

UCLA

UCLA Previously Published Works

Title

¿Te Recurseas? Mapping, Enumerating, and Describing Male and Transwomen Sex Workers in Venue-Based and Virtual Spaces in Lima, Peru.

Permalink

<https://escholarship.org/uc/item/83b8022z>

Journal

AIDS Education and Prevention, 31(6)

ISSN

0899-9546

Authors

Bayer, Angela M
Mallma, Patricia
Cárcamo, César P
[et al.](#)

Publication Date

2019-12-01

DOI

10.1521/aeap.2019.31.6.567

Peer reviewed



HHS Public Access

Author manuscript

AIDS Educ Prev. Author manuscript; available in PMC 2020 December 21.

Published in final edited form as:

AIDS Educ Prev. 2019 December ; 31(6): 567–583. doi:10.1521/aeap.2019.31.6.567.

¿Te recurseas? Mapping, enumerating and describing male and transwomen sex workers in venue-based and virtual spaces in Lima, Peru

Angela M Bayer, PhD¹, Patricia Mallma, MSc PhD¹, César P Cárcamo, MD PhD¹, David A Díaz, BA¹, Miguel Chirre, BA¹, Hugo Sánchez, BA², Patricia J García, MD PhD¹, Pamina M Gorbach, PhD³

¹Facultad de Salud Pública y Administración, Universidad Peruana Cayetano Heredia, Lima, Peru

²Epicentro Salud, Lima, Peru

³Department of Epidemiology, Fielding School of Public Health, University of California, Los Angeles

Abstract

HIV disproportionately affects men who have sex with men and transwomen in Latin America. Globally, efforts to map, enumerate and describe male and transwomen sex workers (MTSWs) are limited. We mapped and described venue- and non-venue based MTSWs and enumerated venue-based MTSWs in Lima, Peru's capital. With venue-based MTSWs, we identified and described the venues, SWs (129 MSWs, 261 TSWs) and their clients and used capture-recapture to enumerate SWs. With non-venue-based MTSWs, we described SW offerings and SWs (76 MSWs, 34 TSWs). Male sex work is concentrated downtown, with much MSW moving online. Transwoman sex work is spread across metropolitan Lima, with less TSW online. At venues, there are more TSWs than MSWs, TSWs self-reported more HIV and sexual risk behaviors, and MSWs had more female partners. Non-venue-based MSWs used condoms less consistently than venue-based MSWs. Results support systematic efforts to describe MTSWs and their partners and provide in-depth information about their unique needs. MTSWs are hard-to-reach populations with unique needs and with different types of partners that all have differing needs for education and prevention services, testing for HIV and other STIs, and linkage to care for those living with HIV.

Introduction

HIV disproportionately affects men who have sex with men and transwomen in Peru and in Latin America (1). In Peru, key populations of men who have sex with men (MSM) and transwomen (TW) have much higher HIV prevalences (12.4% and 20.8%, respectively) (2) than general population males and females (0.5%) and female sex workers (FSWs) (1%) (3). In Peru's capital city, Lima, HIV prevalence is even higher among MSM and TW who are sex workers, estimated at 23.0% among male sex workers (4) and 29.6% among TW, 64% of whom were sex workers (5).

Corresponding author: Angela Bayer, Universidad Peruana Cayetano Heredia, Av Honorio Delgado 430, Urb. Ingeniería, San Martín de Porres, Lima, Peru; angelabayerx@gmail.com.

To effectively engage with populations, it is critical to first objectively identify, describe and estimate the size of the key population or populations. However, this is challenging among sex workers (SWs) worldwide, including male sex workers (MSWs) and transwomen sex workers (TSWs), since they are hard-to-reach populations. Different institutions, including the United Nations, World Health Organization, Family Health International, MEASURE Evaluation and the Population Council, have explored methods to estimate the size of hidden or hard-to-reach populations including SWs and other groups with high HIV risk. Most estimation methods begin with an ethnographic mapping of the different locations where the hard-to-reach population may congregate and follow the mapping with estimation methods such as census and enumeration, multiplier, nomination and capture-recapture (6-9).

Globally, past studies with SWs have used ethnographic mapping to identify and describe the venues where SWs solicit and/or meet clients. Ethnographic mapping is the process of locating, in geographic spatial terms, the places where key activities take place and describing the key activities and key populations present in those places. One highly systematic process for ethnographic mapping is the Priorities for Local AIDS Control Efforts or PLACE method, which was designed for local program managers to better target limited resources. This method includes several steps, such as: planning with a local expert committee; identification of possible venues; verification, mapping and description of the venues; and surveys with venue attendees (8). Relevant examples of studies that applied the PLACE method include a study in South Africa to identify venues where people meet new sexual partners and document the implementation of programs to prevent HIV and other sexually transmitted infections (STIs) at those venues (10) and a study in Liberia to engage youth about risk behaviors that increase their vulnerability to HIV (11).

Other studies have used different methods to estimate the size of SWs and other key populations present at the venues of interest, including capture-recapture to estimate SW populations. A recent review article assessed the availability and quality of population size estimations of FSWs, MSM, TW and people who inject drugs. Of the 140 countries assessed, 99 countries had at least one estimate, although only 38 were nationally adequate and 30 were locally adequate (12). Capture-recapture (CRC) is one type of enumeration method that was originally designed to count wildlife and has been used more recently to estimate the size of hidden human populations (13). CRC has been used to enumerate SWs in different contexts. Examples of CRC to enumerate FSWs include the enumeration of FSWs in China (14), street- and establishment-based FSWs in Côte d'Ivoire and Kenya (15), street- and establishment-based FSWs in Kenya (16), street-based FSWs in Madagascar (17), street- and establishment-based FSWs in Rwanda (18), street- and establishment-based FSWs in Vietnam (19), and both street- and establishment-based FSWs and MSM in El Salvador (20). Examples of CRC to enumerate MSWs include the enumeration of street- and establishment-based MSWs in both Kenya (21) and Nigeria (22).

Some studies have described SWs and other key populations present at venues in greater depth, usually by carrying out surveys or interviews. For example, Blanchard and colleagues mapped 34,480 FSWs in 7 cities in Pakistan and surveyed 2,869 FSWs about their sociodemographic characteristics and sex work experiences (23). Minh et al used capture-

recapture to estimate 930 FSWs in Vietnam and then surveyed 610 FSWs about their sociodemographic characteristics, sex work experiences, and HIV and other STIs (19).

Past efforts in Peru have mapped the socialization venues of FSWs for a large STI prevalence and intervention study (PREVEN) (3) and of MSM and TW, usually as a starting point for national HIV surveillance efforts, which is carried out among MSM and TW (2). However, these mapping efforts in Peru have not been systematic and, to our knowledge, there have been very limited efforts globally to specifically map and enumerate MSW and TSW venues and MSWs and TSWs. Therefore, our objective was to: 1) carry out ethnographic mapping to identify and describe MSW and TSW venues; 2) systematically enumerate venue-based MSWs and TSWs; 3) identify and describe MSW and TSW non-venue-based offerings; and 4) describe the key characteristics of both venue-based and non-venue based MSWs and TSWs in Lima, Peru.

Methods

Study Setting

Peru is home to about 31.2 million people (24). This study was carried out in the capital metropolitan area, which includes the capital city of Lima and the seaport city of Callao. The metropolitan area is home to about 9.5 million people (25) and accounts for about 62% of the HIV cases and 72% of the AIDS cases reported to date nationwide (26). The Lima-Callao metropolitan area is divided into 49 urban and peri-urban districts, including 43 districts in Lima and 6 districts in Callao. This study took place in the 49 districts.

Data Collection Methods

This study employed two methodologies with venue-based SWs, Priorities for Local AIDS Control Efforts (PLACE) and capture-recapture (CRC). Data collection took place from May to July 2013, usually between 11 pm and 6 am. For non-venue-based SWs, we mapped sex work online and in newspapers and then carried out brief surveys with SWs. Members of our fieldwork team each had years of experience working with populations of MSM and TW and many also had experience working with MSWs and TSWs.

PLACE method—First, we systematically followed the steps of the PLACE methodology: 1. Develop the PLACE strategy; 2. Identify possible MSW and TSW venues; 3. Verify, map and describe the MSW and TSW venues; and 4. Describe the MSWs, TSW and clients present at the verified venues (8).

For step 1, development of the PLACE strategy, a critical component was definitions of “sex worker” and “sex work venue.” After significant debate, the team agreed that a “sex worker” is: a man or transwoman who was actively looking or waiting for male clients or willing to exchange sex with men for money or other goods. A “sex worker” did not include: people who live thanks to others, for example, who have a long-term partner primarily to secure a place to live, gifts, or other goods; or those who offer services in non-venue-based locations such as a website or a smartphone app. We defined “sex work venue” as a place where groups of “sex workers” wait for or solicit clients, meet clients, and negotiate the terms of the sexual service. However, they do not necessarily have sex there.

For step 2, identification of possible MSW and TSW venues, we carried out brief surveys with key informants in and near MSM and TW socialization venues to brainstorm MSW and TSW venues. We used face-to-face interviews to apply paper-based surveys. We asked participants to name sex work venues that they were familiar with, both in the district where the interview took place and elsewhere in the metropolitan area. For each venue, we asked for: the location (district, address, other geographic information); the name; the type of venue (public place, beauty salon, bar, club, sauna, porn movie theater or club, internet café, SW house); the peak days and times for sex work; and a point of contact, such as a well-known SW or an employee.

For step 3, verification, mapping and description of MSW and TSW venues, we visited the possible MSW and TSW venues identified during step 2. First, we verified that the venue existed and that it is an MSW or TSW sex work venue. Second, if a sex work venue, we GPS-mapped and confirmed the type of venue. Third, we surveyed key informants at the venue. We used face-to-face interviews to apply surveys that were programmed into smartphones using Magpi (Magpi; Washington, DC). We asked informants the following about the venue: the activities that take place there; the owner or administrator's attitude toward sex work; the types of SWs and clients; the peak days and times for sex work; and whether condoms are available.

For step 4, description of the MSWs, TSW and clients present at the MSW and TSW venues, we visited the venues that were verified as MSW and TSW venues during step 3. MSWs and TSWs were considered separate sub-groups during the survey process. We surveyed: 1. all SWs at venues with less than 20 SWs; and 2. 20 SWs at venues with 20 or more SWs. We surveyed as many clients as were willing to participate. We used face-to-face interviews to apply surveys that were programmed into smartphones using Magpi. We asked participants about their: sociodemographic characteristics; sexual practices in the last 3 months, in transactional and non-transactional contexts; and HIV testing history and status.

Capture-recapture (CRC) method—Following completion of the PLACE steps, we applied the CRC method to enumerate the MSWs and TSWs present at the verified sex work venues.

CRC permits mathematical modeling of data via an equation. CRC carries out two independent captures of population members, which are used to calculate an estimate of the total number of members (27). First, we carried out the capture, during which we visited all of the venues on the same night. At each venue, we approached potential SWs and asked whether they provided services (*¿Das servicios? ¿Te recurseas?*). If they confirmed that they were SWs, we asked whether they would accept the project “tag,” which was a small object that was acceptable to population members and that they would be able and likely to keep with them until the recapture. For this study, the “tag” was a business card-size yearly calendar that had different population-friendly designs for MSWs and TSWs and included a unique identifier to easily verify whether the same SWs were counted during the recapture. Two weeks later, we carried out the recapture, during which we revisited all of the venues from the capture, again on the same night. At both capture and recapture, we completed two registries, one for MSWs and one for TSWs, with the following information: number of

potential SWs approached; number confirming they were SWs; number accepting tag (at recapture, only if not counted during capture); and number previously approached during capture (only at recapture).

Brief mapping of non-venue-based male and transwoman sex work—Given the increase in non-venue-based sex work globally (see McLean for a detailed review of Internet-based MSWs – including information and references related to TSWs (28)), we carried out a final phase to map and briefly describe sex work online and in newspapers in Lima. First, a small team actively searched for publicity related to MSW or TSW services online, including individual SW web pages, international and Peruvian sex work sites, general websites, general and gay social media websites, and in the main newspapers in the capital. Second, the team consolidated the information to identify duplicates, e.g., the same person across different publicity. Finally, the team randomly selected individuals from two sub-groups: 1. MSWs and TSWs; and 2. different types of publicity. These individuals participated in brief phone surveys about the sex work services they offer. For these phone surveys, the research team asked questions as mystery potential clients. Therefore, questions were about “typical” sex work practices and prices.

Data Analysis

During the PLACE method, data analysis occurred between each data collection step. Following step 2, identification of possible MSW and TSW venues, our data manager reviewed the data to identify duplicate mentions of the same venue. Then, the fieldwork team reviewed the data to determine any other duplicates (e.g., different names of the same venue). Finally, we generated a final list of potential MSW and TSW venues for step 3. Following step 3, verification, mapping and description of MSW and TSW venues, we carried out the analysis using STATA version 14 (StataCorp LP, College Station, TX). For each venue that was confirmed to be a sex work venue, we carried out descriptive analyses. Following step 4, description of the MSWs, TSW and clients, we performed descriptive analysis of the data using STATA version 14.

Following the capture-recapture activities, we entered the data into Excel and separately calculated the size of the populations of MSWs and TSWs using the CRC formula (17,21). In the CRC formula, c1 (capture 1) is the sample of people captured from the population n of MSWs or TSWs and c2 (capture 2 or recapture) is the sample of people captured two weeks later. Matches (m) are those captured during both c1 and c2. The CRC formula assumes that the proportion of matches (m) to people counted during the recapture (c2) equals the proportion of people counted during the capture (c1) to the total population (n).

Therefore, n is calculated as: $n = \frac{c1 \times c2}{m}$.

Additionally, the estimated 95% confidence interval (CI) for the CRC population size estimate is: $n \pm 1.96 * \text{var}(n)$, where $\text{var}(n) = \frac{c1 \times c2 \times (c1 - m) \times (c2 - m)}{m^3}$.

For non-venue-based SWs, following the mapping of publicity for sex work online and in newspapers, we consolidated the information in Excel. Then, we performed descriptive analysis of the data on publicities and SWs' sex work practices using STATA version 14.

For all analyses, we used the t test and for continuous variables and the χ^2 and Fisher's exact tests for categorical variables, as appropriate. All tests were two-sided with a statistically significant p value of 0.05 and 95% confidence intervals.

Ethical Approval

The study protocol, consent forms and data collection materials were reviewed and approved by the Institutional Review Boards of the University of California, Los Angeles and the Universidad Peruana Cayetano Heredia. All venue-based participants provided their verbal informed consent prior to initiating their participation in the study. Non-venue-based SWs were not consented since the research team approached them as mystery clients and SWs provided information they would give to any potential client.

Results

PLACE method – identification of potential MSW and TSW venues

During step 2, we surveyed 755 informants. Informants ranged in age from 17 to 68, with an average age of 29.7 years. The majority identified as male (72.7%), followed by transwoman (19.0%) and female (8.3%). Most informants (33.7%) worked for local businesses such as corner stores, pharmacies, restaurants, gas stations or beauty parlors or were street vendors. The remaining interviewees were: community members (21.2%); taxi or mototaxi drivers (14.3%); community service providers (11.3%) such as watchmen, local police and health personnel; MSM socialization venue workers (10.9%) in nightclubs, bars and saunas; or MSWs or TSWs (8.6%).

The step 2 informants named 1,754 potential MSW and TSW venues in Lima and Callao. One venue was named by 58 participants, while most venues were named by 10 or fewer participants. Before moving to step 3, the study team consolidated the venues named into 447 potential MSW and TSW venues.

PLACE method – verification, mapping and description of MSW and TSW venues

During step 3, we found the following for the 447 potential MSW and TSW venues: most existed but were not sex work venues (259 or 57.9%); and many did not exist (107 or 23.9%). We confirmed 81 MSW and/or TSW venues that were distributed across 25 of Lima-Callao's 49 districts. Of these 81 venues, most were TSW-only venues (49 or 60.5%), about one-third were MSW-only venues (28 or 34.6%) and only 4 (4.9%) were venues where both MSWs and TSWs seek out clients. While MSW-only venues were concentrated in downtown Lima (*Cercado*) and immediately surrounding districts, TSW-only venues were distributed across the metropolitan area of Lima and Callao. For the 32 MSW venues, over one-third were public spaces including blocks of streets, parks and plazas, and bridges (12 or 37.5%), followed by nightclubs or bars (7 or 21.9%), saunas (6 or 18.8%), porn video clubs or theaters (5 or 15.6%), and Internet cafés (2 or 6.3%). For the 53 TSW venues, the great

majority were public spaces (40 or 75.5%), followed by beauty salons in a distant second (10 or 18.9%), porn theaters (2 or 3.8%) and a TSW house.

Most venues confirmed as MSW and/or TSW venues had only male clients (77 or 95.1%) although 2 venues had both male and female clients, and 2 venues had both male and transwoman clients. About two-thirds of the venues (50 or 61.7%) were primarily to quickly seek out clients and negotiate the terms of the interaction while the remaining 31 venues (38.3%) also provided opportunities for clients and sex workers to socialize.

At the 32 non-street-based venues, most venue administrators were aware that sex work activities took place there, but did not intervene in those activities (21 or 65.6%). At 10 venues (31.3%), the administrator actively promoted sex work and often coordinated sex worker-client interactions. Only one venue administrator was unaware of sex work-related activities at the venue.

Finally and importantly, condoms were only available at 6 of the 81 venues (7.4%) and they were only available free of charge at 1 of those 6 venues.

PLACE method – description of venue-based MSWs and TSWs

During step 4, we surveyed 261 TSWs, 129 MSWs and 102 clients. Here we will describe the total sample of TSWs and MSWs since a separate manuscript compares TSWs, MSWs and their respective clients at venues where we were able to recruit clients (29).

Both MSWs and TSWs had an average age of 25 years and about 6 in 10 MSWs versus 5 in 10 TSWs were born in Lima or Callao (see Table 1). MSWs were much better educated than TSWs, with almost twice as many MSWs (78.3%) as TSWs (40.6%) reporting complete secondary or at least some post-secondary education ($p < 0.001$). TSWs reported higher weekly earnings than MSWs ($p=0.047$). However, and importantly, a much greater proportion of TSWs' earnings were from sex work, versus from other jobs ($p < 0.001$). Additionally, TSWs earned less per client than MSWs ($p < 0.001$), demonstrating that TSWs need to have a higher number of clients to achieve their higher earnings.

We also explored SWs' identity, partners and HIV testing and risk. All TSWs identified as transwomen and MSWs identified as follows: about 6 in 10 as bisexual; 2 in 10 as heterosexual; and 2 in 10 as homosexual (see Table 1). Approximately one-third of both MSWs and TSWs reported having a stable partner, with MSWs reporting primarily female (62.0%) or male (32.0%) partners and TSWs reporting primarily male (87.6%) and transwoman (10.1%) partners ($p < 0.001$). About 9 in 10 TSWs versus about 8 in 10 MSWs reported ever being tested for HIV ($p=0.002$) although, among those tested, MSWs were more likely to have been tested in the past 6 months ($p < 0.001$). About 10% of participants did not receive the results of any of their most recent HIV tests. Among those who received their test results, a much higher 16.6% of TSWs – versus 4.5% of MSWs – reported testing positive for HIV ($p=0.002$). Importantly, less than half of HIV positive participants reported current antiretroviral therapy. Among participants who were HIV negative, about 4 in 10 MSWs and 6 in 10 TSWs perceived high to very high risk of HIV and a notable small proportion of both groups perceived no HIV risk ($p < 0.001$).

MSW and TSW participants' recent sexual practices with male and transwomen partners are in Table 2. Four MSWs and two TSWs reported no male or transwomen sex partners in the last 3 months. Nearly all MSWs and all TSWs had recent transactional partners and 4 in 10 MSWs and 3 in 10 TSWs had recent non-transactional partners. Both groups reported many more transactional versus non-transactional partners, with TSWs reporting 2.5 times as many transactional partners as MSWs ($p < 0.001$). The majority of MSWs and TSWs had been asked by clients to have sex without a condom. Importantly, although, 27.4% of TSWs versus 12.9% of MSWs reported accepting condomless sex ($p=0.011$). About 9 in 10 MSWs and 4 in 10 TSWs had engaged in recent insertive anal intercourse (IAI) ($p < 0.001$), with both groups reporting more IAI within versus outside of the transactional context. About 3 in 10 MSWs and almost all TSWs had engaged in recent receptive anal intercourse (RAI) ($p < 0.001$), with both groups reporting similar RAI practices both within and outside of the transactional context. MSWs reported using condoms more consistently than TSWs in all contexts. Seven in 10 TSWs reported consistent condom use with transactional IAI and RAI. Notably, among the sub-group of TSWs with non-transactional partners, only 5 in 10 used condoms consistently during RAI and an even lower 3 in 10 had consistent condom use during IAI. Regarding alcohol use before or during sex with male and transwomen partners, about one-half of both MSWs and TSWs reported never using alcohol in this context and 3 to 5 in 10 MSWs and TSWs reported sometimes doing so. Drug use in the context of sexual encounters was even lower, with 8 in 10 MSWs and 7 in 10 TSW reported never using drugs before or during sex and about 1 in 10 MSWs and 3 in 10 TSWs sometimes doing so.

MSW and TSW participants' recent sexual practices with female partners are in Table 3. About 4 in 10 MSWs (53 or 41.1%) and nearly all TSWs (251 or 96.9%) reported no female sex partners in the last 3 months. Among the MSWs with recent female partners, 2 in 10 had transactional partners and 9 in 10 had non-transactional partners. By contrast, among the 10 TSWs with recent female partners, only 1 had a non-transactional partner and the remaining 9 had transactional partners. Both groups reported small numbers of recent female partners. Vaginal sex with female partners was almost universal and anal sex was less common. About 7 to 8 in 10 MSWs consistently used condoms during vaginal and anal sex with transactional female partners, compared to – notably – only 4 in 10 MSWs during the same practices with non-transactional female partners. Regarding alcohol or drug use before or during sex, rates among MSWs were higher with transactional female versus male or transwoman partners and lower with non-transactional female versus male or transwoman partners.

Capture-recapture (CRC) method – estimation of number of venue-based MSWs and TSWs

For MSWs, the study team counted 285 at capture, 160 at recapture and 84 at both capture and recapture. This resulted in an estimated 542 MSWs in metropolitan Lima, with a 95% confidence interval of 475-609. The number of MSWs per venue ranged from 1 to 68, with the smallest number of MSWs at establishment-based venues (average 5.3 people, range 1-26) and the largest number at street-based venues (average 11.2 people, range 1-68), in particular a large plaza in central Lima.

For TSWs, the study team counted 428 at capture, 390 at recapture and 250 at both capture and recapture. This resulted in an estimated 677 TSWs in metropolitan Lima, with a 95%

confidence interval of 635-699. The number of TSWs per venue ranged from 1 to 25, with the smallest number of TSWs at establishment-based venues (average 3.0 people, range 1-12) and the largest number at street-based venues (average 6.5 people, range 1-29).

Brief mapping of virtual and other non-place based male and transwoman sex work

The study team identified 341 individual publicities for male or transwoman sex work in non-venue-based spaces in Lima (see Table 4a). This include 233 publicities for MSWs and 108 publicities for TSWs. The team identified several duplicates in MSWs' publicities, including 21 MSWs and 9 TSWs who had 2 publicities each and 7 MSWs and 1 TSW who had 3-4 publicities each. "Duplicate" means that the same MSW may have had both an individual SW website and a page offering SW services on a social media site.

Overall, the study team identified 204 MSWs and 88 TSWs in virtual spaces and newspapers. A sub-group of 76 MSWs and 34 TSWs participated in brief surveys about their practices with clients (see Table 4b). When compared to venue-based MSWs and TSWs (shown in Table 1), non-venue-based MSWs and TSWs reported charging 3 and 4.5 times more per client, respectively. It was more common for TSWs than MSWs to receive oral sex from their clients and both groups provided oral sex to clients almost universally. When compared to venue-based sex MSWs (shown in Table 2), non-venue-based MSWs reported less consistent condom use with both IAI and RAI. When compared to venue-based TSWs, non-venue-based TSWs reported more IAI and more consistent condom use with both IAI and RAI.

Discussion

This study provides key insights into the nature and dynamics of male and transwoman sex work in the Lima metropolitan area. Male sex work is concentrated in the center of the city and takes place in street- and establishment-based venues, with a significant amount of male sex work that has moved online. Transwoman sex work is spread across the metropolitan area and takes place mainly in street-based venues and small beauty salons, with less transwoman sex work moving online. Overall, there were more TSWs than MSWs in venue-based spaces and more MSWs than TSWs in non-venue-based spaces. Many venue administrators are aware of and even promote sex work, but availability of condoms is incredibly low. Among venue-based SWs, TSWs have lower levels of education, more earnings from sex work and a higher number of clients to achieve those earnings than MSWs. TSWs also reported much higher rates of HIV than MSWs and notably, a small proportion of both groups perceived no HIV risk. When compared to MSWs, TSWs reported much higher rates of recent sexual risk behaviors with male and transwoman partners, including more condomless sex and very low rates of consistent condom use with non-transactional partners. MSWs were more likely than TSWs to have recent female partners and MSWs reported lower consistent condom use with non-transactional female partners. Interestingly, non-venue-based MSWs reported less consistent condom use than venue-based MSWs. Urgent attention needs to be given to the very low rates of condom use in these populations. Strategies need to be developed to promote improved condom use and to provide access to other prevention strategies such as pre-exposure prophylaxis (PrEP). At

the current time, PrEP is only available in Peru through demonstration projects and as of May 2019, 400-600 people nationwide were estimated to have access to PrEP (30).

This study has certain limitations. The primary limitation is that MSWs and TSWs included here are not a random sample. However, the research team followed highly systematic processes to identify the MSWs and TSWs who would participate. For the venue-based sample, MSWs and TSWs were located using a highly systematic process for identifying sex work venues and a systematic approach was used to determine how many SWs at each venue would participate in the survey, focused on a strategy to have representation from SWs at smaller and larger venues. For the non-venue-based sample, an extensive process was used to identify sex work publicities in virtual spaces. After carrying out this process, random selection was used to select MSWs and TSWs for surveys.

Our findings affirm the value of ethnographic mapping and methodologies like the Priorities for Local AIDS Control Efforts or PLACE method to systematically identify and describe venues of importance for reaching key populations (8,10,11). Findings also affirm the importance of taking into account the differences between MSWs and TSWs when targeting future prevention, research and policy efforts with these groups. While past projects and studies have often placed MSWs and TSWs in one group, results here demonstrate that they are two groups with their own unique characteristics and needs. MSWs and TSWs are two different groups, located in different geographic areas of the metropolitan area, providing services in different types of venues, with a different transition to online services, with different types of partners, and with different risk and prevention behaviors. Consideration of these unique qualities is key when developing education and prevention efforts for these populations. Peru has a long history of peer outreach for HIV/STI education and prevention efforts, both on the part of the Peruvian Ministry of Health and non-governmental organizations (2). Current results demonstrate the importance that online efforts, including the use of social media, could play in these efforts. A recent study in Peru examined the effectiveness of a peer-leader social media intervention to prevent HIV and promote HIV testing among MSM and found the intervention to be effective for improving safer sex practices, HIV testing and access to HIV care (31,32).

Findings also affirm the unique needs of transwomen and transwomen sex workers. Among venue-based sex SWs, TSWs have much lower levels of education than MSWs and TSWs are more likely than MSWs to depend on sex work for all, versus some, of their income. TSWs also charge less per client, which means that they need to have more clients to secure their earnings. These education and income dynamics may have an impact on TSWs' risk behaviors and on their access to services, including health services and the continuum of HIV-related services. These are issues that the research team explored further in a separate article, which compares the demographic characteristics, sexual behaviors, and HIV-related behaviors of MSWs, TSWs, and their respective clients (29). In a transactional context, more TSWs than MSWs reported accepting condomless sex and TSWs reported less consistent condom use with both IAI and RAI. In a non-transactional context, TSWs' condom use was very low, with only 3 in 10 venue-based TSWs reporting consistent condom use with IAI and only 5 in 10 TSWs reporting consistent condom use with RAI. These results affirm that transwomen and TSWs have specific needs and warrant special attention. This has been

demonstrated in recent reviews of evidence on HIV prevention in Latin America, both in general (1,33) and among transwomen (5,34), and in recent global overviews of transwomen (35) and transwomen sex workers (36).

Results also demonstrate MSWs' unique needs, especially as they transition to virtual and other non-venue-based spaces. MSWs in non-venue-based spaces reported less consistent condom use than MSWs in venue-based spaces. This is surprising given that the literature shows that higher-earning sex workers, such as virtual sex workers, tend to use protection more (37,38). Similarly, in our past study with higher- and low-income MSWs in Lima, we found that the higher-income group used condoms much more consistently and had lower rates of HIV and syphilis (4). However, it may be that the particular group of MSWs included in the current study may still be low-income and do not yet earn enough money or earn money consistently enough to move into the group of MSWs with consistent higher incomes, higher social capital and greater stability (39). In another study by our research group, we found that even when low-income MSWs earned more, they still had low condom use and high rates of HIV and other STIs (40). An additional consideration is that the non-venue-based MSWs may have reported their practices either more honestly or with more of a marketing focus (each of which may lead in opposite directions) since they were responding to mystery or potential clients. These complex results affirm the importance of what recent reviews with MSWs have shown, that this group has unique needs and requires dedicated services (41-43). Finally, with regard to female partners, MSWs used condoms much less with female non-transactional versus transactional partners. This demonstrates the importance of prevention services and strategies for SWs' non-transactional partners, particularly given the low rates of condom use with these partners.

Finally, both MSWs and TSWs have a need for HIV prevention services and are also impacted by HIV. Twenty-five percent of MSWs and 13% of TSWs had never been tested for HIV and among those tested, 23% of MSWs and a high 44% of TSWs had been tested more than six months ago. A recent study in Peru explored both SMS text messages to cell phones and the Internet for increasing awareness about HIV testing among MSM (44). In this study, many more TSWs than MSWs reported having been diagnosed with HIV and among those living with HIV, the proportion in care was only 4 to 5 in 10 people. These statistics demonstrate low testing rates and poor linkage to HIV care for populations that are key for HIV. Results also demonstrate the importance of prevention services, testing for HIV and other STIs, and linkage to care support for those living with HIV, as has been shown globally and for Latin America (45-48) and as has been shown for Peru (49,50).

Results affirm that MSWs and TSWs are hard-to-reach populations with unique needs and with different types of partners that all have differing needs. These results should be relevant to other populations of MSWs and TSWs in Latin America given the many parallels across countries (1). They may also be relevant to other populations of MSWs and TSWs and other hard-to-reach populations or populations in situations of vulnerability in other low-resource contexts around the globe. Systematic efforts are required to identify and describe these key populations for HIV and STIs. Findings also show the importance of prevention services, testing for HIV and other STIs, and linkage to care for those living with HIV.

Acknowledgements

The authors would like to acknowledge and thank all of the study participants and the amazing study team that worked many late nights and early mornings to carry out this study.

Funding.

This work was supported by the National Institutes of Health (K01TW009206R25TW009343) at the UCLA AIDS Institute and UCLA Center for AIDS Research (AI28697).

References

- García PJ, Bayer A, Cárcamo CP. The changing face of HIV in Latin America and the Caribbean. *Curr HIV/AIDS Rep.* 2014 6;11(2):146–57. [PubMed: 24824881]
- Ministerio de Salud (MINSA), Programa Conjunto de las Naciones Unidas sobre el VIH/SIDA (ONUSIDA). Informe Nacional sobre los Progresos Realizados en el País Perú. Período enero 2011 —diciembre 2012. Lima, Perú: MINSA, UNUSIDA; 2012 Abril.
- Cárcamo CP, Campos PE, García PJ, Hughes JP, Garnett GP, Holmes KK, et al. Prevalences of sexually transmitted infections in young adults and female sex workers in Peru: a national population-based survey. *Lancet Infect Dis.* 2012 10;12(10):765–73. [PubMed: 22878023]
- Bayer AM, Garvich M, Díaz DA, Sánchez H, García PJ, Coates TJ. “Just getting by”: a cross-sectional study of male sex workers as a key population for HIV/STIs among men who have sex with men in Peru. *Sex Transm Infect.* 2014 1 3;
- Silva-Santisteban A, Raymond HF, Salazar X, Villayzan J, Leon S, McFarland W, 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 5;16(4):872–81. [PubMed: 21983694]
- Pisani E, United States, Agency for International Development, Family Health International. Estimating the size of populations at risk for HIV: issues and methods : updated July 2003. Arlington, VA: Family Health International; 2003.
- World Health Organization. Guidelines on estimating the size of populations most at risk to HIV. Geneva: World Health Organization; 2010.
- Weir S, Tate J, Hileman S, Khan M, Jackson E, Herman C. Priorities for Local AIDS Control Efforts: A Manual for Implementing the PLACE Method — MEASURE Evaluation [Internet]. Chapel Hill, NC: MEASURE Evaluation; 2005 [cited 2015 May 4]. Available from: <http://www.cpc.unc.edu/measure/publications/ms-05-13>
- Population Council. Using capture-recapture methodology for enumerating most-at-risk populations (MARPs). Abuja, Nigeria: Population Council; 2012.
- Weir SS, Morroni C, Coetzee N, Spencer J, Boerma JT. A pilot study of a rapid assessment method to identify places for AIDS prevention in Cape Town, South Africa. *Sex Transm Infect.* 2002 4;78 Suppl 1:i106–113. [PubMed: 12083428]
- McCraher DR, Chen M, Wambugu S, Sortijas S, Succop S, Aiyengba B, et al. Informing HIV prevention efforts targeting Liberian youth: a study using the PLACE method in Liberia. *Reprod Health.* 2013;10:54. [PubMed: 24107301]
- Sabin K, Zhao J, Garcia Calleja JM, Sheng Y, Arias Garcia S, Reinisch A, et al. Availability and Quality of Size Estimations of Female Sex Workers, Men Who Have Sex with Men, People Who Inject Drugs and Transgender Women in Low- and Middle-Income Countries. *PloS One.* 2016;11(5):e0155150. [PubMed: 27163256]
- Morgan B Foreward. In: *Capture-Recapture Methods for the Social and Medical Sciences* Boca Raton, FL: Chapman and Hall/CRC; 2017 (Chapman & Hall/CRC Interdisciplinary Statistics).
- Wang JJ, Yang Q, Fan PY, Reilly KH, Ding GW, Wang N. Estimation of population-size changes and HIV prevalence among female sex workers from 2006 to 2009 in Kaiyuan, Yunnan, China. *Biomed Environ Sci BES.* 2012 8;25(4):489–94. [PubMed: 23026531]
- Vuylsteke B, Vandenhoutd H, Langat L, Semde G, Menten J, Odongo F, et al. Capture-recapture for estimating the size of the female sex worker population in three cities in Côte d’Ivoire and in

- Kisumu, western Kenya. *Trop Med Int Health* TM IH. 2010 12;15(12):1537–43. [PubMed: 21054693]
16. Kimani J, McKinnon LR, Wachihhi C, Kusimba J, Gakii G, Birir S, et al. Enumeration of sex workers in the central business district of Nairobi, Kenya. *PloS One*. 2013;8(1):e54354. [PubMed: 23372713]
 17. Kruse N, Behets FM-TF, Vaovola G, Burkhardt G, Barivelo T, Amida X, et al. Participatory mapping of sex trade and enumeration of sex workers using capture-recapture methodology in Diego-Suarez, Madagascar. *Sex Transm Dis*. 2003 8;30(8):664–70. [PubMed: 12897692]
 18. Mutagoma M, Kayitesi C, Gwiza A, Ruton H, Koleros A, Gupta N, et al. Estimation of the size of the female sex worker population in Rwanda using three different methods. *Int J STD AIDS*. 2014 10 20;
 19. Minh TT, Nhan DT, West GR, Durant TM, Jenkins RA, Huong PT, et al. Sex workers in Vietnam: how many, how risky? *AIDS Educ Prev Off Publ Int Soc AIDS Educ*. 2004 10;16(5):389–404.
 20. Paz-Bailey G, Jacobson JO, Guardado ME, Hernandez FM, Nieto AI, Estrada M, et al. How many men who have sex with men and female sex workers live in El Salvador? Using respondent-driven sampling and capture-recapture to estimate population sizes. *Sex Transm Infect*. 2011 6;87(4):279–82. [PubMed: 21385892]
 21. Geibel S, van der Elst EM, King'ola N, Luchters S, Davies A, Getambu EM, et al. "Are you on the market?": a capture-recapture enumeration of men who sell sex to men in and around Mombasa, Kenya. *AIDS Lond Engl*. 2007 6 19;21(10):1349–54.
 22. Adebajo SB, Eluwa GI, Tocco JU, Ahonsi BA, Abiodun LY, Anene OA, et al. Estimating the number of male sex workers with the capture-recapture technique in Nigeria. *Afr J Reprod Health*. 2013 12;17(4 Spec No):83–9. [PubMed: 24689319]
 23. Blanchard JF, Khan A, Bokhari A. Variations in the population size, distribution and client volume among female sex workers in seven cities of Pakistan. *Sex Transm Infect*. 2008 10;84 Suppl 2:ii24–27. [PubMed: 18799488]
 24. Instituto Nacional de Estadística e Informática (INEI). Estado de la Población Peruana 2015 [Internet]. Lima, Perú: INEI; 2015 Available from: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1251/Libro.pdf
 25. Instituto Nacional de Estadística e Informática (INEI). Estado de la Población Peruana 2015 [Internet]. Lima, Perú: INEI; 2015 Available from: https://www.inei.gob.pe/media/MenuRecursivo/publicaciones_digitales/Est/Lib1251/Libro.pdf
 26. Ministerio de Salud (MINSA). Análisis de la Situación Epidemiológica del VIH/SIDA en el Perú, 2013. Lima, Perú: MINSA, ONUSIDA; 2013 11.
 27. Bohning D, Bunge J, van der Heijden P. Basic concepts of capture-recapture In: *Capture-Recapture Methods for the Social and Medical Sciences*. Boca Raton, FL: Chapman and Hall/CRC; 2017. (Chapman & Hall/CRC Interdisciplinary Statistics).
 28. McLean A An evolving trade? Male sex work and the Internet. [Melbourne]: RMIT University; 2013.
 29. Degtyar A, George PE, Mallma P, Diaz DA, Cárcamo C, Garcia PJ, et al. Sexual Risk, Behavior, and HIV Testing and Status among Male and Transgender Women Sex Workers and their Clients in Lima, Peru. *Int J Sex Health Off J World Assoc Sex Health*. 2018;30(1):81–91.
 30. PrEP Watch: Peru [Internet]. [cited 2019 Jun 26]. Available from: <https://www.prepwatch.org/country/peru/>
 31. Young SD, Cumberland WG, Nianogo R, Menacho LA, Galea JT, Coates T. The HOPE social media intervention for global HIV prevention in Peru: a cluster randomised controlled trial. *Lancet HIV*. 2015 1;2(1):e27–32. [PubMed: 26236767]
 32. Garrett R, Menacho L, Young SD. Ethical Issues in Using Social Media to Deliver an HIV Prevention Intervention: Results from the HOPE Peru Study. *Prev Sci Off J Soc Prev Res*. 2017;18(2):225–32.
 33. Miller WM, Buckingham L, Sánchez-Domínguez MS, Morales-Miranda S, Paz-Bailey G. Systematic review of HIV prevalence studies among key populations in Latin America and the Caribbean. *Salud Pública México*. 2013 7;55 Suppl 1:S65–78.

34. Silva-Santisteban A, Eng S, de la Iglesia G, Falistocco C, Mazin R. HIV prevention among transgender women in Latin America: implementation, gaps and challenges. *J Int AIDS Soc.* 2016;19(3 Suppl 2):20799. [PubMed: 27431470]
35. Baral SD, Poteat T, Strömdahl S, Wirtz AL, Guadamuz TE, Beyrer C. Worldwide burden of HIV in transgender women: a systematic review and meta-analysis. *Lancet Infect Dis.* 2013 3;13(3):214–22. [PubMed: 23260128]
36. Nuttbrock LA, editor. *Transgender sex work and society.* New York, NY: Harrington Park Press; 2018.
37. Mariño R, Minichiello V, Disogra C. Male sex workers in Córdoba, Argentina: sociodemographic characteristics and sex work experiences. *Rev Panam Salud Publica Pan Am J Public Health.* 2003 5;13(5):311–9.
38. Niccolai LM, King EJ, Eritsyan KU, Safiullina L, Rusakova MM. “In different situations, in different ways”: male sex work in St. Petersburg, Russia. *Cult Health Sex.* 2013;15(4):480–93. [PubMed: 23464743]
39. Larvie P *Natural Born Targets: Male Hustlers and AIDS Prevention in Urban Brazil In: Men Who Sell Sex: International Perspectives on Male Prostitution and HIV/AIDS.* Philadelphia: Temple University Press; 1999 p. 159–77. (Aggleton P, editor. *Social Aspects of AIDS*).
40. George PE, Bazo-Alvarez JC, Bayer AM. *The Earning and Spending Habits of Male Sex Workers in Lima, Peru.* SAGE Open. 2018 3;8(1).
41. Aggleton P, Parker RG, editors. *Men who sell sex: global perspectives* Abingdon, Oxon ; New York, NY: Routledge; 2015 245 p. (Sexuality, culture and health series).
42. Cáceres CF, Bayer AM, Gomero A, Grenfell PM, Salazar X. *Men who Sell Sex in Peru: Evolving Technology and Sexual Cultures In: Men who Sell Sex: Global Perspectives.* Abingdon, Oxon ; New York, NY: Routledge; 2015 (Aggleton P, Parker RG, editors. *Sexuality, culture and health series*).
43. Baral SD, Friedman MR, Geibel S, Rebe K, Bozhinov B, Diouf D, et al. Male sex workers: practices, contexts, and vulnerabilities for HIV acquisition and transmission. *Lancet Lond Engl.* 2015 1 17;385(9964):260–73.
44. Blas MM, Menacho LA, Alva IE, Cabello R, Orellana ER. Motivating men who have sex with men to get tested for HIV through the internet and mobile phones: a qualitative study. *PloS One.* 2013;8(1):e54012. [PubMed: 23320116]
45. Nachega JB, Morroni C, Zuniga JM, Schechter M, Rockstroh J, Solomon S, et al. HIV treatment adherence, patient health literacy, and health care provider-patient communication: results from the 2010 AIDS Treatment for Life International Survey. *J Int Assoc Physicians AIDS Care Chic Ill* 2002. 2012 4;11(2):128–33.
46. Piñeirúa A, Sierra-Madero J, Cahn P, Guevara Palmero RN, Martínez Buitrago E, Young B, et al. The HIV care continuum in Latin America: challenges and opportunities. *Lancet Infect Dis.* 2015 7;15(7):833–9. [PubMed: 26122456]
47. Risher K, Mayer KH, Beyrer C. HIV treatment cascade in MSM, people who inject drugs, and sex workers: *Curr Opin HIV AIDS.* 2015 11;10(6):420–9. [PubMed: 26352393]
48. Powers KA, Miller WC. Critical Review: Building on the HIV Cascade. *JAIDS J Acquir Immune Defic Syndr.* 2015 7;69(3):341–7. [PubMed: 25835604]
49. Cáceres Carlos F., Konda Kelika, Silva-Santisteban Alfonso, Salazar Ximena, Romero Lottie, Leon Segundo, et al. The Continuum of HIV Care in Peru - Where Are We Now? Key Lessons from an Estimation in the Context of Very Limited Data. *AIDS Res Hum Retroviruses.* 2014;30(suppl).
50. Bayer AM, Díaz CM, Chiappe M, Baker AN, Egoavil MS, Pérez-Lu JE, et al. The odyssey of linking to and staying in HIV care among male sex workers in Peru. *J HIV AIDS.* 2017 1;3(1).

Table 1.

Sociodemographic characteristics, HIV testing history, and perceived HIV risk of place-based male sex workers (MSWs) and transwomen sex workers (TSWs), Lima, Peru, 2013

	MSWs N=129 % (n)	TSWs N=261 % (n)	p-value
Age, mean (confidence interval)	24.9 (23.9-25.9)	25.4 (24.7-26.1)	0.406
Born in Metropolitan Lima (vs. Provinces of Peru)	62.8% (81)	53.3% (139)	0.074
Educational level			< 0.001 ***
Incomplete primary education	3.1% (4)	6.5% (17)	
Complete primary education	2.3% (3)	9.2% (24)	
Incomplete secondary education	16.3% (21)	43.7% (114)	
Complete secondary education	55.8% (72)	31.8% (83)	
At least some post-secondary education	22.5% (29)	8.8% (23)	
Amount earned in past week, in USD, median [IQR] ^{ab}	118 [71-189]	142 [94-236]	0.047 *
Amount earned from sex work in past week, in USD, median [IQR]	71 [43-118]	142 [94-189]	< 0.001 ***
Amount received for last sexual encounter, in USD, median [IQR]	14 [9-19]	9 [9-14]	< 0.001 ***
Identity			N/A
Heterosexual	20.9% (27)	0% (0)	
Homosexual	20.2% (26)	0% (0)	
Bisexual	58.9% (76)	0% (0)	
Transwoman	0%	100%	
Has stable partner	38.8% (50)	34.1% (89)	0.416
Stable partner identity	n=50	n=89	< 0.001 ***
Only male	32.0% (16)	87.6% (78)	
Only female	62.0% (31)	1.1% (1)	
Only transwomen	2.0% (1)	10.1% (9)	
Male and transwomen	0% (0)	1.1% (1)	
Transwomen and female	4.0% (2)	0% (0)	
Ever been tested for HIV	75.2% (97)	87.4% (228)	0.002 **
Most recent HIV test	n=97	n=228	< 0.001 ***
In past 6 months	77.3% (75)	55.7% (127)	
6 months - 1 year	7.2% (7)	29.4% (67)	
1+ years ago	15.5% (15)	14.9% (34)	
Received results of HIV test	91.8% (89)	89.9% (205)	0.555
	n/N	n/N	
Ever tested positive for HIV	4.5% (4/89)	16.6% (34/205)	0.002 **
Is on antiretroviral therapy	50.0% (2/4)	44.1% (15/34)	0.823
Perceived risk of HIV among HIV-negative	n=125	n=227	< 0.001 ***
No risk	8.0% (10)	4.8% (11)	
Little to some risk	48.0% (60)	33.5% (76)	

	MSWs N=129 % (n)	TSWs N=261 % (n)	p-value
High to very high risk	44.0% (55)	61.7% (140)	

^aIQR is the interquartile range.

^bExchange rate from Peruvian nuevos soles to US dollars as of May 1, 2013, calculated using oanda.com.

N/A means non-applicable.

For tests of statistical significance, p-values are as follows:

* p 0.05.

** p 0.01.

*** p 0.001.

Sexual practices with male and transwomen partners among place-based male sex workers (MSWs) and transwomen sex workers (TSWs) in the last 3 months, Lima, Peru 2013

Table 2.

	Transactional		Non-transactional		p-value
	MSWs N = 125 ^a % (n)	TSWs N = 259 ^a % (n)	MSWs ^a N = 125 ^a % (n)	TSW N = 259 ^a % (n)	
At least one male/trans partner	99.2% (124)	100% (259)	44.0% (55)	31.3% (81)	0.532
Number of male/trans partners, mean (confidence interval)	45 (25-66)	117 (104-130)	5 (2-9)	7 (4-10)	0.532
	N=124	N=259	N=55	N=81	
Was asked for sex without condom at least once	61.3% (76)	73.7% (191)			0.013 [*]
Accepted sex without a condom at least once	12.9% (16)	27.4% (71)			0.011 [*]
	% (n/N)	% (n/N)	% (n/N)	% (n/N)	
Any insertive anal intercourse (IAI)	91.1% (113/124)	45.9% (119/259)	72.7% (40/55)	23.5% (19/81)	< 0.001 ^{***}
Always condom use, IAI	90.3% (102/113)	72.3% (86/119)	77.5% (31/40)	31.6% (6/19)	0.001 ^{**}
Any receptive anal intercourse (RAI)	29.8% (37/124)	98.8% (256/259)	32.7% (18/55)	91.4% (74/81)	< 0.001 ^{***}
Always condom use, RAI	94.6% (35/37)	74.2% (190/256)	100% (18/18)	50.0% (37/74)	< 0.001 ^{***}
	N=124	N=259	N=55	N=81	
Alcohol use before or during sex					0.791
Never	59.7% (74)	53.7% (139)	45.5% (25)	46.9% (38)	
Sometimes	36.3% (45)	42.8% (111)	49.1% (27)	44.4% (36)	
Almost always or always	4.0% (5)	3.5% (9)	5.4% (3)	8.6% (7)	
Drug use before or during sex					0.057
Never	83.9% (104)	71.4% (185)	80.0% (44)	70.4% (57)	
Sometimes	14.5% (18)	27.8% (72)	16.4% (9)	29.6% (24)	
Almost always or always	1.6% (2)	0.8% (2)	3.6% (2)	0% (0)	

^aOf the total sample of 129 MSWs, 4 reported no male or transwoman partners in the last 3 months. Of the total sample of 261 TSWs, 2 reported no male or transwoman partners in the last 3 months.

For tests of statistical significance, p-values are as follows:

* p 0.05.

** p 0.01.

1000 d

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3. Sexual practices with female partners among place-based male sex workers (MSWs) and transwomen sex workers (TSWs) in the last 3 months, Lima, Peru 2013

	Transactional		Non-transactional		p-value
	MSWs N = 76 ^a % (n)	TSWs N = 10 ^a % (n)	MSWs N = 76 ^a % (n)	TSWs N = 10 ^a % (n)	
At least one female partner	19.7% (15)	90.0% (9)	89.5% (68)	10.0% (1)	
Number of female partners, mean (confidence interval)	1 (0-2)	3 (-1-7)	2 (1-5)	0 (0-0)	0.027*
	N=15	N=9	N=68	N=1	
	% (n/N)	% (n/N)	% (n/N)	% (n/N)	
Any vaginal sex	100% (15/15)	88.9% (8/9)	100.0% (68/68)	0% (0/1)	< 0.001***
Always condom use, vaginal sex	80.0% (12/15)	87.5% (7/8)	42.6% (29/68)	N/A	N/A
Any anal sex	73.3% (11/15)	55.6% (5/9)	60.3% (41/68)	100% (1/1)	0.419
Always condom use, anal sex	72.7% (8/11)	80.0% (4/5)	46.3% (19/41)	100% (1/1)	0.952
	N=15	N=9	N=68	N=1	
Alcohol use before or during sex					0.966
Never	53.3% (8)	77.8% (7)	63.2% (43)	100% (1)	
Sometimes	46.7% (7)	22.2% (2)	29.4% (20)	N/A	
Almost always or always	0% (0)	0% (0)	7.4% (5)	N/A	
Drug use before or during sex					0.953
Never	100% (15)	88.9% (8)	91.2% (62)	100% (1)	
Sometimes	0% (0)	11.1% (1)	5.9% (4)	N/A	
Almost always or always	0% (0)	0% (0)	2.9% (2)	N/A	

^aOf the total sample of 129 MSWs, 53 reported no female partners in the last 3 months. Of the total sample of 261 TSWs, 251 reported no female partners in the last 3 months.

For tests of statistical significance, p-values are as follows:

* p 0.05.

** p 0.01.

*** p 0.001.

Table 4a.

Location of publicities for male and transwoman sex work in virtual spaces and newspapers, Peru, 2013

	Male sex work publicities N=233 % (n)	Transwoman sex work publicities N=108 % (n)
Virtual spaces		
Individual sex work website	2.6% (6)	1.9% (2)
International sex work website	23.2% (54)	0% (0)
Peruvian sex work website	13.7% (32)	32.4% (35)
General website	30.5% (71)	43.5% (47)
Gay website	9.4% (22)	2.8% (3)
Gay social media website	9.4% (22)	0% (0)
General social media website	1.7 (4)	0% (0)
Newspapers	9.4% (22)	19.4% (21)

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 4b.

Characteristics of sex work among male sex workers (MSWs) and transwomen sex workers (TSWs) in virtual spaces and newspapers, Lima, Peru, 2013

	MSWs N=76 % (n)	TSWs N=34 % (n)	p-value
Typical amount charged for sexual encounter, in USD, median [IQR]	44 [38-50]	40 [33-47]	0.376
Oral sex with clients			
Provides oral sex to clients	54.0% (41)	97.1% (33)	< 0.001 ***
Receives oral sex from clients	96.1% (73)	88.2% (30)	0.121
Insertive anal intercourse (IAI) with clients			
Engages in practice	94.7% (72/76)	79.4% (27/34)	0.013
Always condom use with IAI	79.2% (57/72)	88.9% (24/27)	0.264
Receptive anal intercourse (RAI) with clients			
Engages in practice	43.4% (33/76)	100% (34/34)	0.013
Always condom use with RAI	69.7% (23/33)	88.2% (30/34)	0.264

^aIQR is the interquartile range.

^bExchange rate from Peruvian nuevos soles to US dollars as of May 1, 2013, calculated using oanda.com.

N/A means non-applicable.

For tests of statistical significance, p-values are as follows:

* p 0.05.

** p 0.01.

*** p 0.001