HIV Infection, Sexual Risk Behavior, and Substance Use Among Latino Gay and Bisexual Men and Transgender Persons

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Twenty-five years into the AIDS epidemic, Latino gay and bisexual men and transgender (GBT) persons are still excessively affected by HIV.[1–5] Researchers, practitioners, and public health agencies continue to be challenged to find appropriate methodological and theoretical approaches to assess epidemiological trends and develop effective interventions, particularly with ethnic and sexual minorities. We assessed the status of the HIV epidemic among Latino GBTs in 2 major US cities. We examined HIV prevalence and the socioeconomic correlates of HIV, sexual risk behaviors, and substance use with 2 methodological innovations: respondent-driven sampling and computer assisted self-administered interviews.

Latinos represent approximately 14% of the US population but account for 18% of new HIV/AIDS cases.[2] The annual rate of HIV/AIDS cases among Latino men in 2004 was 60.2 (per 100 000 population), but only 18.7 for White men.[2] Among all Latinos, except for Puerto Ricans, sexual intercourse between men is the dominant mode of HIV exposure (50%).[2] In addition, the percentage of AIDS cases among ethnic minority men who have sex with men (MSM) increased from 33% in 1990 to 54% in 1999.[6] Among young MSM, HIV prevalence is twice as high among Latinos (6.9%) as among Whites (3.3%).[4]

Sexual risk behavior also seems to have increased in Latino GBT communities.[7–10] Among young MSM, the prevalence of unprotected anal intercourse during the preceding 6 months is reported to be between 33% and 49%[11]; among young Latino gay men, it is 44%.[4] Among Latino gay men in New York, Miami, and Los Angeles, rates of unprotected anal intercourse range from 28% over the past 2 months to 37% over the past 12 months.[12] Moreover, unprotected sexual intercourse frequently takes place under the influence of substances.[13–17]

Objectives. We examined HIV prevalence and the socioeconomic correlates of HIV infection, sexual risk behaviors, and substance use among Latino gay and bisexual men and transgender persons in Chicago and San Francisco.

Methods. Data were collected from a sample of 643 individuals (Chicago: n = 320; San Francisco: n = 323) through respondent-driven sampling and computer-assisted self-administered interviews.

Results. HIV prevalence in San Francisco (0.325; 95% confidence interval [CI] = 0.260, 0.393) was higher than in Chicago (0.112; 95% CI = 0.079, 0.163). In San Francisco, HIV prevalence was higher among US-born residents than among those born outside the country; in Chicago, the opposite was true. Heavy use of alcohol was prevalent, especially in Chicago (0.368; 95% CI = 0.309, 0.432; San Francisco: 0.154; 95% CI = 0.116, 0.192). Drug use and more education were positively correlated and greater age was negatively correlated with unprotected anal intercourse.

Conclusions. Heavy alcohol drinking and use of drugs remain a significant public health problem in this population. Drug use was more closely linked to HIV sexual risk behaviors than was heavy drinking. (*Am J Public Health.* 2008;98:1036–1042. doi:10.2105/AJPH.2006.102624)

Substance use is relatively high among Latino GBT persons. In a venue-based sample of this population, Diaz et al. found that drug use in the previous 6 months ranged from approximately 40% in New York City and Los Angeles to 16% in Miami.[13] The most commonly used drugs were marijuana, poppers (amyl nitrites), cocaine, and methamphetamine. In an Internet-based sample of Latino MSM, Fernandez et al.[15] found that 49% of the respondents used club drugs (e.g., cocaine, crystal methamphetamines, ketamine, volatile nitrites) in the past 6 months, with poppers being the most popular (32%). Moreover, heavy use of alcohol, club drugs, and methamphetamines are related to unprotected anal intercourse.[14,15,18]

The sampling of GBT populations for epidemiological studies remains a challenge. Drawing a representative sample of GBT individuals is almost impossible. Most of the published research on this population has relied on convenience sampling, venue-based sampling, and random-digit-dialing methods.[19–23] Although these methods provide some useful data, they all suffer from limited or biased population coverage.

Respondent-driven sampling has emerged as an alternative for sampling hidden populations. Respondent-driven sampling is a chain-referral method that helps assess and control selection bias, thus making it possible to derive population estimates.[24,25] This method has only been used once among GBT populations, in a small pilot study with a sample of Latino GBT persons. In this pilot study, respondent-driven sampling was shown to provide greater population coverage than venue-based sampling.[26]

The other challenge is collecting sensitive data, such as sexual risk behavior, which is highly stigmatized. The use of computer-assisted self-administered interviews to collect such data has been shown to reduce reporting bias, increasing the validity of the variables being assessed.[27] Application of these methods has been limited among Latino GBT persons. We aimed to provide a more accurate assessment of the state of the HIV epidemic among Latino GBTs living in 2

differing urban settings: Chicago, Illinois, and San Francisco, California.

METHODS

Recruitment took place in the summer and fall of 2004 in Chicago and San Francisco. Our sample comprised 643 participants (Chicago: n=320; San Francisco: n=323) 18 years or older.

Chicago and San Francisco were chosen for 2 main reasons. First, both have large Latino and GBT populations. In San Francisco, Latino residents come primarily from Mexico and Central America; the majority of Latinos in Chicago are Mexican or Puerto Rican. Second, San Francisco has been one of the epicenters of the AIDS epidemic and recently has witnessed an increase in substance use among GBT persons.[28] These 2 cities thus provided a diverse sample of Latino GBT persons and a comparison of 2 different epidemiological trends in urban settings.

Respondent-Driven Sampling

Respondent-driven sampling gathers individuals through networks of friends,[24,25] similarly to chain-referral methods. First, a few members of the target population, referred to as "seeds," are recruited to take part in the study. Second, these seeds initiate the chain referral by recruiting a set number of peers, who in turn recruit other peers. The chain-referral process continues until the desired sample size is attained. The use of social networks for recruitment allows researchers using respondent-driven sampling to reach individuals who do not participate in public venues.

The advantage of respondent-driven sampling over traditional snowball sampling is that the sampling method allows for assessment of the relative inclusion probabilities for members of the population with a mathematical model of the recruitment process, which is derived from Markov chain theory and biased-network theory.[24,25] This permits calculation of both unbiased estimators and standard errors or confidence intervals. These calculations are derived from respondents' information regarding their relationship with both their recruiters and recruits and the size of their own social networks. Thus, in this

sampling method, inferences are made from social networks to the population.[26,29]

Recruitment and Interviews

Recruitment was carried out in 2 stages. In the first stage, research staff selected the seeds, the members of the target population who became initial participants of the study. Although the characteristics of seeds in the RDS method are independent of those of the final sample (if referral chains are sufficiently long), broad representation of population characteristics among the seeds accelerates the rate at which the sample reaches equilibrium.[25] Therefore, we based our selection of seeds on a set of sociodemographic variables, which to our knowledge, tend to shape networks and subgroups within the Latino GBT communities.[26] We identified 38 potential seeds (Chicago: n=21; San Francisco: n=17) who varied by country of origin, main language spoken (i.e., English or Spanish), HIV status, gender (i.e., male or transgender [male to female]), and sexual orientation (i.e., gay, bisexual). Seeds were recruited through community organizations and in social venues.

Of the 38 potential seeds, 30 (Chicago: n=13; San Francisco: n=17) were screened, consented to participate, and were interviewed. In the second stage of recruitment, research staff asked those seeds who had completed the interviews to recruit 3 or more of their friends who were Latino, GBT, and 18 years or older. The peers, in turn, recruited other peers into the study. Participants who were interested in recruiting received 3 serially numbered recruitment coupons, which contained the project's toll-free telephone number, to give to potential recruits. To participate in the study, all individuals (except the seeds) had to have a recruitment coupon at the time of the interview. Each participant received $50 dollars for participation in the interview and $20 for each recruit they brought into the study. The recruitment process was repeated with each new recruit until the sample size was reached.

The recruitment process was efficient; the target sample size was reached within 5 months. The Chicago subsample included 10 recruitment waves. The number of waves required for equilibrium was 4 for sexual identity and education and 6 for age, HIV status, and language spoken. In San Francisco, we had 11 waves. The number required for equilibrium

was 3 for sexual identity and education, 4 for HIV status and language spoken, and 5 for age. The number of waves substantially exceeded that required for equilibrium to stabilize the sample composition. This also indicated that homophily, or network clustering and segmentation, was not high.

The interview instrument was developed in both English and Spanish, administered through computer-assisted self-administered interviews, and pilot tested among the target population. Interviews were completed on average in 113 minutes. The instrument included questions about sexual behavior, substance use, HIV testing, and demographic characteristics.

Data Analysis

To estimate prevalence of our variables of interest (e.g., HIV, alcohol use) we used RDSAT version 5.6 software (RDS Incorporated, Ithaca, NY), which accounted for the features (e.g., social network size) of our recruitment.

For the multivariate analysis, however, we took a different approach. A sample drawn through RDS is not self-weighted because individuals vary in their network size and the extent to which they are successful in recruitment. The RDS method permits us to estimate the degree to which individuals with certain sociodemographic characteristics are over- or undersampled and to adjust for this in the analysis. In our study, preliminary analyses showed that primary language spoken, place of birth, age, HIV status, and sexual orientation were all related to the likelihood of participating in the survey. The dependent variable—unprotected anal intercourse—however, was not.

When sampling is associated with potential independent variables in a multivariable model, those variables should be included, but it is not necessary to weight observations.[30] For example, in simple cases in which a formal probability sample includes a disproportionate number of Latinos (i.e., they are oversampled), including an indicator variable for Latino in a regression model is sufficient both to correct standard errors for that aspect of the sample design and to produce unbiased estimates. Thus, the multivariate results shown here were derived from unweighted estimates, with all variables known to be associated with participation in the sample included in the model.

TABLE 1—Sample Demographic Characteristics of Latino Gay and Bisexual Men and Transgender Persons: Chicago, IL, and San Francisco, CA, 2004

	Chicago, No. (%) or mean	San Francisco, No. (%) or mean	Total, No. (%) or mean
Gender			
Male	294 (92)	255 (79)	549 (85)
Transgender	26 (8)	68 (21)	94 (15)
Sexual orientation			
Homosexual/gay	264 (82.5)	275 (85)	539 (84)
Bisexual	56 (17.5)	48 (15)	104 (16)
Age, y			
18–29	126 (39)	76 (23)	202 (32)
30–39	113 (35)	127 (39)	240 (38)
40–49	55 (17)	89 (28)	144 (23)
50–59	23 (7)	29 (9)	52 (8)
≥60	3 (1)	2 (1)	5 (1)
Birthplace			
United States	99 (31)	46 (14)	145 (23)
Colombia	14 (4)	7 (2)	21 (3)
Cuba	8 (2.5)	15 (5)	23 (4)
El Salvador	0	26 (8)	26 (4)
Guatemala	8 (2.5)	11 (3)	19 (3)
Mexico	141 (44)	158 (49)	299 (47)
Nicaragua	0	15 (5)	15 (2)
Peru	4 (1)	17 (5)	21 (3)
Puerto Rico	27 (8)	7 (2)	34 (5)
Other	19 (6)	21 (6)	40 (5)
Language spoken and read[a]	2.97	2.73	2.85
Education			
Less than high school	81 (25)	91 (28)	172 (27)
High school/GED	88 (28)	61 (19)	149 (23)
Technical/vocational school	22 (7)	37 (11)	59 (9)
Some college	84 (26)	74 (23)	158 (25)
College degree	35 (11)	51 (16)	86 (13)
Graduate degree	10 (3)	9 (3)	19 (3)
Employment status			
Full time	156 (49)	85 (26)	241 (37)
Part time	64 (20)	86 (27)	150 (23)
Unemployed	93 (29)	135 (42)	228 (35)
Other	7 (2)	15 (5)	22 (3)
Annual income, $			
<10 000	95 (30)	165 (51)	260 (40)
10 000–19 999	108 (34)	64 (20)	172 (27)
20 000–29 999	70 (22)	50 (15)	120 (19)
30 000–39 999	34 (11)	28 (9)	62 (10)
≥40 000	13 (4)	16 (5)	29 (5)
Relationship status			
Cohabitating, with partner	54 (17)	68 (21)	122 (19)
With partner but not cohabitating	108 (34)	89 (28)	197 (31)
Single/no primary partner	158 (49)	166 (51)	324 (50)

Continued

RESULTS

Table 1 shows the demographic characteristics of the sample overall and by city. Most participants identified as male (85%) and homosexual or gay (84%) and were aged 18 to 49 years. The age distribution differed between the cities. In Chicago, 39% of the participants were aged 18 to 29 years and 17% were aged 40 to 49 years; in San Francisco, 23% were in the younger group and 28% in the older group. Approximately half of the participants were born in Mexico (47%), and 23% were born in the United States. However, they were fairly bilingual, as indicated by the mean score (2.85) in the primary language spoken scale. Half of the total sample had no more than a high school diploma. The percentage of unemployed participants was also high (35%), particularly in San Francisco (42%); correspondingly, income levels were fairly low, with 40% of the respondents earning less than $10 000 in the previous year.

Sexual Risk and Substance Use

Table 2 shows the prevalence for sexual risk behaviors and use of alcohol and other substances. Heavy alcohol use was more prevalent in Chicago than in San Francisco (San Francisco: 0.368; 95% confidence interval [CI]=0.309, 0.432; Chicago: 0.154; 95% CI=0.116, 0.192); we found no clear pattern for drug use. Reported drug use was relatively low, with the exception of marijuana (Chicago: 0.269; 95% CI=0.212, 0.329; San Francisco: 0.330; 95% CI=0.267, 0.393). Reported use of speed was higher in San Francisco (0.192; 95% CI=0.144, 0.241) than in Chicago (0.093; 95% CI=0.056, 0.138), but cocaine use was higher in Chicago (0.193; 95% CI=0.141, 0.240) than in San Francisco (0.090; 95% CI=0.064, 0.135).

A pattern of sexual risk behavior emerged from this sample, showing that in both cities, approximately half of respondents engaged in unprotected oral sex, and 25% engaged in unprotected anal intercourse in the previous 12 months. The prevalence of unprotected anal intercourse in the past 2 months was approximately 14% in both cities. Prevalence of unprotected sexual intercourse with serodiscordant and seroconcordant partners was not estimated because the number of

TABLE 1—Continued

Time in relationship			
<1 mo	13 (8)	17 (11)	30 (9)
1–6 mo	33 (20)	29 (18)	62 (19)
7–12 mo	17 (10)	28 (18)	45 (14)
1–3 y	43 (27)	27 (17)	70 (22)
>3 y	56 (35)	56 (36)	112 (35)
HIV status			
Positive	57 (18)	113 (35)	170 (26)
Negative	208 (65)	184 (57)	392 (61)
Did not know	10 (3)	5 (1.5)	15 (2)
Has not been HIV tested	36 (11)	13 (4)	49 (8)
Refused to answer	9 (3)	8 (2.5)	17 (3)

Note. GED = general equivalency diploma. Total sample, N = 643; Chicago, n = 320; San Francisco, n = 323.
[a]On a scale of 1 to 5: 1 = Spanish all the time; 5 = English all the time.

TABLE 2—Prevalence Estimates for Reported Alcohol and Substance Use and Sexual Risk Behavior Among Latino Gay and Bisexual Men and Transgender Persons: Chicago, IL, and San Francisco, CA, 2004

	Chicago (n = 320), Prevalence, % (95% CI)	San Francisco (n = 323), Prevalence, % (95% CI)
Heavy alcohol use, past 6 mo[a]	36.8 (30.9, 43.2)	15.4 (11.6, 19.2)
Substance use, past 6 mo[b]		
Speed	9.3 (5.6, 13.8)	19.2 (14.4, 24.1)
Cocaine	19.3 (14.1, 24.0)	9.0 (6.4, 13.5)
Crack	8.7 (4.8, 12.4)	10.0 (6.2, 14.2)
Marijuana	26.9 (21.2, 32.9)	33.0 (26.7, 39.3)
Poppers	17.6 (12.7, 22.5)	16.7 (12.3, 20.9)
Ecstasy	4.5 (2.1, 7.2)	8.5 (5.6, 11.8)
GHB	3.0 (0.9, 5.8)	4.4 (2.2, 06.9)
Special K	2.5 (0.6, 4.9)	4.0 (1.7, 16.4)
Heroin	5.9 (3.0, 9.4)	3.6 (1.6, 15.9)
Tranquilizers	7.5 (4.1, 11.2)	16.7 (12.1, 21.6)
Sexual risk behavior, past 12 mo		
Unprotected insertive anal intercourse	24.0 (18.9, 29.4)	27.4 (22.3, 32.5)
Unprotected receptive anal intercourse	25.8 (20.3, 31.5)	24.9 (19.9, 30.2)
Unprotected insertive oral sex	49.8 (43.7, 57.2)	49.5 (43.7, 55.4)
Unprotected receptive oral sex	46.6 (40.1, 53.5)	49.0 (43.2, 55.3)
Sexual intercourse under influence of alcohol[c]	55.6 (49.4, 62.4)	41.7 (35.6, 47.9)
Sexual intercourse under influence of drugs[c]	26.5 (20.9, 32.6)	18.6 (13.6, 23.9)
Sexual risk behavior, past 2 mo		
Unprotected insertive anal intercourse	14.4 (10.1, 19.0)	14.7 (10.4, 19.4)
Unprotected receptive anal sex	13.5 (9.5, 17.6)	14.4 (10.2, 19.2)
Sex under the influence of alcohol	41.4 (35.2, 48.0)	27.0 (22.0, 32.3)
Sex under the influence of drugs	20.2 (15.2, 25.8)	18.6 (13.6, 23.9)

Note. CI = confidence interval. Poppers are amyl nitrites, GHB is γ-hydroxybutyrate, and Special K is katemine.
[a]Heavy alcohol use was defined as 6 or more drinks per occasion.
[b]Substance use was defined as any use, from once a month to at least once a day.
[c]Frequency of this sexual experience could be "once or twice" to "many times."

cases was very low (37 in unprotected sexual intercourse with serodiscordant partners; 92 with seroconcordant partners).

Prevalence of sexual intercourse under the influence of alcohol was higher in Chicago than in San Francisco in the past 12 months (Chicago: 0.556; 95% CI=0.494, 0.624; San Francisco: 0.417; 95% CI=0.356, 0.479). Prevalence of sexual intercourse under the influence of drugs in the past 12 months showed a similar pattern (Chicago: 0.265; 95% CI=0.209, 0.326; San Francisco: 0.186; 95% CI=0.136, 0.239).

HIV Prevalence

Table 3 shows the estimated HIV prevalence by selected demographic characteristics. As expected, the prevalence in San Francisco (0.325; 95% CI=0.260, 0.393) was higher than in Chicago (0.112; 95% CI=0.079, 0.163). The prevalence by place of birth differed between our venues. In Chicago, it was higher among those born in Latin America and the Caribbean (0.126; 95% CI=0.079, 0.184) than among those born in the United States (0.082; 95% CI=0.037, 0.152). In San Francisco, HIV prevalence was higher among US-born residents (0.395; 95% CI=0.260, 0.529) than among those born outside the United States (0.298; 95% CI=0.237, 0.376).

HIV prevalence varied significantly by age groups. The lowest prevalence was among the younger group in both cities (18–29 years; Chicago: 0.020; 95% CI=0.002, 0.048; San Francisco: 0.189; 95% CI=0.078, 0.295). The highest prevalence was among participants aged 40 to 49 years (Chicago: 0.267; 95% CI=0.095, 0.399; San Francisco: 0.481; 95% CI=0.344, 0.607). This could have been the result of a cohort effect.

HIV prevalence varied drastically by income groups, particularly in San Francisco, where the prevalence in the lowest income group was 0.419 (95% CI=0.326, 0.511) and in the highest income group reached zero. When we compared educational groups, we found no clear pattern in the distribution of HIV prevalence. Finally, HIV prevalence was higher in both cities among those reporting any hard drug use (i.e., cocaine, crack, and heroin; Chicago: 0.126; 95% CI=0.037, 0.218; San Francisco: 0.397; 95% CI=0.195, 0.598) than among those reporting use of any club or other

TABLE 3—Estimated HIV Prevalence Among Latino Gay and Bisexual Men and Transgender Persons, by Sociodemographic Variables and Substance Use: Chicago, IL, and San Francisco, CA, 2004

	Chicago, Prevalence, % (95% CI)	San Francisco, Prevalence, % (95% CI)
Overall	11.2 (7.9, 16.3)	32.5 (26.0, 39.3)
Transgender	25.9 (8.0, 44.0)	23.0 (12.2, 36.7)
Sexual orientation		
Homosexual/gay	12.7 (8.6, 19.2)	40.1 (30.9, 48.0)
Bisexual	6.2 (1.5, 12.2)	17.5 (9.1, 27.1)
Age, y		
18–29	2.0 (0.2, 04.8)	18.9 (7.8, 29.5)
30–39	8.8 (5.1, 17.0)	28.9 (21.0, 39.0)
40–49	26.7 (9.5, 39.9)	48.1 (34.4, 60.7)
50–59	22.0 (10.0, 47.3)	38.1 (19.1, 58.1)
Birthplace		
United States	8.2 (3.7, 15.2)	39.5 (26.0, 52.9)
Latin America or Caribbean	12.6 (7.9, 18.4)	29.8 (23.7, 37.6)
Education		
Less than high school	12.6 (4.2, 18.2)	33.3 (21.7, 46.7)
High school/GED	14.1 (8.3, 23.8)	36.3 (25.8, 50.4)
Technical/vocational school	0.0 (0.0, 0.0)	30.0 (13.5, 48.0)
Some college	9.4 (4.5, 21.6)	33.6 (20.9, 46.1)
College degree	20.7 (7.9, 38.5)	23.9 (10.7, 40.5)
Graduate degree	1.9 (0.0, 09.7)	21.4 (4.4, 56.5)
Annual income, $		
<10 000	11.2 (7.4, 24.4)	41.9 (32.6, 51.1)
10 000–19 999	14.6 (9.3, 26.0)	26.4 (14.5, 39.8)
20 000–29 999	8.7 (2.5, 16.1)	18.7 (8.7, 31.2)
30 000–39 999	2.1 (0.0, 6.3)	20.1 (4.4, 36.6)
≥40 000	5.0 (1.4, 3.7)	0.0 (0.0, 0.0)
Illegal substance use, past 6 mo		
Hard drugs[a]	12.6 (3.7, 21.8)	39.7 (19.5, 59.8)
Club or other drug[b]	11.9 (7.8, 19.2)	32.8 (22.9, 43.8)
None	9.0 (4.1, 17.3)	30.6 (21.9, 38.9)
Alcohol use, past 6 mo		
Heavy[c]	8.2 (2.9, 15.0)	30.6 (16.9, 45.2)
Little or none	12.6 (8.7, 19.5)	32.7 (26.1, 39.9)

Note. CI = confidence interval; GED = general equivalency diploma. For Chicago, n = 320; for San Francisco, n = 323.
[a]Hard drug use was defined as any use of cocaine, crack, or heroin, from "once a month or less" to "at least once a day."
[b]Club or other drug use was defined as any use of speed (methamphetamine), marijuana, poppers (amyl nitrites), Ecstasy, GHB (γ-hydroxybutyrate), Special K (katemine), or tranquilizers, from "once a month or less" to "at least once a day."
[c]Heavy alcohol use was defined as 6 or more drinks per occasion.

drug (i.e., speed, marijuana, poppers, Ecstasy, GHB [γ-hydroxybutyrate], Special K [ketamine], and tranquilizers) or no drug use. Unexpectedly, we found higher HIV prevalence among those reporting low or no alcohol use in both Chicago (0.126; 95% CI=0.087, 0.195) and San Francisco (0.327; 95% CI=0.261, 0.399) than among those reporting heavy alcohol use (Chicago: 0.082; 95% CI=0.029, 0.150; San Francisco: 0.306; 95% CI=0.169, 0.452).

Correlates of Unprotected Sexual Intercourse

Logistic regression results for unprotected sexual intercourse (either receptive or insertive) during the previous 12 months are shown in Table 4. The coefficients describe changes in the estimated odds of engaging in unprotected sexual intercourse associated with changes in the variable in question.

TABLE 4—Logistic Regression for Unprotected Sex in the Past 12 Months Among Latino Gay and Bisexual Men and Transgender Persons: San Francisco, CA, 2004

	OR (SE)	t
Total sample (n = 643)	1.046 (0.200)	0.233
Age	0.713* (0.073)	-3.301
Born in United States	1.052 (0.278)	0.190
Language spoken[a]	0.999 (0.122)	-0.005
Education	1.180* (0.079)	2.473
Income	1.113 (0.100)	1.187
Part-time employment	1.489 (0.363)	1.634
Unemployment	1.150 (0.273)	0.588
Homosexual or gay identified	1.251 (0.263)	1.063
HIV positive	0.683 (0.159)	-1.641
HIV status unknown	0.789 (0.222)	-0.841
Any hard drug use[b]	0.960 (0.240)	-0.165
Any club and other drug use[c]	1.975* (0.384)	3.500
Heavy alcohol use[d]	1.072 (0.222)	0.736
Constant	0.430 (0.218)	-1.662

Note. OR = odds ratio.
[a]On a scale of 1 to 5: 1 = Spanish all the time; 5 = English all the time.
[b]Hard drug use was defined as any use of cocaine, crack, or heroin, from "once a month or less" to "at least once a day."
[c]Club or other drug use was defined as any use of speed (methamphetamine), marijuana, poppers (amyl nitrites), Ecstasy, GHB (γ-hydroxybutyrate), Special K (katemine), or tranquilizers, from "once a month or less" to "at least once a day."
[d]Heavy alcohol use was defined as 6 or more drinks per occasion.
*P < .05.

The use of club and other drugs nearly doubled the estimated odds of engaging in unprotected anal intercourse (OR=1.975; P<.05). Older respondents were less likely than younger ones to have unprotected anal intercourse (OR=0.713; P<.05), and respondents with more years of formal education were more likely to engage in this risk behavior than were those with fewer years of schooling. Each unit increase of schooling increased the estimated odds by a factor of 1.18 (P<.05). None of the remaining variables in the model were statistically significant. The lack of statistical significance for alcohol use was not a result of a high correlation between alcohol and drug use; the correlation was only 0.12. Finally, there was no difference in rates of unprotected sexual intercourse between the Chicago and San Francisco samples.

DISCUSSION

We characterized the HIV epidemic among Latino GBTs in 2 large urban settings, applying 2 methodological innovations to improve the reliability and validity of our findings. We aimed at overcoming some of the limitations of previous research by using RDS and computer-assisted self-administered interviews.

The Latino GBT participants we recruited through RDS were predominantly immigrant, of Mexican origin, adult, fairly bilingual in Spanish and English, of working class status, and rather poor. Our sample mirrored, to a large extent, the general US male Latino adult population.[31] Fifteen percent of the respondents identified as transgender (male to female) and 15% as bisexual.

The sampling and recruitment method, RDS, worked effectively. The target sample was reached in a timely fashion and with a sufficient number of waves to guarantee a sample with balanced sociodemographic characteristics. As shown elsewhere,[26] RDS provided greater population coverage than time–location sampling. No major problems, such as forged recruitment coupons or highly isolated and segmented networks, were found. We also encountered no evidence of coercive peer recruitment.

The findings regarding substance use suggest that alcohol drinking is widespread in the Latino GBT population. This may be considered a serious public health problem, given that approximately 37% of the participants in Chicago were classified as heavy drinkers. Alcohol abuse seemed to be subject to regional and cultural differences, because the percentage of heavy drinkers in Chicago was double that of San Francisco. Sexual intercourse under the influence of alcohol and drugs appeared to be common, and somewhat higher in Chicago than in San Francisco, but lower than in New York City, where 68% and 45% percent of Latino gay men were reported to have sexual intercourse under the influence of alcohol and drugs, respectively.[18] This is consistent with previous studies that found Latino gay men reporting higher rates of heavy alcohol use and alcohol-related problems than did their White and Black counterparts.[32,33]

It is difficult to make comparisons across studies, not only because of the methodological differences, but also because there have been so few studies and they were not concurrent. Fernandez et al., for example, found higher rates of alcohol and substance use than we did, particularly with club drugs.[15] Their sample, however, was drawn from Latino gay male Internet users, which could explain the differences. The Urban Men's Health Study, which collected data via telephone from a stratified probability sample of MSM in 4 cities, reported lower rates of speed and cocaine use than we found almost 7 years later.[33]

A study by Diaz et al. of Latino gay men in Los Angeles, Miami, and New York City was the most comparable to ours, although it was conducted almost 6 years ago, they used a venue-based sample, and they collected data via an interviewer-administered questionnaire.[19] The levels of unprotected anal intercourse (either insertive or receptive) found in that study were somewhat higher (28% in the past 2 months and 37% in the past 12 months) than in our study, but not as high as those found in New York City (43%) in another study.[18] This suggests that rates of unprotected sexual intercourse among Latino GBT persons might have decreased or that they are subject to significant regional differences.

Behavioral and Structural Correlates of Risk Behavior

Age, education, and use of club and other drugs were associated with unprotected anal intercourse. As in most studies on gay men and MSM,[34–36] we found older men to be less likely to engage in unprotected sexual intercourse than were young men. This finding may reflect generational differences among Latinos. Young GBT persons are more sexually active than their older counterparts and less concerned about unprotected sexual intercourse because they did not witness the dramatic effects of HIV. To the contrary, they are seeing people with HIV, and even AIDS, live relatively healthy lives.

Unexpectedly, we found years of formal education to be positively associated with unprotected anal intercourse. Having very limited comparable data, we propose 2 explanations. First, Latino GBT persons with higher levels of education may have access to multiple and diverse sexual partners, sexual networks, and sexual intercourse outlets not available to those with low education levels and may therefore be more likely to engage in unprotected sexual intercourse. Second, they may not see themselves as being at risk for HIV either because of the self-confidence that education may bring or because they do not see their sexual partners (i.e., educated, middle-class persons) as being at risk.

The strongest correlation we found was between unprotected anal intercourse and club and other drug use. This finding has been consistent across studies of gay ethnic minority populations, regardless of measurement and geographic location.[15,16,18,37] Our study added to the literature by separating use of alcohol, hard drugs, and club drugs; only club drugs were significantly associated with unprotected sexual intercourse. This points not to the disinhibitory role of substances leading to unprotected sexual intercourse, but to the stimulation provided by club drug use and the existence of 3 distinctive cultures or social milieus: a relatively large group characterized by alcohol use; another group who mainly use club drugs and marijuana, which are more conducive to unprotected sexual intercourse than are the other substances[38]; and a small sector defined by the use of hard drugs.

Our overall HIV prevalence estimate was analogous to estimates among Latino GBT persons and MSM in other major cities.[12,15,20] Diaz and Ayala found an overall prevalence of 22% in 3 cities: Miami (7%), New York City (34%), and Los Angeles (17%).[12]

Strengths and Limitations

This study had limitations worth noting. First, we could not ascertain causality of the association between drug use and unprotected sex. Second, the data were self-reported, including HIV status. We did not validate such data, although the use of computer-assisted self-administered interviews may have reduced reporting bias. Third, the sample came from 2 large urban centers, and generalizations to other Latino GBT populations are tenuous.

Our study opened up new lines of inquiry. The unique and distinctive roles of alcohol and club and hard drug use merit further research. Traditionally, they have been collapsed and assumed to have similar effects on HIV risk, but this might not be the case. In fact, we might be observing different, albeit related, public health problems requiring different approaches.

Likewise, the structural factors related to HIV, such as education, income, and employment, may function differently among Latinos because of the role of immigration. For example, the usual health benefits associated with education may not translate when individuals migrate to other countries in search of economic opportunities. Studies within ethnic groups are essential to further exploration of the role of these structural factors. Finally, venue-based sampling (including the Internet) seems to overestimate substance use and sexual risk behavior.[26] Additional empirical evidence is needed to gain a firm understanding of the different sampling approaches. ∎

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