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IMPACT OF A COMMUNITY POPULAR OPINION LEADER INTERVENTION AMONG AFRICAN AMERICAN ADULTS IN A SOUTHEASTERN UNITED STATES COMMUNITY

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Abstract

We examine the impact of an adapted community popular opinion leader (C-POL) intervention targeting alcohol-using social networks in Southeast Louisiana. A pre-post C-POL was conducted between October 2009 and April 2013, targeting alcohol users. A total of 65 popular opinion leaders were recruited, trained, and deployed into their social networks to diffuse intervention messages. Anonymous community surveys conducted within the venues among 99 male and female participants at baseline and 197 at 6 months to 1 year later revealed significant behavioral and knowledge changes. Average sexual risk score based on 7 sexual risk items declined from 15.3 to 11.9 ($p < 0.001$); the number of vaginal and anal sex partners in the last year decreased from 11.3 to 7.7 and 3.9 to 2.3, respectively ($p < 0.01$); and HIV knowledge score (based on % correct) increased from 67.2 to 76.8% ($p < 0.001$). Findings add to the evidence base surrounding peer interventions.

The states in the Southern United States are consistently ranked lower on numerous indicators of adverse health outcomes including diabetes, obesity, heart disease and sexually transmitted infections such as human immunodeficiency virus (HI ; Kaiser Family Foundation, 2011). Southern states also rank lower on socio-demographic factors related to adverse health outcomes such as poverty, access to healthcare, and unemployment (Bishaw, 2012; Kaiser Family Foundation, 2011). It may not be surprising then that 90% of counties that experienced the largest increases in incidence rates of AIDS were located in the Southeastern U.S. and some rural regions, including the Mississippi Delta and other parts of the Southeast U.S., are now approaching national HIV prevalence rates (Hall, Li, &

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McKenna, 2005). Communities of color in the Southern U.S., particularly African American communities, are disproportionally affected by the HIV epidemic (Kogan et al., 2010; Williams, Neighbors, & Jackson, 2008). In addition to being disproportionately affected by HIV, the rural South is also experiencing surges of increased alcohol and drug abuse (Van Gundy, University of New Hampshire, & Carsey, 2006), risk behaviors often linked to unprotected sexual practices and potential HIV infection (Chitwood, Comerford, Kitner, Palacios, & Sanchez, 2001; Molitor, Truax, Ruiz, & Sun, 1998; Sterk, 2000; Woody et al., 2003). There remains a distinct need for effective HIV prevention programs in rural and semi-rural areas, particularly in the Southern U.S., if we are to keep the epidemic from following the same trajectory as seen in urban U.S. centers.

One promising prevention model for rural communities is the Community Popular Opinion Leader (C-POL) intervention model, which uses social networks and opinion leaders of social networks to fuel prevention messages and behavior change at a population level (Kelly et al., 1992; National Institute of Mental Health [NIMH] & Collaborative HIV/STD Prevention Trial Group, 2007). It is efficient, cost-effective and adaptable, emphasizes community empowerment, and can reach many people in a short amount of time. The C-POL seeks to increase safer-sex and other HIV-related norms among members of a well-defined target population as its theoretical base (Kelly et al., 1991, 1992), using the diffusion of innovation theory (Rogers, 1983). Opinion leaders are recruited and trained to have risk reduction conversations with their friends to increase healthy behavioral norms. Several adaptations of the C-POL intervention have been employed with various populations such as African American MSM (Jones et al., 2008), young Latino migrant MSM (Somerville, Diaz, Davis, Coleman, & Taveras, 2006), male sex workers (Miller, Klotz, & Eckholdt, 1998), and women (Sikkema et al., 2000). To our knowledge, it has not been adapted in a rural or semirural setting among alcohol using social networks.

The purpose of the present study was to examine the impact of a C-POL intervention targeting alcohol-using social networks in the aforementioned rural area of Louisiana. The intervention focused on HIV risk behaviors as well as alcohol use risks. The intervention took place in the rural and semi-rural region located directly between the New Orleans and Baton Rouge Metropolitan areas; two cities ranked respectively as the second and third highest metropolitan areas in AIDS case rates during 2011 (Centers for Disease Control and Prevention [CDC], 2013).

METHODS

STUDY DESIGN

The study design consisted of two phases—a pre-intervention phase (Phase 1) and an intervention phase (Phase 2). During Phase 1, ethnographic research was conducted to inform and adapt the C-POL intervention to the target population and to obtain baseline/pre-intervention data on target community members. Phase 2 of the study consisted of the implementation and evaluation of the community-based C-POL intervention. Both Phase 1 and 2 took place in and around Hammond, Louisiana, with a population size of approximately 20,000; 54.1% female, 45.2% Black, and 52.4 White; and an average

household income of $37,429 (Hammond Area Economic and Industrial Development District, 2010).

Phase 1 was conducted from October 2009 to July 2011 and yielded: (1) target alcohol venues and social segments or networks of the target population within these venues, (2) complete hypotheses to be tested during Phase 2, (3) the pre-intervention instrument (which formed the basis for the post-intervention instrument), and (4) the structure and the content of the C-POL training sessions and intervention. Ethnographic methods were employed to understand: the characteristics of C-POLs in alcohol use venues, the social networks, community norms surrounding HIV, and the range and variability of alcohol and sex risk behaviors of venue patrons. In this phase, a protocol was developed, similar to those used in the five-country C-POL prevention trial (NIMH & Collaborative HIV/STD Prevention Trial Group, 2007), in which we established criteria for the selection of alcohol use venues, outlined standard ethnographic methodologies to be used across venues for selection of C-POLs and determined content and format of the intervention, and standardize data collection techniques and tools for data collection.

Phase 2 began in July 2011 and included baseline data collection among individuals within the venues, POL training for the selected POLs, deployment, process data collection, and follow-up data collection among individuals within the same venues but not the same individuals surveyed at baseline. The primary evaluation design was a pre-post design with venue/networks within the venue as the primary unit of analysis. Baseline community data was collected among individuals within each venue as described below, from July 2011,and July 2012, following selection of POLs (POLs were not part of the baseline community survey). Follow-up surveys were then collected among individuals within each venue 3–6 months following POL deployment.

PARTICIPANTS AND DATA COLLECTION

The target population for the C-POL must be a part of a well-defined commnity venue where the population's size can be estimated, and over the life of the program 15% of the target population size found in venues is trained as C-POLs (Kelly, 2004). Techniques utilized to identify target venues and social segments within venues included in-depth field ethnographic observations; focus groups and in-depth interviews of community gatekeepers and key informants as well as with members of the target population; observations made by gatekeepers and informants (e.g., bar tenders, owners, and others knowledgeable of the social networks within target venues); nomination of C-POLs by population members in the same social network; and use of the C-POLs to identify other opinion leaders within their social group. We partnered with a local rural community-based organization—the Southeast Louisiana Area Health Education Center (SELAHEC)—to adapt and implement C-POL to improve HIV risk behavior among alcohol using social networks in Southeast Louisiana. The staff members from SELAHEC responsible for primary recruitment of C-POLs had extensive experience in the area and among the target population.

A total of 65 POLs were recruited from 15 venues, including 35 females and 30 males. The majority of venues were alcohol sales venues (n = 11). However, some of the venues were barbershops and salons but where members of alcohol-using network members frequented

(per field staff and ethnographic observation). Alcohol venues included a mix of small liquor stores or bars (n = 2), medium sized bars/clubs (n = 6), and large clubs (n = 3).

POL training consisted of two 90-minute group sessions, one week apart, led by both staff depending on the C-POLs—female field staff for female POLs and male field staff for male POLs. Field staff were trained by a pharmacist who ran a local pharmacist-delivered HIV prevention education program focused on increasing the knowledge of the relationship between alcohol use and contracting HIV and in reducing risky sexual behaviors, as well as a local community-based organization trained in POL intervention methods. As with the original and adapted C-POLs, in session one the leaders reviewed basic epidemiology of HIV infection, alcohol use and abuse, high-risk behavior and risk reduction techniques, and misconceptions concerning risk for both sexual and substance use behavior and began training to provide effective health promotion and prevention messages. Session two continued training as well as social skill rehearsals or role-play of techniques learned; i.e., initiation conversations, incorporating and delivering intervention content about safe sexual behavior and safe alcohol consumption, and identification of at least one friend within their social network with whom s/he could initiate an endorsement conversation in the next week. Much of session two was role playing and teaching throughout the role playing, (e.g., what was right, what could have been said differently). These real-life conversations were recorded and described with study forms, and field staff had follow-up phone calls with each POL to review the sessions and provide additional feedback and training prior to their discussion with friends.

No more than eight POLs attended any given session and each POL was given an incentive of $30 per session completed. Sessions were held on an ongoing basis as C-POLs were recruited from the target venues. POLs also received $30 for completion of conversations with at least 10 members of their social network and weekly check-in with field staff to determine whether conversations took place and the extent of the conversation. They also received $30 for completing a 6-month follow-up survey. During weekly check-ins by field staff to determine the number and quality of conversations, typically done by phone or text, the POLs also had a chance to obtain additional feedback and training for any situations that may have arisen.

The C-POLs were encouraged to discuss conversation starters with their peers and to urge those contacted in their social networks to also facilitate educational information sharing and conversation building, behavior change intentions, attitudes, and norms. Reunion parties or booster sessions were held monthly to bring C-POLs back together, to commend them for their efforts and to offer any feedback. Taped recordings of C-POL conversations during the training sessions also aided in process evaluation of the training and delivery. Furthermore, records of the amount of educational material distributed at all venues and the presence of marketing material on a weekly basis during the intervention period was recorded.

Process data included evaluation of key implementation tasks and activities, and it was collected and analyzed continuously throughout the study. Furthermore, brief surveys were given to each C-POL 6 months later in order to determine their own change in knowledge,

attitudes, and perceptions regarding HIV/AIDS (including transmission, testing), and the link with alcohol and other drug use.

Prior to POL deployment, baseline surveys were conducted among community members within each venue. To be eligible to participate individuals had to be 18 years of age or older, reside in the study community, and be proficient in English. Eligible respondents provided informed consent verbally. Interviews were conducted anonymously and administered in a private and quiet location (typically outdoors), using a face-to-face format. While participants may have consumed alcohol prior to the survey, trained field staff who have conducted extensive ethnographic fiel work in each venue and who were trained in recognizing signs of intoxication, administered a Breathalyzer prior to interviews. Those with levels above 0.08 were excluded. Field staff generally began the evening recruitment early, prior to many patrons and potential interviewees consuming multiple drinks, and did not approach participants who, to their knowledge, had consumed more than one alcoholic beverage. A total of 99 African American community respondents were included in the baseline sample. Each respondent was given a $5 gas card for his/her time.

Follow-up survey data was also collected among community members within each venue 3–6 months following POL deployment duration. Survey procedures were the same as those in the baseline interviews, with participants recruited from target venues where C-POLs were identified. Those interviewed at the 6-month folow up did not necessarily have to be the same people interviewed at baseline and, in fact, only three individuals indicated they had taken the survey before (at baseline).

Both baseline and follow-up interviews lasted approximately 20–30 minutes and were conducted at various times of day (i.e., afternoon, evening, and late evening) and days of the week (i.e., weekdays and weekends). The overall response rate across venues was 40%, and varied by venue likely due to venue size which included both large clubs and bars but also small liquor stores where networks congregated. Respondents did not differ from nonrespondents based on age and sex. Responses were recorded by trained interviewers using handheld computers equipped with handheld assisted personal interview (HAPI) software (Nova Research, Bethesda, MD); however, participants were given the opportunity to complete a self-administered version or to complete sensitive data sections on their own, in the presence of the interviewer but only for any clarifications during survey completion. Data were encrypted, transferred to the main study site at Tulane University, and inaccessible until they were uploaded into the warehouse manager program.

MEASURES

Demographics and Additional Covariates—The questionnaire assessed basic demographics, including information about gender, age at interview, education, income, employment, and current relationship status. Participants were asked to report the highest grade they completed, and education was then categorized as high school or less or more than high school: college, vocational school, or military service. Relationship categories were condensed to single, separated/divorced/widowed, married or living with a partner, or in a relationship but not living with a partner.

HIV-Related Sexual Risk Taking—Participants provided information about the number of sex partners in the previous year as well as the total number of vaginal and anal sex partners, and frequency of condom use for vaginal and anal intercourse, rated on a scale of 04 (0 = never, 1 = rarely, 2 = sometimes, 3 = almost always, and 4 = always). Respondents also reported on risky sexual activity, including having sex while high or with a partner who is high, purchasing sex, exchanging sex for drugs or money, having sex with men who have sex with other men, having multiple sex partners at a time, and having sexual contact with intravenous drug users. The frequency with which respondents engage in each of these behaviors was rated on a scale of 0 = never to 4 = always. Participants reported on their sexual health history, including instances of past HIV testing, current HIV status, and whether they had ever had a sexually transmitted infection (STI), as well as whether they ask their regular and casual partners about their HIV status. HIV-related knowledge was indexed using responses to seven true-false questions (e.g., “You can tell from looking at a person if they have the HIV virus”; “Cleaning a syringe with bleach protects you from becoming infected”; and “A negative test for HIV means you do not have HIV infection”). Respondents were also asked about how alcohol use influenced their sexual activity, including whether alcohol makes sex more pleasurable, increases partner selectivity, or influences condom use, as well as the frequency of alcohol use before and during sex.

A composite rating of HIV-related sexual risk behaviors was derived by summing responses to seven items assessing known risk factors for infection, including: having sex while high or with a partner who was high, purchasing sex, exchanging sex for drugs or money, having sex with men who have sex with other men, having multiple sex partners at a time, and having sexual contact with intravenous drug users. The frequency with which respondents engage in each of these behaviors was rated on a scale of 0 = never to 4 = always, yielding total risk scores of 0 to 28. A secondary composite rating of HIV-related sexual risk included all the variables in the prior scale, in addition to frequency of condom use during vaginal and anal sex (rated on a scale of 0 = never to 4 = always), and number of vaginal and anal sex partners, categorized by quintile (0 = lowest quintile to 4 = highest quintile), yielding total risk scores ranging from 0 to 44. Overall HIV knowledge was considered as a combined measure representing the total number of the seven HIV knowledge questions answered correctly, resulting in possible scores of 0 to 7. A pooled measure of alcohol-related sexual risk behaviors included variables associated with alcohol-related influences on sexual behavior (alcohol makes sex more pleasurable, alcohol increases partner selectivity, and alcohol influences condom use), scored as 0 (dcrease in risky behavior), 1 (no influence on behavior), or 2 (increases risky behavior), and frequency of alcohol use before and during sex, scored as 0 (never/rarely), 1 (sometimes), or 2 (always/almost always). Total possible scores on this measure ranged from 0 to 10. Thus, for the HIV-related sexual risk scales and the alcohol-related sexual risk scale, higher scores indicated increased risky behavior, while a higher score on the HIV knowledge scale indicated an increased level of HIV-related knowledge.

STATISTICAL ANALYSES

Demographics were compared between baseline and follow-up populations to evaluate whether the populations differed on potentially important characteristics, using chi-square

for categorical variables and t-tests of continuous measures. Mean scores on the composite risk scales developed (sex risk scale 1, sex risk scale 2, HIV knowledge, and alcohol-related sexual risk) were compared between baseline and follow-up time-points using *t*-tests. A number of potentially modifiable HI -related risk behaviors were also compared between baseline and follow-up time-points, including: condom use during vaginal and anal sex, number of sex partners in the past year, number of vaginal and anal sex partners, alcohol use before and during sex, asking steady and casual partners about their HIV status, number of times tested for HIV, and ever having received an HIV test, using *t*-tests for continuous measures and chi-square for categorical variables.

Following this initial analysis, outcome measures that significantly differed at $p < 0.05$ were evaluated using generalized linear models for continuous outcomes and logistic regression for categorical outcomes to determine any differences in risk behaviors from baseline to follow-up, controlling for significant differences in the baseline and follow-up populations. Generalized Estimating Equations (GEE) were employed to cluster individuals within their venue. All analyses were performed using SAS version 9.3 (Cary, NC).

RESULTS

The demographic comparison between the baseline and follow-up populations is presented in Table 1. As compared to the follow-up population, baseline participants were more likely to be female (56.0% vs. 41.1%, $p = 0.03$), and were more likely to report having a high school education or less (57.6% vs. 44.7%, $p = 0.04$). Participants at baseline were also more likely to be single (61.7% vs. 50.3%) or separated, divorced, or widowed (13.8% vs. 9.1%), and less likely to be married or living with a partner (11.7% vs. 27.4%, $p = 0.02$). No difference in age of the participants was noted between the time-points (mean 28.4 years vs. 28.1 years, $p = 0.80$).

Unadjusted estimates of differences in sexual risk scales and behaviors are presented in Table 2. Participants reported significantly more risky HIV-related sexual behaviors during baseline as compared to follow-up when all sexual-risk behaviors were considered (mean Sexual Risk Scale score 15.3 vs. 11.9, $p = 0.0002$). Participants also had lower levels of HIV knowledge (4.9 vs. 5.4, $p = 0.001$) and increased levels of alcohol-related sexual risk (7.2 vs. 5.6, $p < 0.0001$) at baseline compared to follow-up. Baseline participants also reported a higher number of vaginal and anal sex partners than follow-up participants (11.3 vs. 7.7, $p = 0.01$ and 3.9 vs. 2.3, $p = 0.009$, respectively). Additionally, as compared to follow-up participants, participants at baseline were less likely to report never or rarely using alcohol during sex (62.6% vs. 81.6%), and were more likely to report sometimes or always using alcohol during sex (31.3% vs. 15.8% and 6.1% vs. 2.6%, respectively, $p = 0.002$). However, participants at baseline were more likely to report asking a casual partner about their HIV status than those at follow-up (52.0% vs. 42.4%, $p < 0.0001$). No significant differences were noted for the other outcomes considered

Contrasts in risk scales and risk behaviors at follow-up compared to baseline, adjusted for previously identified demographic differences between the time-points (gender, education, and relationship status) are presented in Table 3. On average, scores on the Sexual Risk Sale

were 2.5 points lower at follow-up compared to baseline (95% CI [−4.12, −0.89]), controlling for gender, education level, and relationship status. Scores for alcohol-related sex risk also decreased by an average of 1.43 at follow-up, after controlling for demographic differences (95% CI [−2.17, −0.69]). At follow-up, participants averaged 5.94 fewer vaginal sex partners (95% CI [−8.86, −3.02]) and 2.21 fewer anal sex partners (95% CI [−3.49, −0.92]) as compared to baseline, following adjustment for gender, education, and relationship status. Compared to baseline, follow-up participants were 2.39 times more likely to report never or rarely using alcohol during sex (95% CI [1.21, 4.70]), but were 0.46 times as likely to report asking their casual partner about their HIV status [0.25, 0.82], controlling for demographic differences in the populations. After adjusting for demographic differences, level of HIV knowledge did not differ between baseline and follow-up.

DISCUSSION

The purpose of the present study was to examine the impact of a C-POL intervention targeting alcohol-using social networks in the aforementioned region of Louisiana. The intervention focused on HIV risk behaviors as well as alcohol use risks. Findings indicate a potential positive impact of the intervention among community members, with the sample as a whole reporting significant reductions in: sexual risk behavior, the number of vaginal and anal sex partners, and alcohol-related sexual risk. Significant increases in HIV-knowledge were observed, as well as decreases in communication with casual partners about HIV status. The later was not what we hypothesized, although perhaps with greater knowledge about HIV, some were less inclined to bring it up with their casual partners over time and more inclined to protect themselves.

Results add to the literature on the use of network interventions to diffuse HIV risk-reduction messages (Kelly, 1994; Latkin, Mandell, Vlahov, Oziemkowska, & Celentano, 1996; Neaigus, 1998). While similar to peer-based education programs, the C-POL theory of community influence is unique and specific in its critical selection of popular opinion leaders from core groups of the community structure, the design of strategic conversational messages to promote HIV awareness, and the ongoing effort to keep C-POLs motivated, engaged, and dedicated to improving their community (Kelly, 2004; Kelly et al., 1992; NIMH & Collaborative HIV/STD Prevention Trial Group, 2007). The attractiveness of intervening in a social context is that fragmentation of transmission networks may result (Potterat et al., 1985; Wohlfeiler & Potterat, 2005).

While there are few studies which employ the C-POL approach to behavior change among rural populations, its effectiveness in the diffusion of safer sex behaviors and positive HIV-related norms has been demonstrated, and across an array of social networks from different populations (Anastario et al., 2013; Jones et al., 2008; Kelly et al., 1992; Li, Guan, Liang, Lin, & Wu, 2013; Miller et al., 1998; Sikkema et al., 2000; Young et al., 2011). A five-country randomized controlled trial of the C-POL, however, demonstrated no differences between intervention and control conditions over time (NIMH & Collaborative HIV/STD Prevention Trial Group, 2010), which the researchers attribute to the intensive screening and additional services received by individuals in both conditions. Many projects have found success regardless of type of population or community setting (rural or urban) due to the

careful tailoring and grassroots approach which are acknowledged to be so critical in designed behavioral interventions (Sikkema et al., 2000)

A central tenet of the C-POL is the identification of social networks through community venues. Locations of social (including sexual and drug using) network formation and sexual mixing, such as bathhouses, sex clubs, and the Internet are important venues in which to conduct interventions and promote HIV testing (Ciesielski et al., 2005; De, Singh, Wong, Yacoub, & Jolly, 2004; McFarlane, Kachur, Klausner, Roland, & Cohen, 2005; Potterat et al., 1985; Woods et al., 2003). Bars or alcohol venues have also been shown to bring together networks that might otherwise appear to be geographically isolated from one another (De et al., 2004; Potterat et al., 1985). In rural areas, identification of high-risk social networks may be dificult. However, we know from multiple sources of HIV/AIDS statistics and reports that minority men and women, especially those in rural communities of the Deep South, are at high risk for HIV infection (CDC, 2008; Reif, Geonnotti, & Whetten, 2006). In the rural region of Louisiana chosen for this intervention, the majority of HIV/AIDS cases are among African American individuals and the number of newly-diagnosed HIV cases has seen a significant increase over time (Louisiana Department of Health and Hospitals, 2008). There is a unique opportunity to continue to adapt and expand the C-POL in this and potentially other rural and semi-rural regions of the state and among some of the most at-risk social networks, increasing empowerment through a strategic approach to a very real problem.

Despite important findings, this study is not without its limitations, including an intervention-only design which prevents determination of true impact, self-reported behavioral measures, and a short follow-up period. While behavior change was assessed by self-report via face-to-face interviews, the types of measures utilized here have been reported as adequate research tools for substance-using populations (Dowling-Guyer et al., 1994; Needle et al., 1995). However, there is always the possibility for information bias to occur. Researchers have also demonstrated that there is both validity and consistency in measures of self-reported substance use and sexual behavior over time among individuals (Adair, Gail Craddock, Miller, & Turner, 1996). The generalizability of the findings may be limited by the restricted geographic and demographic sample, as well as the small sample size. Furthermore, selection bias may have been introduced due to the method of recruitment; however, the likelihood of enrollment at a later date for any venue patrons who refused initially was high. Outreach workers and recruiters (many of whom knew the neighborhoods and local community) made it a point to re-contact all venue patrons. Finally, due to budgetary constraints, we were unable to include and follow a control community.

CONCLUSION

Previous prevention programs have been criticized by respondents and participants as being insensitive to the specific needs of rural communities (Dreisbach & Moyer, 2008). Challenges such as small budgets, lack of reliable public transportation, and limited staff for rural community programs are sometimes overlooked in HIV-prevention programs originally designed for urban populations. C-POL campaigns, however, are relatively low-cost, tailored to the specific needs and health concerns of the community and its population,

and uniquely integrative in their methods of utilizing members of the target community (Kelly, 2004). This cost-effective strategy may be assimilated into the at-risk community to reduce HIV-associated risk behaviors in a way that increases community-efficac, projects feelings of altruism, and enhances neighborhood-ownership of the solutions to local health problems (Kelly, 2004). In the case of rural communities, such changes in neighborhood unity may help to spark domino effects that may change the direction of the environment steering its population toward healthier practices and increased awareness of behaviors associated with poor health outcomes. We must continue to find ways to translate research-based findings and interventions into community programs, but also must be willing to invest resources necessary to alleviate the circumstances that place many individuals at risk for infection with HIV in the first place.

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TABLE 1

Demographic Comparison of Baseline and Follow-Up Time Points

Variable	Baseline (*n* = 99)	Follow-up (*n* = 197)	*p*-value*
Age [mean (min, max)]	28.4 (19, 46)	28.1 (18, 59)	0.80
Gender (%)			0.03
Male	44.0	58.9	
Female	56.0	41.1	
Education level (%)			0.04
High school or less	57.6	44.7	
College/vocational/military	42.4	55.3	
Relationship status (%)			0.02
Single	61.7	50.3	
Separated/divorced/widowed	13.8	9.1	
Married/common law/living with	11.7	27.4	
In relationship, living apart	12.8	13.2	

Note.

* *p*-value based on t-test for continuous measures and chi-square for categorical measures; all values are based on nonmissing data, all items had < 10% missing.

TABLE 2

Unadjusted Differences in Risk Scales and Behaviors From Baseline to Follow-Up

Sexual risk behavior	Baseline	Follow-up	*p*-value*
	Mean (Min, Max)	Mean (Min, Max)	
Sexual Risk Scale	15.3 (4, 25)	11.9 (2, 25)	0.0002
HIV Knowledge Scale	4.9 (2, 7)	5.4 (3, 6)	0.0001
Alcohol-Related Sexual Risk Scale	7.2 (3, 10)	5.6 (1, 10)	< 0.0001
Number of sex partners, last year	10.3 (0, 70)	8.6 (0, 100)	0.37
Number of vaginal sex partners	11.3 (0, 70)	7.7 (0, 50)	0.01
Number of anal sex partners	3.9 (0, 45)	2.3 (0, 11)	0.009
Number of times tested for HIV	1.8 (0, 10)	1.6 (0, 11)	0.44
	(%)	(%)	
Condom use during vaginal sex			0.59
Always/almost always	37.8	44.0	
Sometimes	30.5	29.0	
Rarely/never	31.7	26.9	
Condom use during anal sex			0.10
Always/almost always	31.3	45.1	
Sometimes	28.1	27.8	
Rarely/never	40.6	27.1	
Alcohol before sex			0.61
Never/rarely	33.3	39.6	
Sometimes	56.0	50.8	
Always/almost always	10.7	9.6	
Alcohol during sex			0.002
Never/rarely	62.6	81.6	
Sometimes	31.3	15.8	
Always/almost always	6.1	2.6	
Ask steady partner about HIV status			0.12
Yes	52.0	42.4	
No	48.0	57.6	
Ask casual partner about HIV status			< 0.0001
Yes	53.1	29.4	
No	46.9	70.6	
Ever tested for HIV			0.29
Yes	70.5	76.7	
No	29.5	23.3	

Note.

* *p*-value based on t-test for continuous measures and chi-square for categorical measures; all values are based on nonmissing data, all items had < 10% missing.

TABLE 3

Adjusted Differences in Risk Scales and Behaviors at Follow-Up Compared to Baseline

Scale	**aβ**	**95% CI**	***p*-value**
Sexual Risk Scale 2 (*n* = 173)	−2.50	−4.12, −0.89	0.003
HIV Knowledge Scale (*n* = 265)	0.13	−0.10, 0.36	0.26
Alcohol-Related Sexual Risk Scale (*n* = 217)	−1.43	−2.17, −0.69	0.0002
Number of vaginal sex partners (*n* = 267)	−5.94	−8.86, −3.02	< 0.0001
Number of anal sex partners (*n* = 269)	−2.21	−3.49, −0.92	0.0008
Behavior	**AOR**	95% CI	***p*-value**
Rarely/never using alcohol during sex (*n* = 271)			0.01
Baseline	Reference	—	
Follow-up	2.39	1.21, 4.70	
Ask casual partner about HIV status (*n* = 266)			0.009
Baseline	Reference	—	
Follow-up	0.46	0.25, 0.82	

Note. Models adjusted for: gender, education level, and relationship status; values based on generalized linear modeling for continuous outcomes and logistic regression for categorical outcomes.