

Transactional sex and prevalence of STIs: a cross-sectional study of MSM and transwomen screened for an HIV prevention trial

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Abstract

Introduction: Few studies have characterised the degree of engagement in transactional sex among men and transgender women who have sex with men and explored its association with sexually transmitted infections and human immunodeficiency virus in Ecuador.

Method: We screened 642 men who have sex with men and transgender women for a pre-exposure prophylaxis clinical trial (iPrEx) in Guayaquil, Ecuador, 2007–2009. We analysed the association of degree of engagement in transactional sex and prevalence of sexually transmitted infections including human immunodeficiency virus using chi-square and analysis of variance tests.

Results: Although just 6.2% of those who screened self-identified as sex workers, 52.1% reported having engaged in transactional sex. Compared to those who had never been paid for sex, those who had been paid were more likely to have a sexually transmitted infection (56.6% vs. 45.0%, $p = 0.007$) and trended towards a higher human immunodeficiency virus prevalence (16.6% vs. 10.4%, $p = 0.082$) at screening. Transgender women compared to other men who have sex with men were more likely to have sexually transmitted infections diagnosed at screening (75.6% vs. 50.0%, $p = 0.001$).

Discussion: Transactional sex is practiced widely but occasionally among the men who have sex with men and transgender women in Guayaquil who screened for the iPrEx study; however, engaging in transactional sex may not lead to a sex worker self-identification. Both transactional sex and being a transgender woman are associated with sexually transmitted infections prevalence.

Keywords

South America, homosexual, sexual behaviour, sex workers, HIV

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Introduction

Much of the research characterising male transactional sex (TS) has been conducted in response to the human immunodeficiency virus (HIV) epidemic^{1,2} particularly in Latin America³ where men who have sex with men (MSM) and transgender women (TW) represent key populations for HIV transmission.^{4–9} Men and TW who sell sex are thought to be key vectors for HIV transmission^{10–13} as TS has been associated with an increased risk of sexually transmitted infections (STIs) and HIV.^{14–16} Engagement in TS occurs along a spectrum of participation, ranging from casual, infrequent encounters to continual professional exchange.¹⁷ The degree to which an individual engages in TS, how one

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conceptualises of his or her engagement and how his or her identity impacts the overall risk for HIV and other STIs have not been sufficiently studied.

In the present study, we explored the degree to which engagement in TS, identity and gender may be associated with HIV and STIs or their risk factors.

Method

The pre-exposure prophylaxis initiative (iPrEx) was a randomised double-blinded, placebo-controlled clinical trial to determine the efficacy of once-daily oral emtricitabine/tenofovir (FTC/TDF) in preventing HIV infection in MSM and TW.¹⁸ One of the five eligibility criteria for trial participation, any one of which was qualifying, was self-report of TS in the past six months, because TS was thought to be a risk factor for HIV acquisition. TS included all compensated sex defined by the study as 'exchange of money, gifts, shelter or drugs for sex with a partner in the last six months'. Guayaquil, Ecuador, was selected as a site because of the high incidence of HIV among MSM in the region. Baseline surveillance carried out by Universidad San Francisco de Quito in 2007 demonstrated an HIV prevalence of 19.2% among MSM.¹⁹ There was also a networked community capable of recruiting that brought potential participants into the clinic for screening visits that included a written informed consent, a computer-assisted self-interview (CASI), risk-reduction counselling, a physical examination and a blood draw including testing for STIs.¹⁸ Participants received US\$10. The site screened 642 individuals between 12 December 2007 and 1 July 2009. The CASI included questions on demographics, attitudes about HIV and risk, sexual debut, sex and drug history, and measures of recent sexual exposure.

Preliminary exploratory analysis had revealed that while 52.1% of participants had engaged in TS, only 6.2% had self-identified as sex workers. Therefore, we hypothesised that self-identified sex workers were a unique subset of those engaging in TS and that such identification may have resulted from different life circumstances or lead to different outcomes. Specifically, we thought that those demonstrating ownership of a sex work identity might also have developed efficacious strategies for avoiding HIV.

We evaluated the association of TS and gender identity with socio- and sexual-demographics including HIV and STI prevalence. We focused on psychosocial development, human capital, social integration/disorganisation and economic necessity.

We thus explored the data looking for evidence that these indicators of social, psychological and economic processes were associated with mode of engagement in TS represented by the grouping categories 'ever been

paid for sex', 'self-identified sex-worker', and 'never been paid for sex'. Individuals who identified themselves to be sex workers comprised the 'self-labeled sex-worker' category. Individuals who had engaged in TS but did not identify as sex workers were grouped in the 'ever been paid for sex' category. Those who had never engaged in TS were grouped as 'never been paid for sex'. We hypothesised that the following indicators would be associated with higher prevalence of reported engagement in TS: an earlier age sexual debut and anal sexual debut; a forced sexual debut; lower educational attainment; more lifetime sexual partners; current unemployment and lower income and living apart from family.

Statistical methods

Baseline characteristics were compared by *t*-test or *F* test for continuous variables (with Bonferroni correction for multiple comparisons) and by chi-square test for categorical variables. Medians were compared using the Kruskal–Wallis analysis of variance followed by Mann–Whitney tests (in the spirit of Bonferroni testing) to ascertain which pairs of medians were different. Data were analysed using Statistical Package for the Social Sciences version 22.

Results

A total of 6.2% of individuals who were screened for iPrEx in Guayaquil self-identified as a sex worker. However, another 45.9% reported having ever been paid for sex. Therefore, more than half (52.1%) had participated in some form of TS (Table 1). When questioned about the past six months, 28.2% individuals reported at least one exchange partnership for anal sex.

Despite widespread participation in TS (17.1% had at least one transactional partnership), just 7.2% reported that all three of their last three sexual partnerships were transactional. TS is therefore *widely experienced*, but for most only *occasionally practiced* among MSM and TW.

We found differences between individuals who self-identified as sex workers and those who did not (Table 1). The never-paid group (compared to the ever-paid group) experienced a later sexual debut and later anal sexual debut (first sex: ever paid: 13.5 years vs. never paid: 14.5 years, $p=0.001$ and first anal sex: ever paid: 14.9 years vs. never paid: 16.0 years $p=0.008$, respectively), achieved higher levels of education ($p<0.001$), and had higher monthly median income (ever paid: US\$180 vs. never paid: US\$220, $p=0.005$). They were also less likely to have experienced forced sex at their anal sexual debut ($p=0.004$), have more than 150 lifetime sexual partners ($p<0.001$), and have an STI diagnosis at screening (56.6% vs. 45.0%, $p=0.007$) (Table 1).

Table 1. Individuals who screened for iPrEx in Guayaquil: characteristics by TS history.

Characteristics	Ever been paid for sex		Self-labelled sex workers		Never been paid for sex		Total		Notes
	N = 295	45.9%	N = 40	6.2%	N = 307	47.9%	N = 642	100%	
	M	SD	M	SD	M	SD	M	SD	
Age at interview ($F = 1.118$, $df = 2,633$, $p = 0.328$)	25.8	6.4	27.5	9.4	26.3	8	26.1	7.4	
Age at sexual debut ($F = 6.574$, $df = 2,632$, $p = 0.001$)	13.5*	3.4	13.5	2.7	14.5*	3.6	14.0	3.5	
Age at anal sex debut ($F = 4.907$, $df = 2,631$, $p = 0.008$)	14.9*	4.4	16.3	2.6	16.0*	4.5	15.5	4.4	
First anal sex was obliged, manipulated or seduced ($\chi^2 = 10.932$, $df = 2$, $p = 0.004$)	N = 294		N = 40		N = 307		N = 641		a,b
	31.3%*		37.5%		20.8%*		26.70%		
Education ($\chi^2 = 36.640$, $df = 4$, $p < 0.001$)	N = 293*		N = 40*		N = 306*		N = 639		a,b
Did not complete high school	39.2%		67.5%		25.8%		34.6%		
Finished high school	31.4%		20.0%		31.4%		30.7%		
At least some college	29.4%		12.5%		42.8%		34.7%		
Sexual orientation ($\chi^2 = 40.373$, $df = 4$, $p < 0.001$)	N = 289*		N = 39 [^]		N = 299 [^]		N = 627		a,b
Homosexual	69.9%		20.5%		65.9%		64.9%		
Bisexual	26.3%		74.4%		28.8%		30.5%		
Heterosexual	3.8%		5.1%		5.4%		4.6%		
More than 150 lifetime sexual partners ($\chi^2 = 17.766$, $df = 2$, $p < 0.001$)	N = 285		N = 39		N = 302		N = 626		a
	15.4%*		10.3%		5.0%*		11.2%		
Earned an income this month ($\chi^2 = 2.010$, $df = 2$, $p = 0.366$)	N = 295		N = 40		N = 307		N = 642		
	35.9%		32.5%		40.7%		38.0%		
This month's income among those earning any (USD) ($K-W = 10.65$, $p = 0.005$)	Median	IQR	Median	IQR	Median	IQR	Median	IQR	
	180*	150	200	125	220*	142.5	200	180	
Household composition ($\chi^2 = 13.417$, $df = 4$, $p = 0.009$)	N = 270		N = 39*		N = 286*		N = 595		c
Lives alone	16.3%		7.7%		16.1%		15.6%		
Lives with friend or lover	25.9%		38.5%		17.1%		22.5%		
Lives with family	57.8%		53.8%		66.8%		61.8%		
STI diagnosis at screening ($\chi^2 = 9.886$, $df = 2$, $p = 0.007$)	N = 295		N = 40		N = 307		N = 642		d
	56.6%*		40.0%		45.0%*		50.0%		
Ever had an HIV test? ($\chi^2 = 12.305$, $df = 2$, $p = 0.002$)	N = 294		N = 40		N = 307		N = 641		a
	70.1%*		50.0% [^]		75.9% [^]		71.6%		
HIV prevalence ($\chi^2 = 4.993$, $df = 2$, $p = 0.082$)	N = 295		N = 40		N = 307		N = 642		
	16.6%		12.5%		10.4%		13.4%		

Note: TS, transactional sex; STI, sexually transmitted infection; HIV, human immunodeficiency virus; IQR, Interquartile range.

^aDifference in denominators is due to an early version of computer-assisted self-interview (CASI) that allowed participants to advance without registering any answer.

^bThese variables are temporally prior to current TS status, and may indeed help determine that status. Nevertheless, the data are percentaged in this fashion to facilitate comparisons between the groups. Causality is not implied.

^cRefused to answer, don't know and other were recoded to missing ($N = 47$).

^dSTIs and symptoms that may lead to an STI diagnosis at screening include syphilis, gonorrhea, chlamydia, genital herpes, human papillomavirus or any of the following deemed to be the result of a sexually transmitted infection: genital ulcers, urethritis, proctitis, inguinal bubo syndrome, or other STI-related conditions. This does not include any hepatitis diagnoses or HIV.

*Pairs of means, medians or percentage distributions indicated by * are statistically different as shown by the Bonferroni method of multiple comparisons.

[^]Pairs of means, medians or percentage distributions indicated by [^] are statistically different as shown by the Bonferroni method of multiple comparisons.

Table 2. Individuals who were screened for iPrEx in Guayaquil: characteristics by gender identity.

Characteristics	TW		Other MSM		Total		Notes
	N = 131 M	20.4% SD	N = 511 M	79.6% SD	N = 642 M	100% SD	
Age at interview ($t = -2.027$, $df = 634$, $p = 0.043$, two-tailed)	27.3	6.8	25.8	7.5	26.1	7.4	
Age at sexual debut ($t = 4.825$, $df = 224.124$, $p < 0.001$, one-tailed)	12.8	3.1	14.3	3.5	14.0	3.5	
Age at anal sex debut ($t = 8.294$, $df = 252.816$, $p < 0.001$, one-tailed)	13.1	3.5	16.1	4.4	15.5	4.4	
Ever been paid for sex ($\chi^2 = 35.648$, $df = 1$, $p < 0.001$)	N = 131 74.0%		N = 511 44.8%		N = 642 50.8%		b
First sex was obliged, manipulated or seduced ($\chi^2 = 0.412$, $df = 1$, $p = 0.514$)	N = 131 24.4%		N = 510 27.3%		N = 641 26.7%		a,c
Education ($\chi^2 = 14.138$, $df = 2$, $p = 0.001$)	N = 131		N = 508		N = 639		a,c
Did not complete high school	45.0%		31.9%		34.6%		
Finished high school	33.6%		29.9%		30.7%		
At least some college	21.4%		38.2%		34.7%		
Sexual orientation ($\chi^2 = 74.309$, $df = 2$, $p < 0.001$)	N = 130		N = 497		N = 627		a,c
Homosexual	96.9%		56.5%		64.9%		
Bisexual	1.5%		38.0%		30.5%		
Heterosexual	1.5%		5.4%		4.6%		
Ever used any recreational drugs? ($\chi^2 = 5.059$, $df = 1$, $p = 0.024$) ³	N = 131 47.3%		N = 511 36.6%		N = 642 38.8%		c
More than 150 lifetime sexual partners ($\chi^2 = 37.472$, $df = 1$, $p < 0.001$)	N = 125 24.8%		N = 501 6.4%		N = 626 10.1%		a
Earned an income this month ($\chi^2 = 1.571$, $df = 1$, $p = 0.210$)	N = 131 42.7%		N = 511 36.8%		N = 642 38.0%		
This month's income among those earning any (USD) (K-W = 0.431, $p = 0.512$)	Median 200	IQR 180	Median 200	IQR 160	Median 200	IQR 180	
Household composition ($\chi^2 = 17.890$, $df = 2$, $p < 0.001$)	N = 124		N = 471		N = 595		d
Lives alone	17.7%		15.1%		15.6%		
Lives with friend or lover	35.5%		19.1%		22.5%		
Lives with family	46.8%		65.8%		61.8%		
STI diagnosis at screening ($\chi^2 = 43.052$, $df = 1$, $p = 0.001$)	N = 131 75.6%		N = 511 43.4%		N = 642 50.0%		e
Ever had an HIV test? ($\chi^2 = 2.267$, $df = 1$, $p = 0.132$)	N = 130 76.9%		N = 511 70.3%		N = 641 71.6%		a
HIV prevalence ($\chi^2 = 1.638$, $df = 1$, $p = 0.201$)	N = 131 16.8%		N = 511 12.5%		N = 642 13.4%		

Note: MSM, men who have sex with men; TW, transgender women.

^aDifference in denominators are due to an early version of computer-assisted self-interview (CASI) that allowed participants to advance without registering any answer.

^bThe total proportion of sex workers in Table 2 (52.1%) includes nine individuals who self-labelled as compensated sex workers (i.e. 'cachero'), but did not report ever having been paid for sex (cacheros more often accept gifts, housing, etc.).

^cThese variables are temporally prior to current transactional sex (TS) status, and may indeed help determine that status. Nevertheless, the data are percentaged in this fashion to facilitate comparisons between the groups. Causality is not implied.

^dRefused to answer, don't know and other were recoded to missing (N = 47).

^eSexually transmitted infections (STI) and symptoms that may lead to an STI diagnosis at screening include syphilis, gonorrhoea, chlamydia, genital herpes, human papillomavirus, or any of the following deemed to be the result of a sexually transmitted infection: genital ulcers, urethritis, proctitis, inguinal bubo syndrome, or other STI-related conditions. This does not include any hepatitis diagnoses or HIV.

Table 3. Sex in the three months prior to screening and with the past three partners.¹

	Transactional sex category		Gender identity	
	Ever been paid	Self-labelled sex workers	Never been paid	Other MSM
Sexual contact N ²	295	40	306	510
Reported transactional anal sex in the past six months	40.3% [^]	60% [^]	12.4% [^]	27.5%
			31.3%	28.2%
	$(\chi^2 = 0.761, df = 1, p = 0.383)$			
a				
Behaviour Prevalence				
N ³	249	37	277	453
Past three months				
Total % reporting URAI with any of the last three partners	34.9% [^]	5.4% [^]	30% [^]	28.9%
	$(\chi^2 = 2.912, df = 1, p = 0.088)$			
N ⁴	228	32	259	411
Total % reporting UIAI with any of the last three partners	33.3% [^]	62.5% [^]	45.2% [^]	47.9%
	$(\chi^2 = 38.765, df = 1, p < 0.001)$			
N ⁵				
Number of male partners in the past three months	Median	IQR	Median	IQR
	291	39	303	502
	4*	3	2*	3
	4	5	5	7
	3	5	3	3
	$(K-W = 43.686, df = 1, p < 0.001)$			
Median sexual contacts with the last three partners by type in the last three months				
N ³	277	37	249	453
Receptive anal intercourse (RAI)	2*	0*	2 [^]	1
	8	0	4.5	13
	$(K-W = 26.294, df = 2, p < 0.001)$			
N	277	37	249	453
Unprotected RAI	0 [^]	0*	0*	0
	2	0	0	3
	$(K-W = 5.083, df = 1, p = 0.024)$			
N ⁴	228	32	259	411
Insertive anal intercourse (IAI)	0 [^]	4*	1*	2
	3	10	0	0
	$(K-W = 51.518, df = 1, p < 0.001)$			
N	228	32	259	411
Unprotected IAI	0*	1*	0 [^]	0
	1	4	0	0
	$(K-W = 38.846, df = 1, p < 0.001)$			

(continued)

Table 3. Continued.

	Transactional sex category				Gender identity			
	Ever been paid	Self-labelled sex workers	Never been paid	Other MSM	Ever been paid	Self-labelled sex workers	Never been paid	Other MSM
Sexual contact								
N ²	295	40	306	510	131	641	510	641
Reported transactional anal sex in the past six months	40.3% [^]	60% ^{^*}	12.4% ^{^*}	27.5%	31.3%	28.2%	27.5%	28.2%
Mean sexual contacts with the last three partners by type among those reporting any such contacts in the last three months	M	M	M	M	M	M	M	M
N	177	8	183	272	96	368	272	368
Receptive anal intercourse (RAI)	11.4	12.0	8.4	7.7	16.1	9.9	7.7	9.9
	(<i>F</i> = 0.864, <i>df</i> = 2, 365, <i>p</i> = 0.422)				(<i>t</i> = -2.151, <i>df</i> = 102.862, <i>p</i> < 0.001)			
Mean contacts among those reporting any such contacts	N	N	N	N	N	N	N	N
Unprotected RAI	10.1	1.0	7.4	8.7	12.1	8.7	7.6	8.7
	(<i>F</i> = 0.886, <i>df</i> = 2, 169, <i>p</i> = 0.414)				(<i>t</i> = -1.466, <i>df</i> = 58.628, <i>p</i> = 0.148)			
Insertive anal intercourse (IAI)	10.4	13.6	16.3	13.8	5.0	13.8	14.6	13.8
	(<i>F</i> = 0.788, <i>df</i> = 2, 264, <i>p</i> = 0.456)				(<i>t</i> = 3.497, <i>df</i> = 198.208, <i>p</i> = 0.001)			
Unprotected IAI	8.4	10.4	15.8	12.6	5.4	12.6	13.2	12.6
	(<i>F</i> = 0.881, <i>df</i> = 2, 210, <i>p</i> = 0.416)				(<i>t</i> = 2.279, <i>df</i> = 111.922, <i>p</i> = 0.025)			

Note: MSM, men who have sex with men; RAI, unprotected receptive anal intercourse; K-W, Kruskal-Wallis.

¹Most of these data were collected in the computer-assisted self-interview (CASI) interview in a partner-by-partner sexual network instrument limited to the past three partners in a three-month recall period.

²One participant failed to complete the CASI so that all screening sexual network data are based upon *n* = 641 of the 642 individuals who screened.

³Any individual answering 'don't know' or 'refused' to RAI contacts with any of the last three partners (*n* = 78) was coded to missing for these variables.

⁴As above those who answered don't know or refused to IAI with any of their partners were recoded to missing (*n* = 125).

⁵Total number of male partners was collected on an interviewer administered instrument not limited to the past three partners. Individuals declining to answer were coded to missing (*n* = 8).

⁶Pairs of means, medians or percentage distributions indicated by * are statistically different as shown by the Bonferroni method of multiple comparisons or by the Mann-Whitney *U* test.

⁷Pairs of means, medians or percentage distributions indicated by ^ are statistically different as shown by the Bonferroni method of multiple comparisons or by the Mann-Whitney *U* test.

Compared to participants who had ever been paid or never paid, the self-labelled sex workers had strikingly lower levels of education ($p < 0.001$) and identified more frequently as bisexual ($p < 0.001$). Compared to those who had never been paid, sex workers were more likely to live with a friend or lover (rather than with family, $p = 0.009$). Sex workers also were less likely to have ever had an HIV test than either of the other two groups ($p = 0.002$, Table 1).

As compared to MSM, TW reported earlier first sexual experiences (age at sexual debut: 12.8 years for TW vs. 14.3 years for other MSM, $p < 0.001$ and age at anal sexual debut: 13.1 years for TW vs. 16.1 years for other MSM, $p < 0.001$), leaving school ($p = 0.001$) and being more likely to have used recreational drugs (47.3% vs. 36.6%, $p = 0.024$) (Table 2). TWs were almost four times as likely to have had 150 or more lifetime partners (24.8% vs. 6.4%, $p < 0.001$), were more likely to live with friends, lovers or alone (atypical among young Latin Americans) ($p < 0.001$), and were more likely to have an STI (75.6% vs. 43.4%, $p = 0.001$) and HIV at screening (16.8% vs. 12.5%, $p = 0.201$). We found no significant differences in recent income between TW and other MSM ($p = 0.512$).

Sexual networks

A total of 30.6% of individuals who were screened for iPrEx in Guayaquil reported unprotected receptive anal intercourse (URAI) in the past three months with at least one of the last three sexual partners. Self-identified sex workers were least likely to report URAI (5.4%) as compared to the ever been paid (34.9%) and the never been paid (30.0%) groups, and most likely to report unprotected insertive anal intercourse (UIAI) (Table 3a, Supplementary material).

The median number of highest risk (i.e., URAI) episodes for all three groups was 0 (Table 3b, Supplementary material), though the comparison reached significance due to the 95% of self-identified sex workers who reported *no* URAI. Among those who did report URAI, the mean number of episodes across the past three partners during the past three months was 8.7, but there was only one for each of the two self-identified sex workers in this group (Table 3c, Supplementary material).

Discussion

Of the participants in Guayaquil who reported ever having engaged in TS – surprisingly more than half – only about 1 in 10 self-identified as sex workers. We found that TS was practiced widely but only occasionally for most, inconsistent with financial dependence on

full-time TS. A similar pattern was observed in Australia, where 21.3% of MSM reported TS, while only 0.2% self-identified as sex workers.²⁰

The distribution of high-risk behavior for HIV acquisition was by no means even across groups, and, interestingly, those who self-identified as sex workers did not have the highest rates of the highest risk sex (URAI), but instead engaged in more insertive anal intercourse which confers a lower risk of HIV acquisition than URAI.

A recent study of epidemic and differential patterns of HIV–STI risk among MSM in Quito, Ecuador, reported high levels of STIs including HIV among the MSM studied as well as strong associations among sex workers with an odds ratio for HIV acquisition of 3.3 when compared to those who have never engaged in TS.²¹ Our study corroborates an increased STI prevalence and a trend towards increase in HIV prevalence among individuals engaging in TS.

Additionally, we found that TW as compared to other MSM maintain many risk factors for STI acquisition leading to higher prevalence. Specifically, TW more often experienced an earlier sexual debut, left school early, had more sexual partners, were paid for sex and used recreational drugs.

Public policy interventions intended to reduce risk among self-identified sex workers among MSM and TW should cast a wide net to include the wider population of individuals who exchange sex for good or services. Otherwise, certain individuals who engage in TS but do not consider themselves to be sex workers – simply may not recognise themselves as the intended targets of such interventions.

Limitations of the present study include the cross-sectional approach that does not permit assessments of causality. We looked at numerous comparisons which can increase the Type-I error rate, though we used Bonferroni corrections to help mitigate this possibility. Our participants were recruited for a clinical trial and may not fully represent the entire spectrum of the MSM and TW community in Guayaquil, Ecuador, or beyond. Our findings contribute to the existing literature by providing new data on TS among MSM and TW in a region where such studies are scarce.

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