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Transactional sex, condomless anal sex, and HIV risk among men who have sex with men

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Abstract

To understand the HIV epidemic among men who have sex with men who engage in transactional sex (MSM-TS) in Paris, France, we sought to examine the association between engagement in transactional sex and HIV risk behaviors among MSM in Paris, France. Users of a geosocial-networking application in Paris were provided an anonymous web-based survey ($N=580$), which included questions about transactional sex and behavioral risk factors for HIV along with sexually transmitted infection (STI)/HIV status. Multivariate analyses showed that engagement in transactional sex was associated with condomless receptive and insertive anal intercourse (adjusted relative risk [aRR]= 1.34, 95% confidence interval [CI]=1.04–1.72 and aRR=1.41, 95% CI=1.04–1.91, respectively). MSM-TS were more likely to have engaged in substance use before or during sex (aRR=1.35, 95% CI=1.13–1.62), to have participated in group sex (aRR=1.37, CI=1.13–1.62), and to have had an STI during the last year (aRR=1.68, 95% CI=1.16–2.45). Transactional sex was not associated with HIV status. MSM-TS in Paris engaged in higher HIV risk behaviors, however, did not have higher rates of HIV infection. Sexual health interventions should continue to target MSM-TS; however, future studies should characterize the social, cultural, and structural factors that interact with individual behaviors to elevate HIV risk for MSM-TS.

Keywords

HIV; men who have sex with men; transactional sex; France

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Introduction

The global HIV epidemic among men who have sex with men (MSM) is an important public health concern around the world given the disproportionate burden of infection this group faces. The World Health Organization reports that MSM make up 49% of new HIV infections in Western and Central Europe and North America.¹ Given the broad categorization of MSM, a more nuanced approach is necessary to assess the HIV risk of MSM subgroups.

Previous research has suggested that transactional sex poses elevated risk for HIV among MSM. Transactional sex is defined as the exchange of sex for money or some other commodity, an expression that recognizes diverse configurations of contemporary sex work among men from routine employment, to casual encounters, to other needs like food or shelter.² One meta-analysis of 33 studies in 17 countries found that MSM who engage in transactional sex (MSM-TS) had overall higher HIV prevalence than those who do not.³ However, conflicting empirical evidence exists around HIV among MSM-TS depending on local context. One Nigerian study, for example, found a slightly lower rate of HIV among MSM engaged in transactional sex than those who were not while a study from Mumbai, India found that men selling sex had higher rates of HIV.^{4,5} By contrast, a large study of gay and bisexual male sex workers in Australia found that their rates of HIV and other sexually transmitted infections (STIs) were no different than their nonsex-working peers.⁶ These studies are illustrative examples of the diverse epidemiology that exists among MSM-TS globally, underscoring the need for local, contextualized approaches to research and interventions among MSM-TS.⁷

Among MSM in France, diagnoses of HIV have remained persistently stable and even increased slightly in recent years, contrasting with declines observed among other populations.⁸ These trends demand renewed attention to subpopulations that might be at increased risk for HIV infection. Although some historical literature exists on MSM-TS in France, more recent accounts are needed.⁹ This need is especially great given the disparate HIV and STI prevalence estimates among MSM-TS in other parts of Europe.⁸ To address this gap and explore the role of transactional sex in sexual risk and HIV infection rates among MSM in France, we undertook a behavioral survey to assess risk behaviors, such as condom use in receptive and insertive anal intercourse, substance use before or after sex, participation in group sex, as well as STI and HIV status among a group of Parisian MSM-TS. We sought to understand whether transactional sex is associated with sexual health-related risk practices and whether transactional sex is associated with HIV and other STIs in this group.

Methods

We employed broadcast advertisements on a popular geosocial networking application ('app') for MSM, targeting individuals in the Paris (France) metropolitan area in October 2016. Users were shown an advertisement with text encouraging them to complete an anonymous web-based survey.¹⁰ In English the ad read, 'Looking to improve your health, and the health of those in your community? Share your thoughts with us on gay and bisexual

men's health and have a chance to win €65! Click more to get started!' The advertisement was placed during three consecutive 24hour weekday periods and was presented to users upon opening the app for the first time during the broadcast period. Upon clicking, users were directed to a webpage to complete the survey, which included 52 items in total. As an incentive for participation, the advertisement described that users who completed the survey would be entered in a raffle to win e65 (approximately \$70 US dollars at the time of survey administration).

Users were given the option to take the survey either in English or French. The vast majority (94.3%) took the survey in French. The survey took an average of 11.4 min for users to complete. At the end of the recruitment period, 5206 users had clicked on the advertisement and reached the landing page of the survey, 935 users provided informed consent and began the survey, and 580 users provided informed consent and completed the survey (62.0% completion rate and 11.1% overall completion rate). All protocols were approved by the New York University School of Medicine Institutional Review Board prior to data collection.

Variables

The survey collected information on participant demographics, including age, sexual orientation, country of birth, employment status, and relationship status. It also asked questions about sexual practices, including engagement in group sex, drug use before or during sex, condomless anal intercourse, engagement in transactional sex, as well as HIV and STI status (Appendix 1).

Statistical analysis

The study participants' characteristics, sexual risk behaviors (including condomless anal intercourse, substance use before or after sex, engagement in group sex), and HIV/STI status according to engagement in transactional sex were analyzed descriptively (i.e. frequencies and percentages) and compared using Chi square test. In the multivariable analyses, we used a modified Poisson regression model to assess the association between transactional sex and condomless anal intercourse, substance use before or after sex, engagement in group sex, and HIV/STI status, adjusting for sociodemographic characteristics.¹¹ In addition to general engagement in transactional sex, we conducted a sensitivity analysis to assess the association between recent engagement in transactional sex (within last year) and HIV risk behaviors. The results are presented as adjusted relative risks (aRRs) with 95% confidence intervals (CIs). All statistical analyses were carried out using Stata version 14.0 (Stata Corp., College Station, TX, USA). All tests were two-sided, with a level of significance set at 0.05.

Results

Table 1 presents the characteristics of participants by engagement in transactional sex. Of the 580 participants, 14.0% (n=81) reported they had engaged in transactional sex. 44.5% (n=36) of MSM-TS were below 30 years of age compared to 30.7% (n=151) of MSM who do not engage in transactional sex (MSM-NTS). Additionally, 51.9% (n=42) of MSM-TS were employed, while 70% (n=345) of MSM-NTS were employed.

Among MSM-TS, 63.0% (n=51) engaged in condomless receptive anal intercourse, whereas 48.1% (n=237) of MSM-NTS reported engaging in condomless receptive anal intercourse ($p<0.01$). 32.1% (n=26) of MSM-TS reported that they had been diagnosed with an STI in the past year compared to 20.7% (n=102) of MSM-NTS ($p<0.05$). Moreover, 66.7% (n=54) of MSM-TS reported substance use during sex and 82.7% (n=67) reported participation in group sex, both higher than their MSM-NTS counterparts ($p=0.004$ and $p<0.0001$, respectively).

The results of the multivariate analyses are presented in Table 2. Engagement in transactional sex was positively associated with condomless receptive anal intercourse and condomless insertive anal intercourse in these multivariate models (aRR=1.34, 95% CI=1.04–1.72 and aRR=1.41, 95% CI=1.04–1.91, respectively). Compared with MSM-NTS, MSM-TS were more likely to have used a substance before or during sex (aRR=1.35, 95% CI=1.13–1.62), to have participated in group sex (aRR=1.37, CI=1.13–1.62), and to have had an STI during the last year (aRR=1.68, 95% CI=1.16–2.45), after adjusting for age, sexual orientation, country of origin, and employment and relationship status. Engagement in transactional sex was not associated with HIV-seropositive status (aRR=1.53, 95% CI=0.84–2.78).

Furthermore, MSM-TS were more likely to report more frequent episodes of condomless receptive and insertive anal intercourse (aRR=2.17, 95% CI=1.08–4.36 and aRR=2.77, 95% CI=1.40–5.51, respectively), as seen in supplemental Table 1. In terms of STIs (supplemental Table 2), MSM-TS were more likely to report infection with Chlamydia (aRR=2.53, CI=1.41–4.56) and herpes simplex virus (HSV) (aRR=2.63, CI=1.10–6.28).

A sensitivity analysis (supplemental Table 3) showed that MSM-TS within three months were more likely to have engaged in condomless receptive anal intercourse (aRR=1.34, 95% CI=1.03–1.76), to have had an STI (aRR=2.07, 95% CI=1.32–3.23), and have engaged in substance abuse (aRR=1.50, 95% CI=1.20–1.88). MSM-TS but not in the past three months were more likely to have engaged in both insertive (aRR=1.57, 95% CI=1.08–2.27) and receptive (aRR=1.37, 95% CI=1.07–1.74) condomless anal intercourse, and to have participated in group sex (aRR=1.48, 95% CI=1.32–1.67).

Discussion

For MSM in Paris, transactional sex was associated with higher STI rates and HIV risk behaviors. The MSM-TS in this study were younger with higher rates of unemployment than MSM-NTS. Interestingly, while being involved in transactional sex was associated with certain high-risk practices and translated into higher rates of STIs, a similar relationship was not observed with HIV infection.

These findings hint at the complex interplay between transactional sex, risk, and HIV infection among MSM in Paris. Our findings build upon previous studies from other parts of the world that demonstrate an association between transactional sex and HIV risk behaviors among MSM. A recent U.S. Boston-based study revealed that transactional sex among MSM was significantly associated with sex under the influence of drugs or alcohol.¹² In a study in

the French Antilles and French Guiana on MSM-TS, transactional sex was associated with drug use and a greater number of sex partners.¹³ Furthermore, supplemental Table 1 shows that transactional sex was associated with a higher number of episodes of condomless anal intercourse. It is unclear whether this represents multiple sexual encounters with the same partner or with different partners; however, the number of condomless exposures among MSM-TS likely is a major driver of higher STI diagnosis.

Our findings also build upon studies showing the positive association between MSM-TS and STI diagnosis, fitting with the trend of a higher STI burden among MSM in France.^{3,14} In our study, Chlamydia and HSV were specifically associated with transactional sex: prevalence was 9.48 and 4.31%, respectively. To put the Chlamydia prevalence in context, the landmark IPERGAY trial reported an overall Chlamydia prevalence over 20%.¹⁵ The low overall STI prevalence as compared to the IPERGAY trial may be a result of self-reported STI status and lack of testing in our study. For the same reason, due to lack of testing it is impossible to know whether Chlamydia and HSV infection rates were actually more prevalent than other STIs or simply reported at a higher rate among MSM-TS. Thus, it is unclear whether transactional sex itself serves as a risk factor for Chlamydia infection. Assuming the rates of Chlamydia were actually higher, it is possible there were higher rates of asymptomatic carriage of Chlamydia in our sample of MSM-TS, who were notably younger with higher rates of condomless anal intercourse. A recent study in France exploring the prevalence of asymptomatic STIs at different anatomic body sites among MSM showed a significant prevalence of Chlamydia in all three sites assessed (pharynx, rectum, and urine) and a particularly high rate of rectal chlamydia in MSM reporting receptive anal intercourse.¹⁶ This supports our finding of greater association of Chlamydia compared to other STIs. Higher Chlamydia rates may also be an indication of irregular utilization of STI testing and other healthcare services. Asymptomatic HSV carriage may also explain the high rate of HSV among MSM-TS as well; however, more research among MSM subpopulations in France is necessary to understand the predictors of HSV infection.

The lack of an association between transactional sex and HIV-seropositive status may be due to low overall prevalence of HIV in this sample (10%) or lower rates of self-reported HIV among MSM-TS, both of which may mask a higher HIV prevalence than MSM-NTS. Furthermore, while we did not include the participants who responded that they did not know their HIV status in our analysis, the 12.4% of MSM in Paris who responded in this way may include many who are HIV-positive. One of the drivers of continued high HIV incidence among MSM is the lack of knowledge of one's HIV status, and this likely holds true among MSM-TS. There may also be protective behaviors among MSM-TS in Paris such as higher use of preexposure prophylaxis (PrEP). A recent study showed a high level of awareness of PrEP among MSM-TS in Paris and a higher likelihood to use PrEP than MSMNTS; however, data on actual rates of PrEP use among MSM-TS are lacking.¹⁷ Other protective behaviors may include increased adherence to antiretroviral therapy leading to greater community viral suppression, as well as MSM-TS having sex with regular partners who are known to be HIV-negative or who are tested more frequently.

Future research understanding the relationship between transactional sex and HIV risk should assess the varied motivations of MSM-TS and how different expressions of paid sex

may relate to different practices, sexual subcultures, and infection rates. For example, male sex workers face punitive laws and criminalization throughout the world in ways MSM-TS who do not identify as sex workers may not understand. Thus, there is likely further nuance around risk behaviors and HIV incidence within this group of MSM-TS.

Furthermore, the cultural and legal context of any assessment of transactional sex and HIV risk is also important. A recent global meta-analysis revealed an association between a lower average HIV prevalence among MSM-TS in countries that actively enact laws to protect the rights of sexual minorities, such as Canada, Argentina, and Ecuador.¹⁸ In France, while same-sex relations have been legal since the 1980s, transactional sex has always been criminalized.¹⁹ In this context, it will be important to understand the local sociocultural factors in Paris that influence rates of HIV infection among MSM-TS, as criminalization may deter some from seeking HIV prevention and care.

Future studies should explore the racial/ethnic backgrounds and socioeconomic and employment status of the MSM population in France in order to gauge how these factors intersect with sexual risk among MSM-TS. It is notable that 24.7% of our sample of MSM-TS were born outside of France and 23.5% were unemployed. Previous research has found that for sub-Saharan African migrants living in Paris, transactional sex between men and women has been associated with HIV risk due to immigration hardships and to a lack of stability in housing and in relationships.²⁰ Understanding the mechanisms for this risk among MSM is essential.

Limitations

First, our sample was recruited from a single geosocial-networking app raising the potential for selection bias. Self-report bias is also a concern for self-reported measures of sexual risk and HIV/STI status. The survey did not confirm HIV/STI status by serological testing. Also, our study sample was mostly gay-identified, single, and born in France, further reducing the generalizability of the results. As such, our results provide limited insight into MSM-TS who have other sexual identities such as straight or bisexual, are in relationships, or are recent immigrants. Furthermore, the motivations behind engaging in high risk behaviors and partner-type characteristics of MSM-TS may have further contextualized our findings.

Conclusion

Our results provide a meaningful contribution to the literature surrounding MSM, transactional sex, and HIV risk. Sexual health promotion interventions should target MSM-TS but such interventions must also account for the nuances of contemporary sex work including its diverse manifestations. Qualitative studies should explore factors that motivate sexual risk behaviors and assess how these relate to transactional sex, including attention to how sexual adventurism could mediate men's entry into the world of selling sex.²¹

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix 1. Expanded description of study variables

We assessed engagement in group sex events with the question, 'Have you ever had group sex (sex with three or more people during a single sexual encounter)?' Response options were as follows: 'Yes, in the last three months,' 'Yes, but not in the last three months,' and 'No.' For analyses, we retained the original three-level variable as well as dichotomized it to be 'Yes' (indicating any group sex) and 'No' (indicating no group sex). We assessed drugs use by asking 'How many times in the past three months have you or your partners used alcohol or drug before or during sex?' Response options were 0 times, 1–2 times, 3–5 times, 6–9 times, and 10 or more times. We dichotomized it to be '0 times' and '1 or more times.'

Participants were also asked about condomless anal intercourse. Participants indicated the total number of partners with whom they had had condomless insertive anal intercourse and condomless receptive anal intercourse in the preceding three months. These count variables were transformed into categorical variables with two categories (0 partners and 1 or more partners). The study separately assessed condomless insertive anal intercourse, condomless receptive anal intercourse, and any condomless anal intercourse including condomless insertive anal intercourse or condomless receptive anal intercourse.

We assessed engagement in transactional sex with the question, 'Have you ever exchanged sex for money, drugs, food, or shelter?' Response options were as follows: 'Yes, in the last three months and I used a smartphone application to do so,' 'Yes, in the last three months and I did not use a smartphone application to do so,' 'Yes, but not in the last three months; I did use a smartphone application to do so,' 'Yes, but not in the last three months; I did not use a smartphone application to do so,' and 'No.' For the purposes of these analyses, a composite variable comprising all 'Yes' responses was created to indicate any transactional sex versus none.

Participants were also asked to self-report their HIV status (negative/positive/unknown); we chose to exclude the 12.4% of men who did not know their status. Participants were also asked to report diagnoses of other STIs in the 12 months prior to participation, specifically gonorrhea, Chlamydia, syphilis, herpes simplex virus, human papillomavirus, and hepatitis C. In addition to examining specific STIs, a composite variable was created to indicate any recent STI diagnosis (yes/no).

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Table 1.Sample characteristics by engagement in transactional sex ($N = 580$).

	Transactional sex		p^a
	Total, N (%)	Yes No	
Overall	580 (100)	81 (14.0) 493 (85.0)	
Age (years)			0.045
18–24	84 (14.5)	20 (24.7) 64 (13.0)	
25–29	103 (17.8)	16 (19.8) 87 (17.7)	
30–39	180 (31.0)	17 (21.0) 162 (32.9)	
40–49	139 (24.0)	20 (24.7) 110 (24.1)	
50	54 (9.3)	7 (8.6) 47 (9.5)	
Sexual orientation			0.362
Gay	487 (84.0)	70 (86.4) 417 (84.6)	
Bisexual	69 (11.9)	7 (8.6) 61 (12.4)	
Born in France			0.238
Yes	450 (77.6)	60 (74.1) 389 (78.9)	
No	113 (19.5)	20 (24.7) 93 (18.9)	
Employment status			0.003
Employed	388 (66.9)	42 (51.9) 345 (70.0)	
Unemployed	84 (14.5)	19 (23.5) 65 (13.2)	
Student	81 (14.0)	17 (21.0) 64 (13.0)	
Current relationship status			0.394
Single	378 (65.2)	51 (63.0) 326 (66.1)	
Relationship with a man	172 (29.7)	28 (34.6) 144 (29.2)	
Condomless receptive anal intercourse			0.014
0 partners	340 (58.6)	39 (46.9) 300 (60.9)	
1 partners	226 (39.0)	42 (51.9) 184 (37.3)	
Condomless insertive anal intercourse			0.046
0 partners	371 (64.0)	43 (53.1) 327 (66.3)	
1 partners	193 (33.3)	34 (42.0) 158 (32.1)	
Any condomless anal intercourse			0.006

	Transactional sex		Total, N (%)	Yes	No	^a <i>p</i>
	Yes	No				
0 partners	269 (46.4)	26 (32.1)	242 (49.1)			
1 partners	289 (49.8)	51 (63.0)	237 (48.1)			
Substance use during sex						0.004
No	272 (46.9)	27 (33.3)	244 (49.5)			
Yes	293 (50.5)	54 (66.7)	239 (48.5)			
Participation in group sex						<0.0001
No	198 (34.1)	14 (17.3)	184 (37.3)			
Yes	378 (65.2)	67 (82.7)	309 (62.7)			
HIV status						0.262
Negative	444 (76.6)	60 (74.1)	384 (77.9)			
Positive	58 (10.0)	11 (13.6)	47 (9.5)			
Any STI						0.022
No	451 (77.8)	55 (67.9)	391 (79.3)			
Yes	129 (22.2)	26 (32.1)	102 (20.7)			

STI: sexually transmitted infection.

^aChi square analysis.

Table 2.

Multivariate association (aRRs)^a between transactional sex with condomless anal intercourse, HIV status, STI status, substance use before/during sex, and participation in group sex.

	Transactional sex aRR (95% CI)
Condomless receptive anal intercourse	1.34 (1.04, 1.72) *
Condomless insertive anal intercourse	1.41 (1.04, 1.91) *
Condomless anal intercourse	1.36 (1.12, 1.65) **
Substance use before or during sex	1.35 (1.13, 1.62) **
Participation in group sex	1.37 (1.20, 1.56) **
HIV-positive	1.53 (0.84, 2.78)
STI status	1.68 (1.16, 2.45) **

aRR: adjusted risk ratio; CI: confidence interval; STI: sexually transmitted infection.

^a Adjusted for age, sexual orientation, origin (born in France), employment, and relationship status.

*
p < 0.05

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p < 0.01.