factors to STDs. In other words, social inequality puts women in a vulnerable situation, susceptible to many health disorders, which reflects the reality established outside the prison system.

Prevalence studies in female prison populations are relevant because of the heterogeneity of female inmates and the diverse risk behaviors they assume. The gender issue has greater significance in these cases due to innate conditions of women and also because of their limited access to health services and appropriate information regarding prevention of STDs.

This perspective evidences the need for health strategies for the prevention and early diagnosis of STDs, both in the social context in which this population is inserted and in prisons, considering that this population is temporarily recluse, but later will be reinserted in the community of origin, and, if they are not properly treated and educated about prevention, new cases will continue to happen. Therefore, it is extremely important to implement the National Plan for Health in the Prison System and map existing measures compatible with the features found in the inmates.

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