Published in final edited form as:

J Acquir Immune Defic Syndr. 2019 April 15; 80(5): 522–526. doi:10.1097/QAI.0000000000001966.

Comparing sexual risk behavior in a high-risk group of men who have sex with men and transgender women in Lima, Peru

Jessica Long, MPH¹, Michalina Montaña, MS¹, Robinson Cabello, MD², Hugo Sanchez, BA³, Javier R. Lama, MD, MPH⁴, and Ann Duerr, MD, PhD, MPH^{1,5,6}

¹Department of Epidemiology, University of Washington, Seattle, WA

²Asociación Vía Libre, Lima, Perú

³Epicentro, Lima, Perú.

⁴Asociación Civil Impacta Salud y Educación, Lima, Perú.

⁵Fred Hutchinson Cancer Research Center, Seattle, WA

⁶Department of Global Health, University of Washington, Seattle, WA

Abstract

Background: Transgender women (TW) and men who have sex with men (MSM) are often conflated in HIV research and prevention programs, despite clear differences that exist in culture and behavior.

Methods: We examined baseline data from a large treatment-as-prevention study among TW and MSM in Lima, Peru, to assess differences in risk behavior. Baseline assessment included HIV testing and a questionnaire including socio-demographics, sexual behavior, social venue attendance, and drug and alcohol use. Poisson regression with robust standard errors was used to calculate prevalence ratios adjusted for confounding variables (aPR) and 95% confidence intervals (CI) comparing prevalence of covariates related to HIV risk in MSM and TW.

Results: Overall, 310 TW and 2,807 MSM participated between July 2013 and September 2015 and were included in this analysis. TW engaged in some protective sexual health practices more than MSM, including HIV testing in the last year (aPR=1.62; 95% CI: 1.42, 1.84) and condom use at last sexual encounter (aPR=1.20; 95% CI: 1.06, 1.36). TW were more likely to have sex while using alcohol (aPR 1.15, 95% CI 1.01, 1.31) or drugs (aPR 2.24, 95% CI 1.47, 3.41), have alcohol dependency (aPR 1.38, 95% CI 1.15, 1.66), engage in receptive anal sex (aPR 1.31, 95% CI 1.26, 1.36), and have received money, gifts, or favors in exchange of anal sex (1.96, 95% CI 1.74, 2.20).

Conclusions: TW and MSM exhibited distinct risk profiles, suggesting that interventions specifically targeted to each group may provide new opportunities for more effective HIV prevention programs.

Keywords

HIV; Peru; Transgender Women; MSM

Introduction

Transgender women (TW), persons assigned male sex at birth who identify as women, are among the populations most heavily affected by HIV worldwide. Globally, an estimated 19% of TW are living with HIV, and their likelihood of acquiring HIV is 49 times higher than other adults (1,2). In Peru, HIV prevalence is estimated at 29-49% among TW, while 12-18% among men who have sex with men (MSM) and less than 1% in the general population (3-5). Despite this disparity, TW are poorly understood as a distinct subpopulation in public health practice and research, and are often aggregated with MSM due to overlap in public health programs serving both communities, common mode of HIV transmission (anal sex), difficulty in reaching and including large samples of TW, and poor understanding of gender identities. This limits our understanding of HIV transmission in both populations (6,7) and has led to HIV prevention interventions that conflate MSM and TW despite fundamental differences in their sexual practices, their selection of sexual partners, and the characteristics of the sexual networks they inhabit (8,9). Further, TW are women regardless of having been assigned male at birth, and interventions that target men will not properly address the needs of this community (2,10,11).

Sources of the disparity in HIV infection between MSM and TW are only partly understood, but are plausibly driven by differences in behavioral, social, and structural level risk factors (12). TW face greater stigma, deprivation, and violence worldwide (1,3,10,13-16). TW are far more likely to be receptive partners during anal intercourse, are more likely to participate in sex work, and may have less negotiation power to argue for safe sex (15,17). In some countries, HIV prevalence among TW may be attributed in part to the greater prevalence of injection drug use (IDU) among TW and their greater likelihood of having IDU partners. In Peru, however, IDU is uncommon (18,19), and it is an unlikely cause of high HIV prevalence in TW there. Prior analyses of HIV and related risk behaviors in Peru did not disaggregate data on TW from MSM study participants, or made no comparison of TW to MSM (3,4).

Methods

We assessed baseline differences in risk behavior between MSM and TW from *Sabes* ([ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT01815580) Identifier: NCT01815580), a large study of an expanded treatment-as-prevention strategy focused on early diagnosis and treatment of HIV infection. Detailed methods of *Sabes* are described elsewhere (20,21). Recruitment was conducted both at participating clinics serving MSM and TW populations, as well as through peer outreach at previously identified social venues. Eligibility criteria included having been assigned male sex at birth, reporting a male or TW sexual partner in the previous 12 months, being 18 years of age, unaware of HIV status, and at high risk for HIV. High risk was defined using standard criteria for HIV research among MSM in Peru: engaging in any of the following in

the previous six months: condomless anal intercourse, anal intercourse with >5 male partners, self-identified as sex worker, sexual partner of an HIV-infected man or TW, diagnosis of a sexually transmitted infection (STI), including at screening (22); or sex with a person diagnosed with acute or recent HIV infection; or presentation for HIV testing due to symptoms of acute retroviral syndrome (20). TW were excluded if they were currently on gender-affirming hormone treatment.

At enrollment, each participant completed a computer-assisted self-interview (CASI) assessing demographics, sexual behavior, social venue attendance, and drug and alcohol use. HIV status was assessed by laboratory confirmed testing, previously described (21). Gender was assessed using a single item, “¿Se considera una travestí/transgénero/transsexual?” (“Do you consider yourself a transvestite/transgender/transsexual?”; note all 3 of these terms are understood as referring to transgender identity in Lima), followed by confirmation from medical record data. We defined MSM as assignment of male sex at birth, report of male or TW partner in the past 12 months, and not identifying as transgender. Drug and alcohol data were assessed using self-report; alcohol use was assessed using the Alcohol Use Disorders Identification Test (AUDIT), with alcohol dependency defined as a score of 20 or higher (23).

Covariates were selected based on prior association with HIV risk among MSM and/or TW populations. We used Poisson regression with robust standard errors to calculate adjusted prevalence ratios (aPR) and 95% confidence intervals (CI) comparing MSM and TW. Separate models were developed to understand the relationship between each covariate and gender while controlling for confounders chosen *a priori* for their known influence on sexual behavior. Age, socio-economic status, and education were considered confounders in this analysis and were included in all models. Participants missing data on gender were excluded.

This study was approved by the institutional review boards of Asociación Civil Impacta Salud y Educación, Asociación Vía Libre, and Fred Hutchinson Cancer Research Center, and all participants provided written informed consent. We used Stata version 15.1 (College Station, TX, USA) for all analyses. Two-sided statistical tests were performed at an alpha level of 0.05.

Results

Overall, 310 TW and 2,807 MSM enrolled in *Sabes* between July 2013 and September 2015 were included in this analysis; 219 were excluded (205 for discordance between transgender data from CASI and medical records; 12 for missing data on gender; 2 for missing data on HIV risk factors). Median age was 27.9 years for MSM and 28.9 for TW (Table 1). MSM were more likely than TW to have an income above minimum wage, and twice as likely to have any post-secondary education.

Demographic and behavioral data from TW and MSM participants are shown in Table 1. A number of risk behaviors differed by gender, although there was no discernable pattern of higher risk in one group. Prevalence of HIV and syphilis were similar in the two groups. TW

engaged in some protective sexual health practices more than MSM, including HIV testing in the last year (aPR=1.62; 95% CI: 1.42, 1.84) and condom use at last sexual encounter (aPR=1.20; 95% CI: 1.06, 1.36). Comparatively fewer TW reported sex in the prior 3 months. We found no consistent association between condom use and gender during receptive or insertive anal intercourse in the prior 3 months, although among those who received money, goods, or favors in exchange of sex, TW were more like to use a condom at last anal intercourse (aPR 1.12, 95% CI 1.02, 1.24). More TW reported sex while using alcohol (aPR 1.15, 95% CI 1.01, 1.31) or drugs (aPR 2.24, 95% CI 1.47, 3.41). Their responses were more likely to reveal alcohol dependency (aPR 1.38, 95% CI 1.15, 1.66), receptive anal sex (aPR 1.31, 95% CI 1.26, 1.36), and both receiving (aPR 1.96, 95% CI 1.74, 2.20) and giving (aPR 1.22, 95% CI 0.99, 1.52) money, goods, or favors in exchange for anal sex in the prior 6 months. The findings were similar when analyses were repeated stratifying by selling sex in exchange for money, goods, or favors in the previous 6 months (results not shown).

Discussion

In this population of MSM and TW in Lima, Peru, we found significant differences in HIV risk behavior between MSM and TW. Interestingly, TW in this study reported behaviors consistent with both higher and lower HIV risk compared to MSM study participants. TW were more likely to report a recent HIV test, and having used a condom at last intercourse, behaviors that protect against HIV transmission. A smaller percentage of TW reported recent sexual partners compared to MSM. However, transgender identity was also associated with behaviors, including alcohol and drug use during sex, sex work, and alcohol dependency, which may increase risk of HIV acquisition (24–27).

Due to the high proportion of TW in our study participating in sex work relative to MSM, we explored the hypothesis that selling sex for income explained some differences in risk behavior. Sex workers may have more exposure to HIV prevention interventions as they are a target group for HIV interventions globally (28). However, repeating our analysis using models stratified by selling sex in the prior 3 months did not change our findings.

Our findings are consistent with other research conducted in high and middle-income countries, including Peru, which have found the same high risk behaviors among TW, including participation in sex work, alcohol use during sex, and having unprotected receptive anal sex (4,13,15,16,24). Behavior among MSM in our cohort is similar to that reported in series of biobehavioral surveys in Peru (3), though we found higher reported sex work and lower condom use. We observed lower HIV prevalence in TW compared to previous studies among TW in Lima, which have measured a prevalence of 29-49% (3,4). This difference is likely due to the inclusion criteria of the *Sabes* study; participants were excluded if they knew they were HIV-positive prior to enrollment. Our higher observed rate of HIV testing among TW compared to MSM indicates that on average, TW may have been tested more recently, suggesting that HIV incidence may be higher among TW given the similar observed HIV prevalence. TW were also excluded from the *Sabes* study if they were using hormone therapy, which may have resulted in differences in HIV risk among *Sabes* TW compared to the general TW population.

These results add to a growing body of evidence that TW and MSM should be considered as distinct populations in health research and interventions. Our findings demonstrate differences in magnitude of key risk behaviors, which suggests that some factors may disproportionately contribute to risk among TW. This, in turn, suggests that interventions may be more effective if tailored by gender. For example, the higher proportion of alcohol dependency, and alcohol and drug use during sex indicate greater need for substance abuse interventions among TW. Further, the unexpected finding that TW were more likely than MSM to purchase anal sex may provide an avenue for future research and intervention.

This analysis has several strengths. *Sabes* used peer-outreach to obtain a large sample of both MSM and TW; both are hidden populations that cannot be reached using population sampling techniques. Due to the requirement of high-risk behavior to enter the study, we were able to compare similar MSM and TW communities. While this could reduce the generalizability of our results, this comparability is extremely important for the development of interventions and outreach strategies in these communities. The use of CASI to collect data reduced the likelihood of social desirability bias in our sample, and standardized measures such as the AUDIT allow our data to be compared to other research. Our study may be limited by bias due to the sensitive nature of the questions, or trouble with recall; however, this would likely result in under-reporting of stigmatized behaviors, and is unlikely to differ between MSM and TW. An additional limitation is the exploratory nature of this analysis; all data was collected cross-sectionally and causality cannot be determined. Finally, the quality of the question on transgender identity as collected by the study questionnaire was unclear to investigators, as 40% of respondents who identified as TW in the questionnaire could not be confirmed based on medical records. It is possible stigma and fear of discrimination may have resulted in reluctance to self-identify as transgender to health care providers, or that exclusion of TW on hormone therapy may have led to a sample of TW who are less likely to be openly transgender in their public life. However this could not be confirmed, and due to concerns about possible confusion in the CASI regarding the meaning of transgender identity, the conservative cohort of TW who have disclosed to their health care providers was chosen *a priori* for this analysis.

Our results suggest that the risk profiles of MSM and TW are distinct. However, additional research enrolling large and representative populations of TW are needed to corroborate our findings and document the most appropriate areas for intervention. Although some existing interventions target behaviors that are highly prevalent in both groups, higher rates of some risk behaviors among TW may indicate that they are not being reached by existing interventions, or may be less influenced by messaging and outreach methods targeted to gay men. Our results suggest that continuing to conflate these populations in HIV/STI research and prevention activities may result in missing important opportunities to intervene to prevent spread of these infections among TW. As HIV treatment and prevention continues to advance, disparities in HIV risk and outcomes between MSM and TW will continue to widen without policies and practices specifically addressing these separate populations.

Acknowledgements:

We would like to acknowledge the contribution of the Sabes Study Team: Carmela Ganoza, Ricardo Alfaro, Cecilia Correa, Karin Sosa, Jessica Rios, Manuel Villaran, and Patricia Segura.

Conflicts of Interest and Source of Funding: No authors had conflicts of interest to report. This work was funded by the National Institute on Drug Abuse, US National Institutes of Health (R01 grant DA032106 to AD).

References

1. UNAIDS. The Gap Report: Transgender People. July 16, 2014 Available at: <http://www.unaids.org/en/resources/campaigns/2014/2014gapreport/gapreport>
2. Baral SD, Poteat T, Strömdahl S, et al. Worldwide burden of HIV in transgender women: A systematic review and meta-analysis. *Lancet Infect Dis.* 2013; 13(3):214–22. [PubMed: 23260128]
3. Sanchez J, Lama JR, Kusunoki L, et al. HIV-1, sexually transmitted infections, and sexual behavior trends among men who have sex with men in Lima, Peru. *J Acquir Immune Defic Syndr.* 2007; 44(5):578–85. [PubMed: 17279049]
4. Silva-Santisteban A, Raymond HF, Salazar X, et al. Understanding the HIV/AIDS epidemic in transgender women of Lima, Peru: Results from a sero-epidemiologic study using respondent driven sampling. *AIDS Behav.* 2012; 16(4):872–81. [PubMed: 21983694]
5. UNICEF. At a Glance: Peru Statistics. 2013 Available from: http://www.unicef.org/infobycountry/peru_statistics.html
6. Poteat T, German D, Flynn C. The conflation of gender and sex: Gaps and opportunities in HIV data among transgender women and MSM. *Glob Public Health.* 2016; 11(7-8):835–48. [PubMed: 26785751]
7. Ortiz-Martinez Y, Rios-Gonzalez CM. Need for more research on and health interventions for transgender people. *Sex Health.* 2017; ;14(2):196–197. [PubMed: 28063463]
8. Kojima N, Park H, Konda KA, et al. The PICASSO Cohort: baseline characteristics of a cohort of men who have sex with men and male-to-female transgender women at high risk for syphilis infection in Lima, Peru. *BMC Infect Dis.* 2017; 17(1):255. [PubMed: 28399798]
9. Tucker C, Arandi CG, Bolaños JH, et al. Understanding social and sexual networks of sexual minority men and transgender women in Guatemala City to improve HIV prevention efforts. *J Health Care Poor Underserved.* 2014; 25(4):1698–717. [PubMed: 25418236]
10. Pollock L, Silva-Santisteban A, Sevelius J, et al. “You should build yourself up as a whole product”: Transgender female identity in Lima, Peru. *Glob Public Health.* 2016; 1–13.
11. Operario D, Nemoto T. HIV in transgender communities: Syndemic dynamics and a need for multicomponent interventions. *J Acquir Immune Defic Syndr.* 2010; 55(Suppl 2):S91–3. [PubMed: 21406995]
12. Poteat T, Scheim A, Xavier J, et al. Global epidemiology of HIV infection and related syndemics affecting transgender people. *J Acquir Immune Defic Syndr.* 2016; 72 Suppl 3:S210–219. [PubMed: 27429185]
13. UNAIDS. 2013 UNAIDS Report on the global AIDS epidemic. September 23, 2013 Available from: http://www.unaids.org/en/resources/documents/2013/20130923_UNAIDS_Global_Report_2013
14. CDC. Transgender People. 2016; Available from: <http://www.cdc.gov/hiv/group/gender/transgender/>
15. Bowers JR, Branson CM, Fletcher J, et al. Differences in substance use and sexual partnering between men who have sex with men, men who have sex with men and women and transgender women. *Cult Health Sex.* 2011; 13(6):629–42. [PubMed: 21442499]
16. Deutsch MB, Glidden DV, Sevelius J, et al. HIV pre-exposure prophylaxis in transgender women: a subgroup analysis of the iPrEx trial. *Lancet HIV.* 2015; 2(12):e512–9. [PubMed: 26614965]
17. Poteat T, Malik M, Scheim A, et al. HIV prevention among transgender populations: Knowledge gaps and evidence for action. *Curr HIV/AIDS Rep.* 2017; 14(4):141–152. [PubMed: 28752285]

18. Zunt JR, La Rosa AM, Peinado J, et al. Risk Factors for HTLV-II Infection in Peruvian men who have sex with men. *Am J Trop Med Hyg.* 2006; 74(5):922–5. [PubMed: 16687704]
19. Gotuzzo E, Sanchez J, Escamilla J, et al. Human T cell lymphotropic virus type I infection among female sex workers in Peru. *J Infect Dis.* 1994; 169(4):754–9. [PubMed: 8133088]
20. Lama JR, Brezak A, Dobbins JG, et al. Design strategy of the *Sabes* study: Diagnosis and treatment of early HIV infection among men who have sex with men and transgender women in Lima, Peru, 2013–2017. *Am J Epidemiol.* 2018; 187(8):1577–85. [PubMed: 29522079]
21. Duerr A, Lama J, Sanchez H, et al. Treatment as prevention (TasP) in MSM and transgender women: Successful detection of acute/recent Infection and linkage to care in Lima, Peru. *AIDS Res Hum Retroviruses.* 2014; 30(S1):A286–7.
22. Sanchez J, Lama JR, Peinado J, et al. High HIV and ulcerative sexually transmitted infection incidence estimates among men who have sex with men in Peru: awaiting for an effective preventive intervention. *J Acquir Immune Defic Syndr.* 2009;51 (suppl 1):S47–S51. [PubMed: 19384102]
23. Saunders J, Aasland O, Babor TF, et al. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. *Addiction.* 1993; 88(6):791–804. [PubMed: 8329970]
24. Herrera MC, Konda KA, Leon SR, et al. Impact of alcohol use on sexual behavior among men who have sex with men and transgender women in Lima, Peru. *Drug Alcohol Depend.* 2016 ;161:147–54. [PubMed: 26896169]
25. Deiss RG, Clark JL, Konda KA, et al. Problem drinking is associated with increased prevalence of sexual risk behaviors among men who have sex with men (MSM) in Lima, Peru. *Drug Alcohol Depend.* 2013 9;132(1–2):134–9. [PubMed: 23434130]
26. Baliunas D, Rehm J, Irving H, et al. Alcohol consumption and risk of incident human immunodeficiency virus infection: a meta-analysis. *Int J Public Health.* 2010;55(3):159–66. [PubMed: 19949966]
27. Vagenas P, Lama JR, Ludford KT, et al. A systematic review of alcohol use and sexual risk-taking in Latin America. *Rev Panam Salud Publica.* 2013;34(4):267–74. [PubMed: 24301738]
28. Poteat T, Wirtz AL, Radix A, et al. HIV risk and preventive interventions in transgender women sex workers. *Lancet.* 2015; 385(9964): 274–286. [PubMed: 25059941]

Table 1.Characteristics of MSM and TW Participating in the *Sabes* Study at the time of their Initial Visit (N=3117)

Demographic Characteristics	MSM (n=2807)		TW (n=310)		p-value ^a	aPR ^b	95% CI
	n	%	n	%			
Age (mean, SD)	27.9	8.0	28.9	8.0	0.04		
Any post-secondary education	1854	66.0	102	32.9	<0.001		
Income above minimum wage ^c	1320	47.0	92	29.7	<0.001		
HIV positive	559	19.9	61	19.7	0.92	1.04	(0.82, 1.33)
Active syphilis ^d	220	7.8	28	9.0	0.46	1.08	(0.73, 1.59)
Alcohol dependency ^e	568	20.2	103	33.2	<0.001	1.38	(1.15, 1.66)
Sexual Behavior							
Tested for HIV in prior 12 months	920	32.8	155	50.0	<0.001	1.62	(1.42, 1.84)
Used condom at last sexual encounter	1196	42.6	152	49.0	0.03	1.20	(1.06, 1.36)
Reported any sex in prior 3 months	2579	91.1	240	77.4	<0.001	0.85	(0.80, 0.91)
Sex under the influence of alcohol ^f	1164	45.1	129	53.8	0.01	1.15	(1.01, 1.31)
Sex under the influence of drugs ^f	122	4.7	25	10.4	<0.001	2.24	(1.47, 3.41)
Met a sexual partner at a venue, prior 3 months ^g	2007	71.5	234	75.5	0.14	1.07	(0.99, 1.14)
Sex with a female partner, prior 3 months	548	19.5	11	3.5	<0.001	0.15	(0.08, 0.28)
Sex with a male or TW partner, prior 3 months	2528	90.1	238	76.8	<0.001	0.87	(0.82, 0.93)
Purchased anal sex, prior 6 months ^h	495	17.7	77	24.9	0.002	1.22	(0.99, 1.52)
Condom use during last purchased anal sex ^{i,j}	294	59.4	46	59.7	0.95	1.04	(0.85, 1.27)
Sold anal sex, prior 6 months ^k	751	26.8	188	60.8	<0.001	1.96	(1.74, 2.20)
Condom use when last sold anal sex ^l	509	67.7	140	74.9	0.06	1.12	(1.02, 1.24)
Sexual Behavior with Male or TW Partners^m							
Insertive anal sex, prior 3 months	2190	86.6	174	73.1	<0.001	0.84	(0.77, 0.91)
Condomless insertive anal sex, prior 3 months ⁿ	1784	70.6	136	57.1	<0.001	0.79	(0.71, 0.89)
Receptive anal sex, prior 3 months	1884	74.5	229	96.2	<0.001	1.31	(1.26, 1.36)
Condomless receptive anal sex, prior 3 months ^o	1527	60.4	189	79.4	<0.001	1.31	(1.22, 1.41)

^aP-values refer to the univariate association.^bAll models adjusted only for a priori confounders: age, income, and education. MSM is the reference group for all analyses.^cMinimum wage = 750 Soles/Month, or 220 USD/Month^dActive syphilis defined as reactive rapid plasma reagin (RPR) with titer > 1 and positive microhemagglutination assay–Treponema pallidum (MHA-TP)^eAlcohol dependency defined as AUDIT score of 20 or above^fOf those participants who reported sex in the prior 3 months (MSM, n=2579; TW, n=240)

^gSocial venue (e.g. saunas, adult movie theaters, sex work areas, discotheques, bars, beauty parlors, etc.)

^hPurchasing anal sex is defined as giving money, gifts, favors, or a place to sleep in exchange for anal sex

ⁱEight participants did not respond to questions about sex work

^jOf those participants who reported purchasing anal sex (MSM, n=495 ; TW, n=77)

^kSelling anal sex is defined as receiving money, gifts, favors, or a place to sleep in exchange for anal sex

^lOf those participants who reported selling anal sex (MSM, n=751 ; TW, n=188)

^m2528 MSM and 238 TW reported sex with male or TW partners in the prior 3 months

ⁿOf those participants who reported insertive anal sex (MSM, n=2190 ; TW, n=174)

^oOf those participants who reported receptive anal sex (MSM, n=1884 ; TW, n=229)

aPR: adjusted prevalence ratio; CI: confidence interval; SD: standard deviation