

# Correlates of HIV Testing Among Transgender Women in Ho Chi Minh, Vietnam

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**Abstract** HIV prevalence among transgender women (TW) in Ho Chi Minh City is estimated at 18 %. However, no evidence-based programs or surveillance data exist in Vietnam specific to HIV testing uptake. We examined prevalence and correlates of past-year HIV testing among TW (n = 204) recruited in 2015 via snowball sampling. 59.3 % reported HIV testing in the previous year. In adjusted models, factors positively associated with HIV testing included consistent condom use during sex work with male clients; STI testing in past year; sex with casual partners in the past month; and experiences of police harassment. Factors negatively associated with recent HIV testing included daily/weekly alcohol use and post-traumatic stress symptoms. This study found

significant associations between greater safety in sexual behaviors and higher rates of HIV testing. Targeted and specific services are needed for TW in Vietnam in order to address sexual risk behaviors and provide appropriate access to regular HIV testing.

**Keywords** HIV testing · Transgender women · Sex work · Vietnam · Police harassment

## Introduction

According to the estimates and projections of HIV from the Vietnam AIDS response progress report 2014, there were an estimated 256,000 people living with HIV in Vietnam. The HIV/AIDS epidemic is still concentrated among the key populations of people who inject drugs (PWID), men who have sex with men (MSM) and female sex workers (FSW). In the early years of the HIV epidemic in Vietnam, the epidemic was largely concentrated among people who inject drugs (PWID). However, in Ho Chi Minh City, the most populous city in Vietnam, there has in recent years been greater recognition of an HIV epidemic among MSM. HIV prevalence among MSM is estimated to be 16 % [1]. No country-level rate estimates on HIV testing uptake among MSM have been made publicly available.

Transgender women (TW) are individuals whose gender identities are discordant with the male sex they were assigned at birth [2]. Global public health literature documents that the stigma and marginalization experienced by TW contributes to a wide range of negative health conditions, including psychosocial stressors, substance use, sex work, violence victimization, and social isolation. These outcomes have been correlated with lack of access to social and health care services, along with sexual risk behavior

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and HIV infection [2–7]. In general, TW have higher risks for HIV infection and experience higher HIV prevalence relative to the general population. Globally, available data suggest that HIV prevalence has reached as high as 68 % within TW communities, with incidence rates from 3.4 to 7.8 per 100 person-years (WHO, 2011). In the Asia and Pacific region, HIV prevalence in some areas has been estimated to be as high as 49 % among TW [2, 8, 9]. Generally, HIV prevalence rates amongst TW also exceed those for MSM [10]. TW, at both the global and local level, have limited access to social and health care services, including HIV testing and care, and STI screening and treatment, and may not feel comfortable accessing services designed for other most-at-risk populations, such as men who have sex with men or female sex workers [11, 12].

Stigma and discrimination remain major barriers limiting access to health services by transgender women, especially those related to mental health and other support services [10]. Both globally and in Vietnam, TW have often been ignored in HIV prevention and care strategies, and very few intervention strategies have been developed to facilitate regular HIV testing among TW women [13, 14]. In Vietnam, no funds have been allocated for designing HIV testing, prevention and treatment services for the TW community. Instead, TW have been conflated with MSM in terms of infection surveillance and service access. This creates challenges and barriers to preventing HIV/AIDS transmission in TW communities [12, 15]. There are no evidence-based efficacious HIV prevention, testing and treatment programs for TW in Vietnam. Although researchers have recently piloted promising risk-reduction interventions for TW in Laos and in Thailand, these interventions were not designed specifically to increase regular HIV testing [16, 17]. Unsurprisingly given this background, knowledge related to uptake of HIV testing among TW in Ho Chi Minh City remains limited.

HIV testing and counseling (HTC) is the gateway to HIV prevention and care services. Vietnam has a network of public facilities that offer free HTC services, often co-located with antiretroviral treatment clinics [18]. However, community-based testing has not been supported by the public system in the past, and reductions in donor funding in recent years have resulted in fewer facilities offering HTC [19]. In Vietnam, there are no HTC services that specifically target MSM or TW.

Previous studies report low HIV testing among the MSM population in Vietnam [20, 21]. A number of factors have been reported as contributing to low HIV testing rates, including stigma and discrimination in health care facilities, fear of a positive result, perception of poor quality in public clinics, and concerns about confidentiality of test results [20, 21].

We conducted the TransVN study in order to examine HIV vulnerability among TW in Ho Chi Minh City. Specifically, we examined potential factors that were associated with HIV testing history among TW in order to provide evidence to better inform the development of culturally appropriate HIV prevention models and effective HIV-related national planning for TW in Vietnam.

## Methods

### Participants and Procedures

In May 2015, a cross-sectional survey was conducted with 205 TW in Ho Chi Minh City (HCMC) using a snowball sampling method with the support of a TW Community Advisory Board (TAB) [22]. One TW was excluded from this analysis due to non-response on HIV testing status; thus the sample size for the analysis was 204.

Inclusion criteria for the study were: 18 years of age or older at the time of the study, Vietnamese citizen, male sex assigned at birth, self-identified as expressing female gender, and residing in HCMC at time of enrollment. The survey included structured questions on demographics, gender transition history/experience, HIV and STI testing history, sexual behavior, condom use and barriers, resiliencies, psychological health, barriers to accessing services, alcohol and drug use, and HIV and STI prevention knowledge.

The study was conducted by the Center for Applied Research for Men and Health (CARMAH), a Vietnamese non-governmental organization that works with the lesbian, gay, bisexual, and transgender (LGBT) population. The TAB was formed to help provide culturally appropriate advice in survey development and participant recruitment. The TAB was composed of five individuals who identified as TW and who represented a variety of ages and socioeconomic backgrounds. TW were recruited using a snowball strategy, TAB members identified other TW who met the inclusion criteria through their social networks, introduced the project to them, and made the appointments for TW to go to the study site located in a general medical clinic. Onsite, TW provided verbal informed consent to participate in the study. A standardized questionnaire was completed by participants with trained study staff present to assist with questions or problems. In order to defray costs to participate in the study, the participants were compensated with 200,000 Vietnam dong (~\$10.00 US) after completing all study procedures. Participation was anonymous; no identifying information was collected from TW, and all data was kept confidential and accessible only to study staff.

## Measures

Sociodemographic factors included self-reported age, place of birth, education, monthly income and religion. Transition history/experience was assessed via self-report of experience of sex reassignment surgery, past or current hormone use/injection and silicone injections. HIV and STI testing history was assessed via self-report. Recent HIV and STI testing was defined as having received an HIV or STI test in the past 12 months. Sexual risk behavior was assessed by self-report of lifetime history of selling sex to male clients, buying sex from male clients, recent sex with casual and main partners, and frequency of condom use across these categories.

Psychosocial conditions included self-reports of alcohol (never, monthly and daily/weekly) and substance use including opium, heroin and meth or ecstasy (never vs. ever). Post-traumatic stress disorder (PTSD) was assessed using a four-item PTSD primary care screening tool. Stigma and discrimination were assessed via self-reports of incidents that participants perceived as discrimination from police, from family members, in the workplace, and from healthcare providers.

## Statistical Analysis

To identify significant factors associated with HIV testing in the past year, we conducted Chi square tests to assess the associations between recent HIV testing and sociodemographics, sexual risk behavior, transition history, STI testing history, psychosocial conditions, and stigma and discrimination. Variables found to be significantly correlated (at  $p < 0.05$ ) with recent HIV testing were further assessed via a series of independent logistic regressions and then included in a multivariable model to determine independent predictors of recent HIV testing. Based on the existing literature on transgender women and HIV testing barriers, we further included age, education, religion and income as covariates. SPSS version 16.0 (SPSS Inc., 2007, Chicago, IL) was used for data analysis.

## Results

### Sociodemographics

Demographics of TW in the TransVN Study are presented in Table 1. The majority of participants (45.6 %) were 26–40 years old; 24.5 % were 18–25 years; and 29.9 % were 41 years or older. Most were ethnic Kinh (93.1 %), were born in Ho Chi Minh City (75.5 %), and were Buddhist (73.5 %). About half of the participants reported completing high school (47.5 %); a quarter of study sample

**Table 1** Demographics of transgender women in the TransVN Study, 2015

	N = 204	
	n	%
Demographics		
Age		
18–25 years old	50	24.5
26–40 years old	93	45.6
41 years or older	61	29.9
Race/ethnicity		
Kinh*	190	93.1
Other	14	6.9
Education		
No school/elementary	50	24.5
Secondary	56	27.5
High school and higher	97	47.5
Missing	1	0.5
Place of birth		
Ho Chi Minh City	154	75.5
Other	50	24.5
Religion		
Buddhist	150	73.5
Catholic	19	9.3
None	33	16.2
Missing	2	1.0
Income		
\$0–150	60	29.4
\$151–250	72	35.3
\$251 and over	72	35.3

\* Kinh is the majority ethnic group of Vietnam

only reported attended elementary school (24.5 %); 27.5 % completed secondary school. 29.4 % of TW in the study reported a monthly income less than \$150 (U.S.); 35.3 % earned between \$151 and \$250 per month; and 35.3 % earned more over \$251/month. Results of HIV serology showed that 18.1 % (37/204) were HIV infected.

### HIV Testing

In the previous year, 121 (59.3 %) transgender women in the sample reported receiving HIV testing. Results from logistic regressions assessing factors associated with uptake of HIV testing among TW in the study are shown in Table 2.

Sociodemographic factors were not significantly associated with recent HIV testing. Factors significantly related to HIV testing included STI testing in past year, condom use with men during transactional sex, sex with casual partners, condom use with casual male partners, alcohol

**Table 2** Bivariate association of demographics and other factors with HIV testing history in past year among transgender women in the TransVN Study, 2015

	HIV testing				OR (95 % CI)	p value
	Yes HIV testing		No HIV testing			
	n	%	n	%		
<b>Demographics</b>						
<b>Age</b>						
18–25 years old	26	21.5	24	28.9	Ref	
26–40 years old	61	50.4	32	38.6	1.17 (0.5–2.5)	0.694
41 years or older	34	28.1	27	32.5	0.66 (0.3–1.3)	0.220
<b>Race/ethnicity</b>						
Kinh	115	95.0	75	90.4	Ref	
Other	6	5.0	8	9.6	0.49 (0.2–1.5)	0.202
<b>Education level</b>						
No school/elementary	28	23.3	22	26.5	Ref	
Secondary	29	24.2	27	32.5	2.62 (0.9–7.6)	0.078
High school and higher	63	52.5	34	41.0	2.55 (1.0–6.8)	0.061
<b>Place of birth</b>						
Ho Chi Minh City	121		83		Ref	
Other	93	76.9	61	73.5	1.2 (0.6–2.3)	0.583
<b>Religion</b>						
Buddhist	28	23.1	22	26.5	Ref	
Catholic	89	74.2	61	74.4	1.58 (0.7–3.5)	0.271
None	8	6.7	11	13.4	3.16 (1.0–10.2)	0.055
<b>Income</b>						
\$0–150	23	19.2	10	12.2	Ref	
\$151–250	40	33.1	20	24.1	0.74 (0.4–1.5)	0.411
\$251 and over	38	31.4	34	41.0	1.33 (0.7–2.6)	0.401
<b>Transition history/experience</b>						
<b>Ever used hormone</b>						
No	121		83		Ref	
Yes	58	47.9	46	55.4	1.35 (0.8–2.4)	0.294
<b>Ever injected hormone</b>						
No	63		36		Ref	
Yes	8	12.7	3	8.3	0.63 (0.16–2.5)	0.509
<b>Sexual reassignment surgery</b>						
No	120		81		Ref	
Yes	95	79.2	58	71.6	0.66 (0.35–1.3)	0.219
<b>Testing history</b>						
<b>STI testing in the past year</b>						
No	118		81		Ref	
Yes	74	62.7	79	97.5	23.49 (5.5–100.3)	***<0.001
<b>Sexual history and condom use</b>						
<b>Transactional sex with men in past month</b>						
No	44	37.3	2	2.5	Ref	
Yes	73	60.8	58	69.9	1.5 (0.82–2.7)	0.186
<b>Condom use in transactional sex with men in past month</b>						
Never	47	39.2	25	30.1	Ref	
Usually/sometimes	6	12.5	5	21.7	4.67 (1.0–21.4)	*0.047
Always	14	29.2	13	56.5	5.2 (1.5–17.5)	**0.008

**Table 2** continued

	HIV testing				OR (95 % CI)	p value
	Yes HIV testing		No HIV testing			
	n	%	n	%		
<b>Buying sex with men in past month</b>						
No	107	89.2	70	85.4	Ref	
Yes	13	10.8	12	14.6	1.5 (0.82–2.70)	0.186
<b>Condom use in buying sex with men in past month</b>						
Never	6	42.9	7	58.3	Ref	
Usually/sometimes	4	28.6	2	16.7	1.6 (0.24–9.91)	0.640
Always	4	28.6	3	25.0	0.7 (0.07–6.40)	0.725
<b>Having sex with casual partner in past month</b>						
No	47	38.8	46	56.1	Ref	
Yes	74	61.2	36	43.9	2.01 (1.1–3.6)	*0.016
<b>Condom use with casual partner in past month</b>						
Never	13	17.6	14	37.8	Ref	
Usually/sometimes	27	36.5	14	37.8	4.07 (1.4–11.7)	**0.009
Always	34	45.9	9	24.3	1.96 (0.7–5.2)	0.178
<b>Psychosocial condition</b>						
<b>Alcohol use</b>						
Never	27	27.8	23	33.3	Ref	
Monthly	48	49.5	19	27.5	0.69 (0.3–1.5)	0.366
Weekly/daily	22	22.7	27	39.1	0.32 (0.15–0.7)	**0.004
<b>Substance use</b>						
No	76	63.3	59	71.1	Ref	
Yes	44	36.7	24	28.9	1.4 (0.78–2.6)	0.251
<b>PTSD scale</b>						
Negative	31	25.6	32	38.6	Ref	
Low (level1/level2)	40	33.1	28	33.7	2.2 (1.11–4.51)	*0.023
High (level3/level4)	50	41.3	23	27.7	1.5 (0.76–3.03)	0.234
<b>Stigma and discrimination</b>						
<b>Ever experienced the harrasment from the police</b>						
No	82	72.6	62	86.1	Ref	
Yes	31	27.4	10	13.9	2.34 (1.1–5.1)	*0.034
<b>Ever perceived discrimination at household</b>						
No	100	88.5	65	90.3	Ref	
Yes	13	11.5	7	9.7	1.2 (0.46–3.19)	0.704
<b>Ever perceived discrimination at workplace</b>						
No	98	81.7	75	90.4	Ref	
Yes	22	18.3	8	9.6	2.1 (0.89–4.99)	0.091
<b>Ever perceived discrimination at healthcare facility</b>						
No	113	93.4	73	89.0	Ref	
Yes	8	6.6	9	11.0	0.6 (0.21–1.56)	0.275

Transactional sex means having sex with any man who paid TWs money for sex

OR odds ratio, CI confidence interval

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

use, PTSD symptoms, and having experienced police harassment.

Study participants who tested for other sexually transmitted infections in the past year had greater odds of recent HIV testing compared with those who never tested for STI (OR = 23.49, 95 % CI 5.5–100.3,  $p < 0.001$ ). Among those engaging in transactional sex, TW who reported usually/sometimes and always using condoms with male clients were more likely to be tested for HIV compared to TW who reported never using condoms during transactional sex with male clients: (OR = 4.67, 95 % CI 1.0–21.4,  $p = 0.047$ ). Among those engaging in transactional sex, TW who reported always using condoms with male clients were more likely to be tested for HIV compared to TW who reported never using condoms during transaction sex with male clients: (OR = 5.2, 95 % CI 1.5–17.5,  $p = 0.008$ ). TW who reported using condoms usually/sometimes with casual sex partners were more likely to receive HIV tests in the past year compared to those reported *never* using condoms with casual sex partners (OR = 4.07, 95 % CI 1.4–11.7,  $p = 0.009$ ). Among all TW, those that had casual sex partners in the past month had 2.01 times the odds of past-year HIV testing compared to those that did not report casual sex partners (OR = 2.01, 95 % CI 1.1–3.6,  $p = 0.016$ ). Study participants who reported daily or weekly alcohol use were less likely to uptake HIV testing compared to those who reported never using alcohol (OR = 0.32, 95 % CI 0.15–0.7,  $p = 0.004$ ).

Transgender women who were harassed by the police were 2.34 times more likely to report receiving an HIV test compared to those who were never bothered by police (OR = 2.34, 95 % CI 1.1–5.1,  $p = 0.034$ ). Lastly, TW who reported low levels of PTSD (level1/level2 in scale) had greater odds of receiving HIV testing compared with those with high PTSD scores (OR = 2.2, 95 % CI 1.11–4.51,  $p = 0.023$ ).

Table 3 shows results from a multivariable model assessing factors associated with uptake of HIV testing adjusting for age, education, religion and income. After adjusting for sociodemographic variables, factors significantly associated with HIV testing in the previous year were absence of PTSD, experiences of police harassment, never using alcohol, having sex with casual partners, and using condoms with casual partners in past month.

## Discussion

Though the majority (59.3 %) of transgender women in this sample reported past-year uptake of HIV testing, the high number of newly diagnosed HIV positive individuals (18 % of total sample) suggests an urgent need to more tailored mechanisms to support regular HIV in transgender

**Table 3** Multivariable correlates of HIV testing history in past year among transgender women in the TransVN Study, 2015

	HIV testing in the past year	
	aOR (95 % CI)	p
STI testing in the past year		
No	Ref	
Yes	27.0 (6.16–118.66)	***<0.001
Condom use in transactional sex with men in past month		
Never	Ref	
Usually/sometimes	2.7 (0.45–16.42)	0.275
Always	4.0 (1.27–12.91)	*0.018
Having sex with casual partner in past month		
No	Ref	
Yes	2.0 (1.12–3.67)	*0.019
Condom use with casual partner in past month		
Never	Ref	
Usually/sometimes	4.1 (1.38–12.00)	*0.011
Always	2.2 (0.81–6.20)	0.117
Alcohol use		
Never	Ref	
Monthly	0.58 (0.25–1.36)	0.208
Weekly/daily	0.23 (0.10–0.54)	**0.001
PTSD scale		
No	Ref	
Yes	0.79 (0.64–0.96)	*0.018
Ever experienced the harrasment from the police		
No	Ref	
Yes	2.7 (1.20–6.08)	*0.017

Adjusting for demographics included age, education, religion and income

aOR adjusted odds ratio

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

communities [1, 22]. At 18 %, the HIV prevalence of Vietnamese TW in HCMC is very high, and higher than the reported HIV prevalence rates of Vietnamese MSM [1, 22] and male sex workers [19]. As there have not been any previous studies of HIV prevalence, risk behavior, or HIV testing uptake among TW in Vietnam, this is the first evidence of an HIV epidemic among this population, and highlights the lack of interventions that specifically target TW for HIV testing, prevention and care services.

In this study, more than half of the participants had recently engaged in receptive anal sex with casual partners, and this factor was significantly related to HIV testing. As transgender women typically contract HIV from male sexual partners (whether main, casual, or transactional), this finding is encouraging [9, 23]. However, sex with paying customers, or with male sex workers, was not associated with HIV testing. How TW view the HIV

transmission risks of sex with different types of sex partners could not be ascertained from this quantitative study, and would better be investigated by qualitative methods.

Transgender women in this sample who reported higher levels of sexual safety were generally more likely to also report recent HIV testing. Among TW who had sex with casual partners, a significantly higher proportion had usually or always used condoms than those who never used condoms; and such regular condom use was strongly associated with HIV testing. Condom use with paying male partners was also associated with HIV testing. It may be that TW who use condoms are more cognizant of the risk of condomless sex and more protective of their health, which would make them more likely to seek HIV testing. TW who reported receiving STI testing in the past year were likelier to get an HIV test as well, which would also support the hypothesis that those who are more concerned about their health and use some health services are also more likely to utilize other health services.

Factors relating to psychosocial conditions such as alcohol use and PTSD were inversely associated with HIV testing in the both bivariate and multi-bivariate models. While it is not unusual that TW with higher PTSD scores and alcohol use were less likely to have received HIV testing, further research is needed to better contextualize why TW who experienced police harassment were more likely to receive HIV testing. It may be that law enforcement convey TW to HIV testing facilities so as to ascertain their HIV status before engaging in sexual activities with them, or it may be that TW who are harassed by police are more visible to outreach workers and thus more likely to be legitimately referred for HIV testing [24].

The results of this study must be interpreted with some limitations. This sample may not represent TW in all of Vietnam as the participants were recruited only in Ho Chi Minh City, the economic center of Vietnam. Using a snowball sampling strategy was also a limitation, in that it could lead to recruitment bias, e.g. by enjoining a sample with higher proportion of participants involved in sex work, alcohol use and casual sexual partnerships than a population-based sample might obtain. Our cross-sectional survey design also is a limitation, as results can only show us factors associated with HIV testing in past year among TW participants and not causal or temporal relationships between these variables. Another limitation of this study is the relatively small sample size, which may have reduced power to detect significant associations with HIV testing (such as sociodemographic predictors). However, it should be noted that transgender populations are typically small, and that the sample size here compares well with research with transgender people in other settings. Previous studies have found associations between inadequate knowledge of HIV transmission and misconceptions about how the virus

is acquired and transmitted, as well as associations between perceived HIV infection risk and HIV testing uptake; however, we did not analyze these factors in this study, nor did we empirically assess structural barriers and facilitators related to HIV testing. Further research should take these factors into account when assessing predictors of HIV testing uptake among transgender women in Vietnam. Although injection drug use has been historically associated with the Vietnamese HIV epidemic, we did not report here on whether shared injections (of drugs, silicone, or hormones) significantly predicted recent HIV testing, chiefly because of our concern that the draconian laws criminalizing in-country injection drug and hormone use would be reflected by respondent bias, leading to unreliable self-report data related to these questions. Finally, while the presence of study staff during the questionnaire completion likely reduced literacy barriers, it is possible that respondent bias was heightened, as participants may have been less comfortable in disclosing their sexual behaviors with trained interviewers present and may have under-reported risk behaviors compared to other methods, such as self-administered computer-assisted surveying.

The results of this study indicate significant associations between sexual behaviors and psychosocial conditions with HIV testing. Increasing HIV knowledge about sexual risk behaviors may lead to an increase in HIV testing uptake among TW. As sex work is common among TW who face job discrimination and few other employment opportunities, interventions to support TW with skills training and to find alternate employment could reduce sexual risk behavior [6]. Structurally, HIV testing interventions such as mobile units directed toward locations where transgender women congregate, including sexual economy zones, could also increase uptake of regular HIV testing [14]. Mental health services to address depression, PTSD, and substance use would have direct benefits to TW facing psychosocial problems, and might also facilitate HIV risk reduction and increased use of HIV prevention services, including HIV testing.

TW are considered a high-risk group for HIV in Vietnam, which has been confirmed by the very high prevalence of HIV found in this sample. However, relatively few TW in HCMC access HIV testing services regularly. Targeted and specific services are needed for TW in Vietnam in order to address high-risk behavior, to provide risk reduction counseling to those who test negative, and to refer to HIV care and treatment for those with HIV infection.

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### Compliance with Ethical Standards

**Conflict of Interest** All authors declare that they have no conflict of interest.

**Ethical Approval** This study involve human participants (MSM). All procedures were approved by both the Institutional Review Boards at the University of Pittsburgh (U.S.A.) and at the Hanoi School of Public Health (Vietnam). Therefore, all procedures were in accordance with the ethical standards of the institutional and national research committees and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed Consent** Verbal informed consent was obtained from all participants in the study using an electronic informed consent procedure.

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