

Clients of Female Sex Workers in Lima, Peru

A Bridge Population for Sexually Transmitted Disease/HIV Transmission?

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Objectives: The objectives of this study were to determine the prevalence of risk behaviors, gonorrhea, and chlamydia in clients of female sex workers, and to compare them with men selected from the general population.

Study Design: We conducted a cross-sectional study of men recruited from commercial sex venues in Lima, Peru from January to February 2002. Subjects answered a survey and provided a urine sample.

Results: Men reported that in the recently concluded commercial sex encounter, 95.8% used condoms, and 85.8% always used condoms with female sex workers. Only 16% reported always using condoms with their stable partners; 50.8% always used condoms with casual, noncommercial partners; and 59.6% always used condoms for homosexual anal sex. There were 8 (2%) cases of chlamydia and no cases of gonorrhea.

Conclusions: Clients of female sex workers report high rates of condom use with sex workers and a low prevalence of chlamydia and gonorrhea. It is unlikely that they constitute a bridging population.

SEXUALLY TRANSMITTED DISEASES (STDs) can spread from limited high-prevalence populations into the general, low-prevalence population through people who bridge the gap between the 2 groups. These "bridge populations" are defined as individuals who engage in sex with both high-risk partners such as female sex workers (FSWs) and low-risk partners such as their wives or steady girlfriends.

Several studies from Peru have focused on different aspects of the bridge population model. They demonstrate that up to one fourth of FSWs have had a laboratory-confirmed diagnosis of an STD and that HIV incidence ranges from 0% to 9.6%.¹⁻⁴ Preliminary unpublished data from 2 STD clinics in Lima, combining data for both male and female sex workers, showed that during 2001, 10.3% had serologic evidence for syphilis infection, 4.5% had active chlamydia infections, 4.7% were HIV-positive, and 0.4% had active gonorrhea infections (Javier Salvatierra and Cristina Magalan, personal communication).

Other studies have demonstrated that buying sex is common in the general population, with 34% to 59% of men reporting buying sex from a FSW at least once, using condoms infrequently.^{5,6} Unpublished data from a population-based survey of young, lower-

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class men found that 10% had paid for sex in the past year alone (Carlos F. Caceres, personal communication). Another study of male partners of HIV-positive women recruited from a Peruvian maternity hospital showed that 63% of those men had frequented FSWs, whereas 32% of men from the HIV-negative control group had used the services of FSWs.⁷ The use of condoms with long-term partners is uncommon.⁷⁻¹⁰

These data suggest that FSWs constitute a high-risk core group in which STDs are common and that their clients could serve as a bridging population to carry STDs into the general population. This study tests the hypothesis that men in Lima, Peru, who buy sex from FSWs constitute such a bridge population.

Materials and Methods

Participant Recruitment

Participants were recruited from brothels and hostels during January and February 2002. The brothels were legal, regulated institutions that required the sex workers to have monthly medical checkups at government STD clinics. The 4 brothels sampled ranged in size from approximately 30 to 100 rooms and were located in 2 different complexes, 1 near downtown Lima and another near the port of Callao. They were the largest and most well-established of the approximately 5 to 10 brothels in Lima. Of the dozens of hostels catering to commercial sex, we approached 15 of the busiest in 5 different urban zones known to local healthcare providers for having abundant street-based commercial sex. Eleven gave us permission to use their facilities. Each had between 5 and 10 rooms and derived most of their income through street-based commercial sex, but they did not have a formal relationship with the government or public health institutions.

To recruit clients from the brothels, the interviewers and study coordinator approached the FSWs individually at the beginning of their shifts and informed them of the study, asking for their help in recruiting participants. FSWs would refer their clients to us after concluding their sexual encounter. During the shift, if an interviewer was not occupied, he or she would approach clients directly to invite them into the study. We were not able to record the number of overall clients approached by FSWs and interviewers in

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TABLE 1. Characteristics of 407 Clients of Female Sex Workers,* Lima, Peru, January–February 2002

Variable	Nos. Are Reported as Percentages Unless Otherwise Specified
Age in years median (range)	31 (18–80)
Frequency of purchasing sex	
Once or more a week	27.0
Once or more a month	57.3
Several times a year or less	15.7
During the commercial sex encounter just before the interview	
Type of sex [†]	
Vaginal	98.8
Oral insertive	54.3
Anal	6.6
Oral vaginal	5.4
Condom source	
Female sex workers	77.6
Male clients	18.2
No condom used	4.2
Sexual encounters in the past 3 months	
Number of encounters with a female sex worker	
Median (range)	5 (1–68)
Condom use with female sex worker	
Never	1.2
Sometimes	9.4
Always	89.4
No. of encounters with stable partner	
Median (range)	12 (1–144)
Condom use with stable partner	
Never	67.8
Sometimes	16.2
Always	16.0
No. of encounters with casual and commercial partners	
Median (range)	6 (0–70)
Condom use with casual and commercial partners	
Never	0
Sometimes	22.6
Always	77.4
Total number of partners	
Median (range)	4 (2–44)
STD Prevalence and History	
Chlamydia (lab results)	
Positive	2.0
Gonorrhea (lab results)	
Positive	0
History of genital ulcer	
Yes	14.5
History of penile discharge	
Yes	17.4
Prior laboratory examination for HIV	
Yes	34.6
Attitudes, beliefs, and behaviors regarding sexually transmitted diseases, HIV, and condoms	
Reasons given for not using condoms [‡]	
I am not at risk	50.4
They decrease sensation	38.1
My partner does not like them	22.6
Other	18.4
They interrupt sex	13.8
I always use condoms with my partners	11.6
I do not like to go into the store to buy them	5.9
Real men do not use condoms	2.5
Condoms are too expensive	1.0
Who taught participant to use condoms [‡]	
Sex worker	32.2
Healthcare worker	21.2
Teacher at school	17.7
Packet instructions	15.0
Other	12.3
Friends	10.1
Family	5.9
Sexual partner	3.0
I never use condoms	0.7

TABLE 1. (Continued)

Variable	Nos. Are Reported as Percentages Unless Otherwise Specified
Ever paid more for sex without a condom	
Yes	6.7
Ever forgotten to use a condom while inebriated	
Yes	21.4
Condom breakage	
Most of the time	0.7
Half of the time	1.0
Less than half of the time	5.5
Rarely	33.2
Never	59.7
Condom slippage	
Most of the time	1.5
Half of the time	0.5
Less than half of the time	3.7
Rarely	29.0
Never	65.4
Tried to buy condoms in past 6 months	
Yes	68.0
Perceived likelihood of personal HIV infection	
Totally improbable	11.9
Very improbable	16.5
Somewhat improbable	16.1
Somewhat probable	43.2
Very probable	12.4
Already infected	0

*Data collected from 407 men with stable partners (defined as women whom they considered a "regular partner" and with whom they had intercourse in the preceding 3 months) who had just concluded a commercial encounter with a female sex worker during which penetration occurred.

†Percentages sum to greater than 100% because participants engaged in more than 1 type of sexual activity.

*Percentages sum to greater than 100% because participants chose more than 1 answer.

the brothels. In the hostels, we approached every client who entered with a sex worker as they registered at the reception desk and invited them to participate. We were able to record a participation rate in these venues.

We recruited clients from early evening to late night on Thursdays through Sundays, the busiest nights in both hostels and brothels. Participants qualified for the survey if they had just concluded a paid sexual encounter with a FSW and reported having sexual intercourse with a stable partner during the past 3 months. A stable partner was defined as a wife, a female living partner, or a girlfriend with whom the participant had regular sexual intercourse without financial compensation. Minors, non-Spanish speakers, and inebriated men were excluded. Approval was granted by ethics committees at the University of California, San Francisco, the Peruvian Cayetano Heredia University, and the U.S. Naval Medical Research Center.

Interviews and Specimen Collection

The 6 interviewers were trained Peruvian healthcare counselors, psychologists, or sociologists, all with previous experience interviewing clients of sex workers. They reviewed the consent sheet with the potential participants, and after obtaining verbal consent, administered an anonymous, face-to-face, 20-minute survey in a private room on site. The interviewers read the survey questions aloud to the clients and marked down their answers, addressing basic demographics, alcohol and drug use, and sexual history and behavior. After concluding the survey, the participant provided approximately 10 cc of urine. He then received an anonymous numerical identifier and the toll-free telephone number to call for the results of his urine test, as well as a brochure about STDs and

\$6 U.S. To protect confidentiality, participants were never asked to provide identifying information or to sign documentation. The urine specimens were stored in a cooler at the site and then refrigerated at 4°C later than night or early morning.

Laboratory Procedures

The urine specimens were transferred to the laboratory (U.S. Naval Medical Research Center, Lima, Peru) and tested within 3 days for *Neisseria gonorrhoeae* and *Chlamydia trachomatis* using polymerase chain reaction (PCR) according to the manufacturer's directions (Amplicor CT/NG Test; Roche Diagnostics).

Treatment

Participants who were positive for gonorrhea or chlamydia had the opportunity to receive a free physical examination and treatment at an STD clinic according to local treatment guidelines.¹¹ Free examination and treatment were also offered for the participant's stable partner.

Statistical Analyses

Means, standard deviations, and medians were calculated for continuous variables. Because all continuous variables except for age were skewed, *P* values for comparisons across groups were determined by the Wilcoxon's rank sum test. To derive age-adjusted *P* values, the continuous variables (except age) were log-transformed before entering in a logistic regression model with age. For categorical variables, percentages between groups were compared using either the chi-squared test or Fisher exact test.

Categorical variables were age-adjusted by using logistic regression, with age entered in its continuous form.

We compared our results with a contemporaneous, population-based, random survey of young persons aged 18 to 30 years from lower socioeconomic neighborhoods, which used identical questions and the same laboratory, reagents, and procedures as this study.¹² We compared these individuals with men aged 18 to 30 in our study.

Results

During January and February 2002, we approached 245 eligible men in the hostels, of whom 202 (82%) agreed to participate. We recruited 205 men from brothels; it is unknown how many clients were approached by FSWs to participate in the study.

The general characteristics of the entire sample are presented in Table 1, which demonstrates frequent use of commercial sex by the participants and reportedly high rates of condom use. However, with their stable partners, the men reported less condom use. Men in the hostels were significantly younger than men in brothels (29.5 vs. 36.5 years, $P < 0.001$) and were significantly more likely to report paying for sex once a month or more (88.6% vs. 79%, $P = 0.03$). Men recruited from hostels were also significantly less likely to report being examined for HIV (26.7% vs. 42.4%, $P = 0.007$). The overall prevalence of chlamydia was only 2%, and there were no cases of gonorrhea. Only 1 of the 8 men with chlamydia called to receive confidential results and treatment.

Reported condom use with different partners is shown in Figure 1.

We compared our results with a contemporaneous population-based survey that sampled 154 men aged 18 to 30 in neighborhoods of lower socioeconomic status. The 193 participants from the same age group in our survey were significantly more likely to report ever having an STD (22.8% vs. 7.8%, $P = 0.003$), although they were not significantly more likely to report specific symptoms of an STD such as genital ulcers (13.5% vs. 8.4%, $P = 0.3$) and urethral discharge (11.9% vs. 12.2%, $P = 0.9$). Both groups reported having an identical median number of 1 stable partner during the past year. Clients of FSWs were significantly less likely to always use condoms with those stable partners (18.7% vs. 28.5%, $P = 0.03$, vs. never using a condom), and they were more likely to report always using a condom with their casual and commercial partners (70.4% vs. 9.8%, $P < 0.001$). During the past 3 months, they also had more sexual encounters with casual, noncommercial partners than men in the general population during the past 3 months (6 vs. 0, $P < 0.001$). They had a significantly

higher median number of total sexual partners in the past 3 months (4 vs. 1, $P < 0.001$ Wilcoxon), in the past year (8 vs. 1, $P < 0.001$ Wilcoxon), and in their lifetime (20 vs. 4, $P < 0.001$, Wilcoxon). As expected, participants in our study also had a significantly higher number of commercial partners during the past year (5 vs. 0, $P < 0.001$). The men from our survey were significantly more likely to have bought condoms in the past 3 months (74.5% vs. 38.8%, $P < 0.001$) and significantly more likely to report obtaining condoms was easy or very easy (95.2% vs. 82%, $P < 0.001$). They were also more likely to have received an HIV test (29.0% vs. 16.2%, $P = 0.03$), and they were more aware of their risk for HIV infection, with 54.4% reporting that it was somewhat or very probable that they were infected with the virus, versus 13.8% in the general population ($P < 0.01$). However, rates of chlamydia (3.1% vs. 7.0%, $P = 0.09$) and gonorrhea (0% vs. 1.2%, $P = 0.13$) were not significantly different.

Table 2 presents information on homosexual encounters, which were common among our participants.

During the past year, 38.3% of the 407 participants reported sexual relationships with casual, noncommercial partners. Participants had a mean of 1.4 (standard deviation [SD] \pm 3.0) female casual sex partners who were not FSWs or stable partners, not significantly different from the 1.6 (SD \pm 3.1) casual partners reported by men in the general population. Only 50.8% reported always using condoms with those casual partners, whereas 19.5% reported never using condoms. Of those who did use condoms, 21.8% reported forgetting to use a condom while under the influence of alcohol.

Regarding condom use, more men (32.2%) reported learning to use a condom from a sex worker than from any other source, followed by healthcare professionals (21.2%). Men in brothels were significantly more likely to report having learned to use condoms from FSWs than men recruited in the street (40.0% vs. 24.3%, $P < 0.001$). In the sexual encounter they had just concluded, 81% of the men who used condoms received them from the sex workers. Sex workers in brothels were significantly more likely to have provided condoms than street-based sex workers (87.9% vs. 74.0%, $P < 0.001$). The majority of men were able to use condoms well; 94.4% reported condoms rarely or never slipped off, whereas 92.9% reported they rarely or never break.

Discussion

This study examined both behavioral and biologic characteristics of male clients of FSWs in Lima, Peru. These results demon-

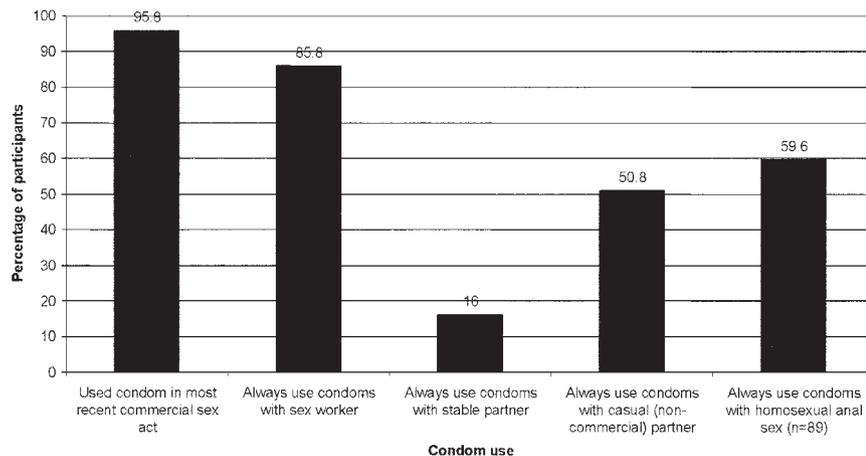


Fig. 1. Reported use of condoms by 407 male clients of female sex workers with their different sexual partners. Data from Lima, Peru, January–February 2002.

strate that it is unlikely that these men constitute an important bridging population. Although the men had significantly higher numbers of sexual partners and significantly less self-reported condom use with their stable partners when compared with men in the general population, their rate of reported condom use was very high with FSWs, and the prevalence of chlamydia and gonorrhea was very low. The spread of STDs from a core group of FSWs through these male clients into the low-risk general population does not appear to be common.

Unlike studies from Cambodia, Thailand, and Kenya, which have shown that male bridge populations exist with the potential to transmit STDs from FSWs to their otherwise low-risk female partners,^{13–16} the commercial sex bridge does not appear to play an important role in Lima. Instead, it is more likely that STDs spread into the general population through the bisexual bridge, as other studies have suggested.^{17,18} One fourth of these heterosexually identified men reported having same-sex relations, which is consistent with other studies from Lima finding high rates of heterosexually identified but bisexually active men.^{18,19} Of these men, 25% never used condoms and 20% were inconsistent condom users. Although almost no one reported engaging in the higher-risk activity of receptive anal sex, their homosexual partners do have a high risk of HIV and syphilis¹⁸ and therefore, their female partners are placed at an increased risk as well.⁷

Casual, noncommercial sexual relationships are another potential mechanism for the spread of STD into the general population. Men in this study were less likely to use condoms with their casual partners than with sex workers, and they reported forgetting to use condoms with their casual and commercial partners when under the influence of alcohol. There is not much research on the nature of casual relationships in Peru. One study demonstrates that women had a lifetime median of 1 to 2 sexual partners, whereas their current male partners had 4 to 6,⁷ and unpublished data from a large population-based sample revealed that the median number of lifetime partners for women was 1 compared with 3 for men (Carlos F. Caceres, personal communication). This suggests that a small group of women might be having casual sexual relationships with a larger group of men, whereas a significant proportion of women remains monogamous. Such disassortative mixing can cause widely disseminated STD transmission and could contribute

to a slow but steady rise in STD prevalence among the low-risk heterosexual population.²⁰

These results might not be applicable across the broad spectrum of commercial sex work in Lima. This study sampled only busy street- and brothel-based venues, ignoring night clubs, strip clubs, telephone call girls, and massage parlors, as well as less-frequented or more dangerous hostels and brothels. Perhaps the clientele engage in riskier behaviors in these other venues or in the 4 hostels that refused participation, leading to an overestimation of condom use in our survey and an underestimation of STD prevalence. Another limitation of the study is that perhaps men who engaged in unprotected sexual activity were less likely to participate in the study when approached. Furthermore, the FSWs who convinced their clients to participate probably had better negotiation skills than the FSWs who did not, which could translate into higher rates of condom use among those referrals. This would bias our sample toward clients with safer sexual behaviors and correspondingly lower rates of infection. However, our finding that 85.8% of men reported always using condoms with FSWs is very similar to another survey in some of the same brothels, which found 87.8% of clients reported always using condoms with FSWs.¹⁰

It is interesting to note that although 30% of men reported having had an STD, similar to a previous survey,¹⁰ only 2.0% currently had chlamydia and there were no cases of gonorrhea. STD prevalence has possibly decreased as a result of safe sex campaigns targeting FSWs, which were begun in the late 1980s and received government sponsorship in the early 1990s, as well as research and education promoting condom use.³ Sex work has been legal and regulated in Peru since the early 1900s,²¹ but popular opinion expresses and studies confirm that consistent condom use has only recently become a norm.^{3,10,22} In comparison with the 85% of men from this study who report always using condoms when purchasing sex, a previous study from the late 1980s showed that only 31% to 44% of FSWs in the same brothels reported always using condoms.²² A later study from 1997 showed that 88% of male clients reported always using condoms with FSWs, the majority of whom reported this was a recent practice.¹⁰ Men recruited from brothels, the target of public health interventions, were significantly more likely than their street-based coun-

TABLE 2. A Comparison of Homosexual Behavior Between Clients of Female Sex Workers and Men From the General Population Aged 18–30, Lima, Peru, January–February 2002

Nos. Are Reported as Percentages Unless Otherwise Specified	Clients of Female Sex Workers	Clients Aged 18–30 (N = 193)	Men From the General Population in Lower-Class Neighborhoods, Aged 18–30 (N = 154)	P Value
Sex with another man (n = 407)				
Yes	24.8	32.1	9.5	<0.001
No	75.2	67.9	90.5	
Sexual role of men who had sex with men (n = 101)				
Insertive anal sex	50.5			
Both insertive and receptive anal sex	0.9			
Receptive oral sex	12.9			
Insertive anal, receptive oral sex	35.6			
Percentage condom use with anal sex				
Always	59.6			
Sometimes	15.7			
Never	24.7			
Ever offered money or gifts by another man for sex				
Yes	62.9			
Ever offered money or gifts to another man for sex				
Yes	7.3			

terparts to have learned about condoms from FSWs, to use condoms provided by the FSWs, and to have been tested for HIV. These data support the hypothesis that public health interventions in the brothels and a safe, well-regulated work environment have encouraged condom use among FSWs, who in turn have trained condom use in their clients.

This study demonstrates the relative unimportance of this sample of clients of FSWs as a bridge population in Lima, Peru, and suggests that potential STD transmission could currently be confined to bisexual and casual, noncommercial relationships. The significance of bisexual bridging is well-established. Further investigation is needed to determine the impact of sex work in other venues and of casual sexual relationships on the spread of STD through the general population.²³

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