Cogitare Enfermagem

ORIGINAL ARTICLE

HIV, syphilis, hepatitis B and C, among women deprived of liberty: prevalence and associated factors*

HIGHLIGHTS

1. Recognition of the female prison population affected by infections.
2. Pathway pointing for assistance in infection control.
3. Make the diagnostic and treatment itinerary effective.
4. Identification of demands and planning of future actions.

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Abstract

Objective: Check the prevalence of infections by HIV, hepatitis B and C, and syphilis, and analyze the associated factors in women deprived of liberty in a municipality in Minas Gerais - Brazil. **Method**:Census conducted between September 2021 and January 2022 with the incarcerated female population, through interviews, rapid tests, collection of confirmatory exams, and referrals. Bivariate and multivariate logistic regression analysis was performed. **Results**: Out of 206 women, 171 (83%) were screened. Of these, 57 (33.3%) were reactive for some of the infections; subsequently, 20.5% (n=35) confirmed the seroprevalence. Syphilis was the most prevalent infection. In the multivariate analysis, the significant variables were low education and violence inside or outside the prison system. **Conclusion**: A positive outcome for some of the infections was associated with lower levels of education, exposure to violence, and a history of infectious diseases. These findings point to ways for effective monitoring through appropriate tracking, diagnosis, and treatment.

Keywords: Deprived of Liberty Population; HIV Seropositivity; Syphilis; Hepatitis B; Hepatitis C.

HOW TO REFERENCE THIS ARTICLE

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INTRODUCTION

The Deprived of Liberty Population (DLP) is estimated to be at high risk for acquiring infections related to confinement conditions; among these infections are sexually transmitted infections, viral hepatitis B and C, HIV, syphilis, and tuberculosis1. They amplify the severity with which they affect certain population groups and the difficulty accessing appropriate treatment2. Prison testing routine needs to be expanded to promote prevention for a population with limited access3.

The increase in the rates of female incarceration and the invisibility of imprisoned or formerly incarcerated women justify the need to understand their situation in Brazilian prisons, especially related to conditions of vulnerability and illness since we have a prison system designed and focused on men4-7. It is also justified by the need for studies in the field of nursing knowledge that can give visibility to sexually transmitted infections, especially when these impact minority groups and/or those in vulnerable situations, to prevent infections from exacerbating the vulnerabilities of these groups due to difficulties in accessing goods and services.

Women face a multifactorial context of vulnerability, including limited access to health goods and services, sexual violence, and distorted perceptions about the risk and transmission of infections8-9.

A report from the National Penitentiary Department10 indicates that 1,204 women deprived of liberty have transmissible diseases, with 46.9% having HIV, 35% syphilis, 6.8% hepatitis, and 4.8% tuberculosis. The hypothesis is that the occurrence of these infections among the female DLP in the municipality of Juiz de Fora/Minas Gerais is also significant, and some factors are associated with positivity for these infections. In light of the above, the objective was to verify the prevalence of infections by HIV, hepatitis B and C, and syphilis and to analyze the associated factors in women deprived of liberty in a municipality in Minas Gerais, Brazil, to make the screening, early identification, and timely treatment of existing cases and their co-infections among women in the prison context more effective.

METHOD

This is a census of all the female DLP in the municipality of Juiz de Fora/Minas Gerais between September 2021 and January 2022. Interviews were conducted, rapid tests for screening infections were performed, and counseling (pre and post-tests) was provided. Confirmatory tests were also collected and referred to the municipality's reference service when necessary.

The direction of the study followed the guidelines of the initiative Strengthening the Reporting of Observational Studies in Epidemiology – Strobe11, whose items were developed by researchers in the fields of epidemiology, statistics, and research methodology, as well as editors of various scientific journals12.

Minas Gerais has the second largest prison population in the country, and Juiz de Fora has one of the highest facilities and the largest concentration of inmates, considering the other regional units of the state13, including the women's prison annex.

As inclusion criteria, all women detained in the women's prison annex aged 18 years or older could participate. As exclusion criteria, women who entered the prison system after the initial list provided by the penitentiary for the research were absent from the penitentiary during the data collection period.

Out of 206 women, 171 (83% of the population) accepted the invitation to participate in the screening phase with the rapid tests. The women who tested positive in the screening were referred for confirmatory test collection. Seven (12.2%) were considered as loss due to refusal, transfer, or being in treatment at the HIV treatment service.

To ensure the tracking of all the secured individuals, the population was recruited at the moment they were escorted to some type of service in the health center or in the pavilion by cell, based on a nominal list provided by the administration of the Prison Unit, respecting criteria of organization, security, availability of prison agents to escort them, and, mainly, the consent of these women to participate in the research. Women who consented to participate were escorted to a cell for the appointment with the researchers (nurses trained by the municipality's testing service).

The consultation and collection were conducted in a private location, preserving the individuality of the women and maintaining confidentiality and privacy regarding their statements and results. In this sense, even though there were security issues involved, the person in charge of the team of prison agents was asked to allow the researchers to be alone with the women in a private room - health center or in the pavilion itself - to maintain the confidentiality of the data and results, as advised by the screening protocol for transmissible infections. This conduct was followed in all consultations, even though some needed to be handcuffed, considering the danger reported by the agents.

In the service, they were subjected to an interview (face to face), with a moment of pre-counseling, using a structured script. The script was built based on the national protocol for investigating and controlling infectious diseases14 and protocols for surveillance and controlling prevalent infectious diseases in Brazil15, seeking to consider the context of vulnerability to which women in deprivation of liberty would be subjected. Next, they were invited to take the rapid tests. The tests are based on the immunoassay and qualitative antibody detection techniques.

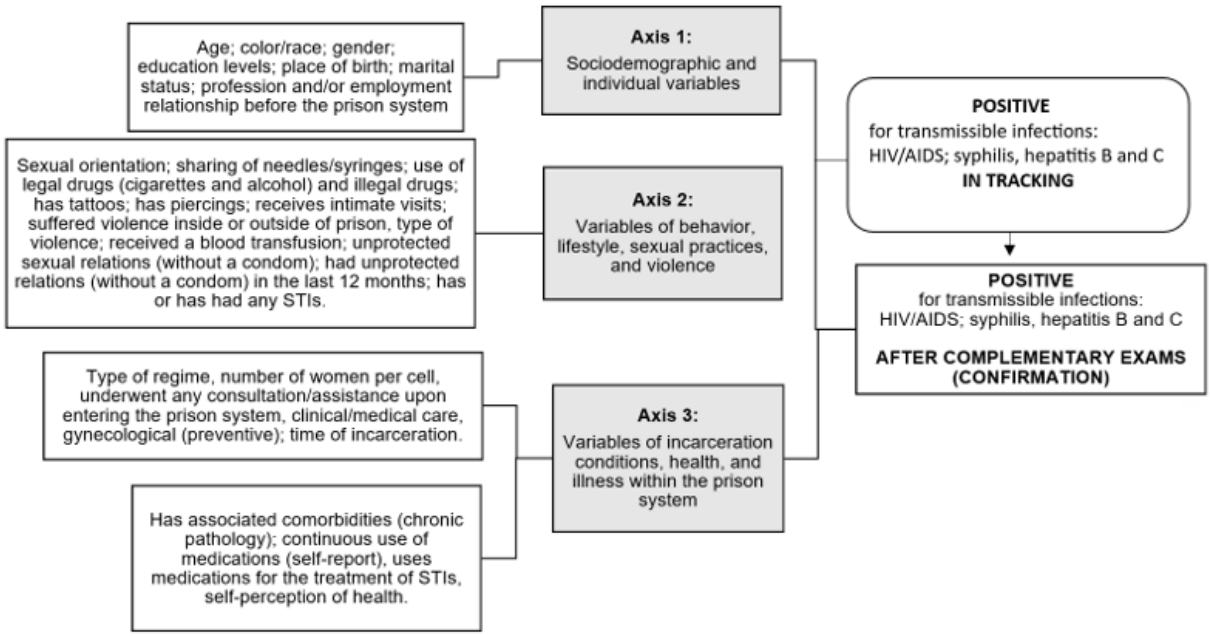
In the case of positive rapid test result reports, in consensus with the women deprived of liberty, this report was attached to their medical records in the health unit. It was clarified that it was a confidential document, just like the data in their medical record. Only they and/or the health professionals would eventually have access in case of treatment or referral. It is emphasized that this position was reached by consensus, as it was recurrent for the detainees to report feeling embarrassed about bringing the "reports" with results into the cell, fearing risks to confidentiality and prejudice in the case of positive results.

In addition, in situations where the woman deprived of liberty tested positive "reactive" for HIV/AIDS, hepatitis B and C, and syphilis after screening, they were advised and referred for a complementary test, such as infections that required confirmation or with an indeterminate result. Confirming the positive result, the precautionary measure was referred for treatment at the prison health center or the reference service for monitoring and treatment. Referrals to the reference service external to the prison required scheduling or transportation with an escort to the Unified Health System (SUS) services.

The adapted interview script consisted of questions about the profile, health condition and illness, access to health goods and services within the system, behavioral

data, and routine in the prison system. Based on these questions, a theoretical model with three axes of groups was proposed (Figure 1).

Figure 1 - Representative diagram of the variables - Transmissible infections. Women's prison system in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023



Source: Authors (2023)

The software IBM Statistical Package for Social Sciences (SPSS), version 29.0, was used for data analysis. Initially, the data were subjected to descriptive analysis to obtain the variables' absolute and relative frequency measures. Subsequently, association measures were taken between the characteristics/variables of the female incarcerated population and the positivity outcomes for the diseases under investigation in this study.

Quantitative variables were analyzed according to their means or medians by parametric or non-parametric tests (according to the distribution pattern). Proportion comparisons were made using the chi-square test, adjusted by Fisher's test when necessary. Association measures (odds ratio) were obtained raw and adjusted by logistic regression to build prediction models with control of confounding variables. In the bivariate and multivariate analysis of logistic regression, controls of the variables were performed, adopting a significance level of 5% ($p \leq 0.05$).

This study was approved by the Research Ethics Committee of the Universidade Federal de Juiz de Fora (UFJF) under Opinion 3.784.839 of 12/19/2019. Presented to the Ministry of Justice of the State of Minas Gerais by the State Secretary of Justice and Public Security (formally approved) of Minas Gerais - Sejusp/MG and to the Health Department of the municipality and authorized the execution.

RESULTS

Between 2014 and 2020, 7,201 cases of TB were reported in the state of Mato Grosso amoOut of 206 women, 171 (83%) were screened with rapid immunochromatographic tests, resulting in 57 (33.3%) with reactive serology for some of the infections. In the confirmatory stage of the tests, 20.5% (n=35) confirmed positivity for any of the infections. The prevalence of HIV was 7% (n=12) in the confirmatory stage; syphilis 12.9% (n=22); hepatitis C had a prevalence of 2.9% (n=five) confirmed cases. No cases of hepatitis B were detected (Table 1).

Table 1 – Prevalence of HIV, syphilis, and hepatitis B and C in the female population deprived of liberty in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023

Female population of the study (n=171)	Tracking		Confirmatory	
	n	%	n	%
HIV[a]	12	7,0	12	7,0
Syphilis[b]	51	29,8	24	14,0
Hepatitis B	0	0,0	0	0,0
Hepatitis C[c]	8	4,7	5	4,0
Some STI (combined)				
HIV+ Hepatitis	2	1,2	2	1,2
HIV+ Syphilis	2	1,2	2	1,2
HIV+Syphilis+Hepatitis C	1	0,6	1	0,6
Has any of the STIs	57	33,4	35	19,9

IST Sexually transmitted infection

[a] In the investigation of the infection, a new case (incidence) was detected during the screening tests.

[b] In the investigation of the infection, 25 cases had a history of the disease (self-report), with the diagnostic confirmation indicated in a complementary test (non-treponemal).

[c] In the investigation of the infection, five cases had a history of the disease (self-report), with the diagnostic confirmation indicated in a complementary exam.

Source: Authors (2023)

Regarding the description of the female population in the study, Table 2 presents the main characteristics of the female population positive for any of the infections. Among them, the age ranging from 18 to 63 years, with an average of 32 years and a median of 34 years, predominant color/race black, 84.2% (n=48); low education, at most up to eight years of study, 64.9% (n=37); native to the system's own headquarters, 47.4% (n=27); and self-declared single or without a partner, 50.9% (n=29); without ties/occupation, 63.2% (n=36), before imprisonment.

Table 2 – Characterization of women deprived of liberty with a positive outcome for any of the infections: HIV, syphilis, hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023 (continue)

Variable (sample n=171)	Positive outcome for infections			
	Tracking		Confirmatory	
	n	%	n	%
Age				
From 18 to 26 years old	11	19,3	9	25,7
From 27 to 32 years old	15	26,3	10	28,6
From 33 to 40 years	17	29,8	8	22,9
Above 40 years	14	24,6	8	22,9
Color/race				
White	9	15,8	4	11,4
Black or Brown	48	84,2	31	88,6
Yellow	0	0,0	0	0,0
Gender				
Cisgender	55	96,5	34	97,1
Transgender	2	3,5	1	2,9
Education				
Up to 8 years of study	37	64,9	23	65,7
From 9 to 11 years of study	11	19,3	4	11,4
12 years or more of study	7	12,3	6	17,1
Does not know/Did not want to inform	2	3,5	2	5,7
Nationality				
Prison system headquarters (JF)	27	47,4	20	57,1
Outside of JF, other cities within MG	23	40,4	12	34,3
Outside of MG	6	10,5	2	5,7
Outside of Brazil	0	0,0	0	0,0
Does not know/did not want to inform	1	1,8	1	2,9
Marital Status				
Without a partner	29	50,9	19	54,3
With companion	27	47,4	15	42,9
Does not know/did not want to inform	1	1,8	1	2,9
Profession/link before imprisonment				
Had a bond	12	21,1	7	20
Did not have a bond	36	63,2	21	60
Does not know/Did not want to inform	9	15,8	7	20
Sexual orientation				
Heterosexual	46	80,7	32	91,4
Homosexual	4	7	1	2,9
Bisexual	5	8,8	0	0,0
Asexual	2	3,5	2	5,7

Table 2 – Characterization of women deprived of liberty with a positive outcome for any of the infections: HIV, syphilis, hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023 (continue)

Variable (sample n=171)	Positive outcome for infections			
	Tracking		Confirmatory	
	n	%	n	%
Needle and/or syringe sharing				
Yes	7	12,3	5	14,3
No	42	73,7	25	71,4
Does not know/Did not want to inform	8	14	5	14,3
Use of legal drugs (cigarette)				
Yes, I am currently using it.	48	84,2	30	85,7
I have never used	8	14	4	11,4
I have used it, but at the moment I am not using it.	1	1,8	1	2,9
Use of legal drugs (alcohol)				
Yes, I am currently using it.	4	7	2	5,7
I have never used	25	43,9	17	48,6
I have used it, but at the moment I am not using it.	28	49,1	16	45,7
Crack use				
Yes, I am currently using it.	3	5,3	3	8,6
I have never used	26	45,6	15	42,9
I have used it, but at the moment I am not using it.	28	49,1	17	48,6
Has a tattoo				
Yes	47	82,5	28	80
No	9	15,8	6	17,1
Does not know/Did not want to inform	1	1,8	1	2,9
Has a piercing				
Yes	29	50,9	20	57,1
No	26	45,6	14	40
Does not know/Did not want to inform	2	3,5	1	2,9
Receives intimate visit				
Yes	1	1,8	0	0,0
No	55	96,5	34	97,1
Does not know/Did not want to inform	1	1,8	1	2,9
Suffered violence inside or outside of prison (last 12 months)				
Yes	39	68,4	25	71,4
No	18	31,6	10	28,6

Table 2 – Characterization of women deprived of liberty with a positive outcome for any of the infections: HIV, syphilis, hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023 (continue)

Variable (sample n=171)	Positive outcome for infections			
	Tracking		Confirmatory	
	n	%	n	%
Have any unprotected intercourse in the last 12 months				
I have and/or have had	35	61,4	22	62,9
No	19	33,3	12	34,3
I don't know/ I don't want to answer	3	5,3	1	2,9
Have/had any infectious disease				
I have and/or have had	32	56,1	21	60
No	24	42,1	13	37,1
I don't know/ I don't want to answer	1	1,8	1	2,9
Incarceration regime				
Closed	14	24,6	8	22,9
Semi-open and open	19	33,3	12	34,3
Temporary	24	42,1	15	42,9
Number of women residing in the cell				
From 8 to 20 women	18	31,6	12	34,3
21 to 24 women	11	19,3	5	14,3
25 to 31 women	15	26,3	12	34,3
Above 31 women	11	19,3	6	17,1
Does not know/Did not want to inform	2	3,5	0	0,0
When he/she entered the unit, he/she went through some care.				
Yes	42	73,7	22	62,9
No	11	19,3	10	28,6
Does not know/Did not want to inform	4	7	3	8,6
Did you receive medical assistance?				
Yes.	41	71,9	22	62,9
I did not receive any service.	16	28,1	13	37,1
Received gynecological consultation				
Yes	2	3,5	1	2,9
I didn't receive	55	96,5	34	97,1
How long have you been incarcerated?				
0.50 to 3.84 months	13	22,8	11	31,4
3.85 to 20 months	32	56,1	19	54,3
20.01 to 336 months	12	21,1	5	14,3

Table 2 – Characterization of women deprived of liberty with a positive outcome for any of the infections: HIV, syphilis, hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023 (conclusion)

Variable (sample n=171)	Positive outcome for infections			
	Tracking		Confirmatory	
	n	%	n	%
Do you have any non-communicable chronic disease?				
Yes	23	40,4	11	31,4
No	32	56,1	23	65,7
Does not know/Did not want to inform	2	3,5	1	2,9
Uses medications for STIs				
Yes, I make use	9	15,8	9	25,7
No, I don't use it.	47	82,5	26	74,3
I don't know/I don't want to inform	1	1,8	0	0,0
Uses medications that act on the Central Nervous System				
Yes, I make use	34	59,6	17	48,6
No, I don't use it.	22	38,6	18	51,4
I don't know/I don't want to inform	1	1,8	0	0,0
I would say that your health is?				
Excellent	6	10,5	4	11,4
Very good	5	8,8	4	11,4
Good	31	54,4	17	48,6
Regular	8	14	6	17,1
Bad	7	12,3	4	11,4

Source: Authors (2023)

The largest share of the insured reported not sharing needles and/or syringes, 73.7% (n=42), but they use legal drugs such as cigarettes, 84.2% (n=48); alcoholic beverages, 49.1% (n=28) and illegal drugs, with crack being the main self-reported, 49.1% (n=28). The presence of tattoos is expressive in 82.5% (n=47) of women, and piercings in 50.9% (n=29) of them. When asked about the use of condoms, 40.4% (n=23) stated "that they never use them" and 61.4% (n=35) have had some unprotected relationship (without a condom) in the last 12 months. Regarding the characteristics related to their health condition, 80.7% (n=46) use continuous medications, mainly those that act on the central nervous system, 59.6% (n=34). Almost the entire sample reports not having received at least one consultation directed to women's health (gynecological), 96.5% (n=55), yet 54.4% (n=31) perceive their health as "good."

Table 3 presents the bivariate analysis between the variables, considering the positive outcome for any infection in screening and confirmation.

Table 3 – Bivariate analysis between the characteristics of the female population about positive outcomes in screening tests and confirmatory exams for HIV, syphilis, and hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023

(continue)

Variable (sample n=171)	Positive outcome for infections					
	Tracking			Confirmatory		
	OR RAW	IC95%	p value	OR RAW	IC95%	p value
Age						
Up to 32 years	0,67	0,35;1,28	0,234	1,12	0,53;2,35	0,766
More than 32 years	1			1		
Color/race						
White	0,63	0,27;1,46	0,284	0,43	0,14;1,33	0,137
Black or brown	1			1		
Gender						
Cisgender	0,32	0,26;0,40	0,044	0,25	0,01;4,13	0,298
Transgender	1			1		
Education						
Up to 8 years of study	2,97	1,16;7,57	0,019	1,73	0,63;4,72	0,280
From 9 to 11 years of study	1,17	0,40;3,43	0,764	0,43	0,11;1,67	0,217
12 years or more of study	1			1		
Nationality						
At the headquarters of the prison system	2,03	0,68;6,02	0,196	4,73	0,99;22,4	0,036
Outside of JF, other cities in Minas Gerais	0,77	0,26;2,25	0,644	1,35	0,27;6,56	0,709
Fora de Minas Gerais	1			1		
Marital Status						
Without a partner	0,56	0,29;1,08	0,086	0,76	0,35;1,64	0,498
With companion	1			1		
Profession/link before imprisonment?						
Yes, I had	0,47	0,22;0,99	0,047	0,48	0,19;1,20	0,115
No, I didn't have	1			1		
Sexual orientation women						
Heterosexual	0,37	0,29;0,46	0,069	0,25	0,19;0,34	0,019
Homosexual	0,21	0,08;0,50	0,019	0,05	0,00;0,35	<0,001
Bisexual	0,19	0,08;0,42	0,011	-*	-*	<0,001
Asexual	1			1		
Needle and/or syringe sharing						
Yes	3,54	0,98;12,7	0,042	3,40	0,96;12,0	0,047
No	1			1		

Table 3 – Bivariate analysis between the characteristics of the female population about positive outcomes in screening tests and confirmatory exams for HIV, syphilis, and hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023

(continue)

Variable (sample n=171)	Positive outcome for infections					
	Tracking			Confirmatory		
	OR RAW	IC95%	p value	OR RAW	IC95%	p value
Use of cigarette						
Yes, I am currently using and/or have used it.	2,31	0,98;5,43	0,050	2,71	0,89;8,23	0,069
I have never used	1			1		
Alcohol use						
Yes, I am currently using and/or have used it.	0,78	0,41;1,50	0,466	0,64	0,30;1,35	0,245
I have never used	1			1		
Crack use						
Yes, I am currently using and/or have used it.	5,89	2,87;12,0	<0,001	4,66	2,13;10,2	<0,001
I have never used	1			1		
Do you have a tattoo?						
Yes	0,91	0,38;2,20	0,844	0,80	0,29;2,19	0,670
No	1			1		
Do you have a piercing?						
Yes	0,90	0,47;1,72	0,756	1,25	0,58;2,67	0,566
No	1			1		
Do you receive intimate visits?						
Yes	0,27	0,03;2,31	0,280	1,26	1,16;1,37	0,147
No	1			1		
Have you experienced violence inside or outside of prison (in the last 12 months)?						
Yes	2,97	1,52;5,82	0,001	2,98	1,33;6,68	0,006
No	1			1		
Have you ever received a blood transfusion?						
Yes	0,96	0,38;2,42	0,947	1,32	0,48;3,62	0,587
No	1			1		
Use of the condom						
No, I never use	0,48	0,21;1,10	0,082	0,56	0,21;1,44	0,226
I rarely use	0,98	0,30;3,16	0,973	1,63	0,47;5,70	0,437
Sometimes I use	0,90	0,30;2,61	0,847	1,01	0,32;3,50	0,925
I often use	1			1		
Have you had any unprotected intercourse in the last 12 months?						
Yes	1,45	0,74;2,85	0,273	1,36	0,62;2,99	0,431
No	1			1		

Table 3 – Bivariate analysis between the characteristics of the female population about positive outcomes in screening tests and confirmatory exams for HIV, syphilis, and hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023

(continue)

Variable (sample n=171)	Positive outcome for infections					
	Tracking			Confirmatory		
	OR RAW	IC95%	p value	OR RAW	IC95%	p value
Did you have any infectious disease?						
No	0,03	0,01;0,09	<0,001	0,08	0,03;0,19	<0,001
Yes, I have and/or have had	1			1		
Type of incarceration						
Closed	1,04	0,53;2,03	0,909	0,98	0,44;2,14	0,959
Semi-open and open	1			1		
Women who reside with you in the cell						
Up to 24 women	1,0	0,56;2,05	0,828	0,86	0,40;1,81	0,692
More than 24 women	1			1		
When he/she entered the prison unit, did he/she receive any health care?						
Yes	1,39	0,63;3,06	0,403	0,66	0,28;1,56	0,351
No	1			1		
You received a medical consultation						
Yes, I received it.	1,0	0,49;2,02	1,000	0,58	0,26;1,28	0,180
I didn't receive	1			1		
You received a gynecological consultation.						
Yes, I received it.	0,79	0,14;4,21	0,785	0,63	0,07;5,47	0,679
I didn't receive	1			1		
Have you been convicted?						
I have already been convicted	0,77	0,40;1,47	0,442	0,93	0,44;1,97	0,857
I have not yet been convicted	1			1		
Time of incarceration						
Up to 11 months	1,50	0,79;2,85	0,213	2,49	1,13;5,49	0,021
More than 11 months	1			1		
Do you have any non-communicable chronic disease?						
Yes	0,69	0,36;1,33	0,270	0,44	0,20;0,98	0,042
No	1			1		

Table 3 – Bivariate analysis between the characteristics of the female population about positive outcomes in screening tests and confirmatory exams for HIV, syphilis, and hepatitis B and C in Juiz de Fora, Minas Gerais, 2021/2022. Juiz de Fora, Minas Gerais, Brazil, 2023

(conclusion)

Variable (sample n=171)	Positive outcome for infections					
	Tracking			Confirmatory		
	OR RAW	IC95%	p value	OR RAW	IC95%	p value
Does it use continuous medication (self-report)?						
Yes	1,95	0,88;4,32	0,094	1,22	0,51;2,94	0,647
No	1			1		
Does it use medications for STIs?						
Yes, I make use	3,42	2,69;4,35	<0,001	6,19	4,35;8,80	<0,001
No, I don't use it.	1			1		
I would say that your health is?						
Excellent the good	1,89	0,94;3,80	0,071	1,50	0,66;3,37	0,325
Bad regular	1			1		

It was not possible to generate an association measure because the cross-reference table contained cells containing "zero."

Source: Authors (2023)

Women with lower education (up to eight years of study) had almost three times the chance of infections than women with 12 years or more of study (raw OR = 2.97; 95% CI 1.16-7.57; p = 0.019). Those with some type of bond or profession before incarceration had a 53% lower chance of a positive outcome for any of the infections compared to those who did not have a profession/occupation (raw OR = 0.47; 95% CI 0.22-0.99; p = 0.047). In the stage of confirmatory tests, a significant association was observed between women native to the prison system's headquarters, with almost five times the odds of an outcome for one of the infections compared to women native to other states or municipalities (raw OR= 4.76; 95% CI 0.99-22.49; p=0.036).

In Axis 2, women who share/shared needles and syringes had almost four times the chance of a positive outcome for some infection compared to those who do not share (raw OR = 3.54; 95% CI 0.98-12.77; p = 0.042), a similar association occurred in the confirmatory stage (raw OR = 3.40; 95% CI 0.96-12.04; p = 0.047). Women who reported using or having used crack had almost six times more chance of a positive outcome for infections (raw OR= 5.89; 95% CI 2.87-12.08; p<0.001), a similar association was found in the confirmatory stage (raw OR= 4.66; 95% CI 2.13-10.20; p<0.001).

Among women who report having suffered violence inside or outside of prison in the last 12 months, there is nearly three times the chance of a positive outcome for any of the infections both in the screening stage and the confirmatory stage (raw OR = 2.97; 95% CI 1.52-5.82; p=0.001) and (raw OR = 2.98; 95% CI 1.33-6.68; p=0.001).

In Axis 3, the incarceration time was significant, with women who have been in the system for less time (up to 11 months) having almost three times the chances of a positive outcome compared to those who have been for a year or more (raw OR = 2.49; 95% CI 1.13-5.49; p=0.021). Women carriers of a chronic pathology have a 56% lower chance of a positive outcome for any infections (raw OR = 0.44; 95% CI 0.20-0.98; p = 0.042).

The explanatory variables that showed p<0.05 were included in a logistic regression model, remaining significant for screening/confirmatory tests: education, place of birth, experienced violence inside or outside of prison in the last 12 months, has or has had any infectious disease.

DISCUSSION

After the adjusted multivariate analysis, the variables that remained significant indicate that lower levels of education, being a native of the municipality, having suffered violence, and already being a carrier of some transmissible infection influence the chances of occurrence for HIV, syphilis, and hepatitis C infections.

Syphilis was identified as the most prevalent infection in screening and confirmatory tests, followed by HIV and hepatitis C. Hepatitis B was not found in the investigation. Similar findings were found in a study in Roraima, Brazil9.

There have been efforts, especially in recent decades, to reduce syphilis indicators in Brazil, with an increase in diagnostic availability and rapid tests; however, they have not been sufficient to contain the spread of the infection. Sometimes, this is related to the lack of association between prevention, diagnostic methods, counseling, and appropriate treatment16-17.

Data from the Brazilian prison population indicates that about 55% are young people up to 29 years old. Regarding education, about 51% did not complete elementary school, while 4% were illiterate, and another 6% were only literate18. Only 9% of incarcerated people achieve a high school education. They are indicators that reveal the deprivation of freedom in young people with low qualifications, low income, and reduced chances of entering the job market. Moreover, the predominance of working-age young people is an important indicator of the selectivity of the penal system in the country.

The prevalence highlights the representation of the young population in prisons, while 55% of the prison population is young, in society, the young population has a representation of only 18%18-19. Authors20 point out that because they often present asymptomatically and are difficult to detect, the young population is more affected by infections21. In addition, low education levels also significantly increase the prevalence of STIs compared to women with high school or higher education.

Another significant demographic feature in this study was being a native of the region. A search of the epidemiological situation of the municipality, in the period from 2013 to 2017, reveals 418 reported cases of HIV out of a total of 12,909 cases in the state22, almost in the same period, from 2012 to 2017, 855 cases of acquired syphilis were reported, of which 50% occurred only in the year 201723-24. It can be inferred that the situation of the protected women reflects the epidemiological situation of infections in the region.

In the same way, violence triples the chances of acquiring a transmissible infection. On one hand, the increase in violence rates in Brazil would reflect the growth of the prison population25. Still, when it comes to women in prison, the context itself reflects forms of violence that worsen, such as the history of "domestic" family violence that makes them more vulnerable to sexually transmitted infections26-28. An analysis by the Pan American Health Organization and the World Health Organization29 found that

women who experienced physical or sexual violence from their partners were 1.5 times more likely to have a sexually transmitted infection, one of which is HIV.

Another aggravating factor is having a transmissible infection or having had one, which may suggest a greater likelihood of acquiring new infections. This is because they are conditions that present similar transmission mechanisms (sexual, parenteral, or vertical transmission). This association resembles studies on coinfection among women, considering similar transmission routes9. On the other hand, it is undeniable that having had or being a carrier of some infection could lead to greater access to means of prevention and health treatment/care. In a study conducted in the municipality of Belo Horizonte, Minas Gerais, Brazil30, it was observed that having a diagnosis of other STIs would have an independent association with a higher chance of HIV/syphilis co-infection, considering that prior knowledge about the factors associated with this co-infection supports the decisions of healthcare professionals involved in care, regarding appropriate diagnosis, monitoring, and treatment.

A limitation of this study relates to safety, which at various times overlaps with the provision of health care. The adapted script was also limiting, as some information was self-referential related to sexual behavior, access to services, and violence. It was potentially conflicting and even difficult to expose.

CONCLUSION

This study concludes by reiterating the importance of expanding it to the male population deprived of liberty, including other transmissible and reemerging infections, especially in the prison system, such as tuberculosis.

Infections such as HIV, syphilis, and hepatitis B and C can affect and have a greater impact on more stigmatized groups, "on the margins" of their social rights. The very condition of health and illness, with a low level of education, deprived of the freedom to navigate the municipal health network, since they are in custody, victimized and/or with a history of violence, imposes on women deprived of liberty a condition of vulnerability compared to the general population.

As contributions to Nursing, studies like this can elucidate aspects of the day-to-day of their practices, such as those related to more prevalent infections and what factors are associated with their positivity. What could also contribute to reflection and improvement in the clinical and community practice of nurses with users and populations in situations of vulnerability or with limitations in access to health services, reorienting practices for approaching these populations and managing positive cases in certain groups and scenarios, such as among women deprived of liberty.

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Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **Nascimento L, Leite ICG, Chagas DNP, Ferreira LV, Silva GA.** Drafting the work or revising it critically for important intellectual content - **Nascimento L, Leite ICG, Chagas DNP, Ferreira LV, Silva GA.** Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **Nascimento L, Leite ICG, Chagas DNP, Ferreira LV, Silva GA.** All authors approved the final version of the text.

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