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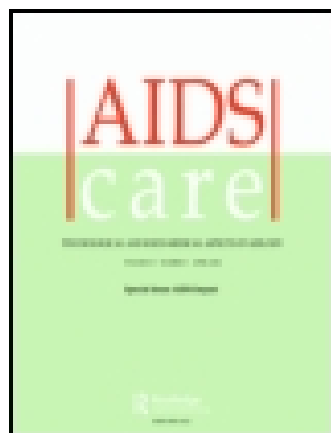
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Risk factors associated with resistance to HIV testing among transwomen in Brazil

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Transwomen are a high-risk population for HIV/AIDS worldwide. However, many transwomen do not test for HIV. This study aimed to identify factors associated with resistance to HIV testing among transwomen in Fortaleza/CE. A cross-sectional study was conducted between August and December 2008 with a sample of 304 transwomen recruited through respondent-driven sampling. Data analysis utilized Respondent-Driven Sampling Analysis Tool and SPSS 11.0. Univariate, bivariate, and multivariate analyses examined risk factors associated with resistance to HIV testing. Less than 18 years of age (OR = 4.221; CI = 2.419–7.364), sexual debut before 10 years of age (OR = 6.760; CI = 2.996–15.256), using illegal drugs during sex (OR = 2.384; CI = 1.310–4.339), experience of discrimination (OR = 3.962; CI = 1.540–10.195) and a belief that the test results were not confidential (OR = 3.763; CI = 2.118–6.688) are independently associated with resistance to testing. Intersectoral and targeted strategies aimed at encouraging the adoption of safer sexual behaviors and testing for HIV among transwomen are required.

Keywords: transwomen; HIV testing; resistance to test; HIV/AIDS; RDS; Brazil

Introduction

Transwomen are a high-risk population for HIV/AIDS worldwide (Baral et al., 2013; Herbst et al., 2008). Often, transwomen are involved in commercial sex, unprotected sex, and use alcohol and other drugs during sexual intercourse (Guadamuz et al., 2011; Martins et al., 2013; Passos & Figueiredo, 2004; Wang et al., 2007).

Stigma, social exclusion, violence, use of hormones and injected silicone, low education and unfavorable social status are factors that increase risk for HIV in this population (Bockting, Miner, Romine, Hamilton, & Coleman, 2013; Jeffries, Marks, Lauby, Murrill, & Millett, 2013; Ramirez-Valles, Garcia, Campbell, Diaz, & Heckathorn, 2008; Sanchez, Sanchez, & Danoff, 2009). However, many transwomen do not test for HIV (Bauer, Travers, Scanlon, & Coleman, 2012).

The marginalization of transwomen affects risk perception and motivation to access testing, leading transwomen to remain unaware of their HIV status. Despite the expansion of HIV testing and treatment, major barriers remain at the level of the patient, at health care provider and at institutional/policy (Deblonde et al., 2010). Health policies concerning transwomen are still unresolved (Cherutich, Bunnell, & Mermin, 2013).

This study aimed to identify risk factors associated with resistance to HIV testing among transwomen in Fortaleza, Ceará State, Brazil.

Methods

Procedures and sample

A cross-sectional study was conducted between August and December 2008. The sample was selected from a list of members maintained by the only transwoman-focused NGO in Fortaleza, ATRAC (Associação de Travestis do Ceará). Sample size was estimated assuming an HIV prevalence of 10%, $\alpha = 0.05$, and power = 0.8. A sample of 304 self-identified transwomen living in Fortaleza, who were at least 14 years old and reported anal or oral sex in the last year, were recruited into this study. The recruitment was conducted through respondent-driven sampling (RDS), a method appropriate to use with a population that is difficult to access but connected to each other through a social network (Heckathorn, 1997; Kendall et al., 2008).

Recruitment and data collection

Respondents were recruited with the aid of Associação de Travestis do Ceará (ATRAC). To initiate recruitment

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in this chain-link method, we selected five initial seeds representing different social classes. Each seed and study participant received three coupons to distribute to transwomen they know by name and have seen in the past 30 days. This procedure was followed until we reached sample size. Each participant that completed the questionnaire received 10 reais (~US\$5) as incentive. To incentivize recruitment, the recruiter received an additional 10 reais (~US\$5) per recruit.

Data collection took place at ATRAC after initial review of eligibility and signed consent procedures. The interview was conducted by a member of the project staff in a private room, using a questionnaire for men who have sex with men (MSM) proposed by UNAIDS (Monzon, 1995) that was modified after formative research.

Variables

Social class assignments used the Brazil Economic Classification Criteria (ABEP, 2008). The Alcohol Use Disorders Identification Test (AUDIT) was used to score alcohol use (Babor, Thomas, Higgins-Biddle, Saunders, & Monteiro, 2001). Anti-transwoman discrimination was self-reported.

Statistical analysis

Data were weighted using Respondent-Driven Sampling Analysis Tool 5.6 (RDSAT) and exported to SPSS 11.0, for bivariate and multivariate analyses. Variables significant at 0.05 in bivariate analysis, or identified in the literature, were used in the logistic regression model.

Ethical aspects

The study was approved by the Research Ethics Committee of the São José Infectious Diseases Hospital, Fortaleza, Ceará, Brazil (protocol number: 01/2007).

Results

Social context and HIV testing

Respondents reported an average of 22 transwomen (mean = 12, SD = 59) in their social networks. The seeds produced long chains and branches (Figure 1).

Two-thirds (208) of transwomen (69%) reported having ever tested for HIV. Of the 208, 12% self-reported as seropositive. Fifty-seven percent (174) reported testing during the past year. Most tested in public services (77%). Reasons reported for testing: "curiosity" (65%), feeling at risk (18%), and ordered by a doctor (8%).

Transwomen who are young (<18 years), single, report no religious affiliation, make less than one minimum wage or more than four minimum wages, social classes D and E, have suffered discrimination, or do not believe in the confidentiality of testing, have a greater probability of having never tested (Table 1).

Behavior and sexual practices, use of alcohol and other drugs, and body transformations

Almost 70% (145) reported sexual debut before age 14. The age of first sexual intercourse ranged from 4 to 21 (mean = 12.7, SD = 3.069). Transwomen who had their first sexual intercourse before 10 years of age (OR = 7.945) or between the ages of 10 and 14 (OR = 2.423) were less likely to test.

Transwomen who did not use a condom at last sexual intercourse, regardless of the type of partner, were less likely to have tested. Respondents who traded sex for money or gifts were less likely to have tested (Table 2).

Transwomen who reported risky silicone injection or the use of alcohol and other drugs during sexual intercourse were less likely to have ever tested for HIV (Table 2).

Factors associated with not testing

First sexual intercourse before age 10 increases not testing by almost seven times (OR = 6.760, Table 3). Persons under 18 years are less likely to test than people over 24 years (OR = 2.384). Illicit drug use during sex and self-report of discrimination reduce HIV testing. Not believing in the confidentiality of HIV test results reduces the likelihood of testing by almost four (OR = 3.763).

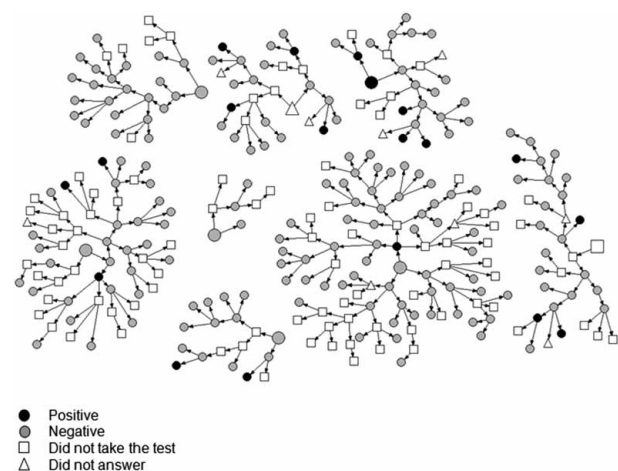


Figure 1. Network mapping of the level of interconnection of seeds considering the results that indicated HIV testing was done at least once in life.

Table 1. Social context and health status of transwomen according to lifetime HIV testing.

	Ever tested			<i>p</i>	OR	95%CI
	No (%)	Yes (%)	Total (%)			
Age						
<18	49.9	15.5	25.8	<0.001	6.898	3.035–15.677
18–28	21.9	30.1	27.6		1.557	0.664–3.647
29–39	17.6	31.6	27.4		1.195	0.497–2.871
≥40	10.7	22.8	19.2		1.000	–
Education						
Illiterate or incomplete elementary school	50.2	35.1	39.7	0.053	–	–
Complete elementary school/incomplete high school	23.6	34.1	30.9		–	–
Complete high school/college	26.2	30.8	29.4		–	–
Marital status						
Single/divorced	98.8	89.0	92.0	0.002	10.952	1.456–82.381
Currently married or living together with a partner	1.2	11.0	8.0		1.000	–
Religion						
Catholic	56.9	71.8	67.3	0.008	1.000	–
Protestant/evangelical	7.4	9.0	8.6		1.040	0.411–2.633
African-Brazilian	20.5	13.9	15.9		1.869	0.967–3.611
Atheist/no religion	15.2	5.3	8.3		3.594	1.542–8.376
Personal income						
<1 minimal wage	47.9	28.3	34.3	<0.001	3.064	1.743–5.385
1–4 minimal wage	31.7	57.4	49.7		1.000	–
>4– minimal wage	20.4	14.2	16.1		2.597	1.279–5.273
Family income						
<1 minimal wage	11.1	4.8	6.8	0.056	–	–
1–4 minimal wage	77.6	74.0	75.1		–	–
>4– minimal wage	11.2	21.1	18.1		–	–
Social class						
D/E	50.2	34.2	39.0	0.012	3.640	1.417–9.353
C	43.3	49.6	47.7		2.164	0.844–5.551
B/A	6.5	16.2	13.3		1.000	–
Living status						
Alone	19.6	25.4	23.7	0.409	–	–
With partner/family	50.1	50.0	50.1		–	–
With friend/madam	30.3	24.6	26.3		–	–
Reported discrimination						
Yes	93.4	84.9	87.3	0.050	2.519	1.014–6.252
No	6.6	15.1	12.7		1.000	–
Believes that the HIV test results are confidential						
Yes	68.3	84.1	79.3	0.003	1.000	–
No	31.7	15.9	20.7		2.452	1.377–4.367
Any participation in an NGO working with transwomen						
Yes	75.2	87.7	83.8	0.036	1.000	–
No	24.8	12.3	16.2		2.344	1.071–5.128
Any participation in the public service activities						
Yes	34.9	33.9	34.2	1.000	–	–
No	65.1	66.1	65.8		–	–

Discussion

The average age of first sexual intercourse for transwomen in our study was 12 years old. In Thailand, transwomen that are sexually active before the age of 13 is 2.5 times more likely to be infected with HIV (Guadamuz et al., 2011). In our study, we found a similar risk of HIV infection for sexual

debut between 10 and 14. However, when sexual debut occurred before the age of 10, the risk of HIV infection was eightfold. The relationship between sexual abuse and subsequent sexual and drug risk, depression and PTSD is well established (Bensley, Eenwyk & Simmons, 2000; Paolucci, Genuis & Violato, 2001).

Table 2. Sexual behavior, use of alcohol and drugs, and body transformations in transwomen according to their lifetime HIV test status.

	Ever test				OR	95%CI
	No (%)	Yes (%)	Total (%)	<i>p</i>		
Age at first intercourse						
<10	30.4	9.9	16.1	<0.001	7.945	3.417–7.945
10–14	56.5	58.5	57.9		2.423	1.2.00–2.423
>14	13.0	31.6	26.0		1.000	–
Partners in the last three months						
Stable only	15.4	11.9	12.9	0.303	–	–
Stable and casual	6.8	11.6	10.1		–	–
Casual only	77.8	76.5	76.9		–	–
Length of relationship with a stable partner						
≤12 months	71.7	51.6	57.2	0.043	2.325	1.080–5.005
>12 months	28.3	48.4	42.8		1.000	–
Have ever exchanged money, gift, or favors with sex						
Yes	76.6	86.5	83.5	0.050	1.000	–
No	23.4	13.5	16.5		1.903	1.018–3.558
Used a condom at sex debut						
Yes	37.4	26.1	29.5	0.050	1.692	1.002–1.692
No	62.6	73.9	70.5		1.000	–
Used a condom at last sex						
Yes	18.8	35.3	29.9	0.013	1.000	–
No	81.2	64.7	70.1		2.357	1.208–4.599
Injected liquid silicone						
Yes	35.9	55.7	49.8	0.002	1.000	–
No	64.1	44.3	50.2		2.275	1.367–3.787
Risk behavior for silicon						
Yes	31.1	49.5	44.0	0.004	1.000	–
No	68.9	50.5	56.0		2.173	1.290–3.659
Alcohol use during sex						
Yes	34.3	50.8	45.8	0.008	1.000	–
No	65.7	49.2	54.2		2.011	1.206–3.355
Illicit drug use during sex						
Yes	17.9	32.0	27.7	0.011	1.000	–
No	82.1	68.0	72.3		2.212	1.198–4.082

Table 3. Risk factors associated with resistance of lifetime HIV testing among transwomen^a.

Variables	OR (95% CI)	<i>p</i>
18 years old versus >24 years old	4.221 (2.419–7.364)	0.000
Sexual debut 10 years old versus >14 years old	6.760 (2.996–15.256)	0.000
Use of illicit drugs during sexual intercourse	2.384 (1.310–4.339)	0.017
Having experienced discrimination	3.962 (1.540–10.195)	0.017
Do not believe in HIV test confidentiality	3.763 (2.118–6.688)	0.000

^aThe model has accuracy equal to 75.9%, the sensitivity was 74.4% and specificity of 76.6%.

Approximately one-third of the transwomen in our study reported never having tested for HIV. This level is lower than in an American transgender population: 14% had never been tested (Feldman, Romine, & Bockting, 2014). Not knowing one's own positive serostatus is associated with an HIV transmission rate 3.5 times higher than those who know their positive HIV serostatus (Marks, Crepaz, & Janssen, 2006).

Fifty-seven percent of transwomen in our sample reported testing during the previous year. While higher in transwomen than in MSM and female sex workers (FSW), levels are below global health guidelines (Chou et al., 2012; Gokengin et al., 2014).

In our study, some risk behaviors functioned as an incentive to test. Examples include: use of alcohol and illicit drugs during or before sex, and previous sex

without condoms. But, only 18% reported perception of risk as the reason for testing. Counterbalancing perception of risk is the fear of a positive result, as suggested by Deblonde et al. (2010).

Transwomen have additional risk through prostitution, among the few occupations that transwomen can engage in (Kulick, 2013; Romano, 2008). Transwomen face discrimination in schools as well as in mainstream employment. With few employment options, they transform their bodies through silicone and hormones to begin life in prostitution (De Santis, 2009), doubling the chance of HIV infection (Guadamuz et al., 2011) and four times more risk than FSW (Operario, Soma, & Underhill, 2008).

Transwomen discrimination also constitutes an access barrier to medical care (Avery, Hellman, & Sudderth, 2001; Bockting, Robinson, Benner, & Scheltema, 2004; De Santis, 2009; Kenagy, 2005; Lombardi, 2007; Melendez & Pinto, 2009; Rachlin, Green, & Lombardi, 2008).

When discrimination is linked to systems that should offer support, such as the police and health services, it causes transwomen to avoid seeking services, and the possibility of testing (Rhodes, Simic, Baros, & Platt, 2008).

Given discrimination in public services, non-governmental organizations (NGOs) have a more important role in the health of transwomen. In our study, the number of transwomen participating in NGO activities was three times higher than those reporting visits to public health services. Participation in transwomen-focused NGOs empower this population and could promote testing. Unfortunately, NGOs are facing their own exclusion from HIV/AIDS programming among a series of unfortunate changes to the National AIDS Program.

Conclusion

Many factors lead transwomen to become infected with HIV, and to resist testing. It is not clear that the new Brazil national strategy of making HIV test kits widely available will be successful in this population, since even in this study, many refused to test. A strategy targeted to transwomen is needed, one that encompasses health services and NGOs who work with this population, in order to increase HIV testing. Generic solutions are not likely to be effective.

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Conflict of Interest declaration

No conflict of interest.

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