

The Association Between Substance Use, Condom Use And Sexual Risk Among Low-Income Women

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Substance use is frequently assumed to be associated with higher levels of sexual risk-taking and lower levels of condom use. An analysis of 668 black, Hispanic and white low-income women at public health and public assistance facilities in Miami shows that 19% engaged in risky sexual behavior over the preceding six months, 24% in substance use and 31% in condom use. Overall, substance users are nearly four and one-half times more likely to take sexual risks than nonusers, but are about half as likely to have relied on condoms. When the probability of condom use is considered in the context of both substance use and sexual risk, substance users who take sexual risks appear just as likely to rely on condoms as are nonusers who take sexual risks and those who do not (odds of 0.43–0.49). However, substance users who do not take sexual risks are much less likely to use condoms (odds of 0.15). This pattern holds among black, Hispanic and white women, and suggests that perceptions of risk and the risks that partners bring to sexual encounters may be more important determinants of condom use than substance use per se.

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As the incidence of AIDS and of human immunodeficiency virus (HIV) infection among women continues to rise, particularly among minority women,¹ it is important to identify factors that underlie both the rising incidence and the sharp ethnic differentials in infection. A number of studies have suggested that differences in condom use and in factors influencing condom use play a role in both trends.² Increasingly, research has also suggested that both condom use and sexual risk-taking are influenced by substance use.³ Even though many studies have linked sexual risk-taking and condom use to substance use, none have focused specifically on women; perhaps more important, no work has compared black, Hispanic and white women from the same community.

Initial studies of substance use and of sexual risk-taking among heterosexuals focused on the use of crack cocaine and of heroin, but recent work has broadened the range of judgment-inhibiting substances to include both other drugs and alcohol.⁴ With few exceptions, this work has established that substance users are more

likely than nonusers to engage in risky sexual behavior and that they are less likely than nonusers to rely on condoms. In some studies, condom use has been treated as one component of a sexual-risk index, which is then related to substance use. In other research, condom use has been treated as a separate independent variable, which is then related to substance use directly.

In this article, we separate condom use from other forms of sexual risk-taking (such as having multiple partners or exchanging sex for money or drugs). This allows us to consider the separate associations between substance use and sexual risk-taking and between substance use and condom use, as well as the joint effect of substance use and sexual risk-taking on condom use. More important, by separating other sexual risks from condom use in our analysis, we can evaluate condom use in four different contexts: situations combining substance use and risky sex; situations involving substance use but no risky sex; situations involving no substance use but risky sex; and situations combining no substance use and no risky sex.

Most researchers have hypothesized that substance use is associated with higher sexual risk-taking and reduced condom use because it lowers inhibitions and impairs judgment.⁵ If this is the case, we would expect to find the lowest rates of condom use among persons who use substances, irrespective of their sexual risk-

taking. Further, we would expect the highest rates of condom use among persons who are not substance users and who engage in risky sex, since for persons who knowingly engage in risky sex, condom use is rational risk-reduction behavior.

This line of reasoning could lead one to argue that people who do not engage in risky sex, regardless of whether they engaged in substance use, have no need to use condoms. Some who take no sexual risks, however, might use condoms for contraceptive purposes, while some others may do so just to be "safe." From a rational perspective, the latter group should be large: Many women may realize that even though they do not engage in risky sexual practices, the same may not be true of their partners. (Public health messages have contained this warning for some time.)

In short, condom use may be most common among women who do not take sexual risks, and it may be among these women where substance use has its greatest effect on condom use. If this is the case, it could mean that by only comparing condom users and nonusers among those who knowingly engage in risky sex, the impact of substance use is underestimated. At a minimum, the approach used in this article allows us to separate the association between substance use and condom use by reported sexual risk. If it is the judgment-impairing effect of substances that is important, the largest differences in condom use might be expected not among women who know that they engage in risky sex, but rather among those who do not "know" that each sexual encounter is risky.

Sample and Procedures

Data were collected from September 1994 through February 1995 at 21 public health, sexually transmitted disease (STD) and family planning clinics or state economic service centers in Miami, Florida.* (Evidence suggests that Miami is an ideal site for studying substance use and HIV risk

*State economic service centers are multiservice centers for low-income individuals that include public assistance and food stamp offices, as well as public health clinics.

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among women, as the prevalence of each appears to be higher there than in the rest of the country generally.⁶) Data collection occurred during the first six months of a project to test an HIV risk-behavior intervention. A one-year pilot study was conducted prior to the start of data collection to develop the instruments and procedures, as well as to refine the intervention.

The data presented here were collected during project screening. Potential study participants were approached in waiting areas by trained female interviewers of the same ethnicity. Up to four black, Hispanic and white interviewers were assigned to each facility, depending on the ethnic composition of its client population. All respondents were given the choice of having the screening instrument administered in either English or Spanish.

The project was briefly explained in a standardized manner, and women were told that their willingness to participate would not effect their access to services at the facility. Women were then asked if they were interested in learning more about the program and if they were willing to answer a few questions to determine their eligibility to participate. Women were considered eligible if they were aged 18–45, were not pregnant, could understand or speak either English or Spanish, identified themselves as black (or African American), Hispanic or white, and were not knowingly HIV positive.

Potential participants were told that if they were eligible, they would have the chance to earn as much as \$185 for full participation over a one-year period, but that they would receive nothing for answering the screening questions that day. (Interviewers also explained that all information given was legally protected by a Certificate of Confidentiality granted under section 301[d] of the Public Health Service Act.) If women indicated that they were interested, the screening instrument was administered.

Because waiting rooms and reception areas in all of the facilities were relatively small and the periods between when clients signed in and when they met with professional staff were long, it was generally possible for everyone at each site to be approached. The screening instrument was to be administered with as much privacy as the facility environment permitted, but this varied from small offices to corners of waiting rooms and to space in corridors set aside for this purpose. Interviewers were instructed to approach all women visiting each facility other than those who clearly did not meet inclusion

criteria (e.g., obviously pregnant women, and women who clearly were elderly). A trained, experienced field supervisor monitored procedures for the first week of screening at each facility.

Since our objective was to determine women's eligibility to participate in the study, the instrument was short and focused on inclusion or exclusion criteria. Questions included whether respondents had engaged in sexual risks (had had sex with three or more partners, or had exchanged sex for money or drugs) over the preceding six months, or whether they thought their partner had had sex with men or had injected drugs. If a woman responded positively to any of these items, she was classified as a sexual risk-taker.

The women were also asked if they had used marijuana, cocaine or other drugs such as pills or inhalants in the last six months, or had drunk alcohol prior to having sex over the same period. A woman who had used any of these substances was classified as a substance user. Each respondent was also asked if she had used condoms during sexual encounters over the preceding six months. (Ethnicity and age were self-reported.)

The participants represented a sample of women using the public health and public assistance system in Miami who were willing to respond to the initial screening instrument. No data are available for those who, when approached, said that they were not interested in participating, and the items on sexual risks, substance use and condom use were not asked of women who did not meet initial eligibility parameters.

A total of 719 women completed the screening process. Of the 1,511 women approached by interviewers, only 19% did not wish to be screened; another 33% did not meet inclusion criteria. We have no way to determine how many of the 287 who refused to participate in the screening procedure would have met the inclusion criteria. Our analysis is based on responses from 668 women, after the exclusion of 51 women who had completed the screening—23 who reported in-

Table 1. Mean age of women participating in study, and percent-age distribution by selected characteristics, according to race and ethnicity, Miami public health facilities, 1994–1995

Characteristic	All (N=668)	Black (N=182)	Hispanic (N=287)	White (N=199)
Mean age	29.2	28.5	29.7	29.1
Race/ethnicity				
Black	28.7	na	na	na
Hispanic	39.9	na	na	na
White	31.4	na	na	na
Age				
<25	32.6	33.9	33.3	24.4
25–34	41.6	43.9	37.4	44.5
35–44	25.8	22.2	29.3	31.1
Childhood residence				
Miami	35.6	67.5	13.3	36.4
Other U.S. area	28.2	23.6	13.0	53.5
Outside U.S.	36.2	8.9	73.7	10.1
Reported an STD				
Yes	17.0	23.2	9.9	20.7
No	83.0	76.8	90.1	79.3
Total	100.0	100.0	100.0	100.0

Note: na=not applicable.

jection drug use* and 28 who did not respond to items on condom use or age.

Selected characteristics are reported for all women and separately for each ethnic group in Table 1. There is nothing unusual in these data, given the ethnic history and demographic characteristics of Miami. For example, one would expect that a majority of black women had spent their preadult years in Miami, and that a majority of whites had moved to Miami from other areas of the United States; this is clearly reflected in these data. Similarly, it is not surprising that a large majority of Hispanics spent their preadult years abroad.

The women's mean age reflects the age parameters for inclusion in the study, and the ethnic differential is small and non-significant. The number of women who reported having had an STD other than HIV is similar to what has been reported in other studies,⁷ although Hispanics report a rate less than half that of blacks and whites. (A detailed discussion of the sample, the procedures and the sexual risk and substance use behavior of the sample has appeared elsewhere.⁸)

Results

Overall Patterns

Data in Table 2 (page 134) show the percentage of women engaging in sexual risks, substance use and condom use, and the odds of their doing so. Nineteen per-

*Such women were excluded because injection drug use is a *direct* risk for HIV infection, and this study was intended to examine substance-use behavior that represents an *indirect* risk, through sexual behavior.

Table 2. Number and percentage of women reporting being involved in selected behavior, and odds of such behavior, by race and ethnicity

Behavior and race/ethnicity	N	%	Odds
Sexual risk-taking	120	19.0	0.233
Black	42	23.1	0.300
Hispanic	34	13.4	0.155
White	44	22.1	0.284
Substance use	151	23.8	0.313
Black	33	18.1	0.221
Hispanic	57	22.5	0.291
White	61	30.7	0.442
Condom use	197	31.1	0.451
Black	64	35.2	0.542
Hispanic	68	26.9	0.368
White	65	32.7	0.485

cent of the women had engaged in one of the behaviors classified as being sexually risky. (Such a level of risky sexual behavior is somewhat higher than we would expect for women in a representative sample,⁹ but is not unusual for a sample composed of low-income, mostly minority women.¹⁰) Not surprisingly, more women reported having engaged in substance use than in risky sex ($\chi^2=4.45$, $p<.01$), and more women reported using condoms than reported either having risky sex ($\chi^2=24.52$, $p<.001$) or using substances ($\chi^2=8.22$, $p<.001$). Measurement and sampling differences prohibit strict comparisons, but data from a similar sample suggest that the prevalence of such behavior in our sample is in line with what might be expected.¹¹

In short, these data show that there are substance users who do not take sexual risks, and that condom use occurs among both substance users and nonusers, as well as among sexual risk-takers and those who do not take such risks. If substance use reduces judgment and enhances sexual risk-taking, we would expect substance users to be more likely than nonusers to take sexual risks. We would also expect substance users to be less likely than nonusers to rely on condoms.

Data reported in Table 3 assess these hypotheses. The odds that a substance user would take a sexual risk (0.61) are nearly 4.5 times greater than the odds that a nonuser would take such a risk (0.14) ($\chi^2=51.82$, $p<.001$). In addition, the likelihood of condom use is two times greater for nonusers of substances than for substance users ($\chi^2=9.93$, $p<.001$). This suggests that even though substance use reduces the probability of using condoms, substance use has a closer association with sexual risk-taking than with condom use.

This observation gains support from the

data in Table 4, which shows the odds of condom use while simultaneously considering substance use and sexual risk-taking. Overall, the likelihood of condom use does not differ between women who report they are substance users and sexual risk-takers and those who report no substance use but who engage in sexual risk-taking (odds of about 0.43 in both groups). There is, however, a large difference in the odds of condom use between substance users and nonusers who do not take sexual risks: Substance users who report no sexual risks are much less likely to rely on condoms (0.15) than are nonusers who report no sexual risk-taking (0.49) ($\chi^2=15.09$, $p<.001$). Moreover, nonusers of substances who do not engage in sexual risk-taking are just as likely to report condom use as are sexual risk-takers who are or who are not substance users.

Ethnic Differences

There are substantial differences between ethnic groups on each measure. Table 2 shows that Hispanic women are less likely than either black women ($\chi^2=6.82$, $p<.001$) or white women ($\chi^2=5.87$, $p<.001$) to report sexual risk-taking. In contrast, white women are more likely than black women ($\chi^2=8.02$, $p<.001$) or Hispanic women ($\chi^2=3.81$, $p<.01$) to report substance use. Black women, however, are more likely to report condom use than are Hispanic women ($\chi^2=3.44$, $p<.01$), although there is no difference in the prevalence of condom use between blacks and whites and between Hispanics and whites.

There are also differences within ethnic groups in the relative risks of each behavior. Hispanics are more likely to report substance use than they are to engage in sexual risk-taking ($\chi^2=33.50$, $p<.001$); the same is true of whites ($\chi^2=3.74$, $p<.01$), but not of blacks. Finally, while women in all ethnic groups are more likely to report condom use than sexual risk-taking, only black women are significantly more likely to report condom use than substance use ($\chi^2=13.51$, $p<.001$).

While these differences produce sizable ethnic gaps in levels of sexual risk-taking and condom use between substance users and nonusers, within each ethnic group the expected pattern is maintained: Substance users have higher odds of taking sexual risks and lower odds of using condoms than do nonusers (Table 3). The odds of sexual risk-taking are 8.9 times greater among black substance users than among nonusers ($\chi^2=31.98$, $p<.001$), 4.6 times greater among Hispanic substance users ($\chi^2=17.93$, $p<.001$) and 2.6 times

greater among white substance users ($\chi^2=7.75$, $p<.001$). Similarly, the odds of condom use were significantly lower for black ($\chi^2=3.44$, $p<.01$), Hispanic ($\chi^2=6.82$, $p<.001$) and white ($\chi^2=2.46$, $p<.05$) substance users than for nonusers.

Interpretation of these findings is complicated, however, by the large differences between ethnic groups in the prevalence of the behaviors being studied. For example, among substance users, black women are nearly four times more likely than Hispanics ($\chi^2=9.22$, $p<.001$) and are three times more likely than whites ($\chi^2=5.97$, $p<.001$) to be sexual risk-takers. Hispanics, on the other hand, are substantially less likely than whites ($\chi^2=4.79$, $p<.01$) or blacks ($\chi^2=2.92$, $p<.01$) to be condom users. Similarly, among nonusers of substances, whites ($\chi^2=6.81$, $p<.001$) and blacks ($\chi^2=4.61$, $p<.01$) are about two times more likely than Hispanics to take sexual risks, while Hispanics are nearly half as likely as whites ($\chi^2=2.99$, $p<.01$) and blacks ($\chi^2=5.36$, $p<.001$) to use condoms.

When we consider the likelihood of condom use among women who report sexual risks or who report no sexual risk, by whether they are substance users (Table 4), we find the same pattern within each ethnic group as was seen among all women. Among black, Hispanic and white women, there is little difference in condom use between substance users who take sexual risks, nonusers who take sexual risks and nonusers who take no sexual risks; in comparison, substance users who take no sexual risks consistently report the lowest likelihood of condom use.

In Table 4, the only significant differences between columns within ethnic groups all involve substance users who are not sexual risk-takers. For example, among women not taking sexual risks, condom use is substantially less likely among black ($\chi^2=2.74$, $p<.05$), Hispanic ($\chi^2=7.81$, $p<.001$) and white ($\chi^2=4.57$, $p<.01$) substance users than among their counterparts who report no substance use.

Table 3. Among substance users and nonusers, odds of women's sexual risk-taking and condom use, by ethnicity

Behavior and ethnicity	Substance use	
	Yes	No
Sexual risk-taking	0.606	0.139
Black	1.539	0.173
Hispanic	0.390	0.085
White	0.525	0.200
Condom use	0.237	0.481
Black	0.269	0.620
Hispanic	0.118	0.369
White	0.356	0.551

A comparison of differences within columns of Table 4 highlights some important variations in condom use by ethnic group. First, whites who are substance users and who take sexual risks have a much higher likelihood of condom use than do comparable blacks ($\chi^2=1.95, p<.05$) and Hispanics ($\chi^2=2.41, p<.01$). In addition, even within the context of the very low odds of condom use among women who report substance use and no sexual risk-taking, the likelihood of condom use among Hispanic women is particularly low relative to white women ($\chi^2=1.98, p<.05$). Finally, for substance nonusers, the odds of condom use among Hispanic women are substantially lower than those among comparable black ($\chi^2=1.93, p<.05$) and white risk-takers ($\chi^2=1.98, p<.05$); similarly, condom use is significantly less likely among Hispanic women not engaged in sexual risk-taking than among comparable blacks ($\chi^2=4.23, p<.01$) and whites ($\chi^2=2.15, p<.05$).

Discussion

The findings presented in this article must be interpreted with caution, primarily because the data from ethnic breakdowns—particularly those concerning condom use among women of various substance-use and sexual-risk categories—are based on small numbers of respondents. (It is worth bearing in mind, however, that essentially the same pattern was observed within each ethnic group.) In addition, our sample was not designed to be representative of all women; it was drawn from facilities offering services to low-income women in a single large metropolitan setting. While there is increasing evidence that such women are disproportionately affected by HIV and AIDS, the women who participated in the screening had to volunteer to participate, and we cannot estimate the resulting bias. Other factors affecting the interpretation of the results are that the behaviors analyzed are all based on self-reports and that our data do not allow consideration of a number of factors likely to interact with and influence the relationships reported.

Given these constraints, the data suggest that substance use is associated with both sexual risk-taking and condom use, but more closely with risk-taking than with condom use. Substance users were 4.3 times more likely to take sexual risks than were nonusers, while substance users were about half as likely to rely on condoms as were nonusers.

These associations do not establish substance use as the only—or even the pri-

mary—factor responsible for the differences observed, however. There are many contextual and situational factors associated with substance use or nonuse that may be as important as, if not more important than, the use of substances. This is highlighted when we contrast the findings for black women with those for white women. Black women are the only ethnic group to have reported less substance use than risky sex, while white women reported the highest level of substance use but the same level of risky sex as black women. Yet, when we examined the odds of risky sex for substance users and nonusers, there was no difference between black women and white women who were not substance users in the odds of engaging in risky sex; among substance users, however, blacks were three times more likely than whites to engage in risky sex.

In short, even though black women in this sample were less likely than whites to use substances, when black women did use them they were more likely to be engaging in risky sex. It is equally important to examine this issue in the reverse: How is it that white women engage in substance use in greater numbers than black women, yet avoid risky sexual situations more frequently?

Similarly, there is no difference in the likelihood of condom use between black women and white women who reported no substance use, but among substance users, white women are more likely than black women to report condom use (even though substance users of both ethnic groups are markedly less likely to rely on condoms than are nonusers). Again, the impact of substance use appears to be greater for black women than for white women.

The data imply one situational factor that might help to explain these differences, but this factor's role may vary substantially within different contexts. Only among substance users who report sexual risk-taking do whites have a substantially higher chance of using condoms than blacks. If we assume that condom use is a potentially negotiable outcome that is determined in part by the actions of the woman involved, this implies either that, at a minimum, white substance users are more likely to negotiate than are comparable blacks, or that white substance users are able to exercise more power in the negotiating process.

Many other factors need to be considered, but the relatively high rate of condom use among white women who are substance users and who take sexual risks implies that substance use by itself is not

Table 4. Among substance users and non-users, odds of condom use, by sexual risk-taking, according to ethnicity

Sexual behavior and ethnicity	Substance use	
	Yes	No
Sexual risk-taking	0.425	0.432
Black	0.333	0.571
Hispanic	0.231	0.200
White	0.750	0.533
No sexual risk-taking	0.146	0.489
Black	0.182	0.628
Hispanic	0.079	0.386
White	0.212	0.554

the determining factor. In short, any impairment in judgment related to substance use appears to be relative, which suggests that condom use among these women might be influenced by public health campaigns and behavioral interventions.

Perhaps our most important finding is the low rate of condom use among substance users who report no sexual risks. Even though these women report no sexual risk-taking, we find a much higher rate of condom reliance among nonusers who report taking no sexual risks. The fact is that taking no "sexual risks" does not mean having no sexual intercourse, and reported sexual risks are the product of a subtle (but not well understood) mixture of knowledge and perception, not only of one's own behavior but also of the behavior of one's partners. This may be of particular importance for minority women; as has been shown elsewhere,¹² such women are very likely to markedly underestimate the risk behavior of their partners.

What is particularly intriguing among our findings is that for blacks and Hispanics, both the highest and the lowest odds of condom use are seen among women who report no sexual risk-taking, with the factor distinguishing them being that the latter are substance users and the former are nonusers. Thus, it is important to identify not only the contextual factors that influence minority women's misperceptions of their partners, but also the situational and contextual factors associated with substance use and nonuse that may lead some women to perceive themselves as not at risk and to not use condoms as a result.

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