

METHAMPHETAMINE AND COCAINE USE AMONG MEXICAN MIGRANTS IN CALIFORNIA: THE CALIFORNIA-MEXICO EPIDEMIOLOGICAL SURVEILLANCE PILOT

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Methamphetamine and cocaine use have been associated with a vulnerability to HIV infection among men who have sex with men and among men who have sex with women but not specifically among Mexican migrants in the United States. The California-Mexico Epidemiological Surveillance Pilot was a venue-based targeted survey of male and female Mexican migrants living in rural and urban areas in California. Among men ($n = 985$), the percentage of methamphetamine/cocaine use in the past year was 21% overall, 20% in male work venues, 19% in community venues, and 25% in high-risk behavior venues. Among women, 17% reported methamphetamine/cocaine use in high-risk behavior venues. Among men, methamphetamine/cocaine use was significantly associated with age less than 35 years, having multiple sex partners, depressive symptoms, alcohol use, sexually

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transmitted infections (including HIV), and higher acculturation. Prevention interventions in this population should be targeted to specific migrant sites and should address alcohol, methamphetamine, and cocaine use in the context of underlying psychosocial and environmental factors.

Migration has increased the vulnerability of populations to HIV infection in different parts of the world (Coffee, Lurie & Garnett, 2007; Joint United Nations Programme on HIV/AIDS & International Organization for Migration, 1998; Yang, Derlega & Luo, 2007). Mexican migration has increased dramatically in recent decades in the U.S., and California continues to be home to the highest concentration of this population (The Pew Hispanic Center, 2005). Despite strong participation in the U.S. labor force, especially in California, Mexican migrants and immigrants are more likely than U.S.-born Latinos or other U.S.-born race/ethnicity groups to live in poverty, to lack public or private health insurance, and to lack a usual health care provider (The Pew Hispanic Center & Robert Wood Johnson Foundation, 2008; Zúniga, Castañeda, Averbach, & Wallace, 2006). Moreover, Mexican-born Latinos are more likely than U.S.-born Latinos to present a short HIV-to-AIDS interval, implying delayed testing and inadequate care and treatment (Espinoza, Hall, Selik, & Xiaohong, 2008; Tang, Levy, & Hernandez, 2008). In addition, in two California studies, it was more likely that Latino immigrants were infected with HIV in the U.S. than in their home countries (Harawa et al., 2002; Levy et al., 2007).

Although published research on Latino migrants within the U.S. portrays considerable environmental vulnerability promoting unprotected sex with multiple partners and sex workers, and also unprotected sex under the influence of alcohol, available data on HIV prevalence among migrants suggest infection rates are low (Organista & Balls Organista, 1997; Organista, Carrillo, & Ayala, 2004; Painter, 2008; Sanchez et al., 2004). Over time, environmental and behavioral factors may increase the opportunities for HIV-infected individuals to enter into Latino migrant sexual networks, and migrant communities could experience higher rates of HIV infection and transmission (Apostolopoulos et al., 2006; Rangel et al., 2006; Worby & Organista, 2007). Methamphetamine and cocaine use promotes opportunities for becoming infected with HIV and sexually transmitted infections (STIs) among men who have sex with men (MSM) and, more recently, among men who have sex with women, particularly through unprotected anal and vaginal intercourse and unprotected intercourse with a new partner (Centers for Disease Control and Prevention [CDC], 2006; Compton, Lamb, & Fletcher, 1995; Mansergh et al., 2006; Molitor, Truax, Ruiz, & Sun, 1998; Zule, Costenbader, Meyer, & Wechsberg, 2007). Although there is evidence that methamphetamine and crack cocaine smoking is increasing nationally, especially in the border states in Mexico and in the United States, in addition to increasing non-injected methamphetamine use among Latinos diagnosed with AIDS in California, research is scarce addressing these behaviors among Mexican migrants in relation to HIV (Maxwell et al., 2006; Rock Wohl, Johnson, & Frye, 2007). This article examines methamphetamine/cocaine use and its association with STIs, HIV, and other risk behaviors among Mexican migrant men in California.

METHODS

The California-Mexico Epidemiological Surveillance Pilot (CMESP) was a binational collaborative project to assess the vulnerabilities and risk behaviors of Mexican migrants to HIV and STIs. The National Center for HIV/AIDS Control and Prevention, Secretariat of Health, Mexico (CENSIDA) shaped the research design through background information on migrant demographics, vulnerabilities, and risk behavior and was instrumental in the development of the questionnaire. The CMESP consisted of a venue-based targeted systematic survey of male and female Mexican migrants living in rural and urban areas in San Diego and Fresno counties, California, conducted from March 2004 through November 2005 by collaborating community-based organizations (Planned Parenthood MarMonte, Vista Community Clinic, and the Bi-national AIDS Advocacy Project [PROCABI]).

The target population was defined as persons 18-64 years of age, born in Mexico, who either (a) had been living/working in the United States for 5 years or less or (b) had been living/working in the United States for more than 5 years but returned to Mexico at least every 24 months on average. Additionally, basic fluency in Spanish or English was required to participate. More than 150 sites identified through key informants and field staff were assessed for potential participation in the survey throughout the 2-year study period. The assessment consisted of an initial screening visit and, if promising, enumeration. The screening criteria considered if the site was suitable for the study protocol and confirmed the presence of the target population. Enumeration consisted of systematically screening the population (e.g., every third person at a day laborer pick-up location, or every other person walking by the main entrance of a bar/club) using a 2-minute questionnaire to assess the volume and proportion of our target population at a given site during time frames of one to four hours. Three types of sampling venues were identified:

1. Male work (male migrant camps and day laborer pick-up locations)
2. Community (family migrant camps, laundromats, parks, adult schools and churches)
3. High-risk behavior (bars and clubs including sites with MSM, and parks and streets with drug use or MSM activity)

Only enumerated sites with relatively high volumes and proportions of the target population were selected for the survey (except for high-risk behavior venues that had their own sampling frame with a lower volume threshold). A given site was added or dropped throughout the study depending on its enumeration data at that time and the proportion of persons who had already participated in the study. Subsequently, we systematically sampled individuals from each site in proportion to the volume of eligible migrants enumerated there. During the survey, a systematically selected person at a site was first enumerated and, if found to be eligible, was offered participation in the study. The survey was composed of informed consent procedures, a 35-minute interviewer-administered questionnaire, and collection of blood and urine specimens for testing for HIV, STIs, and hepatitis C virus. The questionnaire included sections on demographics, migration patterns, sexual behavior,

substance use, and HIV knowledge. The questionnaire, consent forms and procedures, and study design were approved by the Committee on Human Research at the University of California, San Francisco, and by the Committee for the Protection of Human Subjects, California Health and Human Services Agency.

MEASURES

Reported Methamphetamine/Cocaine Use. The questionnaire asked participants to self-report use of methamphetamine, cocaine, heroin, and other drugs in the past 12 months. As data collection began, field staff reported that participants often referred to methamphetamine as “coca” or cocaine or thought they were the same drug. Key informants and field staff both indicated that “cranka” (methamphetamine) was prevalent in many of our sampling sites and participants were likely to refer to it as “coca.” In the sampling during the second year we added questions in the survey on cocaine cost and amount purchased to determine whether methamphetamine use was being reported as cocaine use. However, most of the participants could only provide approximate amounts and stated that they had purchased “*un poquito*” (a little bit) for “*un veinte*” (twenty dollars’ worth). More specific information was reported by a subset of 13 respondents, who reported the purchase of .25 to 1 gram of the drug for U.S.\$20, which suggests the cost range for methamphetamine, crack cocaine or lowest purity level powder cocaine (Executive Office of the President, Office of National Drug Control Policy, 2004). Both Fresno and San Diego counties are in methamphetamine transportation corridors and distribution areas (National Drug Intelligence Center, United States Department of Justice, 2006). Although the CMESP ethnographic information supported the prevalence of methamphetamine use, it is likely that some cocaine, crack cocaine, a combination of these, or some other drug was consumed by participants at any given site. Based on the difficulty in differentiating between cocaine and methamphetamine, we combined these two drugs to create the methamphetamine/cocaine variable.

Acculturation was assessed using a seven-item Likert language preference scale. A “low” category, derived when a participant reported listening to and speaking exclusively in Spanish at home, at work, and at leisure, has been found among Mexican migrants to be associated with a lower prevalence of psychiatric disorders and depressive symptomatology and a lower prevalence of illicit drug use (Alderete, Vega, Kolody, & Aguilar-Gaxiola, 1999; Alderete, Vega, Kolody, & Aguilar-Gaxiola, 2000; Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998). *Alcohol use in past 30 days* reflects the number of days in which participants consumed at least five alcoholic drinks. *Depressive symptoms* in the past 7 days were defined by a score ≥ 16 using the Center for Epidemiologic Studies-Depression (CES-D) scale, previously used in Mexican immigrant populations (Alderete et al., 1999). *Any sexually transmitted infection* includes *Chlamydia trachomatis*, HIV, syphilis, and hepatitis C virus. A Gen-Probe Aptima Combo 2 assay was used to detect *Chlamydia trachomatis* and *Neisseria gonorrhoeae* in urine samples. Syphilis was detected in serum samples using Rapid Plasma Reagin and confirmed by Treponema Pallidum-Particle Agglutination. HIV and hepatitis C were detected on serum samples by enzyme immunoassays and confirmed, respectively, by Western blot and recombinant immunoblot assays. Statistical analysis was performed using SAS, Version 9.1 (SAS Institute, Cary, NC). The unweighted results are stratified by venue to best represent the different profiles of the three venue types. While controlling for venue, stepwise

TABLE 1. Methamphetamine/Cocaine and Heroin Use by Type of Venue; Mexican Migrants in California, 2004-2005

	Total Study Sample	Male Work Venues	Community Venues	High-Risk Behavior Venues
Methamphetamine/cocaine				
Men ^a	(209/985) 21%	(105/525) 20%	(40/209) 19%	(64/251) 25%
Women	(5/286) 2%	(0/6) 0%	(1/257) 0.4%	(4/23) 17% ^b
Heroin				
Men ^c	(16/985) 2%	(8/525) 2%	(3/209) 1%	(5/251) 2%
Women ^d	(2/286) 1%	(0/6) 0%	(0/257) 0%	(2/23) 9%

^aChi-square tests for differences between proportions were not significant comparing venue categories for men; 7 out of 985 men reported injecting methamphetamine/cocaine and they were recruited across all three types of venues. ^bChi-square $p < .001$ as compared to community venues. ^cAmong 16 men, 10 injected heroin, distributed across the venues; 14 also used methamphetamine/cocaine. ^dAmong two women, one injected heroin; both also used methamphetamine/cocaine. Among transgenders, two out of 12 reported methamphetamine/cocaine use.

logistic regression was used with variables that were significantly associated with methamphetamine/cocaine in the univariate analysis.

RESULTS

There were 1,283 participants recruited across 68 sampling sites (31 male work venues, 24 community venues, 13 high-risk behavior venues), with a 21% refusal rate during enumeration and a 24% refusal rate among eligible persons. Among the 985 men enrolled in the survey, 21% reported methamphetamine/cocaine use (20% in male work venues, 19% in community venues, and 25% in high-risk behavior venues) (Table 1). Among men who reported methamphetamine/cocaine use, 59% reported some methamphetamine use and 41% reported cocaine use. Only seven men reported injecting methamphetamine/cocaine, and they were recruited in all three types of venues. Use of cocaine, specifically, was not reported significantly higher in any type or subtype of venue. Methamphetamine/cocaine use was reported by 2% of the women in the study sample (0% in male work venues, <1% in community venues, and 17% of the women in high-risk behavior venues). Among the 43 men that reported geographic location of drug use (in questions added in the second year of sampling), 77% indicated methamphetamine/cocaine use exclusively in California in the past year. The percent of heroin use was 2% among men and 1% for women, 61% (11/18) of whom reported use through injection.

Table 2 shows the univariate analysis of variables by methamphetamine/cocaine use among men by type of venue. Younger men, as compared with those over 35 years of age, were significantly more likely to have used methamphetamine/cocaine in male work venues and community venues. The percentage reporting methamphetamine/cocaine use increased significantly with the number of sexual partners in all three types of venues. Specifically, men with multiple partners, compared with men with zero or one partner, were significantly more likely to also report methamphetamine/cocaine use in all three types of venues. Methamphetamine/cocaine use was significantly associated with sex with sex workers, higher acculturation, higher level of alcohol use and depressive symptoms in the past week in only the male work and high-risk behavior venues although the trend was generally similar in the community venues. Among men disclosing the characteristics of their sex work partners ($n =$

TABLE 2. Mexican Migrant Male Participants Reporting Methamphetamine/Cocaine Use by Type of Venue and Selected Variables (*n* = 985)

	Male Work Venues <i>n</i> = 525			Community Venues <i>n</i> = 209			High-Risk Behavior Venues <i>n</i> = 251		
	Men Reporting Methamphetamine/Cocaine			Men Reporting Methamphetamine/Cocaine			Men Reporting Methamphetamine/Cocaine		
	<i>n</i>	% OR (95% CI)	<i>p</i>	<i>n</i>	% OR (95% CI)	<i>p</i>	<i>n</i>	% OR (95% CI)	<i>p</i>
Age in years									
18 to 24	40	26 2.0 (1.2-3.4)	0.009	22	34 7.6 (2.9-20.1)	<.001	27	29 1.2 (0.6-2.4)	0.631
25 to 34	33	21 1.5 (0.9-2.6)	0.129	12	23 4.4 (1.5-12.4)	0.004	18	21 0.8 (0.4-1.7)	0.531
35+	32	15 ref		6	6 ref		19	26 ref	
Number of sex partners									
0 to 1	38	12 ref		25	16 ref		13	13 ref	
2 to 4	52	34 4.0 (2.5-6.5)	<.001	13	32 2.5 (1.2-5.5)	0.018	28	24 2.1 (1.0-4.2)	0.048
5+	15	33 3.8 (1.9-7.8)	<.001	2	29 2.2 (0.4-11.8)	0.359	23	61 9.9 (4.1-23.7)	<.001
Sex with sex worker									
Yes	32	31 2.2 (1.3-3.6)	0.001	4	31 2.0 (0.6-6.8)	0.272	17	37 2.0 (1.0-3.9)	0.049
No	73	17 ref		36	18 ref		47	23 ref	
Acculturation ^a									
Low	45	16 ref		25	19 ref		14	18 ref	
Medium to high	60	24 1.7 (1.0-2.6)	0.016	15	20 1.1(0.5 – 2.2)	0.868	50	29 1.9 (1.0-3.6)	0.066
Alcohol use in past 30 days ^b									
0 or 1 day	76	17 ref		37	20 ref		14	21 ref	
2 or more days	29	38 3.0 (1.8-5.0)	<.001	3	11 0.5 (0.1-1.6)	0.225	50	60 5.7 (2.6-12.7)	<.001
Depressive symptoms ^c									
Yes	24	34 2.4 (1.4-4.1)	0.001	5	28 1.7 (0.6-5.0)	0.349	20	41 2.5 (1.3-4.9)	0.006
No	81	18 ref		35	19 ref		43	22 ref	
Any STI ^d									
Yes	10	24 1.3 (0.6-2.8)	0.465	0	0 ^e	--	15	68 7.9 (3.0-20.4)	<.001
No	95	20 ref		40	20 undefined		49	21 ref	

OR = Odds Ratio, CI = Confidence Interval, ref = referent category, STI = sexually transmitted infection. ^aTwo participants with missing acculturation scale. The Cronbach α in our analysis was .89. ^bFive or more alcoholic drinks in one day. ^cEight participants with missing depression scale. The Cronbach α in our analysis was .90. ^dSome missing STI results: five CT, three syphilis, seven hepatitis C virus, one HIV. ^eZero out of five participants.

144), 71% reported their sex workers as Latina women, 18% as women of varied race/ethnicities, 8% as transgender (mostly Latina/o), and 1% as men.

About half (51%) of the overall sample of migrant men reported farmwork in the past year (57% in male work venues, 67% in community venues, and 26% in high-risk venues), and it was not significantly associated with methamphetamine/cocaine use. Analysis of methamphetamine/cocaine use across the sexual behavior categories (i.e. MSM, men who have sex with women, and men who did not have sexual partners) did not result in statistically significant findings. Additionally, men reporting unprotected anal or vaginal sexual encounters were not more likely to report methamphetamine/cocaine use as compared with men reporting only protected sex.

Men who tested positive for any STI (including HIV) were significantly more likely to report methamphetamine/cocaine use in high-risk behavior venues (odds ratio [OR] = 7.9, 95% confidence interval [CI] = 3.0-20.4; see Table 2). We found six HIV-infected men in our study, five of whom were among MSM at MSM high-risk behavior sampling sites. Three of the six HIV-infected men in the sample reported both multiple partners and methamphetamine/cocaine use. The three men also reported use of a condom at last sexual encounter with all sexual partners. Among men, there were 30 *Chlamydia trachomatis* infections, 16 syphilis infections (14 early latent, 2 primary), and 18 hepatitis C virus infections, not mutually exclusive. There were no *Neisseria gonorrhoeae* infections detected.

In multivariate analysis, while controlling for type of venue, methamphetamine/cocaine use was associated with younger age cohorts compared with age over 35 years (OR = 2.2, 95% CI = 1.5-3.3 for 18 to 24 years; OR = 1.5, 95% CI = 1.0-2.3 for 25 to 34 years), multiple sex partners as compared with zero or one partner (OR = 2.5, 95% CI = 1.7-3.6 for two to four partners; OR = 3.7, 95% CI = 2.2-6.3 for five or more partners), alcohol use (OR = 2.5, 95% CI = 1.6-3.8 for two or more days in past month vs. 0 or 1 day), depressive symptoms (OR = 2.2, 95% CI = 1.4-3.3), any STI (OR = 2.0, 95% CI = 1.1-3.5) and higher acculturation (OR = 1.4, 95% CI = 1.0-2.0) (Table 3).

LIMITATIONS

Although our study includes a variety of Mexican migrant sites in the counties of Fresno and San Diego, the results represent the sampled population at the selected sites, not the Mexican migrant population in California as a whole. In addition, because this was a cross-sectional design, the directionality of the associations may vary in that some of the factors may precede, be concurrent with, or pursue methamphetamine/cocaine use. Notwithstanding, the literature indicates alcohol bingeing is common at the time of using methamphetamine and cocaine, and jointly, promote unprotected sex, a greater number of sexual partners, and ultimately, an increased likelihood of becoming infected with HIV and other STIs (Colfax et al., 2004; Semple, Zians, Grant, & Patterson, 2005; Zule et al., 2007). Another limitation is that the drug use questions did not address intensity of use in the past 12 months. In addition, unprotected anal or vaginal sex was defined by whether a condom had been used during the last anal or vaginal sexual encounter for each reported partner (up to six) in the past 12 months, excluding event-level analysis on condom use under the influence of methamphetamine/cocaine.

TABLE 3. CMESP Methamphetamine/Cocaine Use Multivariate Analysis, Mexican Migrant Male Study Population in California, 2004-2005

	OR (95% CI)	<i>p</i>
Venue		
High-risk behavior	0.7 (0.4-1.2)	0.162
Male work	0.8 (0.5-1.2)	0.204
Community	ref	
Age in years		
18 to 24	2.2 (1.5-3.3)	<.001
25 to 34	1.5 (1.0-2.3)	0.048
35+	ref	
Number of sex partners		
0 to 1	ref	
2 to 4	2.5 (1.7-3.6)	<.001
5+	3.7 (2.2-6.3)	<.001
Alcohol use in past 30 days		
0 or 1 day	ref	
2 or more days	2.5 (1.6-3.8)	<.001
Depressive symptoms		
Yes	2.2 (1.4-3.3)	<.001
No	ref	
Any STI		
Yes	2.0 (1.1-3.5)	0.023
No	ref	
Acculturation		
Low	ref	
Medium to high	1.4 (1.0-2.0)	0.04

Note. CMESP = California-Mexico Epidemiological Surveillance Pilot. OR = odds ratio. CI = confidence interval. ref = referent category. Logistic regression analysis with $n = 977$; eight observations excluded due to incomplete data.

DISCUSSION

The high percentage of methamphetamine/cocaine use in this study suggests that Mexican migrant men are at substantial risk for this particular HIV-related high-risk behavior. Although the percentage of methamphetamine/cocaine use in the total study sample (21%) includes high-risk behavior venues, the percentage in these venues (25%) was not statistically greater than the percentages in male work (20%) and community venues (19%). The Young Men's Survey (YMS), a population-based survey of men aged 18-35 years living in low-income areas in five counties in Northern California, reported 14% methamphetamine or cocaine or crack use in the past six months (CDC, 2006). Given the difference in the reported time periods (12 months in the CMESP vs. 6 months in the YMS), comparison of the studies is problematic, but the presence of methamphetamine/cocaine use among low-income male populations in California regardless of race/ethnicity and migrant status is clear. In our survey, the percentage of women reporting methamphetamine/cocaine use was low in community venues (<1%). However, in the high-risk behavior venues, men and women appear to have similar rates of methamphetamine/cocaine use.

The Borges, Medina-Mora, Breslau, and Aguilar-Gaxiola (2007) analysis of the 2001-2002 Mexican National Comorbidity Survey indicates a lower prevalence of methamphetamine/cocaine use among migrants than in our study. Persons with a history of labor migration to the United States had a prevalence of lifetime use (ever) of 10.0% for cocaine and 6.4% for other drugs. Moreover, in this analysis, migrants

had a higher prevalence of lifetime use of cocaine and other drugs as compared with family members of migrants, and other Mexicans. As compared with this population-based survey, the selection of sampling sites based on high concentrations of the target population in our study could have selected for Mexican migrants at a higher risk for methamphetamine/cocaine use than other Mexican migrants. The 1999 California Agricultural Worker Health Survey, where 90% of the sample was born in Mexico, found that 14% (60/416) of farmworkers had ever used methamphetamine, speed, crack, or cocaine (Villarejo, 2008). The lower prevalence in this study may be explained by data from the national treatment admissions in the United States and in Mexico suggesting that in 1999 the trend of smoking methamphetamine and crack cocaine was just starting to rise in the border states and had doubled by 2003 (Maxwell et al., 2006).

Younger age and having multiple sexual partners were associated with methamphetamine/cocaine use in all three venue types in this sample of Mexican migrant men. This finding is similar to other studies of methamphetamine use among heterosexuals (CDC, 2006; Molitor et al., 1998; Zule et al., 2007). Higher acculturation has previously been shown to be associated with illicit drug use among Mexican immigrants (Vega et al., 1998), similar to the association with methamphetamine/cocaine use found in our study. Previous studies of Mexican migrants have also reported the common practice of having sex with sex workers, where a network of men may be linked by one or more female sex workers, which consequently generates the potential for multiple infections at one site (Organista & Organista, 1997; Painter, 2008). In our study, methamphetamine/cocaine use was significantly associated with sex with sex workers in our univariate analysis but not in our multivariate analysis, while controlling for number of partners. This may be due to migrant men reporting sex workers as simply sexual partners, given the ambiguity in classifying a friend who performs sex work, as reported by field staff. Additionally, depressive symptoms and alcohol use were associated with methamphetamine/cocaine use in our sample. Depression has been shown to be a common comorbidity among persons with drug and alcohol dependence (Regier et al., 1990). Among cocaine and methamphetamine users, depression has also been associated with higher levels of impulsivity in sexual behavior (Semple et al., 2005).

In the high-risk behavior venues, our results are consistent with previous studies finding an association between STIs, including HIV, and methamphetamine/cocaine use among MSM and heterosexual men (CDC, 2006; Mansergh et al., 2006). Cocaine use and, in particular, crack cocaine, has been strongly associated with HIV high-risk behaviors, sex work, and STIs in various populations in the United States (Compton et al., 1995) and also among Latino immigrants (Paz-Bailey, Teran, Levine, & Markowitz, 2004). In our study, the combination of these factors adds up to a risk profile for Mexican migrant men that is similar to other young men living in California that struggle with poverty. However, as compared with U.S.-born populations in California, Mexican migrants and immigrants are less likely to have regular sources of health care and insurance that contribute to delayed testing and late HIV presentation.

Our findings underscore the importance of targeting the three types of venues for prevention interventions, not only traditional high-risk venues. Moreover, the profiles of the three different venues in our study provide distinct contexts for prevention opportunities. In the male work venues, sex workers, alcohol, and drugs were frequently available to men that primarily attended or lived at these sites for employment purposes, not leisure. Most of these men were separated, even if temporarily, from female partners and families. Therefore, interventions should include

focus on resiliency factors in the face of separation from partners and families and the pervasive offers to engage in high-risk behaviors. In the community venues, especially through adult schools, churches, and community groups, prevention programs can address experimenting with and addiction to methamphetamine/cocaine, alcohol bingeing, and harm reduction services. Most of the HIV and STIs were found in the high-risk behavior venues, where mixing of migrant and nonmigrant sexual networks was visually evident. The majority of the bars and clubs were completely devoid of any prevention messages or interventions. Therefore, we recommend peer-driven interventions promoting the use of condoms, drug and alcohol prevention and harm reduction, and also having condoms available at the high-risk behavior sites. For all three venue types, given the transient nature of the population, peer-driven prevention interventions that can continue wherever the migrants relocate may yield significant impact on knowledge, awareness, and behavior change or avoidance. Lastly, our study highlights the need to target the populations at Mexican migrant sites with alcohol and drug-related education and prevention interventions, harm reduction services, testing and treatment for STIs and HIV, mental health services, and other comprehensive care and prevention services.

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