

# HIV testing coverage among female sex workers, Brazil, 2016

*Cobertura de teste anti-HIV entre mulheres trabalhadoras do sexo, Brasil, 2016*

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**ABSTRACT:** *Introduction:* Knowing the factors associated with periodic HIV testing among female sex workers (FSW) is essential to expand testing coverage and to broaden programs of treatment as prevention. *Methods:* We used data from 4,328 FSWs recruited by the respondent-driven sampling (RDS) method in 12 Brazilian cities in 2016. Data analysis considered the complex sampling design. The prevalence of HIV testing in the last year and periodic HIV test were estimated. Factors associated with regular HIV testing were identified through logistic regression models. *Results:* The testing coverage in the last year was 39.3%. Only 13.5% of FSW reported having performed a periodic HIV test in the last year. Among the factors associated with the higher probability of HIV testing in the last year were a better level of education, living with a partner, working indoors, consistent use of condoms, and regular use of public and private health services stood out. *Discussion:* Periodic HIV testing allows early diagnosis and immediate treatment of cases, reducing the chances of spreading the infection to the population. However, factors such as stigma and discrimination hinder the use of regular health services. *Conclusion:* It is necessary to expand awareness campaigns, especially among FSWs with low educational level and greater vulnerability, in order to broaden the perception of risk and the importance of periodic testing, in addition to encouraging regular health care.

**Keywords:** Sex workers. RDS. HIV Serodiagnoses. Associated factors. Brazil.

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**RESUMO: Introdução:** Conhecer os fatores associados ao teste periódico de HIV no grupo de mulheres trabalhadoras do sexo (MTS) é fundamental para expandir a cobertura de testagem e ampliar os programas de tratamento como prevenção. **Métodos:** Foram utilizados dados de 4.328 MTS recrutadas pela metodologia *respondent-driven sampling* (RDS) em 12 cidades brasileiras em 2016. A análise de dados considerou o desenho complexo de amostragem. Foram estimadas as prevalências de realização do teste de HIV no último ano e do teste periódico. Através de modelos de regressão logística foram identificados fatores associados à testagem regular de HIV. **Resultados:** A cobertura de teste no último ano foi de 39,3%. Apenas 13,5% das MTS relataram ter realizado teste periódico de HIV no último ano. Entre os fatores associados à maior probabilidade de realização de teste de HIV no último ano, destacaram-se o melhor nível de instrução, o fato de morar com companheiro, trabalhar em lugares fechados, o uso consistente de preservativo, e o uso regular de serviço de saúde público e privado. **Discussão:** A realização periódica de teste de HIV possibilita o diagnóstico precoce e o tratamento imediato dos casos, reduzindo as chances de disseminação da infecção na população. Entretanto, fatores como estigma e discriminação dificultam o uso regular de serviços de saúde. **Conclusão:** É necessário expandir campanhas de conscientização, sobretudo entre as MTS de baixo nível de instrução e maior vulnerabilidade, a fim de ampliar a percepção de risco e da importância da testagem periódica, além de incentivar os cuidados regulares de saúde.

**Palavras-chave:** Profissionais do sexo. RDS. Sorodiagnóstico de HIV. Fatores associados. Brasil.

## INTRODUCTION

Despite preventive measures widely adopted in recent years to reduce the spread of the infection by the acquired immunodeficiency virus (HIV) and other sexually transmitted infections (STIs) among female sex workers (FSW), this population segment continues being disproportionately affected by HIV<sup>1</sup>.

From an epidemiological point of view, unprotected sexual practices and the multiplicity of partnerships are important determinants for a greater exposure to HIV<sup>2</sup>. In addition, other STIs act as co-factors for HIV transmission<sup>3,4</sup>. From social perspective, structural characteristics, including environment, violence, stigma, cultural contexts and contexts of illegality of sex work continue to be a crucial part in determining the risk of infection among sex workers and their clients<sup>5</sup>.

In Brazil, it is estimated that FSWs represent 0.8% of the female population between 15 to 49 years, corresponding to half a million women, approximately<sup>6</sup>. Although prostitution is not considered a crime according to Brazilian law, except if women under the age of 18 years are involved, FSWs constantly experiment discrimination, condemnatory, moralistic and punitive attitudes<sup>7</sup>, in addition to physical and sexual violence — factors that are consistently associated with adverse health outcomes<sup>8</sup>.

Since the onset of HIV/AIDS epidemic in Brazil, in the 1980s, the prevalence of HIV has remained in levels below 1% in the general population has been “concentrated”, with higher rates among key-populations, such as FSWs<sup>9</sup>. The prevalence rate of HIV for FSWs was estimated in some researches conducted in the country<sup>10,11</sup>,

being always much higher than the general female population<sup>12</sup>. A review and meta-analysis study<sup>13</sup> jointly investigated 8 Brazilian researches, totaling 3,625 female sex workers. The combined prevalence was estimated in 5.1%. In a biological and behavioral survey conducted in 10 Brazilian cities, in 2009, the prevalence of HIV was estimated in 5%<sup>14</sup>, and in a survey of 2016, performed with similar methodology, the prevalence of HIV remained in the same level<sup>15</sup>.

Currently, periodic HIV testing is a public health priority, especially among key-populations, such as FSWs, and the Ministry of Health recommends that it should be performed with a semiannual periodicity<sup>16</sup>. According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), the 90-90-90 target establishes that, until 2020, 90% of all people living with HIV should know their serological status, 90% of all people with HIV diagnosis should receive antiretroviral treatment, and 90% of all the people receiving antiretroviral treatment should reach suppression of viral load<sup>17</sup>.

In this sense, the HIV test constitutes the gateway to HIV prevention and treatment, since it allows the early identification and treatment of the cases, reducing the negative impact of the disease on the individual, and it is strategic for prevention, since it decreases the chances of new infections<sup>18</sup>. However, although the access to testing has increased in recent years, regular HIV tests in the high-risk populations continue to be a challenge in several countries. To know the factors associated with periodically getting tested for HIV test is fundamental to expand testing coverage and to expand treatment as prevention programs (TasP)<sup>19</sup>.

This study aims to estimate the prevalence of last year HIV testing and periodic testing, and to investigate factors associated with HIV testing coverage in the last 12 months among FSWs in Brazil.

## METHODS

In Brazil, in 2016, a biological and behavioral survey was conducted using the respondent-driven sampling (RDS) methodology to recruit FSWs, in order to estimate the prevalence rate of HIV, syphilis and hepatitis B and C; and to identify knowledges, attitudes and practices related to infection by HIV and other SDIs.

The survey was conducted in 12 Brazilian cities (Manaus, Belém, Fortaleza, Recife, Salvador, Belo Horizonte, São Paulo, Rio de Janeiro, Campo Grande, Brasília, Curitiba and Porto Alegre), chosen by the Departamento de Vigilância, Prevenção e Controle das IST, Aids e Hepatites Virais (DIAHV – Department of Surveillance, Prevention and Control of STIs) both for geographic criteria and by its relevance in the HIV/AIDS epidemic in the country. In each city, the minimum sample size was established at 350 FSWs.

Women were considered eligible to participate in the study based on the following inclusion criteria: being a woman (gender biologically determined at birth); being 18 years old or older; having had commercial sex in the last 4 months prior to the research; having accepted to participate in the study; having a valid invitation for the research.

In each of the 12 cities, 5 to 10 seeds were selected, non-randomly, after formative qualitative research. Each seed received 3 coupons to distribute to other FSWs within their social network. After participating in the interview, each participant also received 3 coupons to distribute to their peers, and this process was repeated until the sample size was reached in each city. We used primary (snacks, giveaways and reimbursement of transport) and secondary incentives, for the recruitment of other participants.

The socio-behavioral questionnaire was composed of closed multiple choice questions and included the following topics: sociodemographic and sex work characteristics; knowledge about HIV transmission and other STIs; social support and access to educational and preventive materials; HIV, syphilis, and hepatitis B and C testing; health status, health assistance and sexually transmitted diseases; violence; sexual behavior with fixed partners and clients; and use of alcohol and drugs.

HIV, syphilis, hepatitis B and C testing was performed through quick standardized tests, using peripheral venous blood collection, according to the protocols recommended by the Brazilian Ministry of Health<sup>4</sup>.

For data analysis, the complex sampling design of the recruitment by RDS was considered, also considering the dependence between the observations, resulting from the recruitment chains, and the unequal selection probabilities, due to the different network sizes of each participant. Each city composed a stratum and, in each city, weighting was inversely proportional to the size of the network, totaling the size of the stratum. In order to consider the homophilia effect—that is, the tendency of one participant to recruit peers with similar characteristics—the three participants invited by the same recruiter were considered as a cluster<sup>14</sup>. The analyses were performed using the SPSS statistical software, version 21.0<sup>20</sup>.

In this study, two outcomes were considered: “proportion of FSWs who underwent HIV testing in the last 12 months prior to the research”; and “proportion of FSWs who underwent HIV testing in the last 12 months prior to the research because they get tested periodically”, after analysis of the reasons reported for getting the last HVI test.

To analyze the possible factors associated with the two outcomes, the following socio-demographic and sexual work characteristics were considered: age group (18 to 24; 25 or older); schooling level (some primary school; some middle school; some high school, complete high school; incomplete undergraduate education or a higher level); monthly income (R\$ 500.00; greater than R\$ 501.00); lives with a partner (yes; no); workplace (bars and nightclubs; other places indoors; street points).

To investigate the association of the outcomes with other preventive practices, the following factors were considered: if they use condoms with their clients (always uses condoms with clients in vaginal sex: yes; no); and if they would accept not using a condom with their clients (would accept not using condoms with clients with any situation: yes; no), created from the questionnaire question “In what situations would you accept having sex without condoms with costumers?”, with the following answer options: when she already knows the client; by request or demand of the client; when she needs money very much; when she makes many calls on the same day; when she

has an allergy (irritation) from the condom; when there is no condom at the time of the call; when she is not conscious due to drug or alcohol use; another reason.

To analyze the association between HIV testing and regular use of health services, the following options were considered: no; public; and private — corresponding, respectively, to not making regular use of health services; regular use of public health service; and regular use of private health service.

Bivariate and multivariate logistic regressions were performed, having as response variables, firstly, the HIV test coverage in the last year prior to the research and, subsequently, the periodic HIV test coverage in the year prior to the research. As a measure of association, odds ratio (OR) was used.

This research project was approved by the Research Ethics Committee of the Oswaldo Cruz Foundation (Protocol 1.338.989) and followed the guidelines of the National Health Council, ensuring voluntariness, anonymity and the possibility of interrupting participation at any time in the study, through the signing of the Term of Free and Informed Consent (TFIC).

## RESULTS

Among the 4,328 recruited in the study, 4,245 women 18 years or older were included in the analysis, after excluding the seeds. Of the total of studied FSWs, 66.3% were 25 years or older; 73.8% had not completed high school; 27.4% had a monthly income of up to R\$ 500.00; and 12.9% lived with a partner. In relation to the workplace, 14% worked in bars and nightclubs, 46.6% in street points, and 39.4% in other places. Of the total, 80.5% reported always using condoms during vaginal sex with clients, and 37.4% would accept having sex without condoms with their clients. Regarding the regular use of health services, 56.6% used the public service, 4.6% used private service, and 38.8% reported not using any health service.

Of the studied FSWs, 77.3% had already undergone a HIV test in their lives; 39.3% had undergone at least one HIV test in the last 12 months prior to the research; and 38.0% had been tested more than 12 months ago. Only 13.5% of the FSWs got tested for HIV in the last 12 months because they do the test periodically (Table 1).

Table 1. Prevalence of HIV test according to the time of the last test. RDS-FSW, Brazil, 2016.

When did you last get tested for HIV?	Prevalence	95% CI
Never had it	22.7	(21.0 – 24.3)
Did it in the last 12 months prior to the research	39.3	(37.4 – 41.2)
Because she is tested periodically	13.5	(12.2 – 14.8)
For another reason	25.8	(23.4 – 26.8)
Did it more than 12 months before the research	38.0	(36.2 – 40.0)

CI: confidence interval.

Among the FSWs that got tested in the 12 months before the research, 15.4% got tested in their prenatal, 34.6% because they did it periodically, and 36% because they felt exposed to risks. As for FSWs who had never tested for HIV (22.7%), the main reasons were: not feeling at risk (16.6%); not seeing reason to perform the test (23.7%); not knowing where to get it (8.5%); being afraid (21.9%); or being ashamed (12.1%) of getting the test.

The prevalence of HIV testing in the last 12 months and the results of the bivariate logistic regression with the factors considered in the study are shown in Table 2. The findings reveal a positive and statistically significant gradient in the HIV testing coverage in the last year as the level of schooling increases. A significant growth in the proportion of testing is observed as income increases. The HIV testing coverage in the last 12 months among those who live with a partner is 44.9%, significantly higher than among those who do not (38.45). The proportion of street workers who got tested in the last 12 months was 37.4%, which is significantly lower than that found among FSWs who work in bars and nightclubs (45.8%). There was no significant association with age groups.

The results of Table 2 also show that there is a statistically significant association between the HIV testing coverage in the last year and other preventive practices: this coverage was significantly greater among FSWs who reported using condoms regularly with clients (OR: 1.421) and among those who would not accept not using condoms with clients in any situation (OR = 1.413). In the analysis of association with the regular use of health services, the greater coverage of the HIV test in the last year was in the private service (57.7%), followed by the public service (40.6%), being the lowest recorded coverage (35.3%) for those who reported not using health services regularly, with statistically significant odds ratios of 2.509 and 1.255, respectively, when compared to those who do not use any health service regularly (Table 2).

The results of multivariate logistic regression, considering getting tested for HIV in the last 12 months as outcome, are shown in Table 3. Age groups were not considered, since there was not a significant association in the bivariate modeling. Even after including all factors in the regression, the gradient for the schooling level remained, with significant odds ratios for all levels of education (except for some middle school) and also for the income of R\$ 501.00 or more. The fact of not accepting not using condoms with clients in any situation remained statistically significant (OR = 1.284), as well as having a regular public (OR = 1.338) or private (OR = 2.072) source of care.

Table 4 shows the results of the bivariate logistic regression models, with the response variable as the periodic HIV testing. The analysis by age group shows that the FSWs aged 18 to 24 years old have periodic testing coverage of only 9.7%, significantly lower than the one found among the FSWs aged 25 years or older. The association between periodic testing and level of education were statistically significant from complete high school and for the monthly income of R\$ 501.00 or more. The FSWs from bars and nightclubs had a periodic testing coverage of 19.1%, significantly higher (OR = 1.820) than the one found among FSWs who worked at street points (11.5%). The women

Table 2. Prevalence of HIV test in the last year prior to the survey and respective odds ratios for study variables. RDS-FSW, Brazil, 2016.

Variables	%	HIV test in the last year			
		95% CI	OR	95% CI	
Age group	18 to 24 years old	37	(33.7 – 40.5)	1.000	-
	25 or older	40.4	(38.1 – 42.8)	1.115	(0.969 – 1.376)
Schooling level	Some primary school	32.1	(27.4 – 37.3)	1.000	-
	Some middle school	32.7	(29.4 – 36)	1.025	(0.783 – 1.341)
	Some high school	42	(38.4 – 45.8)	1.531	(1.167 – 2.008)
	High school	46.7	(42.3 – 51.2)	1.851	(1.388 – 2.470)
	Incomplete undergraduate education or a higher level	55	(47.7 – 62.2)	2.586	(1.793 – 3.729)
Monthly income	≤ R\$ 500.00	31.1	(27.6 – 34.9)	1.000	-
	R\$ 501.00 or more	42	(39.7 – 44.3)	1.603	(1.321 – 1.945)
Lives with a partner	No	38.4	(36.4 – 40.5)	1.000	-
	Yes	44.9	(39.6 – 50.3)	1.303	(1.031 – 1.647)
Place of work	Street	37.4	(34.6 – 40.3)	1.000	-
	Bars or nightclubs	45.8	(40.8 – 50.9)	1.413	(1.111 – 1.797)
	Other indoor spaces	39.2	(36 – 42.4)	1.077	(0.896 – 1.293)
Uses condoms with clients	No	32.7	(28.5 – 37.2)	1.000	-
	Yes	40.8	(38.7 – 42.9)	1.421	(1.146 – 1.762)
Accepts not using condom with clients	Yes	34.2	(31.1 – 37.4)	1.000	-
	No	42.3	(39.9 – 44.8)	1.413	(1.189 – 1.679)
Regular use of health services	No	35.3	(32.4 – 38.3)	1.000	-
	Public	40.6	(38 – 43.2)	1.255	(1.061 – 1.484)
	Private	57.7	(49.3 – 65.7)	2.509	(1.743 – 3.612)

CI: confidence interval; OR: odds ratio.

who reported living with a partner had a lower chance of getting periodically tested than the ones who do not (OR = 0.668).

In Table 4, additionally, the statistically significant association between the periodic HIV testing and other preventive practices stands out, with higher proportions of periodic testing among women who always use condoms with clients during vaginal sex (OR = 2.384) and among those who would not accept not using condoms with clients

in any situation (OR = 1.696). In addition, having a usual source of care, whether public or private, was one of the main factors associated to periodic HIV testing, with odds ratios of 1.639 and 4.079, respectively.

Table 3. Multivariate analysis of the association between study variables and prevalence of HIV testing in the last year prior to the survey. RDS-FSW, Brazil, 2016.

Variables OR		HIV test in the last year	
		95% CI	
Schooling level	Some primary school	1.000	-
	Some middle school	1.016	(0.756 – 1.366)
	Some high school	1.491	(1.091 – 2.037)
	High school	1.743	(1.244 – 2.443)
	Incomplete undergraduate education or a higher level	2.460	(1.619 – 3.737)
Monthly income	≤ R\$ 500.00	1.000	-
	R\$ 501.00 or more	1.338	(1.077 – 1.663)
Lives with a partner	No	1.000	-
	Yes	1.245	(0.968 – 1.603)
Place of work	Street	1.000	-
	Bars or nightclubs	1.007	(0.767 – 1.321)
	Other indoor spaces	0.783	(0.633 – 0.969)
Uses condoms with clients	No	1.000	-
	Yes	1.119	(0.865 – 1.447)
Accepts not using condoms with clients	Yes	1.000	-
	No	1.284	(1.044 – 1.579)
Regular use of health services	No	1.000	-
	Public	1.338	(1.113 – 1.609)
	Private	2.072	(1.406 – 3.053)

CI: confidence interval; OR: odds ratio.

Table 4. Prevalence of periodic HIV testing in the last year prior to the survey and respective odds ratios for study variables. RDS-FSW, Brazil, 2016.

Variables %		Periodic HIV testing in the last year			
		95% CI	OR	95% CI	
Age group	18 to 24 years old	9.7	(7.9 – 11.8)	1.000	-
	25 or older	15.4	(13.8 – 17.2)	1.702	(1.311 – 2.209)
Schooling level	Some primary school	11.1	(8 – 15.2)	1.000	-
	Some middle school	9.4	(7.6 – 11.5)	0.828	(0.537 – 1.277)
	Some high school	12.7	(10.5 – 15.3)	1.164	(0.764 – 1.774)
	High school	18.4	(15.4 – 21.8)	1.810	(1.192 – 2.747)
	Incomplete undergraduate education or a higher level	27.6	(21.4 – 34.8)	3.052	(1.840 – 5.061)
Monthly income	≤R\$ 500.00	7.1	(5.4 – 9.3)	1.000	-
	R\$ 501.00 or more	15.8	(14.3 – 17.5)	2.454	(1.785 – 3.373)
Lives with a partner	No	14.0	(12.7 – 15.5)	1.000	-
	Yes	9.8	(7.2 – 13.3)	0.668	(0.464 – 0.960)
Place of work	Street	11.5	(9.8 – 13.4)	1.000	-
	Bars or nightclubs	19.1	(15.5 – 23.3)	1.820	(1.335 – 2.482)
	Other indoor spaces	13.9	(12.0 – 16.0)	1.241	(0.971 – 1.586)
Uses condoms with clients	No	6.9	(5.0 – 9.5)	1.000	-
	Yes	15.0	(13.6 – 16.6)	2.384	(1.655 – 3.433)
Accepts not using condoms with clients	Yes	9.7	(8.0 – 11.8)	1.000	-
	No	15.5	(13.8 – 17.2)	1.696	(1.311 – 2.194)
Regular use of health services	No	9.6	(7.9 – 11.6)	1.000	-
	Public	14.8	(13.1 – 16.7)	1.639	(1.275 – 2.108)
	Private	30.2	(23.1 – 38.5)	4.079	(2.658 – 6.260)

CI: confidence interval; OR: odds ratio.

In the multivariate analysis of the association between periodic HIV testing and the set of independent variables considered in the study (Table 5), the following factors were statistically significant: age group of 25 years or older; incomplete undergraduate education or a higher level; monthly income of R\$ 501.00 or more; consistent use of condoms with clients during vaginal sex; and having a usual source of care (public or private).

Table 5. Multivariate analysis of the association between study variables and prevalence of periodic HIV testing in the last year prior to the survey. RDS-FSW, Brazil, 2016.

	Variables OR	Periodic HIV testing in the last year	
		95% CI	
Age group	18 to 24 years old	1.000	-
	25 or older	1.694	(1.275 – 2.252)
Schooling level	Some primary school	1.000	-
	Some middle school	0.753	(0.466 – 1.220)
	Some high school	1.054	(0.646 – 1.720)
	High school	1.426	(0.876 – 2.322)
	Incomplete undergraduate education or a higher level	2.415	(1.334 – 4.372)
Monthly income	≤ R\$ 500.00	1.000	-
	R\$ 501.00 or more	1.921	(1.362 – 2.710)
Lives with a partner	No	1.000	-
	Yes	0.670	(0.447 – 1.003)
Place of work	Street	1.000	-
	Bars or nightclubs	1.276	(0.913 – 1.784)
	Other indoor spaces	0.819	(0.619 – 1.082)
Uses condoms with clients	No	1.000	-
	Yes	1.874	(1.215 – 2.890)
Accepts not using condom with clients	Yes	1.000	-
	No	1.191	(0.873 – 1.626)
Regular use of health services	No	1.000	-
	Public	1.732	(1.319 – 2.274)
	Private	2.965	(1.902 – 4.622)

CI: confidence interval; OR: odds ratio.

## DISCUSSION

The comparison of biological and behavioral studies performed in 2009 and 2016 in the group of FSWs showed an important increase of the HIV testing coverage in Brazil. The proportion of FSWs tested for HIV at least once in life grew from 64.4% to 77.3%, while the testing coverage in the 12 months prior to the researches increased from 20.3% to 39.3%<sup>15</sup>.

However, despite the progress, the findings of this study show that the coverage of the periodic HIV testing among Brazilian FSWs still has much to improve. The testing coverage in the 12 months prior to the research was less than 40%, and only 13.5% of the FSWs reported having been tested for HIV in the last year because they do it periodically.

Despite the recommendation for frequently getting tested for HIV among the so-called key-populations<sup>21</sup>, several countries also have low testing coverage among FSWs. In a socio-behavioral and serological survey conducted in 2012 in 4 provinces of the Dominican Republic, about one third of the FSWs did not know where to get tested for HIV, and only half had been tested at least once in the last 12 months<sup>22</sup>. In China, the coverage of getting tested for HIV at least once in life among FSWs is even lower (48%) than the one found in Brazil<sup>23</sup>.

A meta-analysis study based on 36 articles of researches conducted in different countries about HIV testing among FSWs showed a great variation in the proportion of women who had been tested for HIV at least once throughout life and in the last year. In the group of analyzed countries, Benin and Canada stood out for high coverage; 87% in life and 65.3% and 75.1% in the last year, respectively — levels much higher than those found in Brazil.

The findings of low HIV testing coverage in the country corroborate results of other national studies. An investigation performed at the Brazilian border with French Guiana showed that 31.6% of the FSWs had never been tested for HIV<sup>25</sup>. In Fortaleza, Ceará, a study conducted with 402 FSWs revealed that 28.2% of them had never been tested for HIV, and 23.6% reported having had HIV testing more than one year before the research or not knowing when they had done it. The main barriers for getting tested were the perception that there was no risk of infection (24.1%) and fear of discrimination if the result was positive (20.5%). On the other hand, the main incentives for getting tested were the higher availability of test sites (57.0%) and extended schedules in health units (44.2%)<sup>26</sup>.

In this study, among the factors associated with a higher probability of getting tested for HIV in the last 12 months, a better level of education, the fact of living with a partner, working indoors, the association with other preventive practices — such as the consistent use of condoms—, and the regular use of health services, both public and private, stand out. The findings thus provide evidences that street FSWs, with low education and lower income are the most vulnerable and need specific interventions, aimed at raising awareness on risk exposure and on the importance of regular testing.

Regarding periodic HIV testing, the associations were somewhat different. While age was not significantly associated with HIV testing in the year preceding the study, younger FSWs were the ones with the lowest prevalence of periodic testing. Regarding the situation of living with a partner, the association was reversed, from protection (relative to the test in the last year) to risk (with periodic testing). A possible interpretation of this result is that FSWs who live with a partner get tested, usually, when they feel exposed or expose themselves to risks, and not because they are aware of the importance of periodic HIV testing. Recent studies in international literature also indicated that greater risk perception is associated with a greater chance of HIV testing<sup>24</sup>.

The association between periodic HIV testing and the fact of having a usual source of care, whether public or private, shows, on the other hand, that the use of healthcare programs and services may impact the disposition of this population to periodically get tested for HIV, an important component for prevention strategies of FSWs around the world<sup>21</sup>.

However, factors such as stigma and discrimination are important barriers that hamper the regular use of health services<sup>27,28</sup>, especially due to the fear of public exposition and of the consequent negative attitudes of health professionals<sup>29</sup>. A previous publication, with the same data used in this study, showed that the non-disclosure of sexual work in health services may affect the HIV testing coverage, significantly lower among those who did not reveal being sex workers<sup>30</sup>.

Periodic HIV testing allows early diagnosis and immediate treatment of cases, reducing the chances of spreading the infection to the population. In Brazil, the difficulty in early detection of HIV infection impairs the benefits of the TasP (adopted since 2014), continuing HIV dissemination by individuals who do not know their serological status. Specifically in the case of FSWs, the expansion of early HIV diagnosis in this group would benefit the sex workers themselves and their clients, with positive repercussions in the general population.

## CONCLUSIONS

Among the factors that contribute to the maintenance of the high load of HIV infection among FSWs is the lack of knowledge of the serological status, which has negative implications in coping with HIV/AIDS epidemic, both from the preventive and therapeutic point of view. Given the low HIV testing coverage among Brazilian FSWs, it is necessary to expand awareness campaigns, specifically among FSWs with low educational level and greater vulnerability, on the importance of periodic testing, as well as other preventive practices, in addition to encouraging regular health care, which are significantly associated with HIV testing coverage.

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