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Health of female prisoners in Brazil

Saúde de mulheres privadas de liberdade no Brasil

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Abstract *The majority of the women in prisons comes from the poorest strata of society with limited access to education, income and health services. This contributes to the fact that female prisoners have a higher burden of adverse health events than both male prisoners and women in general population We objected to estimate the prevalence of different morbidities and risk factors among female prisoners in Brazil. A total of 1,327 women were recruited in this cross-sectional study. Data were collected using a using audio computer-assisted self-interviewing questionnaire, rapid antibody tests and physical examination. The higher prevalences was of syphilis, infection sexually disease, arterial hypertense, asthma, common mental disorders and severe physical violence. Regarding risk factors, 36.3% have good knowledge about HIV, 55.8% were smokers, 72.3% had ever used any illicit drug, 92.1% are sedentary and 92.1% maintained an unhealthy diet. Female prisoners are disproportionately affected by various adverse health conditions. There is a need for an effective surveillance system inside prisons for early diagnosis and treatment.*

Key words *Prisoners, Brazil, Women, Epidemiology, Prevalence*

Resumo *A maioria das mulheres nas prisões vem das camadas mais pobres da sociedade, com acesso limitado a educação, renda e serviços de saúde. Isso contribui para o fato de que presidiárias têm maior carga de eventos adversos à saúde do que presidiários do sexo masculino e mulheres da população em geral. Objetivamos estimar a prevalência de diferentes morbidades e fatores de risco entre presidiárias no Brasil. Um total de 1.327 mulheres foram recrutadas neste estudo transversal. Os dados foram coletados por meio de um questionário de autoentrevista com áudio assistido por computador, testes rápidos de anticorpos e exame físico. As maiores prevalências foram de sífilis, infecções sexualmente transmissíveis, hipertensão arterial, asma, transtornos mentais comuns e violência física grave. Em relação aos fatores de risco, 36,3% têm bom conhecimento sobre o HIV, 55,8% são fumantes, 72,3% já usaram alguma droga ilícita, 92,1% são sedentários e 92,1% mantêm alimentação não saudável. As presidiárias são desproporcionalmente afetadas por várias condições adversas de saúde. É necessário um sistema de vigilância eficaz dentro das prisões para o diagnóstico e tratamento precoce.*

Palavras-chave *Prisioneiros, Brasil, Mulheres, Epidemiologia, Prevalência*

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Introduction

Historically, women were less involved in crimes than men. This fact has always been associated with social rules and assimilation of a patriarchal ideology[1]. However, the women's liberation achieved in recent years, as it has brought innumerable advances in all aspects of women as a human being and citizen, has also made them more vulnerable to several factors that increase the risk of being incarcerated[2]. Consequently, the number of women in the prison system has skyrocketed and is growing faster than the male population[3]. In Brazil, there has been a 656% increase in the number of female prisoners between 2000 and 2016, compared with 293% increase among men[4]. It is estimated that approximately 38,000 women live in prisons in Brazil[5].

The imprisonment experience has strong potential in promoting health inequities[6]. The majority of the prison population comes from the poorest strata of society with limited access to education, income and health services[7]. As a consequence, prisoners have a high prevalence of infectious diseases, chronic non-communicable diseases and mental disorders[8-10]. This burden of disease and other adverse health events is greater among female prisoners, both in relation to male prisoners and in relation to women in general population[11]. In addition, there is a high prevalence of sexual abuse[12] and reproductive needs[13,14], uncommon problems among men. These discrepancies clearly reveal that prison systems were not designed considering the presence of women, leading to a strong process of gender inequity[1].

Brazil is a country with marked differences in the routine of the penitentiary system in the different regions. It is possible to find systems that guarantee dignified living conditions, while in other places female prisoners live in overcrowded prisons, with poor quality food, with no guarantee of health services and respect for human rights. In 2014, a National Policy was elaborated aiming to guarantee the right to health for all the prisoners in Brazil, however there is a major gap in the provision of health care consistent with women's biological and social needs[15].

Investigations into the health conditions of the prison population have focused mainly on male prisoners or both sexes at the same time, without focusing solely on the results of women. In addition, most of the evidence comes from high-income nations[16]. This study presents results from the first national health survey of women prisoners in Brazil. Our objective is to estimate the prevalence of different morbidities and their main risk factors among women prisoners in Brazil.

Material and methods

Settings

This cross-sectional study was carried out in 15 female prison units located in the states of Pará and Rondônia (North region), Ceará (Northeast region), Federal District and Mato Grosso (Central-West region), São Paulo and Minas Gerais (Southeast region), Paraná and Rio Grande do Sul (South region). The study was conducted between January 2014 and December 2015, as part of the project entitled National Health Survey on Female Prison Population and Prison Services.

Sample Population

Women prisoners were included in the study for at least six months in a closed or semi-open regime. Women who were unable to be assisted by the research team (due to health reasons, dangerousness or eventual departures from the unit) and/or who did not have Portuguese as their primary language were excluded. Initially, two states were intentionally selected by the Brazilian political-administrative region that had the largest female prison population[4]. Then, the presidents were stratified according to their location (capital, metropolitan or interior). Only prisons with more than 75 prisoners were included in the sample due to the obligation to have health services. The minimum sample size was estimated at 2,518 residents. Imposing an increase of 10%, the estimated final sample was 2,714 women. However, due to financial and operational limitations, the final sample collected was 1,327 women.

Instruments and variables collected

The data were collected in three stages: 1) Rapid tests and glycemia: The tests consisted of tests to identify anti-HIV, anti-HCV, anti-HVB and treponemic antibodies. For the detection of HIV, the enzyme immunoassay was used for simultaneous qualitative detection of antibodies against human immunodeficiency virus type 1 and type 2 (HIV-1/HIV-2, BioManguinhos). In the case of the first positive result, the participant repeated the blood collection process, using an-

other laboratory kit (ABON) for confirmation. Pre- and post-testing counseling was carried out. In addition, capillary glycemia was performed to diagnose diabetes; 2) Physical examination: It consisted of a blood pressure test to estimate the occurrence of arterial hypertension, besides height and weight for calculating the body mass index (BMI); 3) Application of a questionnaire dealing with sociodemographic and epidemiological characteristics. The data were collected through a self-administered questionnaire, using Audio Computer-Assisted Self-Interviewing (ACASI) technology, which consists in the use of tablets for the questionnaire responses, giving respondents greater secrecy and privacy in responses. The choice of ACASI follows from its applicability in research in which there is a need to approach sensitive information, personal data, or even related to health risk behaviors[17].

The Alcohol Use Disorders Identification Test (AUDIT) was used to identify different patterns of alcohol consumption[18]. The AUDIT is composed of 10 items and evaluates both recent use and problems related to alcohol consumption, as well as symptoms of addiction. The classification of alcohol consumption was stratified into two categories: low risk and high risk or high risk. The low-risk consumption refers to those who obtained 0 to 7 scores. The consumption of risk or high risk refers to those that obtained above 8 scores after the application of the instrument.

The prevalence of common mental disorders (CMD) was estimated through the Self-Reporting Questionnaire-20 (SRQ-20)[19]. The instruction consists of 20 questions, the first four related to physical symptoms and another 16 about psychological symptoms. The application of SRQ-20 allows the early detection of signs and symptoms of mental health impairment, including fatigue, insomnia, irritability, and subclinical aspects. Because it is a screening instrument, the determination of the cutoff point for the detection of cases is fundamental for guaranteeing sensitivity and specificity. In this study, the minimum score of 7 affirmative responses of the SRQ-20 was adopted, in accordance with guidelines established for women[20].

The definitions of physical, psychological, sexual and moral violence used in this research are in accordance with the concepts adopted by the World Health Organization and the legislation in force in Brazil[21]. The definitions of severe physical violence relate to episodes involving beating, burns, or attempted hanging. Severe physical violence is related to objects that have caused injury or bodily injury, such as firearms, knife strikes or sharp instruments.

Were considered sedentary, women who reported weekly physical activity time <150 minutes and/or time to watch television was ≥3 hours a day. Regarding the dietary habits of the interviewee, it was considered an unhealthy diet when they did not include regular consumption of beans and/or vegetables and/or fruits, as recommended by the Brazilian Ministry of Health[22].

The BMI was calculated as body mass divided by the square of the body height (BMI=kg/m² - weight in kilogram and height in meters). The BMI was stratified: Normal or low weight (<25), overweight (>25 and <30) and obese (>=30).

Socioeconomic aspects, such as age, education level and number of children were also investigated. The race was self-reported (*parda*, black, white and yellow), obeying the criteria established in Brazil.

Data analysis

The data were analyzed using SPSS® software version 20.0 and Stata® version 15. To adjust the sample loss, complex analysis data was applied. This analysis is composed of variables with information about the strata, clusters, sampling weights and population correction. Sampling weights were applied for accurate fit estimates. Weighting, clustering and stratification were considered in the research project to minimize standard errors. The inverse of the product of the probabilities of the sampling units was considered as weight in each of the stages of the design. The analysis was performed considering the sample weights calculated for each of the databases used in the analysis.

Initially, a descriptive analysis of the data was performed. Categorical variables were described by frequency distribution. For continuous variables, the Kolmogorov Simirnov test was used initially, as well as histograms, to identify if each variable followed the normal distribution. Continuous variables with normal distribution were expressed as means ± standard deviation and those that did not follow normal distribution were expressed through median and interquartile range.

The prevalence of morbidities and risk factors studied were expressed by weighted relative frequency and respective confidence intervals (95%CI).

Ethical aspects

Initially, the supervisor explained the research to all selected participants and applied the consent form for research, guaranteeing confidentiality and voluntariness.

When any test was positive, the study participant was referred to a referral service specialized, which were defined before conducting the research in each state and penitentiary.

Results

The total sample was 1,327 women prisoners. The mean age was 33.4 years (95%CI 32.8-33.9), with 27.5 years (95%CI 27.0-28.1) being the mean age of the first admission to the prison system. These women are mostly brown (65.1%, 95%CI 47.0-52.5), with incomplete education (34.7%, 95%CI 32.0-37.5), with no fixed partners (43.5%, 95%CI 40.7-46.3), who were previously unemployed (22.7%, 95%CI 20.5-24.8 (25.4%, 95%CI 23.0-27.7)) or as domestic (23.7%, 95%CI 21.4-25 (95%CI 33.7-39.3)) were the family's main source of income prior to imprisonment and 81.5% (95%CI 79.4-83.5) are mothers (Table 1). Regarding the prison characteristics, 68.1% (95%CI 65.5-70.6) were recidivists, serving sentences for non-violent crimes physically (95%CI 87.5-90.8), 65.6% (95%CI 62.9-68.3) for drug trafficking (Table 1).

More than 60% of women consider their health very good or good. The higher prevalences was of syphilis (11.7%, 95%CI 9.9-13.8), IST (51.8%, 95%CI 48.9-54.6), leprosy (7.4%, 95%CI 6.1-9.0), arterial hypertense (24.2%, 95%CI 21.9-26.7), asthma was 20.1% (95%CI 17.9-22.6), cardiovascular diseases (6.2%, 95%CI 4.9-7.9), common mental disorders (64.2%, 95%CI 61.5-66.9), severe physical violence (36.4%, 95%CI 33.8-39.0) and sexual violence (16.5%, 95%CI 14.6-18.8) (Table 2).

Regarding risk factors, 36,3% (95%CI 33.6-39.0) have good knowledge about HIV transmission, 55.8% were smokers (95%CI 53.1-58.5), 72.3% (95%CI 69.6-74.7) had ever used any drug (95%CI 14.9-19.5), 92.1% (95% CI 90.4-93.6) are sedentary and 92.1% (95%CI 90.4-93.6) maintained an unhealthy diet (Table 2).

Table 1. Sociodemographic characteristics of women prisoners at Brazil, 2020.

Characteristics	%[1]	95%CI
Race (N=1,318)		
Black	15.3	13.3-17.6
Parda	49.8	47.0-52.5
White	31.5	28.9-34.2
Yellow	2.4	1.7-3.4
Indigenous	1.0	0.6-1.7
Education (N=1,324)		
Illiterate	3.0	2.2-4.2
Incomplete elementary school	41.3	39.0-44.5
Complete elementary school	16.1	14.0-18.5
Incomplete high school	17.0	15.0-19.3
Complete high school	14.9	12.9-17.1
Incomplete undergraduate	2.4	1.6-3.6
Graduated	1.2	0.8-2.0
Marital status (N=1,325)		
Single	43.5	40.7-46.3
Fixed man partner	22.0	19.7-24.5
Fixed woman partner	24.5	22.1-27.2
Married	10.0	8.4-11.9
Occupation before being arrested (N=1,321)		
Did not work before being arrested	22.7	20.5-24.8
Service and trade worker	25.4	23.0-27.7
Domestic service worker	23.7	21.4-25.9
Poorly specified occupations informal work	9.0	7.4-10.5
Artisan	5.3	4.0-6.5
Administrative services worker	2.7	1.8-3.5
Agricultural worker, hunting and fishing forestry	1.9	1.1-2.6
Another	9.3	8.8-9.8
Have children (N=1,316)		
No	18.5	16.4-20.5
Yes	81.5	79.4-83.5

N: observed values; [1]%: Weighted estimate; 95%CI: Confidence Interval.

Source: Authors.

Discussion

Infectious diseases and their main risk factors

Infectious diseases, especially HIV/AIDS, have been the most studied health issues among prisoners worldwide during the past 30 years[16]. This study found a high prevalence of infectious diseases. Social marginalization, illicit drug de-

pendence, unprotected sex with multiple partners, tattooing, low socioeconomic status and poor health system conditions are factors that facilitate the high dissemination of these diseases among prisoners[23].

An important fact is that the feminization of the HIV/AIDS epidemic can also be verified within the prison system. The rate of HIV infection among women is higher when compared to men in prisons[8]. In addition, wives who reported having a fixed partner had a higher prevalence than single women, which may indicate HIV transmission from their partners[24].

We call attention to a probable interaction between gender and history of having been arrested in this population. While men were at increased risk of being exposed to HCV among those who were never arrested, among those with a history of incarceration the prevalence of HCV was higher among women. Contextual variables, such as the exchange of sex for money or drugs may explain this difference[25].

The prevalence of leprosy and tuberculosis (TB) in this study was 7.4% and 0.9%, respectively. The low prevalence of TB found in this study may reflect the advances in the fight against TB in Brazilian prisons and the lower rates of overcrowding of female prisons compared to male prisons in Brazil. Nevertheless, this can have negative consequences, both at the prison level and across the community, in view of the rotation of prisoners in the units and the flow of people out of the system[26]. These individuals are not totally isolated by the walls that surround them; the bond with the outside world is through contact with his visits and with the prison system's staff[27]. In addition, they can also relate to the community in the fulfillment of the sentence in a semi-open regime, in the pardons and in the fugues or in the return to freedom after the sentence is fulfilled. This is why early detection and treatment of TB cases is so important.

Thus, prisons can act as an aggravating factor in three scenarios: 1) prisoners are a closed community and there is a high risk of cases among inmates; 2) spreading the infection to other people inside the prison during their stay there; and 3) dissemination to the community when they are released[28].

Despite the pace of the fall, leprosy persists as a public health problem in some developing countries. Among them, Brazil stands out as the only country in Latin America that has not reached the goal of eliminating this endemic disease[29]. Prisons are one of several obstacles that

Table 2. Prevalence of diseases and health risk factors among women prisoners in Brazil, 2020.

Variables	%[1]	95%IC
Perception of health status (N=1,322)		
Very well/well	60.3	57.5-63.0
Regular/Poor/Very poor	39.7	36.9-42.5
Infectious diseases		
HIV (N=1,288)	2.3	1.6-3.2
Syphilis (N=1,115)	11.7	9.9-13.8
Hepatitis B (N=1,288)	0.3	0.1-0.9
Hepatitis C (N=1,288)	1.9	1.3-3.0
Have symptoms de ITD	51.8	48.9-54.6
Tuberculosis (N=1,269)	0.9	0.5-1.7
Leprosy (N=1,322)	7.4	6.1-9.0
Risk factors for infectious diseases		
Have good knowledge about HIV transmission (N=1,327)	36.3	33.6-39.0
Condom used with every partner in the last 12 months before were arrested to prison (N=453)	9.6	7.2-12.8
Chronic diseases and conditions		
Cardiovascular diseases (N=1,230)	6.2	4.9-7.9
Arterial Hypertense (N=1,293)	24.2	21.9-26.7
Diabetes (N=1,221)	3.0	2.2-4.2
Asthma (N=1,310)	20.1	17.9-22.6
Stroke (N=1,312)	1.4	0.8-2.3
Cancer (N=1,298)	2.2	1.5-3.3
Risk factors for chronic diseases and conditions		
Hypercholesterolemia (N=1,152)	6.0	4.7-7.6
Smoker (N=1,324)	55.8	53.1-58.5
Ex-smoker (N=1,324)	15.0	13.1-17.1
Passive smoker (Only no smokers, N=562)	62.3	59.5-65.0
Alcohol use (N=1,262)		
Low risk	20.2	17.9-22.7
High risk	17.3	14.9-19.5
Lifetime illicitly drug use (N=1,325)	72.3	69.6-74.7
Sedentarism (N=1,312)	92.1	90.4-93.6
Unhealthy eating (N=1,318)	92.1	90.4-93.6
Overweight	34.5	31.7-37.3
Obesity	26.3	23.8-29.0
Sexual violence suffered before were arrested to prison (N=1,320)	29.9	27.3-32.6
Violence suffered in Prison		
Moral violence(N=1,297)	41.6	38.9-44.4
Psychology violence (N=1,292)	43.2	40.4-45.9
Mild physical violence (N=1,327)	52.2	49.5-54.9
Severe physical violence (N=1,327)	36.4	33.8-39.0
(N=1,327)	28.3	25.8-30.8
Sexual violence (N=1,324)	16.5	14.6-18.8
Mental health		
Common mental disorders (N=1,319)	64.2	61.5-66.9

N: observed values; [1]%: Weighted estimate; 95%CI: Confidence Interval.

Source: Authors.

must be considered in Brazil's fight against leprosy given the high prevalence of this disease found in this study.

Chronic diseases and their major risk factors

Approximately 50% of prisoners have some chronic health condition and the major modifiable risk factors for chronic diseases are a public health problem for prisoners around the world[30,31]. Important gender inequalities exist, as female prisoners are more likely to be overweight and obese than the general population of similar age and gender[32]. It is believed that weight gain, in most cases, occurs within prisons. Women increase their body mass index by about 5 points (BMI) and, consequently, have a BMI almost eight times higher than men[32,33].

Prisoners are significantly more affected by risk factors for cardiovascular disease than the general population, such as poor diet, lack of exercise, and stress[34,35]. In addition, women are still more likely to have one of these factors when compared to men[36]. Hypertension is one of the most important factors in determining these diseases, and was identified in 24.2% of the women in the study[37]. This prevalence was the same as that found among women of the general population in Brazil[38]. Taking into account that the women in our study had a mean age lower than the study conducted in the general population, it is believed that hypertension may occur earlier in this population.

Mental health

A systematic review about common mental disorders (CMD) with studies published between 1980 and 2013 identified a CMD prevalence of 32% in the world's female population[39]. This result is well below the estimated prevalence of common mental disorders in this study (64.2%) and in other countries[40,41]. Gender is one of the factors most associated with the prevalence of common mental disorders. Men were 35% less likely to report or suffer from mental illness compared to women[40].

Violence

Research indicates that the female prison population experiences more severe and frequent interpersonal violence during their life compared to the female population in general[9,42,43]. In this study, nearly 30% of women reported having suffered sexual violence before being arrested. This violence is found within the penal institutions that should function as a rehabilitation environment.

If a traumatic event, such as sexual abuse, occurs in infancy, the impact of this event has a strong potential to generate adverse health outcomes and a 40% increase in the chances of mental health treatment in adulthood[44].

In addition, studies point to a significant correlation between the incarcerated experiencing episodes of violence, with emphasis on sexual violence during some stage of life, and her violent behavior[45]. Therefore, there is a possibility that prisoners who are victims of violence are more vulnerable to repeated violent experiences in adult life[46]. These data bring visibility to the issue of female incarceration and show a hidden side of the reality of these women's lives, revealed in a universe of violence suffered and perpetrated[45,47].

Beyond physical issues, structural violence in marginalized communities, the role of class and ethnicity as precursors to imprisonment of these women, the dehumanization and abuse that takes place in prisons, the loss of rights and stigma are factors that appear amplified when they are in prisons[48]. Gender issues in the treatment of women's crime are manifested in different spheres. They begin in the penal system, which reflects a predominant patriarchal and androcentric tradition in society.46 What's more, the system maintains the discriminatory aspects that hinder women's emancipation, contributing to the consolidation of a culture that appropriates the body and identity of women as if they were public spaces for discussion.

The restriction of intimate visits for female prisoners is another aspect that deepens the institutionalized gender violence. Although intimate visits were a guaranteed right for the subjects incarcerated in the Brazilian prison system, in our study, only 10.0% reported receiving visits. Most female prisons prohibit women from enjoying this right, while this is not true for men[49].

Limitations and conclusions

The research presented important operational and financial difficulties. Municipalities and states organize prisons locally, and the Federal Ministry of Justice has relatively little influence in day-to-day operation or policies and practices related to research. Although the Ministry of

Justice commissioned the search, access to many penitentiaries was very difficult. Some units refused to participate or withdrew at the last minute. This generated important delays and additional costs that reduced the size of the study and affected its representativeness.

Women living in Brazilian prisons primarily come from poor communities with poor and declining access to diagnostic and treatment services. There is a need for an effective surveillance system within the prison aimed at early diagnosis and treatment for the most diverse health issues that disproportionately affect this population. Prisons present an important venue to affect health and disease, not only for their ability to amplify disease, but also through providing a venue to reach potential patients for a range of infectious, chronic and behavioral issues that may be more difficult to treat in this population outside of prison. Recognizing female prisoners' roles as mothers and wives and the number of people dependent on them, the need to address health issues in prison is even more important. Currently, to the extent these services are provided they are primarily built on male models, with little attention to reproductive health or appropriate diets, for example. At a minimum providing regular and accurate health, surveillance for prisoners and prison staff is a national imperative.

Collaborations

M Leal, L Kerr and C Kendall conceived the paper. M Leal, L Kerr and RMS Mota developed the analysis plan. M Leal and RMS Mota carried out the analysis and wrote the initial draft of the manuscript. C Kendall, RJ Pires Neto and D Seal contributed to the analysis and interpretation of results. All authors reviewed earlier versions of the draft and approved the final manuscript.

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