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INFORMING INTERVENTIONS: THE IMPORTANCE OF CONTEXTUAL FACTORS IN THE PREDICTION OF SEXUAL RISK BEHAVIORS AMONG TRANSGENDER WOMEN

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Abstract

This study identifies contextual factors that predict risky sexual behavior among 153 transgender women who participated in a structured survey soliciting information on demographics, substance use, HIV status, risk behaviors, and other health and psychosocial factors. Multivariate logistic regression models were used to determine predictors. Inconsistent condom use was associated with stimulant use, unstable housing, and recruitment site. Substance use during sex was associated with unstable housing and stimulant use. Sex work was associated with hormone use, gender confirming surgeries, and younger age. When developing interventions for transgender women, it may be useful to focus on predictors of risk behavior rather than predictors of current HIV status (i.e., race/ethnicity as "risk factor"), because these behaviors are the target of interventions aimed at sexual risk reduction. Implications include potential benefits of context-specific interventions, structural interventions addressing barriers to housing and health care, and culturally specific substance abuse treatment programs for transgender women.

Transgender women, or people who were assigned a "male" gender at birth but identify as female, are a highly vulnerable and marginalized population in the United States (Boehmer, 2002; Clements-Nolle, Marx, Guzman, & Katz, 2001; Clements-Nolle, Marx, & Katz, 2006; Garafalo, Deleon, Osmer, Doll, & Harper, 2006; Lombardi, 2007; Melendez & Pinto, 2007; Meyer & Northridge, 2007; Nemoto, Operario, Keatley, & Villegas, 2004). It comes as no surprise, then, given the association of negative health outcomes with stigma and discrimination (Clements-Nolle et al., 2006; Diaz, Ayala, & Bein, 2004; Diaz, Ayala, Bein, Henne, & Marin, 2001), that transgender women experience severe health disparities across a number of outcomes, including HIV. Estimates suggest that HIV prevalence rates among

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transgender women are among the highest of all risk groups (Clements-Nolle et al., 2001; Herbst et al., 2007), and have been reported in the range of 14% to 68%, depending on which subgroup of transgender women were sampled (Elifson et al., 1993; Rodriguez-Madera & Toro-Alfonso, 2005). Table 1 provides an overview of selected regional reports from various urban centers in the United States Although no national surveillance data exist owing to lack of data collection on transgender people, a recent meta-analysis of 29 studies found that 28% of transgender women tested positive for HIV (Herbst et al., 2007). Despite high HIV prevalence rates, transgender women have a low perceived risk of HIV acquisition and engage in high-risk activities, including unprotected receptive anal sex, sex under the influence of drugs and alcohol, and sex work (Kenagy, 2002; Nemoto, Operario, Keatley, Han, & Soma, 2004; Sausa, Keatley, & Operario, 2007).

As demonstrated in other populations, substance use is a contextual factor that contributes to risky sex, and substance abuse has been consistently linked to HIV status among transgender people. In San Francisco, transgender people who reported injection drug use were almost three times more likely to be HIV-positive (Clements-Nolle et al., 2001). In Washington, DC, transgender people who had a self-reported substance abuse problem were more than twice as likely to be living with HIV or AIDS (Xavier, Bobbin, Singer, & Budd, 2005). Sex under the influence of drugs and/ or alcohol is one of the most commonly cited sexual risk factors for HIV as it often leads to unprotected sex (Nemoto et al., 2004; Xavier et al., 2005). Among transgender women, unprotected sex under the influence of substances seems to be especially prevalent with primary partners (Nemoto et al., 2004; Risser et al., 2005) but is also reported with paying and casual partners (Melendez & Pinto, 2007; Sausa et al., 2007). The aforementioned meta-analysis found that almost half (44%) of transgender women reported unprotected receptive anal intercourse, with the highest rates being reported with sex work clients (39%) and primary partners (37%) (Herbst et al., 2007). Another recent meta-analysis compared HIV rates among transgender women engaged in sex work, transgender women not engaged in sex work, and nontransgender women engaged in sex work, and found that transgender female sex workers had significantly higher HIV prevalence rates (27%) than the other two groups (Operario, Soma, & Underhill, 2008).

Other types of HIV risk and protective behaviors identified in nontransgender populations but yet to be explored among transgender women include the use of stimulants and serosorting. Although previous studies of substance use among transgender women have combined all types of substances in predicting risk behavior, studies in other populations (e.g., MSM) have noted that stimulant use in particular tends to precipitate risky sexual behavior (Morin et al., 2005; Shoptaw & Reback, 2007). However, this link has not yet been investigated among transgender women. Additionally, studies of other high-risk populations identify serosorting as one strategy some people report using to reduce risk of HIV transmission when having unprotected sex (Eaton, Kalichman, & Cain, 2007; Truong et al., 2006). However, it is not clear whether transgender women are engaging in serosorting and whether or not this practice might explain reports of high levels of unsafe sex.

Communities of color are disproportionately represented among people living with HIV as well as new HIV cases (Centers for Disease Control and Prevention, 2005), and studies have shown that this holds true among transgender women (Herbst et al., 2007). Race and

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ethnicity are therefore often treated as a starting point for designing interventions because race/ethnicity seems to be a consistent predictor of HIV status. However, race/ethnicity is often *not* the best predictor of HIV sexual risk behavior in high-risk populations (Schwarcz et al., 2007), which is the concern of any behavioral intervention seeking to reduce sexual risk. Race and ethnicity also may not always be appropriate or straightforward targets of behavioral interventions within communities of transgender women, where transphobia and racism intersect to create unique contexts of risk (Sugano, Nemoto, & Operario, 2006).

Many studies that report ethnicity-based differences in HIV prevalence rates among transgender women do not control for recruitment site or examine the roles that living conditions or drug of choice play in predicting risk behavior (Clements-Nolle et al., 2001; Garafalo et al., 2006; Nemoto et al., 2004). Contextual factors, or the physical, environmental, and behavioral factors that may influence or predict risky sex, may be more useful predictors of risky sex as well as more appropriate targets of behavioral interventions that serve transgender women. The importance of examining the physical and social context of where and how transgender women live, socialize, and seek services should not be overlooked, as these sites can also serve as potential sites for intervention (Elifson, Sterk, & Theall, 2007; Sevelius et al., 2008). In addition, studies in other populations have found that unstable housing is a strong correlate of HIV risk behaviors (Elifson et al., 2007). However, there are currently no data on this relationship among transgender women, who report high levels of housing and employment discrimination (Cochran, Stewart, Ginzler, & Cauce, 2002; Garofalo, Osmer, Sullivan, Doll, & Harper, 2007; Sugano et al., 2006; Xavier et al., 2005; Xavier & Bradford, 2005).

Using a framework drawing upon conservation of resources theory, this study examines how material, personal, and social resources influence risk behavior that leads to increased risk of HIV acquisition or transmission (Hobfoll, 1989). For material resources, we examined housing status. Stimulant use was conceptualized as a personal resource. For transgender women, hormone use and gender confirming surgeries can be conceptualized as social resources. Understanding how transgender women's desire to retain, protect, and/or build these different types of resources provides a context for exploring the intersecting issues to be addressed by intervention efforts that seek to reduce sexual risk behavior. This study therefore seeks to (a) describe the demographics and risk behaviors of a diverse sample of transgender women in San Francisco recruited from various types of venues around the city, and (b) identify contextual factors that predict risky sexual behavior among transgender women to inform behavioral HIV prevention interventions targeting this population.

METHODS

PROCEDURE AND SAMPLE

Data were collected by the San Francisco Department of Public Health as part of a modified version of the HIV Testing Survey (HITS). HITS was a study designed by the Centers for Disease Control and Prevention to examine the effect of changes in HIV infection reporting policies on HIV testing behaviors in people at risk for HIV. The findings related to HIV testing behaviors among transgender women are reported elsewhere (Schwarcz & Scheer, 2004).

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Between June and October of 2002, transgender women were recruited from 12 transgender-specific social service agencies, six bars/clubs, and seven street locations in San Francisco that were known to be frequented by transgender people. To minimize recruiter bias, every third person entering a venue was approached for recruitment, and recruiters varied the times they recruited from the various venues. To be eligible, potential participants were required to be over age 18, have resided in California for at least the past 6 months, be assigned "male" at birth but currently identify as female and currently identify, or have identified at some point in the past, as transgender. Of 181 people who were eligible for the study, 153 (85%) elected to participate. Trained staff, which included two transgender women, conducted 1-hour face-to-face interviews at the San Francisco Department of Public Health immediately following recruitment or the following day. All participants provided verbal consent. Compensation was $25 cash.

MEASURES

Demographics—Participants reported demographic characteristics such as race/ethnicity, age, gender identity, income, education level, HIV status, housing, and incarceration history. Gender identity was assessed using three questions. The first was "Would you describe yourself as: male, female, or other (specify)?" The second question was "What gender were you at birth?" and the response options were "*male,*" "*female,*" "*intersex/ambiguous,*" or "*refuse to answer.*" The third question was "At some point in your life, have you considered yourself to be transgender? For example, one is male at birth but has considered oneself to be female and/or lives full or part time as a woman.

Sexual Risk Behaviors—To measure sexual risk behaviors, interviewers inquired about the same sexual behaviors across both male and female primary partners, nonprimary partners, and paying partners. A participant was categorized as actively engaging in sex work if she affirmatively answered the question, "In the past 12 months, have you had sex with a man who gave you money, drugs, food, transportation, or shelter in exchange for sex?"

Only 7% (n = 13) of the 153 participants in this sample reported sexual activity with female or transgender partners; therefore only sexual behavior with nontransgender male partners was analyzed for this study. We chose to focus on receptive anal sex owing to the high risk of HIV acquisition associated with this sexual activity. [1] For each type of male partner (primary, casual, and paying), participants were asked, "In the past 12 months when you have had sex with [this type of partner] where he put his penis into your butt/anus, how often did you use a rubber or condom?" The response choices were: "*never,*" "*less than half the time,*" "*about half the time,*" "*more than half the time,*" "*always,*" "*refuse to answer,*" or "*don't know*." Inconsistent condom use was defined as "*not always*" using condoms during receptive anal sex across each type of partner by combining the following responses: "*never,*" "*less than half the time,*" "*about half the time,*" "*more than half the time.*"

[1]Although receptive vaginal sex is also risky for transgender women who have had genital reconstruction surgery, this type of surgery is expensive and difficult to gain access to for many transgender women. Indeed, only 9 (5%) women in this sample reported having had this type of surgery, of whom only 4 (2%) reported having vaginal sex within the past year.

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Drug and Alcohol Use—To measure alcohol use, participants were asked, "In the past month, have you had 5 or more drinks on any single day?" To measure drug use, participants were asked about any drug use over the past year, and then were asked about which specific types of drugs they had used. Because previous studies have linked stimulant use to increased HIV risk behaviors in other populations (Colfax et al., 2005; Morin et al., 2007; Wright et al., 2007), we combined methamphetamines (including crystal meth), crack, and cocaine use into a single variable measuring stimulant use during the past year. Participants were also asked about general nonintravenous and intravenous drug use.

To measure substance use during sex, participants were asked for each type of partner "The last time you had sex with this [type of partner], had you been drinking alcohol before or during sex?" and "The last time you had sex with this [type of partner], had you been using drugs before or during sex?" These two items were combined across all types of partners to yield one binary variable describing drug and/or alcohol use during the most recent sexual encounter.

Gender Confirming Procedures—To measure gender-confirming procedures, participants were asked, "Have you had any type of gender confirmation surgery?" This question included but was not limited to genital reconstruction surgery, including a number of procedures such as breast augmentation and facial feminization. Participants were also asked about various types of noninjection as well as injection hormone use during the past year. These items were combined to measure all types of hormone use during the previous year.

ANALYSIS

The primary goal of our analysis plan was to identify contextual factors that predict HIV risk behaviors. Frequencies of demographic, HIV status, and other psychosocial measures were generated for descriptive purposes. Pearson *chi-square* tests were conducted to assess bivariate associations between demographic variables, recruitment sites, unstable housing, health and psychosocial factors, and the three behavioral outcomes. A p level of less than .05 indicated differences on these variables.

Three multivariate logistic regression models were constructed to provide odds ratios (ORs) and 95% confidence intervals (CIs) to determine independent predictor variables of the three binary outcome measures: inconsistent condom use, drugs and/or alcohol during last sexual encounter, and currently engaging in sex work. To clarify these relationships, variables associated with risk behaviors at $p < .25$ in Pearson chi-square tests were included in the initial equations as predictors. Variables that failed to reach significance at the level of $p < .25$ upon entry into the regression equation were then excluded from the final model in a backward stepwise procedure in order to maximize the fit of the models as assessed by the Hosmer-Lemeshow goodness-of-fit test (Hosmer & Lemeshow, 1989). All analyses were conducted using SPSS, Version 14.0.

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RESULTS

DEMOGRAPHICS

Table 2 presents the demographic profile of this sample by recruitment site. One hundred fifty-three transgender women were interviewed, with substantial participation by transgender women of color (81% of the sample were women of color, including 26% African American and 27% Latina). There was a relatively even distribution of participants across age groups; almost two thirds of the sample (62%) were between the ages of 25 and 44, with considerable participation (20%) from both the younger cohort, ages 18–24, and the older cohort (18%), 45 and older. Almost half (49%) of the sample reported less than $1,000 in monthly income over the past year, and the majority (57%) had completed or had less than a high school education. Forty-one percent of the sample reported having unstable housing within the past year. Almost one quarter (22%) of the sample was HIV-positive. Slightly more than a quarter (26%) of participants reported having had some type of gender confirming procedure, and almost three quarters (74%) reported having used hormones in the past year. Almost a quarter (24%) had been arrested within the past year. Almost a third (31%) had been in drug treatment at some point in their lives.

RISK BEHAVIORS AND CORRELATES

As shown in Table 3, 40% of the participants reported inconsistent condom use during receptive anal sex over the past year. Close to half (45%) reported having used alcohol and/or drugs during their last sexual encounter, and over a third (34%) reported being currently engaged in sex work. Table 3 presents the results of the bivariate analyses that examined the contextual correlates of the risk behaviors of interest. Inconsistent condom use was more likely among participants who were recruited on the street, had unstable housing, had five or more drinks in a single day over the past month, and had used stimulants in the past year. Drug and/or alcohol use during last sexual encounter and sex work were more likely among Latina participants, those who had unstable housing during the past year, had used hormones during the past year, had been arrested during the past year, and had used stimulants within the past year.

Table 4 presents the results of three multivariate logistic regression models that identify the independent associations of the predictor variables with each of the risk behaviors. Initial tests of 2-way interactions were considered for the model, but none was found to be significant and a main effects model was retained.

Inconsistent Condom Use—Transgender women who reported stimulant use in the past year were more than four times more likely to report inconsistent condom use (OR = 4.47, 95% CI = 1.39–14.43). Participants who were recruited from street locations as well as those who reported unstable housing were four times more likely to report inconsistent condom use (OR = 4.20, 95% CI = 1.36, 12.93 and OR = 4.40, 95% CI = 1.44, 13.39, respectively).

Substance Use During Last Sexual Encounter—Controlling for stimulant use in the past year, White transgender women were 15 times more likely than Asian women to have used substances during the last sexual encounter (OR = 15.16, 95% CI = 2.41, 95.61).

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African American transgender women were eight times more likely (OR = 8.14, 95% CI = 1.77, 37.54) and Latina transgender women were 5 times more likely (OR = 5.46, 95% CI = 1.41, 21.21) than Asian transgender women to have used substances during their last sexual encounter. Transgender women who reported unstable housing in the past year were three times more likely to report using substances during their last sexual encounter (OR = 3.11, 95% CI = 1.11, 8.73).

Sex work—Transgender women who reported hormone use in the past 12 months were 7 times more likely to report currently engaging in sex work (OR = 7.09, 95% CI = 2.02 to 24.86). African American transgender women were almost 5 times more likely than Asian transgender women to report currently engaging in sex work (OR = 4.66, 95% CI = 1.15, 18.96). Having had some type of gender-confirming procedure and younger age were also significant predictors of sex work (OR = 3.14, 955 CI = 1.13, 8.68 and OR = .94, 95% CI = 0.90, 0.99, respectively).

DISCUSSION

This research examines contextual factors that contribute to HIV-related risk behaviors among a diverse sample of transgender women. In this sample, 22% were living with HIV and 41% had unstable housing. Forty percent reported inconsistent condom use, 45% had used drugs and/or alcohol during their last sexual encounter, and 34% were currently engaged in sex work. The bivariate and multivariate correlates of the three risk behaviors we examined suggest that substance use, unstable housing, and access to trans-specific health care are three areas that urgently need to be addressed by HIV prevention interventions prioritizing this population.

The HIV prevalence rates, rates of inconsistent condom use, and rates of sex work found in our study were consistent with those of other studies focused on transgender women (Clements-Nolle et al., 2001; Edwards, Fisher, & Reynolds, 2007; Garafalo et al., 2006; Herbst et al., 2007; Melendez & Pinto, 2007; Nemoto et al., 2004; Xavier, Bobbin, et al., 2005). In our analysis, stimulant use, unstable housing, and recruitment site were more powerful in predicting inconsistent condom use during receptive anal sex than ethnicity of the participant. Transgender women recruited on the street were more likely to report inconsistent condom use with all types of partners than transgender women recruited from agencies or bars. This difference was not found across ethnicities. Being recruited from the street was not necessarily a proxy for homelessness, but our data also show that unstable housing predicted inconsistent condom use even when controlling for recruitment site in the model. This lends support to the idea that when people do not have a stable place to live, HIV prevention may not be a high priority (Elifson et al., 2007). Structural interventions that target housing-related issues among transgender women (e.g., housing discrimination) may be a powerful way to increase transgender women's ability to prioritize HIV prevention in their lives.

Inconsistent condom use was not related to seroconcordance or discordance of the participants' sexual partners, so we did not find evidence for serosorting among transgender women as has been reported in other high-risk populations (Eaton et al., 2007; Truong et al.,

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2006). Consistent with previous studies, transgender women who used drugs and/or alcohol during their last sexual encounter (with any type of partner) were more likely to report inconsistent condom use. We found that as in other populations at risk for HIV, stimulant use is a significant predictor of risky behaviors among transgender women. Transgender women may use substances to cope with the stress of sex work and other stresses associated with the stigma of being transgender (Hughes & Eliason, 2002; Nemoto et al., 2004; Sausa et al., 2007). Issues of substance use must be addressed for HIV prevention programs targeting transgender women to be effective. To be truly inclusive of transgender individuals, not only must treatment staff be trained in transgender sensitivity, but also the programs themselves must be designed to address the unique needs and issues that affect transgender people. Issues related to gender affirmation, sex work, as well as intersections of transphobia and racism must be addressed directly, and their link to substance use explored within the context of treatment (Lombardi & van Servellen, 2000; Oggins & Eichenbaum, 2002).

Results from our multivariate analyses suggest that being younger, using hormones, having had some type of gender confirming procedure, and being African American significantly increase one's likelihood of being engaged in sex work. As found in other communities that experience oppression (Diaz et al., 2004), the severe stigma and discrimination that transgender women experience underlie many of the risk behaviors frequently reported in this community (Sugano et al., 2006). Employment and housing discrimination lead directly to the need to engage in survival sex work for many transgender women who are not afforded opportunities for education, training, and basic social services owing to their transgender status (Clements, Wilkinson, Kitano, & Marx, 1999; Kammerer, Mason, Connors, & Durkee, 2001; Kenagy, 2005; Sausa et al., 2007).

When designing interventions for transgender women aimed at reducing sexual risk behavior, it may be important to note that sex work and unprotected receptive anal sex is a high-risk behavior that has unique implications for male-to-female transgender people. Transgender women report that receptivity during sex is experienced as affirming of their gender identity, and very few transgender women have access to genital surgery, as our data and others have demonstrated (Bockting, Robinson, & Rosser, 1998; Nemoto et al., 2004; Sausa et al., 2007). Having unprotected receptive sex has often been cited as a way that transgender women express trust and intimacy with their primary partner, sometimes to distinguish them from paying and/or casual partners (Nemoto et al., 2004; Sausa et al., 2007). In addition, studies have shown that stigma and discrimination increase transgender women's need for affirmation and validation as women from their male sexual partners, thus increasing their willingness to engage in risky sexual behavior (including sex work) and reducing their self-efficacy to negotiate condom use and/or substance use during sex (Melendez & Pinto, 2007; Nemoto, Luke, Mamo, Ching, & Patria, 1999; Sausa et al., 2007). Condom use during receptive anal sex and sex work both often hold a distinct significance to transgender women that is important to consider when designing HIV prevention programs and messages intending to reduce sexual risk.

African American transgender women, owing to the intersection of transphobia and racism, may be more vulnerable to employment discrimination and other types of violence and

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harassment, leading to the need to engage in survival sex. In addition to fulfilling basic survival needs, the financial incentive to engage in sex work may be especially high for transgender women who pursue gender confirming procedures, such as taking hormones and undergoing surgeries (e.g., facial feminization, breast augmentation, and genital reconstruction). The financial need created by expensive gender confirming procedures may lead some transgender women to engage in particularly risky behaviors because sex work clients will sometimes pay more for barrier-free sex or to have women inject drugs with them (Boles & Elifson, 1995; Nemoto et al., 1999; Nemoto et al., 2004). This link has been explored in qualitative studies where transgender women report engaging in sex work to gain financial access to basic transgender-related health care, such as hormone therapy, as well as expensive procedures that are rarely covered by health insurance (Nemoto et al., 2004; Sausa et al., 2007). In addition, the need to be able to sustain one's survival and livelihood through sex work may lead some women to seek gender confirming procedures in order to attract clients.

Historically, examinations of HIV have focused on race/ethnicity as a primary predictor of serostatus. However, in examining who is most at risk for HIV, life circumstances and context are just as important and useful to consider, as supported by the findings presented here. Communities of color are disproportionately impacted by HIV as well as many economic and social challenges, although race/ethnicity is not always the best predictor of risk behavior and is not malleable. Therefore, race/ethnicity may not always be useful as a sole basis on which to develop HIV prevention messages and strategies for recruitment into risk reduction interventions. For example, one innovative study of how living conditions impact HIV risk behavior among low-income African American women found that this group, often treated as homogeneous, consists of women with unique and differing experiences that need to be taken into consideration when designing interventions (Gentry, Elifson, & Sterk, 2005). As this study suggested, how issues related to living conditions and other contextual factors intersect with race/ethnicity to contribute to risky behaviors may be more relevant for developing prevention strategies for diverse transgender women of color.

Evidence-based behavioral interventions are often developed with a priority population based on race/ethnicity, and this can render them difficult to adapt for transgender women because transgender women are severely marginalized based on gender identity and presentation, which is compounded by racism for transgender women of color. In addition, agencies that prioritize transgender women often do so across race/ethnicities (Edwards et al., 2007). This creates a unique cultural context that needs to be specifically and thoughtfully addressed by interventions. Indeed, in a review of HIV prevention programs that specifically addressed culture by focusing on issues of race and ethnicity, Wilson and Miller (2003) recommended that we expand the definition of culture in HIV prevention to include "the cultures of sex and sexual identity as distinct cultural influences" (p. 192).

Interventions based on the intersections of gender and life context with race/ethnicity may be most effective for prioritizing transgender women at highest risk for acquiring or transmitting HIV. Interventions that utilize sites where transgender women are likely to socialize, work, select sexual partners, and receive services may be able to target specific attitudes and behaviors as well as contexts in which HIV risk behaviors are more likely to

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occur. For example, clinics that serve transgender sex workers might be able to provide more relevant HIV prevention messages to their clients, regardless of race/ethnicity, than race-based interventions that do not account for whether or not their target population is currently engaged in sex work. Our findings suggest that it may be especially important to design HIV prevention interventions aimed at sex workers with young transgender women in mind, because younger transgender women are more likely to report being currently engaged in sex work. In addition, the provision of information and/or medical care related to access to hormones and safe hormone use may be a particularly strong recruitment strategy for reaching transgender sex workers.

Limitations of this study should be considered. Our sample was limited to transgender women recruited in San Francisco who identify (or identified at some point in the past) as ‘transgender’. Therefore, our sample may not be representative of transgender women in other parts of the US or those who do not currently identify as “transgender” (e.g., those with “post-transsexual,” “stealth,” or “genderqueer” identities). Additionally, our small sample size prevented us from statistically investigating important concepts of intersectionality that have been suggested in previous studies and supported by our findings here. Exploring these intersections with larger, and perhaps more representative, samples of transgender women is an important next step in this line of research.

In conclusion, our findings suggest the need to critically reexamine and reignite our HIV prevention strategies (both primary and secondary) with transgender women. Given the complex sexual risk factors present among transgender women, HIV prevention programs developed for other populations that are simply adapted to include new language will not ultimately address the issues most important to transgender women. HIV prevention interventions need to be based on the unique intersections of culture and context that most influence the lives of transgender women.

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TABLE 1

Selected Regional Reports of HIV Prevalence among Transgender Women

Location	HIV prevalence (%)	Source
Atlanta (sex workers)	68	(Elifson et al., 1993)
Chicago (youth)	22	(Garafalo et al., 2006)
Houston	27	(Risser et al., 2005)
Los Angeles	52	(Edwards et al., 2007)
San Francisco	35	(Clements-Nolle et al., 2001)
San Juan	14	(Rodriguez-Madera & Toro-Alfonso, 2005)
Washington DC	32	(Xavier et al., 2005)

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TABLE 2

Demographics, HIV Prevalence, Risk Behaviors, and Related Factors by Recruitment Site

	Total *N* (%)	**Agency *N* (%)**	**Bar/Club *N* (%)**	**Street *N* (%)**	
	153 (100)	**82 (54)**	**26 (17)**	**45 (30)**	***p***
Inconsistent condom use[a]	61 (40)	30 (50)	7 (35)	24 (75)	**
Drug and/or alcohol use, last sexual encounter	69 (45)	38 (46)	10 (38)	21 (47)	ns
Sex work	52 (34)	27 (33)	5 (19)	20 (44)	ns
Ethnicity					
Latina	41 (27)	24 (30)	5 (19)	12 (27)	*
African-American	39 (26)	20 (25)	4 (15)	15 (34)	
Asian	27 (18)	14 (17)	7 (27)	6 (14)	
Native American	15 (10)	13 (16)	1 (4)	1 (2)	
White	29 (19)	10 (12)	9 (35)	10 (23)	
Age					
18 – 24	31 (20)	22 (27)	3 (12)	6 (13)	ns
25 – 34	49 (32)	19 (23)	13 (50)	17 (38)	
35 – 44	46 (30)	26 (32)	4 (15)	16 (36)	
45 +	27 (18)	15 (18)	6 (23)	6 (13)	
Highest grade completed					
8th grade or less	12 (8)	8 (10)	1 (4)	3 (7)	ns
Some high school	30 (20)	14 (17)	3 (12)	6 (23)	
High school/GED	44 (29)	24 (29)	6 (23)	13 (29)	
Some college/AA/Tech	41 (27)	26 (32)	6 (23)	9 (20)	
College grad/Postgrad	26 (17)	10 (12)	10 (39)	6 (13)	
Monthly income, past year					
<1000	75 (49)	38 (46)	8 (31)	29 (64)	ns
1000 – 1999	43 (28)	26 (32)	10 (39)	7 (16)	
2000 – 2999	24 (16)	13 (16)	5 (19)	6 (13)	
3000 – 3999	3 (2)	2 (2)	0 (0)	1 (2)	
>4000	8 (5)	3 (4)	3 (12)	2 (4)	
Unstable housing, past year	63 (41)	38 (46)	7 (27)	18 (40)	ns

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	Total *N* (%)	Agency *N* (%)	Bar/Club *N* (%)	Street *N* (%)	
	153 (100)	**82 (54)**	**26 (17)**	**45 (30)**	***p***
HIV positive	34 (22)	20 (24)	1 (4)	13 (29)	*
Gender confirmation surgery	40 (26)	25 (31)	4 (15)	11 (24)	ns
Hormone use, past year	113 (74)	68 (83)	13 (50)	32 (71)	**
Arrested, past year	37 (24)	15 (18)	4 (15)	37 (24)	*
IDU, past year	14 (9)	5 (6)	3 (12)	6 (13)	ns
Alcohol use, five or more drinks on single day	42 (27)	20 (24)	6 (23)	16 (36)	ns
Stimulant use, past year	29 (19)	16 (55)	1 (3)	12 (27)	ns

Note. Columns may not always equal totals due to missing responses for some items.

[a] Inconsistent condom use is defined as not always using condoms with every type of partner (primary, casual, commercial) during receptive anal sex.

* $p < .05$.

** $p < .01$.

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TABLE 3

Bivariate Correlates of Three Sexual Risk Behaviors: Inconsistent Condom Use, Drug and/or Alcohol Use During Last Sexual Encounter, and Sex Work

		Inconsistent Condom Use		Drug and/or Alcohol Use Last Sexual			
	Total *N* (%)	*N* (%)		Encounter *N* (%)		Sex Work *N* (%)	
	153 (100)	61 (40)	*p*	69 (45)	p	52 (34)	p
Ethnicity							
Latina	41 (27)	26 (43)	ns	26 (38)	**	22 (42)	**
African-American	39 (26)	15 (25)	22 (32)	17 (33)			
Asian	27 (18)	9 (15)	6 (9)	7 (14)			
Native American	15 (10)	5 (8)		5 (7)	3 (6)		
White	29 (19)	5 (8)	10 (15)	3 (6)			
Recruitment site							
Agency	82 (54)	30 (49)	**	38 (55)	ns	27 (52)	ns
Bar/Club	26 (17)	7 (12)	10 (15)	5 (10)			
Street	45 (30)	24 (39)	21 (30)	20 (39)			
Age							
18 – 24	31 (20)	16 (26)	ns	18 (26)	ns	13 (25)	**
25 – 34	49 (32)	25 (41)	23 (19)	24 (46)			
35 – 44	46 (30)	18 (30)	21 (30)	13 (25)			
45 +	27 (18)	2 (3)	7 (10)	2 (4)			
Highest grade completed							
8th grade or less	12 (8)	7 (12)	ns	9 (13)	ns	4 (8)	ns
Some high school	30 (20)	15 (25)	16 (23)	16 (31)			
High school/GED	44 (29)	16 (26)	22 (32)	14 (27)			
Some college/AA/Tech	41 (27)	15 (25)	15 (22)	13 (25)			
College grad/Postgrad	26 (17)	8 (13)	7 (10)	5 (10)			
Monthly income, past year							
<1000	75 (49)	32 (53)	ns	36 (52)	ns	22 (42)	ns
1000 – 1999	43 (28)	14 (23)	17 (25)	14 (27)			
2000 – 2999	24 (16)	11 (18)	13 (19)	12 (23)			
3000 – 3999	3 (2)	2 (3)	1 (1)	2 (4)			

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	Total *N* (%)	Inconsistent Condom Use *N* (%)		Drug and/or Alcohol Use Last Sexual Encounter *N* (%)		Sex Work *N* (%)	
	153 (100)	**61 (40)**	***p***	**69 (45)**	**p**	**52 (34)**	**p**
>4000	8 (5)	2 (3)	2 (3)	2 (4)			
Unstable housing, past year	63 (41)	35 (57)	**	39 (57)	**	27 (52)	*
HIV positive	34 (22)	12 (21)	ns	17 (27)	ns	8 (16)	ns
Gender confirmation surgery	40 (26)	15 (25)	ns	16 (23)	ns	18 (35)	ns
Hormone use, past year	113 (74)	50 (82)	ns	58 (84)	*	48 (92)	**
Arrested, past year	37 (24)	19 (31)	ns	28 (41)	**	21 (40)	**
IDU, past year	14 (9)	10 (60)	ns	12 (60)	**	8 (53)	ns
Alcohol use, five or more drinks on single day	42 (27)	23 (38)	*	29 (42)	**	19 (37)	ns
Stimulant use, past year (Meth, cocaine, and/or crack)	29 (19)	22 (37)	**	27 (39)	**	16 (31)	**

Note. Columns may not always equal totals due to missing responses for some items.

[a] Inconsistent condom use is defined as not always using condoms with every type of partner (primary, casual, commercial) during receptive anal sex.

* $p < .05$.

** $p < .01$.

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TABLE 4

Multivariate Logistic Regression Analyses Predicting Risky Sexual Behaviors

	Odds Ratio (95% Confidence Interval)		
Predictors	**Inconsistent Condom Use**	**Drugs/Alcohol During Last Sexual Encounter**	**Sex Work**
Recruitment Site			
Street	4.20 (1.36, 12.93) *	…	…
Bar/Club	1.10 (.31, 3.94)		
Agency	1.00		
Unstable housing, past year	4.40 (1.44, 13.39) *	3.11 (1.11, 8.73) *	…
Stimulant use, past year	4.47 (1.39, 14.43) *	40.04 (4.66, 343.73) *	…
Ethnicity			
Latina	…	5.46 (1.41, 21.21)*	3.08 (.88, 10.79)
African American	8.14 (1.77, 37.54) *	4.66 (1.15, 18.96) *	
Native American	6.73 (.78, 57.97)	1.44 (.24, 8.79)	
White	15.16 (2.41, 95.61) *	.69 (.13, 3.75)	
Asian	1.00	1.00	
Hormone use, past 12 months	…	…	7.09 (2.02, 24.86) *
Gender confirmation surgery	…	…	3.14 (1.13, 8.68) *
Age	…	…	.94 (.90, .99) *

* $p < .05$.