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ORIGINAL PAPER

HIV Risk and Substance Use in Men Who Have Sex with Men Surveyed in Bathhouses, Bars/Clubs, and on Craigslist.org: Venue of Recruitment Matters

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Abstract There has been little evaluation regarding whether men who have sex with men (MSM) recruited in one type of venue differ in behavioral and demographic characteristics from those recruited in others. We surveyed MSM in gay bars/clubs ($n = 199$), bathhouses ($n = 194$), and off Craigslist.org ($n = 208$). Men in bathhouses reported the greatest average number of partners and were less likely to disclose their HIV status. Among men reporting anal sex; those on Craigslist reported the least condom use. Finally, men surveyed in gay bars/clubs were the youngest of the three and the most likely to be single; they also reported the highest levels of attachment to the gay community and the most frequent alcohol use. Our findings demonstrate the need to tailor HIV prevention efforts to the location in which they are targeted, and for researchers to evaluate if participants differ by recruitment source.

Resumen Se ha evaluado poco si los hombres que tienen sexo con hombres (HSH) reclutados en distintos lugares difieren en su comportamiento y demografía. Nosotros encuestamos HSH en bares y clubes gay ($n = 199$), en casas de baño ($n = 194$) y en Craigslist.org ($n = 208$). Los hombres encuestados en casas de baño reportaron el promedio más alto de compañeros sexuales, y menor tendencia a revelar su status de VIH. Entre los hombres que reportaron sexo anal, aquellos encuestados en Craigslist.org reportaron el menor uso de condones. Finalmente, los hombres encuestados en bares y clubes gay resultaron ser más jóvenes y con mayor tendencia a ser solteros. También reportaron mayor conexión con la comunidad gay y mayor uso de alcohol. Nuestros resultados demuestran la necesidad de adaptar esfuerzos de prevención de VIH a lugares específicos, y que los investigadores analicen si los participantes difieren, dependiendo de dónde fueron reclutados.

Keywords Bars · Bathhouses · Internet · MSM · Gay and bisexual men · Recruitment

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Introduction

Men who have sex with men (MSM) are 44 times more likely to contract HIV than other men [1], accounting for 53% of new HIV/AIDS cases in 2006 [2]. One study noted that the mean incidence rate of HIV among MSM in the United States is 2.39%, which, if sustained in a cohort of young MSM, would result in 40% of them being HIV positive by age 40 [3].

Venues where MSM gather continue to serve as key locations where health and community service providers conduct HIV testing, education, and prevention efforts [4–7]. Raymond et al. [4] noted the health significance that such venues can play in preventing the spread of HIV. They found that public sex environments had the highest likelihood of having MSM with unrecognized HIV infection, highlighting the need for increased location-based HIV testing and education. One study [7] proposed that both patron and venue-specific characteristics may each

influence the frequency of HIV risk behaviors in commercial sex venues such as bathhouses. Furthermore, Thiede et al., [8] found recent HIV infection was associated with meeting partners at bathhouses or sex clubs, bars or dance clubs, or online.

Using data from a random-digit-dial telephone survey, Binson et al. [9] compared MSM who went to public cruising areas, those who went to baths, and those who used multiple venues. This study found that men who went to bathhouses and men who used multiple venues were more likely than those who cruised public spaces to be HIV positive, have had sexually transmitted infections, and to report using amyl nitrate (i.e., poppers), ecstasy/MDMA, methamphetamine, and other party drugs. Notably, data for the Binson et al. study were collected in 1997; thus it is unclear if these findings would be replicated today.

With the growth of the Internet and MSM seeking sex online [10], research and prevention has expanded into this arena [11–13]. Researchers have noted how venue-specific characteristics (e.g., the abundance of alcohol in bars/clubs, anonymous chat online, dark/quiet spaces in bathhouses) create social norms that can significantly impact how MSM negotiate serostatus disclosure, condom use, and other behaviors related to HIV transmission [14–17]. As a result, venues where MSM meet sex partners have been of particular interest to researchers not only as a place to recruit MSM at risk for HIV transmission, but also as a point location for the development and delivery of HIV prevention and interventions [4, 6, 13, 18].

Most studies that report on venue-associated HIV risk have recruited men from a single venue, be it a bathhouse, bar/club, or Internet website, with very little cross-venue research using identical measures of HIV-associated risk. Similarly, researchers have evaluated if different types of recruitment methods produce samples that are different from each other [19–21]. For example, Parsons et al. [20] compared the characteristics of participants recruited in bars/clubs when using two variations of time–space sampling. However, with few exceptions [22, 23], there has been little evaluation as to whether MSM recruited in one type of venue differ along relevant dimensions from those recruited in others. Knowledge of such differences can have a significant impact on how providers develop the content of their prevention efforts, and how researchers monitor threats to external validity due to the contexts of recruitment source (i.e., venue).

Current Study

Our goal was to examine if samples recruited in bars/clubs, bathhouses, and on Craigslist.org differed from each other in behavior and demographic characteristics. We chose these three venues based on previous research with MSM in New York city (NYC) indicating these were among the three most common places MSM meet male sex partners [15]. In so doing, we adapted time–space sampling to identify approximately equal numbers of MSM in each type of venue and compared groups across three domains: (1) demographic characteristics and attachment to the gay/bisexual community, (2) sexual behavior and HIV status disclosure, and (3) drug and alcohol use. Such findings can inform HIV prevention providers seeking to tailor the content of their programs for venue-based delivery, as well as researchers seeking to evaluate their recruitment approaches.

Method

Data are taken from the Sex in the City Study, a cross-sectional brief survey administered to sexually active MSM in NYC in 2009–2010. We adapted probability-based recruitment methods to anonymously collect data from samples of MSM identified in bathhouses, gay bars/clubs, and on Craigslist.org. Our goal was to recruit 200 MSM from each venue. To be eligible, participants had to be biologically male, at least 18 years of age, report having sex with at least one male partner in the last 3 months who was not their main partner, and identified via one of the three aforementioned types of venues. All procedures were reviewed and approved by the Brooklyn College Institutional Review Board.

Recruiting men in NYC Bathhouses and Gay Bars/Clubs

The research team used time–space sampling [20, 24, 25] to recruit MSM in gay bars/clubs and bathhouses. We first employed ethnographic mapping [26] to generate an exhaustive list of gay bars/clubs and bathhouses in NYC. Using a random-digit generator, we selected a bar/club or bathhouse to attend on a randomly-selected day of the week. Recruitment teams were sent to venues and approached random patrons for participation in the project. In bars/clubs, 39% ($n = 199$ of 510) of those approached consented to complete the survey and 45% ($n = 194$ of 431) consented in bathhouses. Participants received the survey on a clipboard so that they could step away from others to complete the questionnaire in private. Participants deposited their own completed survey into a secure box held by recruitment staff. As an incentive, participants were given two $1 scratch-off lottery tickets. Survey data were entered into an SPSS database and checked/verified by project staff for accuracy. This procedure was used until the team approximated the targeted recruitment goal, $n = 199$ men in bars/clubs and $n = 194$ men in bathhouses.

Recruiting on the NYC Men-Seeking-Men Section of Craigslist.org

The research team adapted time–space sampling [20, 24, 25] to recruit men off the no-strings-attached NYC men-seeking-men section of Craigslist.org. In so doing, we divided each day into 30 min increments (1, 1:30, 2, 2:30 a.m. etc.) and used a random-digit generator to select an increment of time. At that randomly-selected time, we posted an ad for the study on Craigslist. We opted to post ads on Craigslist, versus simply responding to ads already posted, in an effort to also reach those men who browse ads but may not have posted one themselves. A set of varying headlines were used (e.g., "How much sex do most men have?" "Can we talk about sex?" "Help us learn about gay and bisexual men's sex lives" "Answer some questions about your sex life"). The text of the ad further described the study and instructed men to respond via email. The ad also noted that we would be raffling off four gift certificates valued at $50 to Amazon.com for men completing the survey. Those responding to our Craigslist posting via email were provided a link to the survey (which was hosted on a separate secure website). Craigslist has automated filters preventing us from including the URL to the survey within our advertisement. This procedure was used until the team approximated the targeted recruitment goal, $n = 208$.

During the recruitment period the research team posted to Craigslist 72 times. A total of 286 email responses were received. Of these, 242 consented to complete the survey. Twenty-seven of these men were not eligible (they did not have at least one recent male sex partner in the last 3 months who was not a primary partner) and thus skipped to the end. Of the remaining 215, seven were excluded for having completed the survey more than once. Mean time to complete the survey was 11 min (SD = 6.1).

Although, there are many websites MSM use to meet sex partners we chose Craigslist.org because it was free to the public, required no membership, and was un-moderated by a central administrator. It is one of the largest M4M bulletin boards in the US. Craigslist might be an attractive option for MSM seeking immediate sexual encounters on a casual basis [27].

Measures

Participant Characteristics

Participants indicated their age in years, sexual identity (gay, bisexual, queer-has sex with men, or heterosexual-has sex with men), relationship status (single, partnered-boyfriend/husband, partnered-girlfriend/wife), race and ethnicity (White/European, Hispanic/Latino, African American/Black, Asian/Pacific Islander, and Mixed/"other"), gender (male or transgender—note, all participants were male), and HIV status (positive, negative, unsure).

Sexual Behavior in the Last 3 Months

Participants answered a series of questions about their sexual behavior with male partners in the most recent 3 months. Men indicated if they had engaged in any anal sex with a male partner (yes, no), if they had engaged in group sex while sober (yes, no), and if they had engaged in group sex while drunk or high on drugs (yes, no). Participants indicated their total number of male partners, and how many of these partners were the same HIV status. Further, for their non-main sex partners, men reported the number of anal sex acts with and without a condom, and how many of their anal sex acts occurred while drunk or high on drugs.

Discussing HIV with Partners

In order to capture behavior and attitude variables, participants were asked two questions about discussing HIV with sex partners. First, they responded to the statement, "I discuss my HIV with my sex partners" (never, sometimes, frequently, or always). Second, using a Likert-type scale ranging from "1-strongly disagree" to "6-strongly agree" men rated how difficult they found it to discuss HIV with sex partners.

Drug and Alcohol Use

Participants reported on their lifetime and recent use (<3 months) of six drugs: cocaine, methamphetamine, ecstasy/MDMA, GHB (gamma-hydroxybutyric acid), ketamine, and Viagra/Cialis/Levitra (used without a prescription). All drug use questions were dichotomized (yes, no). In addition, men indicated their frequency of alcohol use in the last 3 months (never, monthly or less, 2 to 4 times per month, 2 to 3 times per week, 4 or more times per week).

Attachment to the Gay/Bisexual Community

Finally, participants completed the 5-item Attachment to the Gay/Bisexual Community Scale [28]. Items included "I am happy that I am a member of the gay/bisexual community," "I have a strong sense of belonging to the gay/bisexual community," I have a lot of pride in the gay/bisexual community," "I feel a strong sense of attachment towards the gay/bisexual community," and "I feel good about being gay/bisexual." Responses were on a Likert-type scale (1-strongly disagree, 4-strongly agree, $\alpha = 0.92$).

This scale was adapted from the multigroup ethnic identity measure [29, 30].

Analytic Plan

We compared men recruited on Craigslist, bars/clubs, and bathhouses across three domains: (1) demographic characteristics and attachment to the gay/bisexual community, (2) sexual behavior and HIV status disclosure, and (3) drug and alcohol use. We used chi-square tests for nominal and ordinal variables. For continuous variables with approximately normal distributions (i.e., age and attachment to the gay/bisexual community) we used analysis of variance (ANOVA). For continuous variables with non-normal distributions (e.g., total number of sex partners) we used Kruskal–Wallis ANOVA (chi-square) tests, a non-parametric equivalent to a one-way ANOVA.

We used multivariate modeling to determine the association between recruitment venue and sexual behavior and HIV status disclosure (Tables 2 and 3), and drug and alcohol use (Table 4). We regressed recruitment venue (using contrast coding to generate pair wise comparisons) on items listed in Tables 2, 3, and 4 (dependent variables). We ran models one of three ways. For binomial dependent variables (e.g., anal sex in the last 3 months, 1 = yes, 0 = no), we used logistic regression. For variables with count responses (e.g., number of male sex partners) we used negative binomial regression, which accounts for the skewed distribution of these variables. For proportional outcomes (e.g., proportion of sex acts without a condom) we used ordinary least squares regression. All models adjusted for race (White vs. Non-White), HIV status (HIV positive vs. not HIV positive) sexual identity (gay vs. not gay), age (40 and over vs. under 40), and relationship status (single vs. not single).

Results

Demographic Characteristics and Attachment to the Gay/Bisexual Community

Table 1 presents demographic differences for participants recruited in bathhouses, gay bars/clubs, and on Craigslist. All tests were significantly different. Men recruited in bars/clubs were the youngest on average, the most likely to know their HIV status (94.9%), and the most likely to be HIV negative (86.2%). Men recruited from bathhouses were the most ethnically and racially diverse (53.9% were men of color). Men from Craigslist were the least likely to identify as gay, and also reported the lowest mean score on the Attachment to the Gay/Bisexual Community Scale. Similarly, men on Craigslist were the most likely to report currently being a relationship with a female partner (11.2%).

Sexual Behavior and HIV Status Disclosure

HIV Status Disclosure

Tables 2 and 3 present data on various sexual behaviors and HIV status disclosure with sex partners (Table 2 reports nominal and ordinal variables, Table 3 reports interval-ratio variables). Men recruited in bathhouses were the most likely to report that they "never" discussed their HIV status with their sex partners. Similarly, these men were the most likely to report that they "strongly agree" with the statement that it is difficult to discuss HIV with sex partners. Men in bathhouses reported the high number of recent male sex partners on average (Md = 7) and had the smallest proportion of male sex partners that were the same HIV status (51%), compared with men in bars/clubs (74%) and men from Craigslist (84%).

Group Sex

There were no significant venue differences in the amount of men reporting recent group sex while sober (overall 32.4%). In bivariate analyses, there was a marginally significant ($P = 0.053$) association between venue of recruitment and having recent group sex while intoxicated via alcohol or other drugs. Multivarite modeling found that men from bars/clubs (21.5%) were significantly different from men from bathhouses (12.3%) with regard to recent group sex while drunk or high on drugs ($P < 0.05$).

Anal Sex with Male Partners

Men from Craigslist (74.1%) were significantly less likely than men from bathhouses (89.6%) and bars/clubs (83.9%) to report recent anal sex with a casual male partner. Similarly, men from bathhouses reported the greatest number of recent anal sex acts (Md = 5, IQR 2–12); however, there were no significant venue differences in the *number* of anal sex acts that occurred without a condom 61.4% of men reported always using a condom during anal sex (overall Md = 0, IQR 0–1).

We next report on venue differences in the average *proportion* of recent anal sex acts without a condom among male partners (unprotected anal intercourse: UAI). For each participant, the proportion of anal sex acts that were unprotected was calculated as a function of his total anal sex acts, and these proportions were averaged across participants. For example, a man who reported UAI during 17 of his 30 anal acts would be calculated as having UAI 56% of the time he had anal sex. All values were nested among

Table 1 Demographic characteristics across three recruitment sources

	Bathhouses		Bars and Clubs		Craigslist				
	$N = 194$		$N = 199$		$N = 208$				
	n	%	*n*	%	*n*	%	X^2	*df*	*P*
HIV status									
Positive	31	16.5	17	8.7	28	13.5	10.37	4	0.03
Negative	140	74.5	168	86.2	158	76.0			
Unsure	17	9.0	10	5.1	22	10.6			
Race and ethnicity									
African American/Black	32	16.8	21	10.6	13	6.3	26.68	8	<0.001
European/White	88	46.1	113	57.1	140	67.6			
Asian, Pacific Islander, Hawaiian	11	5.8	10	5.1	12	5.8			
Hispanic/Latino	49	25.7	40	20.2	27	13.0			
Multiracial/ethnic or "other"	11	5.8	14	7.1	15	7.2			
Sexual identity									
Gay	158	84.5	165	84.2	149	71.6	27.75	6	<0.001
Bisexual	26	13.9	21	10.7	37	17.8			
Queer: has sex with men	0	0	9	4.6	9	4.3			
Heterosexual: has sex with men	3	1.6	1	0.5	13	6.3			
Relationship status									
Single	134	69.8	156	80.4	116	56.3	36.26	4	<0.001
Partnered: boyfriend, husband	49	25.5	37	19.1	67	32.5			
Partnered: girlfriend, wife	9	4.7	1	0.5	23	11.2			
	M	SD	M	SD	M	SD	F	*df*	*P*
Age (range 18–74)	41.8	10.1	35.1	10.3	41.3	12.0	23.44	2, 595	<0.001[a]
Attachment to the Gay/Bisexual Community Scale (range 1–4)	3.13	0.77	3.33	0.78	2.68	0.88	33.64	2, 591	<0.001[b]

[a] Men from bars/clubs were significantly different from other groups, Bonferroni $P < 0.05$

[b] All three groups were significantly different from each other, Bonferroni $P < 0.05$

the 477 men who reported recent anal sex. Compared to men from bathhouses, men from Craigslist averaged a higher proportion of anal sex acts without a condom (19 vs. 28% of sex anal acts). Using a similar analytic procedure, we calculated the average proportion of anal sex acts that occurred under the influence of alcohol or drugs. Compared to men on Craigslist (23%) and bathhouses (17%), men from bars/clubs (35%) averaged a significantly higher proportion of anal sex acts that occurred under the influence of alcohol or drugs. See Table 3 for all values.

Drug and Alcohol Use

Table 4 reports on venue differences in drug and alcohol use. Men surveyed in bars/clubs were the most likely to have ever used cocaine (43.4%), ecstasy/MDMA (37.4%), and ketamine (18.8%). There were no significant differences in having ever used methamphetamine (overall 16.3%), GHB (overall 10.5%), or non-prescribed use of an erectile dysfunction drug (overall 30.3%).

Patterns varied for recent use (<3 months). For lifetime cocaine users ($n = 216$), 44.3% of men from bars/clubs had used recently, compared with 24.1% of users from bathhouses and 18.1% of lifetime users on Craigslist. In bivariate analyses, for lifetime methamphetamine users ($n = 93$), 42.9% of methamphetamine users from bathhouses had used recently, compared with only 19.2% of users from Craigslist and 18.8% of lifetime users from bars/clubs; however, there was no significant effect for venue in multivariate modeling. Finally, for men who had used erectile dysfunction drugs without a prescription ($n = 171$), 69.1% of lifetime users from bathhouses had used recently, compared with 50.0% of lifetime users from Craigslist who had used recently, and 46.0% of lifetime users from bars/clubs. We lacked sufficient statistical power to assess for recent use differences by venue among

Table 2 Sexual behavior across three recruitment sources (ordinal and nominal variables)

	Group A		Group B		Group C		Bivariate			Multivariate[a]
	Bathhouses, $N = 194$		Bars and clubs, $N = 199$		Craigslist, $N = 208$					Group differences
	n	%	*n*	%	*n*	%	X^2	*df*	*P*	
Any anal sex w/a casual male partner, <3 months										
Yes	163	89.6	162	83.9	152	74.1	16.25	2	<0.001	A ≠ C; B ≠ C
Group sex while sober, last 3 months										
Yes	54	28.4	64	32.5	77	37.2	3.48	2	0.18	NS
Group sex while drunk or high on drugs, last 3 months										
Yes	23	12.3	42	21.5	34	16.4	5.86	2	0.05	A ≠ B
Discussing HIV with sex partners										
Never	30	15.5	14	7.1	13	6.3	21.40	6	<0.001	NA
Sometimes	66	34.2	54	27.4	84	40.4				
Frequently	49	25.4	60	30.5	48	23.1				
Always	48	24.9	69	35.0	63	30.3				
Discussing HIV with sex partners (dichotomous)										
Never	30	15.5	14	7.1	13	6.3	12.03	2	0.002	A ≠ B, C
Sometimes, frequently, always	163	84.5	183	92.9	195	93.8				
I find it difficult to discuss HIV with my sex partners										
1—Strongly disagree	78	41.1	85	43.1	76	36.5	25.19	10	0.01	NA
2	24	12.6	28	14.2	36	17.3				
3	16	8.4	21	10.7	38	18.3				
4	29	15.3	28	14.2	26	12.5				
5	14	7.4	21	10.7	21	10.1				
6—Strongly agree	29	15.3	14	7.1	11	5.3				
"Strongly agree," I find it difficult to discuss HIV with my sex partners										
No	161	84.7	183	92.9	197	94.7	13.57	2	<0.001	A ≠ B, C
Yes—strongly agree	29	15.3	14	7.1	11	5.3				

[a] Using logistic regression. Adjusted for race (1 = White, 0 = Non-White), HIV status (1 = HIV positive, 0 = not HIV positive), sexual identity (1 = gay, 0 = not gay), age (1 = 40+, 0 = under 40), and relationship status (1 = single, 0 = not single), $P < 0.05$

NS = Not significant, *NA* = Not applicable

lifetime GHB users and lifetime ketamine users. Compared to men from Craigslist (39.6%) and men from bathhouses (34.1%), men from bars and clubs (63.8%) were significantly more likely to report drinking two or more times per week (in the last 3 months). Notably, 30.8% of these men surveyed in bars/clubs reported drinking four or more times per week.

Discussion

We adapted probability-based recruitment methods to recruit three separate samples of MSM from gay bars/clubs, bathhouses, and Craigslist.org. Variability across venues in sexual behavior and substance use lead us to conclude that the three samples differed in more ways than they were similar. Given the wide array of differences we found, the data suggest that the men we sampled from each of these venues may represent unique populations within broader MSM communities. These findings have implications both for researchers and providers.

Implications for Research

Researchers have identified MSM as "invisible" and "hard-to-reach" populations such that traditional probability methods of sampling (e.g., random-digit dialing) are cost-prohibitive or otherwise ineffective [31–34]. Instead, researchers have employed other approaches for sampling MSM, including time–space sampling and targeted sampling. Both approaches involve identifying the venues at which MSM congregate and then systematically recruiting

Table 3 Sexual behavior across three recruitment sources (interval-ratio variables)

	Group A				Group B				Group C				Bivariate[a]			Multivariate[b]
	Bathhouses, $N = 194$				Bars and clubs, $N = 199$				Craigslist, $N = 208$				Kruskal–Wallis ANOVA			
	M	Md	SD	IQR	M	Md	SD	IQR	M	Md	SD	IQR	(X^2)	*df*	*P*	Group differences
Total male partners (not including a main partner), <3 months	12.7	7	17.1	[3–15]	8.9	4	17.4	[2–10]	10.4	5	18.7	[3–12]	18.57	2	<0.001	A ≠ B, C; B ≠ C
Proportion of total recent male partners that were the same HIV status (range 0 to 1)	0.51	0.5	0.46	[0–100]	0.74	1	0.39	[0.50–1.0]	0.84	1	0.33	[1.0–1.0]	64.78	2	<0.001	A ≠ B, C; B ≠ C
Total # anal sex acts, <3 months (w/male partners)	10.1	5	18.1	[2–12]	7.6	3	14.6	[1–8]	9.9	3	56.2	[0–7]	22.89	2	<0.001	A ≠ B, C
# Anal sex acts with a condom, <3 months (w/male partners)	7.7	4	13.4	[1.75–10]	5.4	2	9.4	[1–5]	4.4	2	7.2	[0–5]	23.53	2	<0.001	A ≠ B, C
# Anal sex acts without a condom, <3 months (w/male partners)	2.6	0	8.1	[0–2]	2.2	0	7.3	[0–1]	5.6	0	56.2	[0–2]	1.03	2	0.60	NS
Proportion of total anal sex acts that happened without a condom (male partners only) (among men who reported anal sex, $n = 477$)	0.19	0	0.31	[0–0.34]	0.23	0	0.33	[0–0.50]	0.28	0.07	0.36	[0–0.50]	7.57	2	0.02	A ≠ C
Total # anal sex acts that occurred while drunk or high on drugs	2.1	0	8.6	[0–0]	3.9	0	15.7	[0–2]	5.5	0	56.5	[0–1]	15.55	2	<0.001	A ≠ B
Proportion of total anal sex acts that happened while drunk or high on drugs (among men who reported anal sex, $n = 477$)	0.17	0	0.34	[0–.05]	0.35	0	0.43	[0–1.00]	0.23	0	0.36	[0–0.43]	17.56	2	<0.001	A ≠ B; B ≠ C

[a] Because these items have non-normal distributions, we used we used Kruskal–Wallis ANOVA (X^2)

[b] Summed items (e.g., total male partners) using negative binomial regression. Proportional items (e.g., proportion of sex acts w/o condom) using ordinary least squares regression. Models adjusted for race (1 = White, 0 = Non-White), HIV status (1 = HIV positive, 0 = not HIV positive), sexual identity (1 = gay, 0 = not gay), age (1 = 40+, 0 = under 40), and relationship status (1 = single, 0 = not single), $P < 0.05$

M Mean, *Md* Median, *IQR* Interquartile range, *NS* Not significant

Table 4 Drug and alcohol use across three recruitment sources

	Group A Bathhouses $N = 194$		Group B Bars and clubs $N = 199$		Group C Craigslist $N = 208$		Bivariate			Multivariate[a]
	n	%	*n*	%	*n*	%	X^2	*df*	*P*	Group differences
Lifetime drug use										
Cocaine	56	29.0	85	43.4	83	40.1	9.39	2	0.01	A ≠ B
Methamphetamine	36	18.8	35	17.8	27	13.1	2.66	2	0.26	NS
Ecstasy/MDMA	42	21.9	74	37.4	56	27.5	11.72	2	0.003	A ≠ B; B ≠ C
GHB	18	9.4	27	13.6	18	8.9	2.84	2	0.24	NS
Ketamine	19	9.9	37	18.8	19	9.4	9.85	2	0.01	A ≠ B; B ≠ C
Viagra, Cialis, Levitra (without a R_x)	59	30.7	55	27.8	68	33.2	1.38	2	0.50	NS
Recent drug use, <3 months										
Cocaine (among lifetime users, valid $n = 216$)	13	24.1	35	44.3	15	18.1	14.38	2	<0.001	A ≠ B; B ≠ C
Methamphetamine (among lifetime users, valid $n = 93$)	15	42.9	6	18.8	5	19.2	6.19	2	0.045	NS
Ecstasy/MDMA (among lifetime users, valid $n = 161$)	12	30.8	13	19.4	12	21.8	1.86	2	0.39	NS
GHB (among lifetime users, valid n 59)	7	38.9	5	21.7	1	5.6	–	–	–	NA
Ketamine (among lifetime users, valid n =70)	5	27.8	5	15.2	1	5.3	–	–	–	NA
Viagra, Cialis, Levitra (without a R_x, among lifetime users,valid $n = 171$)	38	69.1	23	46.0	33	50.0	6.71	2	0.03	A ≠ B, C
Alcohol use, <3 months										
Never	41	22.2	9	4.9	27	13.0	50.27	8	<0.01	NA
Monthly or less	29	15.7	14	7.6	35	16.9				
2 to 4 times per month	52	28.1	44	23.8	63	30.4				
2 to 3 times per week	33	17.8	61	33.0	45	21.7				
4 or mores times per week	30	16.2	57	30.8	37	17.9				
Alcohol use exceeds 2 or more times per week, <3 months										
Yes	63	34.1	118	63.8	82	39.6	37.59	2	<0.001	A ≠ B; B ≠ C
No	122	65.9	67	36.2	125	60.4				

(–) Chi-square cannot be computed, expected counts fall below five in one or more cells

[a] Logistic regression. Adjusted for race (White vs. Non-White), HIV status (1 = HIV positive, 0 = not HIV positive), sexual identity (1 = gay, 0 = not gay), age (1 = 40+, 0 = under 40), and relationship status (1 = single, 0 = not single), $P < 0.05$

NS Not significant, *NA* Not applicable

individuals within these spaces, preferably casting a wide net as to capture as much diversity as possible. With few exceptions [c.f., 22, 23], few studies have evaluated whether MSM recruited in one type of venue differ in behavior and demographic characteristics from those recruited in others.

Given the significant cross-venue variation we identified, our data highlight the need for researchers working with MSM to continually evaluate their recruitment approaches, particularly when pooling participants from multiple venues. Specifically, the venue of recruitment may be related to key outcomes of interest such as drug use or other HIV-associated risks. Researchers who find differences by recruitment source might consider splitting analyses by venue of recruitment, or including recruitment source as an independent variable when conducting multivariate analyses.

In contrast, we do not suggest that researchers should focus their recruitment activities exclusively in a single type of venue purely to avoid sample contamination or threats to external validity, as this will limit the study's generalizability. That being said, focusing on a single venue would be relevant if this approach was germane to a specific research question (e.g., determining the acceptability and efficacy of a bathhouse-based intervention). Instead, our results highlight the importance for researchers to evaluate their recruitment methods and account for any recruitment effects in their analyses.

Implications for HIV Prevention

Consistent with previous research [4, 7, 8, 15, 35], these data highlight the need to tailor HIV prevention efforts based on the location in which they are delivered and the population for which they are intended. It is understood that the approach providers undertake within various spaces should be tailored to match the environment, in the sense that strategies used in one venue may not work in another type of venue. This is particularly evident with the Internet, in which it is more difficult to provide face-to-face interactions or distribute tangible services (e.g., HIV testing and counseling). Our results highlight that in addition to the approach, the content of efforts need also be tailored within each space as the MSM within one type of venue may be inherently different, and thus have unique needs from the MSM in another type.

Although there is much debate over the efficacy of serosorting to reduce HIV transmission [36, 37], a growing body of research has indicated that MSM increasingly engage in this behavior [38–40]. HIV status disclosure is a central component to initiating a serosorting process. Our data indicated that men in bathhouses reported the greatest number of partners on average, but were less likely to disclose their HIV status. Similarly MSM recruited in bathhouses were the most likely to indicate that disclosure was "difficult." Bathhouses are spaces in which non-verbal communication is the norm, making it difficult for men to have candid conversations about HIV [14, 41]. Similarly, men surveyed in bathhouses were the most likely to be HIV positive. Widespread HIV stigma and fear of rejection make it difficult for HIV positive MSM to discuss these topics with their sexual partners, especially during a casual encounter [42].

Men recruited from Craigslist appeared to engage in different sexual behaviors than the other two groups of MSM. They were the least likely to identify as gay, reported the lowest scores on the Attachment to the Gay/Bisexual Community Scale, and the least likely to report anal sex. Further, they endorsed the greatest portion of partners as being HIV seroconcordant. Some studies show that the Internet may make it easier to have conversations around HIV and to "filter out" men who do not match desired characteristics [11, 43]. However, there is also evidence to suggest that some men are dishonest about their HIV status online [44, 45], thus our finding should be interpreted with caution. Among the men who reported anal sex; those from Craigslist appeared to be among the riskiest. This sample reported the greatest proportion of their anal sex acts to be unprotected, and nearly one in four of their anal sex acts was experienced under the influence of alcohol or drugs. To date, there has been limited research conducted with MSM on Craigslist [c.f., 43], with many US-based researchers recruiting MSM from more mainstream "profile-based" websites like Manhunt.net, Gay.com, and Adam4Adam.com. One study noted that between two and four thousand ads are posted to the NYC men-seeking-men section of Craigslist every day [27], making it an active space in which to target research recruitment and sexual health outreach. Our findings highlight not only the need to provide HIV prevention and outreach for MSM on Craigslist, but also the need for more research with men on this site.

Men surveyed in gay bars/clubs were the youngest on average, the most likely to be single, reported the most frequent alcohol use, and reported the highest mean scores for attachment to the gay/bisexual community. These are perhaps defining facets of the gay bar/club scene (i.e., younger age, social drinking, and having a stronger sense of "pride"), and may serve as useful anchors from which health and community service providers draw when developing outreach for men in these venues [46]. Men in bars and clubs were the most likely to report group sex while drunk or high on drugs and the highest average proportion of their anal sex acts occurred while drunk or high on drugs. Moreover, these men were the most likely to have ever used cocaine. Nearly half of users had done so recently. Gay bars/clubs are venues that are often highly visible to members of the public and among the most accessible for researchers and providers. Due to the ease of accessing and locating gay bars/clubs, they continue to serve as important locations for sexual health outreach to MSM. Our findings point to the need for efforts in bars/clubs to be focused on alcohol use, sex while under the influence of alcohol/drugs, and cocaine use.

Limitations

In an effort to rapidly engage men within venues, we utilized a brief survey with close-ended responses. We chose to study men in bars/clubs, bathhouses, and on Craigslist based on previous research highlighting the amount of sex-seeking MSM engage in within these venues [15]; however, gay and bisexual men congregate in a large array of places including social networking sites (e.g., gay community events, Facebook), public sex environments (e.g., public parks, public toilets, adult bookstores), other websites (e.g., Manhunt, Adam4Adam, DList), and private spaces (e.g., private sex parties, house parties) [35]. Similar to the differences found in the three venues in which we recruited men, men in other spaces may also vary with regard to the behaviors examined in this study. Further, we recognize that MSM are not constrained to a single venue, neither for social nor sexual purposes. Future studies should consider both the frequency of venue attendance in addition to cross-over between venues.

Among MSM, HIV is transmitted predominately via anal sex with male partners [47, 48]. As such, our focus was on anal intercourse between men; we did not collect data with regard to female partners or about other sexual behaviors which could also lead to HIV infection (e.g., oral sex with ejaculation). We also recognize that the wording of some questions may be less than ideal. For example, we asked men to report frequency of discussing HIV status (never, sometimes, frequently, or always), but perhaps the actual number of partners that participants discussed their HIV status with would have been more useful. Similarly, it would have been more useful to have split anal sexual behavior into receptive versus insertive acts. This, however, increases the number of questions participants must answer which could negatively impact participation rates.

Participants in this study were recruited using adapted methods of time–space sampling, thus we are unable to comment on how men in this study may differ from those recruited using other probability-based methods. An advantage of time–space sampling is its systematic approach for capturing location-based populations; however, it has the potential to oversample patrons who frequently attend the venues being studied. In bars/clubs and bathhouses, staff actively approached participants; whereas, on Craigslist, a more passive approach (i.e., posting ads for the study) was employed for reasons mentioned previously. Future research should investigate if active versus passive approaches online result in different sample characteristics.

Our data are limited to the specific socio-geographic region of New York City, impacting the generalizability of our results. In addition, data are restricted to MSM who chose to participate. We do not know how many men "viewed" our advertisement on Craigslist.org but did not respond. Although, our response rate in bars/clubs and in bathhouses was on par with similar research using venue-based time–space sampling [20], we do not have data on those who declined participation. Finally, all limitations of self-report and recall bias apply.

Conclusion

Despite such limitations we have shown how our findings could be useful for both researchers and providers examining sexual risk behaviors among MSM. These data suggest ways in which the content of outreach efforts might best be tailored for specific venues as well as indicating where outreach/research efforts might best be targeted when trying to reach a population engaged in a specific type of behavior. We recognize that risky behaviors were identified among participants in all three recruitment sites; however, levels of risk varied substantially. For example, efforts focused on HIV status disclosure might best be located within bathhouses, whereas efforts focused on cocaine use could be more effective if located in bars/clubs. In contrast, efforts seeking to reach men who engage in a high proportion of UAI might target MSM on Craigslist. It is curious if the differences we observed are a result of the physical spaces in which we identified participants—each space possesses unique characteristics and social norms that impact individual's behavior such as substance use and HIV status disclosure. Or are the differences we observed a result of personality/motivational characteristics that attract certain types of individuals to a particular venue? For instance, someone looking to drink socially knows they should go to a bar/club whereas someone looking for a non-verbal sexual encounter would probably realize that a bathhouse might better meet their needs. Perhaps this question is tautological, as individuals synergistically and reciprocally create the social norms that characterize different spaces. Nonetheless, these findings suggest that venues where MSM gather to meet one another are an important arena for HIV prevention efforts and scientific inquiry.

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References

1. CDC. Analysis provides new look at disproportionate impact of HIV and syphilis among U.S. gay and bisexual men. Atlanta: US Department of Health and Human Services; 2010. http://www.cdc.gov/nchhstp/Newsroom/msmpressrelease.html. Accessed 15 Mar 2010.
2. CDC. Subpopulation estimates from the HIV incidence surveillance system—United States, 2006. MMWR. 2008;57(36):985–9.
3. Stall R, Duran L, Wisniewski SR, et al. Running in place: implications of HIV incidence estimates among urban men who have sex with men in the United States and other industrialized countries. AIDS Behav. 2009;13:615–29.
4. Raymond HF, Bingham T, McFarland W. Locating unrecognized HIV infections among men who have sex with men: San Francisco and Los Angeles. AIDS Educ Prev. 2008;20(5):408–19.
5. Frankis JS, Flowers P. Public sexual cultures: a systematic review of qualitative research investigating men's sexual behaviors with men in public spaces. J Homosex. 2009;56(7):861–93.
6. Woods WJ, Euren J, Pollack LM, Binson D. HIV prevention in gay bathhouses and sex clubs across the United States. JAIDS. 2010;55:s88–90.
7. Reidy WJ, Spielberg F, Wood R, Binson D, Woods WJ, Goldbaum GM. HIV risk associated with gay bathhouses and sex

clubs: findings from 2 Seattle surveys of factors related to HIV and sexually transmitted infections. Am J Public Health. 2009;99 (Suppl 1):S165–72.
8. Thiede H, Jenkins RA, Carey JW, et al. Determinants of recent HIV infection among Seattle-area men who have sex with men. Am J Public Health. 2009;99(S1):S157–64.
9. Binson D, Woods WJ, Pollack L, Paul J, Stall R, Catania JA. Differential HIV risk in bathhouses and public cruising areas. Am J Public Health. 2001;91(9):1482–6.
10. Liau A, Millett G, Marks G. Meta-analytic examination of online sex-seeking and sexual risk behavior among men who have sex with men. Sex Transm Dis. 2006;33(9):576–84.
11. Chiasson MA, Parsons JT, Tesoriero JM, Carballo-Dieguez A, Hirshfield S, Remien RH. HIV behavioral research online. J Urban Health. 2006;83(1):73–85.
12. Rosser BR, Oakes JM, Horvath KJ, Konstan JA, Danilenko GP, Peterson JL. HIV sexual risk behavior by men who use the Internet to seek sex with men: results of the Men's INTernet Sex Study-II (MINTS-II). AIDS Behav. 2009;13(3):488–98.
13. Chiasson MA, Hirshfield S, Rietmeijer C. HIV prevention and care in the digital age. JAIDS. 2010;55:s94–7.
14. Richters J. Through a hole in a wall: setting and interaction in sex-on-premises venues. Sexualities. 2007;10(3):275–97.
15. Grov C, Parsons JT, Bimbi DS. Sexual risk behavior and venues for meeting sex partners: an intercept survey of gay and bisexual men in LA and NYC. AIDS Behav. 2007;11:915–26.
16. Horvath KJ, Bowen AM, Williams ML. Virtual and physical venues as contexts for HIV risk among rural men who have sex with men. Health Psychol. 2006;25(2):237–42.
17. Grov C, Golub SA, Parsons JT. HIV status differences in venues where highly-sexually active gay and bisexual men meet sex partners: results from a pilot study. AIDS Educ Prev. 2010;22: 496–508.
18. Daskalakis D, Silvera R, Bernstein K, et al. Implementation of HIV testing at 2 New York city bathhouses: from pilot to clinical service. Clin Infect Dis. 2009;48(11):1609–16.
19. Semaan S. Time–space sampling and respondent-driven sampling with hard-to-reach populations. Method Innov Online. 2010;5(2): 60–75.
20. Parsons JT, Grov C, Kelly BC. Comparing the effectiveness of two forms of time–space sampling to identify club drug-using young adults. J Drug Issues. 2008;38:1063–84.
21. Platt L, Wall M, Rhodes T, et al. Methods to recruit hard-to-reach groups: comparing two chain referral sampling methods of recruiting injecting drug users across nine studies in Russia and Estonia. J Urban Health. 2006;83:39–53.
22. Ross MW, Mansson SA, Daneback K, Cooper A, Tikkanen R. Biases in internet sexual health samples: comparison of an internet sexuality survey and a national sexual health survey in Sweden. Soc Sci Med. 2005;61(1):245–52.
23. Evans AR, Wiggins RD, Mercer CH, Bolding GJ, Elford J. Men who have sex with men in Great Britain: comparison of a self-selected internet sample with a national probability sample. Sex Transm Infect. 2007;83(3):200–5.
24. MacKellar D, Valleroy L, Karon J, Lemp G, Janssen R. The Young Men's Survey: methods for estimating HIV seroprevalence and risk factors among young men who have sex with men. Pub Health Rep. 2006;11:138–44.
25. Stueve A, O'Donnell L, Duran R, Sandoval A, Blome J. Time-space sampling in minority communities: results with young Latino men who have sex with men. Am J Public Health. 2001;91(6):922–6.
26. Watters JK, Biernacki P. Targeted sampling: options for the study of hidden populations. Soc Problems. 1989;36(4):416–30.
27. Grov C. Risky sex- and drug-seeking in a probability sample of men-for-men online bulletin board postings. AIDS Behav. 2010;14:1387–92.
28. Carpiano RM, Kelly BC, Easterbrook A, Parsons JT. Community and drug use among gay men: the role of neighborhood and networks. J Health Soc Behav. 2011;52:74–90.
29. Phinney JS, Chavira V. Ethnic identity and self-esteem: an exploratory longitudinal study. J Adolesc. 1992;15(3):271–81.
30. Roberts RE, Phinney JS, Masse LC, Chen YR, Roberts CR, Romero A. The structure of ethnic identity of young adolescents from diverse ethnocultural groups. J Early Adol. 1999;19:301–22.
31. Grov C, Bux DA, Parsons JT, Morgenstern J. Recruiting hard-to-reach drug-using men who have sex with men into an intervention study: lessons learned and implications for applied research. Subst Use Misuse. 2009;44:1855–71.
32. Bowen AM, Williams ML, Daniel CM, Clayton S. Internet based HIV prevention research targeting rural MSM: feasibility, acceptability, and preliminary efficacy. J Behav Med. 2008;31:463–7.
33. Fernandez MI, Varga LM, Perrino T, et al. The Internet as recruitment tool for HIV studies: viable strategy for reaching at-risk Hispanic MSM in Miami? AIDS Care. 2004;16(8):953–63.
34. Hatfield LA, Ghiselli ME, Jacoby SM, et al. Methods for recruiting men of color who have sex with men in prevention-for-positives interventions. Prev Sci. 2010;11(1):56–66.
35. Pollock JA, Halkitis PN. Environmental factors in relation to unprotected sexual behavior among gay, bisexual, and other MSM. AIDS Educ Prev. 2009;21(4):340–55.
36. Golden MR, Stekler J, Hughes JP, Wood RW. HIV serosorting in men who have sex with men: Is it safe? JAIDS. 2008;49(2):212–8.
37. Wilson DP, Regan DG, Heymer K-J, Fengyi J, Prestage GP, Grulich AE. Serosorting may increase the risk of HIV acquisition among men who have sex with men. Sex Transm Dis. 2010;37(1):13–7.
38. Zablotska IB, Imrie J, Prestage G, et al. Gay men's current practice of HIV seroconcordant unprotected anal intercourse: Serosorting or seroguessing? AIDS Care. 2009;21(4):501–10.
39. Horvath KJ, Oakes JM, Rosser BR. Sexual negotiation and HIV serodisclosure among men who have sex with men with their online and offline partners. J Urban Health. 2008;85(5):744–58.
40. Snowden J, Raymond HF, McFarland W. Prevalence of seroadaptive behaviors of men who have sex with men, San Francisco, 2004. Sex Transm Infect. 2009;85:439–76.
41. Elwood WN, Green K, Carter KK. Gentlemen don't speak: communication norms and condom use in bathhouses. J Appl Comm Res. 2003;31:277–98.
42. Golub SA, Tomassilli JC, Parsons JT. Partner serostatus and disclosure stigma: implications for physical and mental health outcomes among HIV-positive adults. AIDS Behav. 2009;13:1233–40.
43. Moskowitz DA, Seal DW. "GWM Looking for sex—SERIOUS ONLY": the interplay of sexual ad placement frequency and success on the sexual health of "men seeking men" on Craigslist. J Gay Les Soc Serv. 2010;22:399–412.
44. Ross MW. Typing, doing, and being: sexuality and the Internet. J Sex Res. 2005;42(4):342–52.
45. Ross MW, Rosser BRS, Coleman E, Mazin R. Misrepresetnation on the Internet and in real life about sex and HIV: a study of Latino men who have sex with men. Cult Health Sex. 2006;8: 133–44.
46. Zablotska IB, Holt M, Prestage G. Changes in gay men's participation in gay community life: implications for HIV surveillance and research. AIDS Behav (in press) Mar 19.
47. CDC. HIV among gay, bisexual and other men who have sex with men (MSM). Atlanta: CDC (2010). http://www.cdc.gov/hiv/topics/msm/pdf/msm.pdf. Accessed 30 Sept 2010.
48. CDC. Trends in HIV/AIDS diagnoses among men who have sex with men—33 States, 2001–2006. MMWR. 2008;57(25):681–6.