

Predictors of High-Risk Sexual Behavior Among People Living With HIV/AIDS

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Several recent studies have found that a significant number of HIV+ individuals are engaging in unsafe sexual practices. This study was conducted to explore the correlates of high-risk sex among a sample of 360 HIV+ adults recruited from outpatient medical care facilities. The study showed that 34% of all respondents reported at least 1 occasion of unprotected anal or vaginal intercourse in the previous 6 months. Consistent with other research, there were multiple correlates of high-risk sex: lower income, an elevated number of sexual partners, negative attitudes about condoms, lack of risk avoidance strategies, and recreational and intravenous drug use prior to sex. However, contrary to other research, no association was found between low self-esteem, depression/anxiety, or the use of alcohol with unprotected sex. Unlike most studies that have focused exclusively on gay and bisexual men, this study included an additional sample of women and poorer, ethnically diverse individuals. Although there were some gender and ethnic differences, neither gender nor ethnicity moderated any of the significant relationships between psychosocial variables and sexual behavior, suggesting the commonality of issues confronting people living with HIV/AIDS in maintaining safer sex practices. Implications for designing interventions for HIV+ persons are discussed.

KEY WORDS: AIDS; HIV+ men and women; risk behaviors; intervention; behavior change.

INTRODUCTION

Because of the introduction of highly effective combination drug therapies, individuals with HIV/AIDS are living longer and healthier lives. This increased life span has also resulted in a prolongation of sexual activity. Several recent studies have found that a significant number of HIV-positive (HIV+) individuals are engaging in unsafe sexual practices (i.e., unprotected vaginal and anal intercourse; Heckman *et al.*, 1998; Kalichman, 1999; Kalichman *et al.*, 1997b). For effective intervention and prevention development, identifying psychosocial variables that predict reductions in HIV infection or AIDS development is

paramount. However, predicting sexual risk-taking behavior patterns can be increasingly complicated (Cochran *et al.*, 1995).

Although most HIV-related behavioral research has focused on sexual risk-taking behaviors of populations at-risk for HIV infection, such as gay/bisexual men and IV drug users (see, e.g., Ekstrand and Coates, 1990; Kalichman *et al.*, 1996a; Kegeles and Hart, 1998; Kelly *et al.*, 1991; McKusick *et al.*, 1990; Ostrow *et al.*, 1997; Peterson *et al.*, 1992; Valdiserri *et al.*, 1989), several recent studies have specifically examined the sexual risk-taking behavior of persons with HIV. Kalichman (1999) investigated a sample of 203 HIV+ men and 129 HIV+ women and found that 42% of men and women reported at least one occasion of unprotected anal or vaginal intercourse in the preceding 6 months. Heckman *et al.* (1998) found that 26% of their sample of 277 HIV+ men and women from the state of Wisconsin engaged in high-risk sex in the past 6 months. A study in South Beach, Florida, conducted by Darrow *et al.* (1998) reported that 39.2%

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of HIV+ men reported engaging in unprotected anal intercourse in the previous 6 months. Other estimates of unsafe sexual behavior in HIV+ men include 22–32% of samples in New York and San Francisco (Purcell and Parsons, 1998), 25% in a Switzerland study (Eich-Hochli *et al.*, 1998), 25% in a Pittsburgh study (Robins *et al.*, 1997), 24% in a Minnesota study (Rosser *et al.*, 1999), and 24% in a study of men in Midwestern states (Rompa *et al.*, 1998).

Ostrow *et al.* (1999) compared the incidence of unsafe sex and correlates of unsafe sex between HIV+ and HIV– gay and bisexual men. The HIV+ men were recruited as part of the Chicago Cohort of the Multicenter AIDS Cohort Study; HIV– men were recruited simultaneously as a comparison group. There were no differences in the rates of unprotected anal intercourse between the two groups, nor were there any differences in other demographic, attitudinal (e.g., sexual sensation seeking, preference for unprotected anal sex, and belief in the efficacy of new therapies), or behavioral measures assessed in the survey. Forty-six percent of HIV– men and 48% of HIV+ men engaged in unprotected anal intercourse during the previous 6 months.

The high incidence of unsafe sex among HIV+ individuals suggests the importance of being able to predict when such behavior will occur. The Public Health Model (Lynch, 2000) provides a framework for conceptualizing variables that may be correlated to high-risk sexual behavior among HIV+ persons. This model incorporates both the psychosocial and person-in-environment perspectives and suggests that there is a dynamic interaction between the person with HIV, the disease, and the external environment. This framework indicates that understanding why some HIV+ persons engage in high-risk sexual behavior would require taking into account demographic factors, psychosocial factors, and emotional states. Previous research has identified several predictors of sexual risk-taking behavior of HIV+ individuals within these categories. Demographic predictors include poverty (Darrow *et al.*, 1998; Kalichman *et al.*, 1996b, 1997a), being younger (Heckman *et al.*, 1998; Robins *et al.*, 1997; Rompa *et al.*, 1998; Rosser *et al.*, 1999), living with a spouse (Heckman *et al.*, 1998; Stall *et al.*, 1990), and having less education (Heckman *et al.*, 1998; Robins *et al.*, 1997). Psychosocial variables include drug and alcohol use (Kalichman *et al.*, 1997a; Kalichman and Rompa, 1995; Purcell and Parsons, 1998; Robins *et al.*, 1994, 1997), having multiple sexual partners (Eich-Hochli *et al.*, 1998; Heckman *et al.*, 1998; Rompa *et al.*, 1998), having less general knowledge on risk transmission (Emmons *et al.*, 1986),

lacking in behavioral skill-based risk-reducing behaviors (Carey and Lewis, 1999; Kalichman *et al.*, 1996b), and having negative condom attitudes (Catania *et al.*, 1989, 1992, 1994; MacDonald *et al.*, 1990; Valdiserri *et al.*, 1989). Emotional states include low self-esteem (Robins *et al.*, 1997; Siegel *et al.*, 1989) and depression (Kelly *et al.*, 1993a; Kennedy *et al.*, 1993; Robins *et al.*, 1997). However, there are some contradictory findings. Kalichman (1999) found that psychological distress was not related to continued sexual risk and reported only a modest association between substance use and unprotected sex. Similarly, De Vroome *et al.* (1998) found that depression was not related to unprotected anal sex, nor was recreational drug use strongly associated with unprotected sex with steady or casual partners. Likewise, Eich-Hochli *et al.* (1998) found no correlation between substance use and sexual risk-taking behavior with regular sexual partners, and Darrow *et al.* (1998) found alcohol and drug use to be unrelated to unsafe sex. Finally, Heckman *et al.* (1998) reported no association between income and unsafe sexual practices.

As the incidences of HIV infection and AIDS continue to rise, it is imperative to better understand the predictors of sexual risk-taking behavior among persons living with HIV in order to develop interventions that would help them maintain long-term safer sex practices. This study was conducted to further explore the correlates of high-risk sex among both HIV+ men and women and to help resolve discrepant findings from previous research. Based on the public health model and the research conducted thus far, it is hypothesized that HIV+ persons who engage in transmission risk practices will show evidence of certain demographic factors such as being younger, having lower income, living with a spouse, and having less education. They will experience various psychosocial challenges such as substance use, multiple sexual partners, limited knowledge of risk transmission, negative attitudes about condoms, and a lack of behavioral skills to avoid infection. They will also exhibit negative emotional states, such as depression and low self-esteem. In addition, other demographic factors were examined, such as gender, ethnicity, sexual orientation, and employment status.

METHODS

Participants and Procedures

Participants included 360 HIV+ adults (292 men and 68 women) receiving outpatient medical care

for HIV/AIDS-related issues from a public agency (a public clinic run by the University Medical Center, $n = 197$) and a private agency (Lambda Health Care, $n = 163$). Close to 75% of all individuals receiving HIV medical care in the Las Vegas Valley access care from these two agencies (Clark County Health District, 1999). Patients entering these clinics between February and May 1999 were asked by the receptionist or medical personnel whether they were interested in participating in a voluntary and confidential study of persons with HIV/AIDS in Clark County, Nevada. Few individuals refused to participate ($n = 12$). Surveys were self-administered unless reading assistance was requested ($n = 4$), and participants were compensated \$10 for their time. Surveys were also available in Spanish, although few actually completed Spanish questionnaires ($n = 7$). Individuals were encouraged to complete the surveys on site while waiting for their medical appointment; however, they were allowed to take surveys home and return them ($n < 10$). No identifying information was collected, allowing for completely anonymous responses. The medical staff tracked only those who completed the surveys to ensure that no individual was recruited more than once.

Measures

The survey instrument was pretested with prevention/intervention workers from a local community-based HIV/AIDS organization and clients receiving services from that agency.

Demographics Factors

Standard demographic information (age, race/ethnicity, gender, income, education, and employment status) was obtained as well as information on sexual orientation and whether they were currently living with a spouse (wife/husband, significant other, partner). Health-related questions included the date first tested positive, the last CD4 count, use of any HIV medications, and whether respondents were experiencing any symptoms related to their HIV medication.

Sexual Behavior

Respondents were asked to estimate the number of sexual contacts with men and women during the last 6 months. The 6-month timeframe has been

found to both be broad enough to sample behavior patterns and provide a reliable measure of sexual behavior (Bajos *et al.*, 1991; Catania *et al.*, 1992). Respondents were asked about behaviors with both regular partners (defined as someone with whom there had been a relationship for more than 3 months without excluding relationships with other partners at the same time) and casual partners (defined as any occasional sexual encounter within the last 6 months). The sexual behaviors of interest included insertive and receptive anal intercourse and vaginal sex; therefore, male respondents were asked about male and female partners, whereas female respondents were only asked about male partners. Respondents were also asked whether they disclosed their own HIV status and knew the HIV status of their partners.

Psychosocial Factors

Risk Avoidance Strategies. The perceived likelihood of utilizing risk-reducing behavior strategies was assessed using an 8-item scale adapted from Kalichman and Rompa (1995). The scale describes interpersonal (e.g., "I will tell my partner I don't want to have unprotected intercourse"), cognitive (e.g., "I will decide ahead of time what I will and will not be willing to do"), and behavioral (e.g., "I will keep condoms near by") strategies for sexual risk avoidance. Participants were instructed to "imagine a situation with a sexual partner where he/she wants to have anal or vaginal intercourse" and indicate how likely they are to use each strategy to avoid having unsafe sex. With a response scale ranging from 1 (*not likely at all*) to 5 (*very likely*), the items were internally consistent ($\alpha = .87$) and averaged into a composite measure.

Risk Knowledge. A 10-item true-false index measuring HIV risk behavior knowledge was used. Sample items included the following statements: "Latex is the best material a condom can be made of for protection against HIV" and "A woman is not likely to get HIV from having sex with a man unless he is bisexual." The index was scored as the number of questions answered correctly.

Condom Attitudes. Six items were used to measure *Negative Attitudes about Condoms* (e.g., "Using condoms is immoral"; $\alpha = .72$). Two items were used to measure *Embarrassment about Condoms* (e.g., "It's embarrassing to buy condoms in a store"), $r = .51$. Two items were used to measure *Benefits from Condoms* (e.g., "Using condoms makes sex last longer"),

$r = .39$. The items were adapted from Catania *et al.* (1994) and had a response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) and were averaged to form composite measures.

Substance Use. Participants estimated how often alcohol, ingested or inhaled recreational drugs [such as marijuana, ecstasy (“X”), ketamine (“special K”), crack cocaine, amyl nitrite (“poppers”) etc.], and intravenous (IV) drugs were used before engaging in vaginal/anal sex during the last 6 months and how often their effects were felt. The response scale ranged from 1 (*never*) to 5 (*every time we had sex*).

Other. Participants were also asked how many different men or women they have had sex with in the past 6 months (*multiple sexual partners* was coded as 4 or less vs. more than 4).

Negative Emotional States

Self-Esteem. The 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to measure self-perceptions on a scale of 1 (*strongly agree*) to 5 (*strongly disagree*). After reverse coding the negatively phrased items, the self-esteem items demonstrated internal consistency ($\alpha = .88$) and were averaged into a composite measure.

Depression/Anxiety. General mental health was measured with a short, 5-item version of the Mental Health Inventory (MHI-5). The MHI-5 is a screening test designed to detect a number of disorders, including major depression, affective disorders generally, and anxiety disorders. Its performance has been evaluated and deemed highly acceptable (Berwick *et al.*, 1991). The items had a rating scale ranging from 0 (*none of the time*) to 5 (*all of the time*) and were recoded, such that higher scores reflect more anxiety or depression. The items (e.g., “How much of the time during the last month have you felt downhearted and blue”) were internally consistent ($\alpha = .81$) and averaged to form a composite measure.

RESULTS

Demographic Information

The recruitment sites yielded a sample that was diverse in both socioeconomic status and ethnicity, as shown in Table I. The public clinic sample included a higher proportion of African Americans and a higher proportion of heterosexual and bisexual individuals, whereas the private clinic had a higher proportion

of Caucasians and homosexual individuals. The public clinic patients had lower income and education, were less likely to be employed full-time or live with a spouse, had a lower CDC count, and were less likely to be using protease inhibitors. Table I also shows that there were gender differences in ethnic breakdown, education, employment status, sexual orientation, years since tested positive, last CDC count, and experiencing symptoms related to HIV medication. Combined, the ethnic background of these participants generally reflected those of the AIDS epidemic in Clark County, Nevada (i.e., 64% Caucasian, 22% African American, 13% Hispanic/Latino, and 2% other), although there was a larger proportion of African American women in this sample (53 vs. 43% in Clark County).

Sexual Behaviors

Men and women consistently disclosed their HIV status to regular partners (95% men, 88% women); however, this was not the case with their casual partners: only 43–44% of the men and 50% of the women reported always informing casual partners about their HIV status. More than one-third (34–40%) never or rarely informed their casual partners. Between 80–91% of the respondents knew the HIV status of their regular partners. On the other hand, 42–44% of males and 60% of females were never or rarely informed about the HIV status of casual partners.

Table II details this information and indicates the percentage of these respondents who engaged in unsafe sex (i.e., reported at least one occasion of unprotected anal or vaginal intercourse in the previous 6 months). It appears that 46–48% of men with HIV– regular partners engaged in unsafe sex, compared to 65–68% of men with HIV+ regular partners. The difference is wider among women with HIV– regular partners (26%) and those with HIV+ partners (69%). Respondents were not asked about the serostatus of casual partners because there could be more than one; however, 58% of men and 33% of women reported engaging in unsafe sex with casual partners.

As a whole, one-third (34%) of all respondents reported at least one occasion of unprotected anal or vaginal intercourse in the previous 6 months. Another 35% reported always using a condom during sexual encounters, and 31% reported not engaging in any sexual encounters. In the following analyses, these three groups will be referred to as the “Unsafe Sex,” “Safer Sex,” and “No Sex” groups, respectively.

Table I. Sociodemographic and Health Characteristics (by Clinic Site and by Gender)

| | Private clinic (n = 163) | | Public clinic (n = 197) | | Men (n = 292) | | Women (n = 68) | |
|---|-----------------------------|------|----------------------------|------|------------------|------|-------------------|------|
| | n | % | n | % | n | % | n | % |
| Gender ^a | | | | | | | | |
| Male | 138 | 84.7 | 154 | 78.2 | | | | |
| Female | 25 | 15.3 | 43 | 21.8 | | | | |
| Race/ethnicity ^{a,b} | | | | | | | | |
| Caucasian | 115 | 70.6 | 79 | 40.1 | 166 | 56.8 | 28 | 41.2 |
| African American | 27 | 16.6 | 88 | 44.7 | 79 | 27.1 | 36 | 52.9 |
| Hispanic/Latino | 16 | 9.8 | 19 | 9.6 | 33 | 11.3 | 2 | 2.9 |
| Other | 5 | 3.1 | 11 | 5.6 | 14 | 4.9 | 2 | 2.9 |
| Education ^{a,b} | | | | | | | | |
| Some high school | 17 | 10.5 | 44 | 22.3 | 45 | 15.5 | 16 | 23.5 |
| High school/trade school | 48 | 29.6 | 84 | 42.6 | 106 | 36.4 | 26 | 38.2 |
| Some college/2 year degree | 63 | 38.9 | 58 | 29.4 | 97 | 33.3 | 24 | 35.3 |
| College degree/post graduate | 34 | 21.0 | 11 | 5.6 | 43 | 14.8 | 2 | 2.9 |
| Income under \$15,000 ^a | 42 | 25.9 | 163 | 83.2 | 163 | 56.0 | 42 | 62.7 |
| Employment status ^{a,b} | | | | | | | | |
| Employed full-time | 91 | 56.2 | 17 | 8.7 | 97 | 33.4 | 11 | 16.4 |
| Employed part-time | 14 | 8.6 | 16 | 8.2 | 22 | 7.6 | 8 | 11.9 |
| Not employed for pay | 38 | 23.5 | 133 | 68.2 | 127 | 43.8 | 44 | 65.7 |
| Retired | 19 | 11.7 | 29 | 14.9 | 44 | 15.2 | 4 | 6.0 |
| Sexual orientation ^{a,b} | | | | | | | | |
| Heterosexual | 46 | 28.4 | 90 | 46.2 | 82 | 28.3 | 54 | 80.6 |
| Bisexual | 17 | 10.5 | 44 | 22.6 | 155 | 53.4 | 5 | 7.5 |
| Homosexual | 99 | 61.1 | 61 | 31.3 | 53 | 18.3 | 8 | 11.9 |
| Currently living with a spouse (wife/husband, significant other, partner) ^a | 74 | 45.4 | 62 | 31.5 | 109 | 37.3 | 27 | 39.7 |
| Last CD4 count ^{a,b} | | | | | | | | |
| Less than 200 | 36 | 22.6 | 57 | 28.9 | 79 | 27.3 | 14 | 20.9 |
| 200–500 | 66 | 41.5 | 82 | 41.6 | 125 | 43.3 | 23 | 34.3 |
| Over 500 | 39 | 24.5 | 27 | 13.7 | 52 | 18.0 | 14 | 20.9 |
| Don't know | 18 | 11.3 | 31 | 15.7 | 33 | 11.4 | 16 | 23.9 |
| Taking prophylactic drugs | 70 | 50.4 | 77 | 52.4 | 128 | 53.6 | 19 | 40.4 |
| Taking protease inhibitors ^a | 131 | 92.3 | 115 | 77.7 | 210 | 86.4 | 36 | 76.6 |
| Taking antiviral drugs | 102 | 72.9 | 116 | 78.9 | 184 | 76.7 | 34 | 72.3 |
| Experiencing symptoms with medication ^b | | | | | | | | |
| None | 42 | 29.6 | 47 | 32.6 | 83 | 34.7 | 6 | 12.8 |
| Low | 40 | 28.2 | 24 | 16.7 | 55 | 23.0 | 9 | 19.1 |
| Moderate | 52 | 36.6 | 66 | 45.8 | 92 | 38.5 | 26 | 55.3 |
| Severe | 8 | 5.6 | 7 | 4.9 | 9 | 3.8 | 6 | 12.8 |
| Age ^c | 40.53 (8.48) | | 40.27 (7.53) | | 40.41 (8.14) | | 40.28 (7.22) | |
| Years since testing HIV positive ^{b,c} | 6.59 (4.42) | | 7.43 (4.51) | | 7.33 (4.57) | | 5.91 (3.90) | |

^aIndicates statistically significant clinic site differences ($p < .05$).

^bIndicates statistically significant gender differences ($p < .05$).

^cValues represent mean (SD).

Demographic Factors and Unsafe Sexual Behavior

Contingency tables analyses were used to compare the Unsafe Sex, Safer Sex, and No Sex groups with respect to seven sociodemographic factors: gender, ethnicity, income, education, living with a spouse, sexual orientation, and recruitment site (public vs. private clinic). There was a significant difference in income: half (52%) of the Safer Sex Group had a household income greater than \$15,000 compared to 36% of

the No Sex Group and 40% of the Unsafe Sex Group, $\chi^2(2) = 7.11, p < .05$. There was also a difference in living with spouse. Almost half or more of the Safer Sex (53%) and Unsafe Sex (47%) groups lived with a spouse compared to only 11% of the No Sex group, $\chi^2(2) = 51.50, p < .001$.

A site difference indicated that although there were fairly equal proportions of Unsafe Sex and Safer Sex group members from the public and private clinics, there was a higher proportion of No Sex Group

Table II. Sexual Behaviors With Regular and Casual Partners

| | Male respondent (<i>N</i> = 292) | Female respondent (<i>N</i> = 68) |
|--|--------------------------------------|---------------------------------------|
| Regular male partner | 102 (34.9%) | 40 (58.8%) |
| Regular male partner knows respondent is HIV+ | 97 (95.1%) | 35 (87.5%) |
| Respondent knows the HIV status of his/her regular male partner | 93 (91.2%) | 32 (80.0%) |
| Regular male partner is HIV– | 46 (49.5%) | 19 (59.4%) |
| Proportion engaging in unsafe sex | 22 (47.8%) | 5 (26.3%) |
| Regular male partner is HIV+ | 46 (49.5%) | 13 (40.6%) |
| Proportion engaging in unsafe sex | 30 (65.2%) | 9 (69.2%) |
| Regular female partner | 57 (19.5%) | |
| Regular female partner knows respondent is HIV+ | 54 (94.7%) | |
| Respondent knows the HIV status of his regular female partner | 48 (84.2%) | |
| Regular female partner is HIV– | 28 (58.3%) | |
| Proportion engaging in unsafe sex | 13 (46.4%) | |
| Regular female partner is HIV+ | 19 (39.6%) | |
| Proportion engaging in unsafe sex | 13 (68.4%) | |
| Casual male partner | 85 (29.1%) | 15 (22.1%) |
| Respondent never/rarely informs casual male partners he/she is HIV+ | 29 (34.1%) | 6 (40.0%) |
| Respondent is never/rarely informed about the HIV status of casual male partners | 36 (42.4%) | 9 (60.0%) |
| Proportion engaging in unsafe sex | 49 (57.6%) | 5 (33.3%) |
| Casual female partner | 36 (12.3%) | |
| Respondent never/rarely informs casual female partners he is HIV+ | 14 (38.9%) | |
| Respondent is never/rarely informed about the HIV status of casual female partners | 16 (44.4%) | |
| Proportion engaging in unsafe sex | 21 (58.3%) | |

members from the public clinic (37%) compared to the private clinic (25%), $\chi^2(2) = 6.07, p < .05$. Further analyses indicated that public clinic patients were less likely to live with a spouse (32% vs. 45%), $\chi^2(2) = 7.36, p < .01$, and this accounts for the lower proportion of sexual activity among public clinic patients.

A one-way analysis of variance (ANOVA) was also used to compare the age across these three groups. The No Sex Group was older ($M = 43.13, SD = 8.58$) than the Safer Sex ($M = 39.87, SD = 7.48$) and Unsafe Sex ($M = 38.41, SD = 7.20$) groups, $F(2) = 11.27, p < .001$.

Psychosocial Factors and Unsafe Sexual Behavior

Multivariate analyses of covariance (MANCOVA) were used to compare the Unsafe Sex, Safer Sex, and No Sex groups with respect to HIV risk behavior knowledge, risk avoidance strategies, condom attitudes, and multiple sexual partners. Because there were group differences in the demographic factors of income, living with a spouse, and age, these variables were entered into the multivariate equation as covariates. The multivariate tests indicated statistical significance of the psychosocial factors, and Table III lists which individual factors were significant.

Subsequent analyses of covariance (ANCOVA) were used to further explore whether gender or

ethnicity was a moderating variable, with income, living with a spouse, and age entered as covariates.

Risk Knowledge

The Unsafe, Safer, and No Sex groups did not differ in risk knowledge. There were also no gender differences, but Whites demonstrated more knowledge ($M = 8.97, SD = 1.51$) than did African Americans ($M = 8.42, SD = 1.40$) with Hispanics falling in between ($M = 8.60, SD = 1.42$), $F(2) = 11.41, p < .01$.

Risk Avoidance Strategies

The Unsafe Sex Group was the least likely to use risk avoidance strategies compared to the Safer Sex and No Sex groups. Although men ($M = 4.01, SD = .94$) were less likely to use risk avoidance strategies compared to women ($M = 4.46, SD = .66$), $F(1) = 14.00, p < .001$, gender did not modify the relationship between sexual behavior and risk avoidance strategies.

Condom Attitudes

The Safer Sex Group had less *negative attitudes toward condoms* compared to the No Sex and

Table III. Psychosocial Predictors of Unsafe Sex

| | Safer sex | | Unsafe sex | | No sex | | p< |
|---|-----------|------|------------|------|--------|------|------|
| | Mean | SD | Mean | SD | Mean | SD | |
| Psychological variables | | | | | | | |
| HIV risk behavior knowledge | 8.91 | 1.43 | 8.74 | 1.36 | 8.56 | 1.63 | |
| Risk avoidance strategies | 4.29 | 0.78 | 3.74 | 0.94 | 4.26 | 0.89 | .001 |
| Negative attitudes about condoms | 2.05 | 0.75 | 2.66 | 0.71 | 2.27 | 0.84 | .001 |
| Embarrassment about condoms | 1.83 | 0.88 | 2.22 | 0.91 | 2.20 | 1.11 | .01 |
| Benefits of condoms | 2.70 | 1.04 | 2.50 | 0.91 | 2.50 | 0.86 | .10 |
| Multiple sexual partners in the past 6 months (>4) ^a | 10 | 10.2 | 29 | 24.6 | | | .001 |
| Negative emotional states | | | | | | | |
| Depression/anxiety | 2.47 | 0.98 | 2.77 | 0.89 | 2.52 | 0.92 | |
| Self-esteem | 3.68 | 0.82 | 3.62 | 0.78 | 3.66 | 0.78 | |
| | Safer sex | | Unsafe sex | | No sex | | p< |
| | n | % | n | % | n | % | |
| Alcohol & drug use prior to sex with regular partner | | | | | | | |
| Alcohol | 29 | 56.9 | 53 | 61.6 | | | |
| Recreational drugs | 16 | 31.4 | 41 | 47.1 | | | |
| IV drugs | 5 | 9.8 | 15 | 17.2 | | | .05 |
| Felt effects of alcohol or drugs | 10 | 35.7 | 25 | 59.5 | | | .05 |
| Alcohol & drug use prior to sex with casual partner | | | | | | | |
| Alcohol | 24 | 70.6 | 45 | 81.8 | | | |
| Recreational drugs | 15 | 44.1 | 37 | 67.3 | | | .05 |
| IV drugs | 4 | 11.8 | 14 | 25.5 | | | .05 |
| Felt effects of alcohol or drugs | 23 | 67.6 | 42 | 76.4 | | | |

^aValues in the first column represent n and those in the second column represent %.

Unsafe Sex groups. There were no gender differences, but Whites ($M = 2.24, SD = .77$) had less negative attitudes toward condoms compared to African Americans ($M = 2.42, SD = .86$) or Hispanics ($M = 2.59, SD = .78$), $F(2) = 3.96, p < .05$.

The Safer Sex Group was also less embarrassed about condoms compared to the No Sex and Unsafe Sex groups. There were no gender differences, but African Americans ($M = 1.96, SD = .81$) and Whites ($M = 2.11, SD = 1.02$) were less embarrassed about condoms compared to Hispanics ($M = 2.41, SD = 1.25$), $F(2) = 5.34, p < .01$.

In terms of condom benefits, the Safer Sex Group had marginally higher agreement than did the other two groups, although there were no differences across gender or ethnicity.

Multiple Sexual Partners

The Unsafe Sex Group was significantly more likely to have more than four partners in the last 6 months compared to the Safer Sex Group. The number of people who had more than four sexual partners was too small to further subdivide by gender and ethnicity.

Use of Alcohol or Drugs

Substance use was common for men and women in this study. Table IV shows that alcohol was the most frequently used, followed by ingested/inhaled recreational drugs. IV drug use was used least frequently. MANCOVA was used to compare the Unsafe Sex and Safer Sex groups with respect to use of alcohol, recreational drugs, and IV drugs, as well as reports of feeling the effects of alcohol or drugs prior to sex. Income, living with a spouse, and age were again entered as covariates, and separate equations were examined for respondents with regular sexual partners and respondents with casual sexual partners.

With regular partners, the multivariate test results were not statistically significant, although the univariate tests indicated that use of IV drugs and reports of feeling the effects of drugs or alcohol were higher in the Unsafe Sex Group compared to the Safer Sex Group. With casual partners, the multivariate test results were marginally significant, with univariate tests indicating that use of recreational and IV drugs were higher in the Unsafe Sex Group. The cell sizes for these analyses were too small to permit further subdivision by gender or ethnicity.

Table IV. Proportion of Respondents Who Used Alcohol or Drugs Before Sex

| | Male respondent (<i>N</i> = 292) | Female respondent (<i>N</i> = 68) |
|---|--------------------------------------|---------------------------------------|
| Regular male partner | | |
| Number who had sex with this type of partner | 71 | 27 |
| Number who drank alcohol before sex | 42 (59.2%) | 20 (74.1%) |
| Number who ingested/inhaled drugs before sex | 33 (46.5%) | 7 (25.9%) |
| Number who injected IV drugs before sex | 9 (12.7%) | 1 (3.7%) |
| Number who felt the effects of alcohol/drugs before sex | 44 (62.0%) | 13 (48.1%) |
| Regular female partner | | |
| Number who had sex with this type of partner | 42 | |
| Number who drank alcohol before sex | 23 (54.8%) | |
| Number who ingested/inhaled drugs before sex | 19 (44.2%) | |
| Number who injected IV drugs before sex | 10 (23.3%) | |
| Number who felt the effects of alcohol/drugs before sex | 22 (51.2%) | |
| Casual male partner | | |
| Number who had sex with this type of partner | 63 | 6 |
| Number who drank alcohol before sex | 50 (79.4%) | 4 (66.7%) |
| Number who ingested/inhaled drugs before sex | 38 (60.3%) | 3 (50.0%) |
| Number who injected IV drugs before sex | 9 (14.3%) | 1 (16.7%) |
| Number who felt the effects of alcohol/drugs before sex | 49 (77.8%) | 2 (33.3%) |
| Casual female partner | | |
| Number who had sex with this type of partner | 31 | |
| Number who drank alcohol before sex | 25 (80.6%) | |
| Number who ingested/inhaled drugs before sex | 19 (61.3%) | |
| Number who injected IV drugs before sex | 10 (32.3%) | |
| Number who felt the effects of alcohol/drugs before sex | 24 (77.4%) | |

Emotional States and Sexual Behavior

MANCOVA was used to compare the Unsafe Sex, Safer Sex, and No Sex groups with respect to self-esteem and depression/anxiety, with income, living with a spouse, and age as covariates. The multivariate tests did not indicate statistical significance, although subsequent ANCOVAs were used to further explore whether gender or ethnicity were moderating variables, with income and age entered as covariates.

Anxiety/Depression

Anxiety/depression levels did not differ between the Sexual Behavior groups. Although women ($M = 2.78$, $SD = 1.84$) were more anxious/depressed than were men ($M = 2.55$, $SD = .91$), $F(1) = 4.44$, $p < .05$, gender did not modify the relationship between sexual behavior and anxiety/depression.

Self-Esteem

Self-esteem did not differ overall between the Sexual Behavior groups. There were also no

significant gender or ethnic differences, nor were the interaction terms significant.

DISCUSSION

The high rate of unprotected anal and vaginal intercourse among people who are HIV+ found in this and other studies present significant challenges for curbing the transmission/reinfection of HIV in the United States. In light of increasing reports of drug-resistant strains of HIV, these findings are particularly troubling. Although this study documented a higher rate of HIV+ men having unsafe sex with their regular HIV+ partners, up to half (40–50%) of all individuals with HIV– regular partners engaged in unsafe sex. Although individuals were not asked about the serostatus of casual partners, over half of all men and a third of all women reported engaging in unsafe sex with casual partners. Individuals were likely to inform their regular partners about their HIV+ status; however, a majority of HIV+ men and women did not consistently inform their casual partners. Kalichman (1999) and Rosser *et al.* (1999) found similar rates of nondisclosure. These findings seem to contradict other studies that found that when HIV+ persons have unsafe sex, it is primarily with other

HIV+ persons and that the rate of HIV+ persons having sex with HIV- partners is low (Marks *et al.*, 1994; Thompson *et al.*, 1996).

Unlike most previous studies that have focused exclusively on HIV+ gay and bisexual men, this study sample included women and poorer, ethnically diverse individuals. Although there were some gender and ethnic differences, neither gender nor ethnicity moderated any of the significant relationships between psychosocial variables and sexual behavior, suggesting the commonality of issues confronting people living with HIV/AIDS in maintaining safer sex practices.

Of the demographic factors explored in this study, only income had the hypothesized relationship with high-risk sexual behavior in the study sample of HIV+ individuals. Because HIV is closely associated with economics in this country, it was not surprising that those who were poor were more likely to engage in sexual risk-taking behavior. The HIV crisis among people in some low income inner city neighborhoods has also been linked with sexual mixing of non-drug-using individuals with crack cocaine and injection drug users that have heightened exposure to HIV and other sexually transmitted diseases (Gould, 1993).

Our hypothesis regarding education did not materialize. No association was found between risky sex and education. Even though age was significantly different across the three groups, the difference lay in the No Sex Group being older; the Safer Sex and Unsafe Sex groups were similar in age. The finding in regards to age could be due to sampling. Our study sample focused on people accessing medical care for HIV. The HIV disease process is usually less advanced with younger persons; thus, many of the HIV+ younger population may not have been accessing medical care and therefore not included in our sample.

The proportion of male respondents engaging in unsafe sex was consistent between regular and casual relationships; however, the proportion of female respondents engaging in unsafe sex was higher among regular partners. Further analysis indicates that this is true mostly for women with regular partners who are HIV+: their proportion of engaging in unsafe sex was over twice that of women with regular HIV- partners or casual partners. Perhaps these women were less concerned about reinfection or perhaps their partners were the ones who infected them in the first place. There was an association between living with a spouse and sexual behavior, but like the age variable, the difference was between the No Sex Group and the Safer and Unsafe Sex groups. Specifically, individuals living

with a spouse were more likely to engage in either safer or unsafe sex whereas individuals not living with a spouse were less likely to engage in sex at all.

Consistent with the public health model and several of our hypotheses, there were multiple psychosocial correlates of high-risk sex among the study sample of HIV+ individuals: lack of risk avoidance strategies, negative attitudes about condoms, an elevated number of sexual partners, and recreational and IV drug use prior to sex. Research has shown that individuals employing interpersonal, cognitive, and behavioral risk avoidance strategies had a significantly lower likelihood of engaging in unsafe sex (Carey and Lewis, 1999; DiClemente and Peterson, 1994; Nimmons and Folkman, 1999; Rosser *et al.*, 1999). These strategies appear effective in keeping sexually active individuals from having unprotected sexual intercourse. An array of more promising and theoretically based skill training, motivational, and interpersonal, intrapersonal, and peer education interventions are emerging to equip HIV+ individuals with the tools to maintain long-term safe sex practices. As pointed out by Darrow *et al.* (1998), current counseling and testing (CT) models employed throughout the United States inform a person that he or she is HIV+ and provide a brief counseling session on how to avoid transmission/reinfection; however, CT models do not seem to be effective in maintaining safe sex behavioral change over a long period of time (see Letters to Editor by Darrow *et al.*, 1999, and Wolitiski and Doll, 1999, for a further debate on this issue). Factors that initially motivate people living with HIV to avoid high-risk sex (such as knowing their HIV status) may not be the same ones that enable them to maintain safer sex practices over the long-term.

Negative attitudes about condoms and embarrassment about condoms were significantly associated with unsafe sexual practices. As found in other research (Carballo-Diequez and Dolezal, 1996; Catania *et al.*, 1991; Peterson *et al.*, 1992), this study found that African Americans and Hispanics had more negative attitudes about condoms. Prevention and intervention programs need to spend more time acknowledging and validating strong rejection of condoms instead of only discussing the technical aspect of using them and negotiating their use (Carballo-Diequez and Dolezal, 1996). Additionally, trainers should work on increasing skills to eroticize the use of condoms during sex (Peterson *et al.*, 1992).

Our study was also consistent with most other research in finding that the more sexual contacts a person has, the higher the likelihood of engaging in

high-risk sex. More sexual opportunities place individuals at more risk for unprotected intercourse. It has been well documented that condom noncompliance and condom breakage is common among individuals engaging in anal and vaginal sexual behavior and stem from a number of natural human failings (Carballo-Diequez and Dolezal, 1996; Eich-Hochi *et al.*, 1998; Peterson *et al.*, 1992; Thompson, 1993). Engaging in anal and vaginal intercourse with multiple partners obviously increases the likelihood of spreading HIV or becoming reinfected.

In contrast to earlier research and our hypothesis on knowledge of risk transmission, we found no relationship regarding risk knowledge and unsafe sex. In earlier years of the HIV epidemic, knowledge about the forms of HIV transmission and risk knowledge in general was strongly associated with behavioral change, particularly with the gay population (Emmons *et al.*, 1986). However, recent studies are suggesting that many individuals who engage in unsafe sex are well informed on how the virus is transmitted. In addition, studies have shown that knowledge about viral load (and its relationship to likelihood of HIV transmission) and knowledge/concerns about reinfection are related more to unsafe sexual behaviors than to general transmission risk knowledge (Kalichman and Ostrow, 1998; Ostrow and Kalichman, 1999). Darrow *et al.* (1998) reported that men in their survey who engaged in risky behavior had received repeated counseling sessions about AIDS and HIV prevention. Three sets of reasons emerged for engaging in risky sex. Some men were rationally calculating their chances of transmitting HIV; others were focused on their own sexual satisfaction; and others were concerned about pleasing their sexual partners and agreed to participate in unsafe sex. Our study sample had high levels of knowledge about HIV/AIDS risk and transmission. Although some groups in America may still be lacking current information on HIV, and although education remains a crucial component of altering behaviors, permanently changing behavior is considerably more complex. Individuals do not make behavioral choices on the basis of information alone. After all, the American public is well educated on the dangers of smoking, eating poorly, driving without seat-belts, drunk driving, and substance abuse—yet significant numbers engage in all these behaviors.

Although drug and alcohol use prior to sex was common in this sample, there was no difference between the Unsafe Sex and Safer Sex groups with respect to use of alcohol before sex. On the other

hand, use of recreational drugs did differ significantly with casual partners, and IV drug use differed significantly with both regular and casual sexual partners. The findings regarding ingested/inhaled and IV drug use are noteworthy, given the possibility of underreporting. These findings support the idea that substance abuse prevention and treatments, as well as the role of substance use during sex in modifying safer sex decision-making, are obvious issues that cannot be separated from effective intervention strategies with this population.

Contrary to some previous research on negative emotional states (Kalichman *et al.*, 1997a; Kelly *et al.*, 1993a; Ostrow *et al.*, 1999; Robins *et al.*, 1997), no association was found between low self-esteem or depression/anxiety and unprotected sex, after controlling for income, age, and living with spouse; however, these findings are consistent with a recent study by Kalichman (1999). The inconsistent findings in previous research may be due to the type of sample in each study. Unlike studies that have reported a relationship between negative mental states and unsafe sex, this study and the study by Kalichman (1999) used samples that did not consist of individuals accessing mental health or prevention services; therefore, they were not seeking specific services to resolve emotional or psychological issues.

In light of this discussion, it is important to consider the limitations of this study. First, data collection methods in this study relied on self-reports of behavior, which are susceptible to response biases. Additionally, the sample was one of convenience recruited only from medical establishments; therefore, it cannot be considered representative of all people living with HIV/AIDS. On the other hand, it is important to note that the nature of this topic necessitates relying on self-reports and convenience samples. Furthermore, this sample was taken from the two medical clinics where close to 75% of all HIV+ individuals in the Las Vegas valley access outpatient care. Our findings need replication with a larger sample of women, and more exploration is needed into the various factors that underlie high-risk sexual behaviors, perhaps through focus groups, personal interviews with HIV+ men and women, or both of these. Despite its limitations, this research offers important insight for intervention efforts on behalf of HIV+ individuals.

SUMMARY/CONCLUSION

It is surprising that in the year 2001 such little research about the sexual risk-taking behaviors of

HIV+ individuals, especially women, has been conducted. Additional intervention efforts that can effectively assist people living with HIV/AIDS in maintaining longer-term safer sex practices are urgently needed. What is clear is that current intervention efforts are not working for a substantial portion of people living with HIV. Many of these efforts have not worked when HIV/AIDS was widely considered a deadly disease, and are likely to be less effective as HIV/AIDS is viewed as a manageable condition.

Further exploration into the preexisting behaviors and coping styles that placed men and women at risk for HIV infection in the first place are needed (Ostrow *et al.*, 1999), as well as a deeper understanding of the situational dynamics that occur in actual, heat-of-the-moment sexual behavior (Eich-Hochli *et al.*, 1998; Gold, 1993). This and other research support the need for more holistic strategies that focus on a variety of interventions including interpersonal, cognitive, and behavioral skill training geared toward the development of risk-reducing behavior strategies. Integrating motivational-based HIV risk reduction interventions with skills-based HIV risk reduction strategies appears promising despite the need for further evaluation (Carey and Lewis, 1999). However, these motivational enhancement approaches must go beyond self-interest-based explanations (Hart *et al.*, 1992) and focus on altruistic concerns and the responsibility to the larger community. Appealing to altruistic reasoning and stressing the importance of those infected not to infect others, in combination with other interventions, may be effective in motivating a segment of the HIV+ community in refraining from risky sexual practices (Nimmons and Folkman, 1999). In addition to this discussion being advanced by intervention workers and treating physicians, peer support and social support groups may be one avenue to effectively reinforce this message. These forums may provide HIV+ individuals an opportunity to engage in safe and open dialogue on the challenges in maintaining long-term safer sex practices, the ability to process information as a group on social norm expectations, and to develop more of an "enlightened self-interest" (Etzioni, 1988) that incorporates an understanding of HIV risk reduction in their own life goals and for the larger community.

HIV transmission is embedded in a host of social, economic, political, and cultural factors, and this must be taken into account in the design and implementation of intervention strategies. Approaches into social and behavioral interventions must also take into account the unique individual characteristics of the

different environments where HIV is spreading. Although more study into the development of effective interventions in a variety of settings and situations is critically needed, the reality is that there may be limits to public health education and intervention.

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