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Abstract

This study investigated associations of substance use, relationship abuse and HIV self-protective behavior with unprotected sex among 290 impoverished women with a non-cohabitating primary partner. Unprotected sex was associated with having a physically or psychologically abusive partner among low-income housed women, and having an abusive partner who also drank to intoxication among women living in shelters. Indicators of HIV self-protective behavior were associated with less frequent unprotected sex among sheltered women, even after accounting for abuse and substance use within the relationship. Results suggest the need for HIV-prevention interventions to address the problems of partner substance use and relationship abuse.

Keywords

- *drug and alcohol use*
- *HIV*
- *impoverished women*
- *unprotected sex*
- *violence*

ACQUIRED immunodeficiency syndrome (AIDS) is currently among the 10 leading causes of death for women of reproductive age in the USA and disproportionately affects poor women of color (Anderson & Smith, 2005). The primary route of infection for women is unprotected heterosexual sex (CDC, 2004). Impoverished women may be particularly vulnerable to HIV infection due to their high rates of drug and alcohol abuse, involvement with substance-using sex partners and exposure to relationship violence and other forms of victimization (Browne & Bassuk, 1997; Nyamathi, Bennett, & Leake, 1995a; Sikkema et al., 1996; Wood, Valdez, Hayashi, & Shen, 1990). Understanding how these factors impact women's ability to protect themselves from HIV is critical to prevention efforts.

Drug and alcohol abuse have not received adequate attention as primary risk factors for women's HIV acquisition through heterosexual sex (Amaro, Raj, Vega, Mangione, & Perez, 2001). Some research has indicated that condom use is less frequent among women who abuse alcohol or drugs (e.g. Wingood & DiClemente, 1998), but the association is complex and not well understood. Substance abuse may contribute to high-risk sexual behavior by reducing behavioral inhibitions and diminishing risk perceptions (Cooper, 2002; Fromme, D'Amico, & Katz, 1999; MacDonald, MacDonald, Zanna, & Fong, 2000). For women, drug and alcohol abuse may increase their risk of HIV infection by undermining their ability to practice safer sex. In general, substance abuse is associated with lower feelings of competence, mastery and control over one's life (Lindenberg et al., 1998). Women who abuse alcohol or drugs, particularly those who are impoverished and living in unstable circumstances, may have difficulty obtaining condoms and having them available when they are going to have sex (Nyamathi, Lewis, Leake, Flaskerud, & Bennett, 1995b). Such women may also feel less efficacious in negotiating condom use with their partner prior to a sexual episode, interrupting the sexual episode to use a condom and refusing unwanted or unsafe sex with their partner. This may be particularly the case for women who rely on their partners for drugs or exchange sex for drugs. For example, sexual exchange or barter is common among female crack users, and their condom use tends to be sporadic or the prerogative of men (Lichtenstein, 1997). It is also possible that women's engagement in unprotected sex is strongly influenced by their partner's drug and alcohol use. Women who engage in substance use often have sexual partners who do the same (Pivnick, Jacobson, Eric, Doll, & Drucker, 1994). Negotiating condom use with a resistant partner who is high or intoxicated may be particularly challenging for women. Among female injection drug users, for example, those who have an injecting partner are nearly three times more likely to engage in unprotected sex compared to women with a partner who does not inject drugs (Nyamathi et al., 1995b). It is important to better understand the relative importance of own versus partner substance use to women's engagement in unprotected sex.

Victimization and relationship abuse have also been identified as important HIV risk factors for women (Maman, Campbell, Sweat, & Gielen, 2000), particularly poor women of color (Wyatt et al., 2002). Much of the literature on relationship abuse and women's risk behavior has focused on whether the partner is physically or sexually abusive; less is known about whether psychological abuse within a relationship, in the absence of physical or sexual violence, is associated with greater risk behavior. In general, women in abusive relationships report greater fear that their partner will respond violently if asked to use a condom (Kalichman, Williams, Cherry, Belcher, & Nachimson, 1998) and this fear appears to be well founded. Compared to non-violent men, those with a history of domestic violence report that they would react more negatively and coercively to a request from their partner to use a condom (Neighbors, O'Leary, & Labouvie, 1999). Thus, it is not surprising that women who experience relationship violence are less likely to practice safe sex than other women (Amaro & Raj, 2000; Wingood & DiClemente, 1998; Wingood, DiClemente, McCree, Harrington, & Davies, 2001). Other factors that likely contribute to abused women's HIV susceptibility include having high-risk sex partners, low perceived control over safe sex and being subjected to coerced sex (Beadnell, Baker, Morrison, & Knox, 2000; Davis, Combs-Lane, & Jackson, 2002; Wingood, et al., 2001). In general, relationship violence can erode women's sense

of coherence and personal control (Ingram, Corning, & Schmidt, 1996; Umberson, Anderson, Glick, & Shapiro, 1998), which may be important determinants of their ability to engage in HIV self-protective behavior.

Among poor women, substance use and violence are interrelated problems. Women who drink heavily and abuse other substances are at higher risk for both physical and sexual victimization (El-Bassel et al., 2003; Gil-Rivas, Fiorentine, & Anglin, 1996; Kalichman et al., 1998; Kantor & Straus, 1989; Wenzel, Koegel, & Gelberg, 2000), and substance use by male partners is associated with the probability and severity of abuse (Fals-Stewart, 2003; Kantor & Straus, 1987, 1989; Testa, Quigley, & Leonard, 2003). Women with histories of physical abuse and victimization are more likely to engage in a host of high-risk behaviors, including substance use (Davis et al., 2002), and those who experience partner violence are more likely to increase their drug use over time (Salomon, Bassuk, & Huntington, 2002). The overlapping problems of substance use and relationship violence leaves open the question of whether they are independently associated with women's unsafe sexual practices.

The present study examines the correlates of unprotected sex in a sample of impoverished women with a non-cohabitating primary male partner. The focus on *primary male partners* is important because most women who acquire HIV are infected by this type of partner (O'Leary, 2000). Our decision to further restrict the sample to women with *non-cohabitating partners* was based on evidence suggesting that the personal and dyadic determinants of unprotected sex differ across partner types (Crosby et al., 2000) and we were particularly interested in identifying the determinants of unprotected sex in less established and/or committed relationships. This study had three main goals, the first of which was to investigate associations of drug and alcohol use by women and their partners, as well as the occurrence of relationship abuse, with the frequency of unprotected sex in the relationship. We expected that higher levels of substance use and relationship abuse would be associated with more frequent unprotected sex in bivariate analyses. However, we were particularly interested in whether women's own substance use, their partner's substance use and relationship abuse would each emerge as significant independent risk factors for unprotected sex in multivariate analyses. Further, we were interested in whether experiencing psychological abuse, in the absence of physical or sexual abuse, is a risk factor for more frequent unprotected sex in its own right. The second goal of the study was to determine whether certain key factors relevant to women's potential to engage in HIV self-protective behavior (asking their partner to use a condom, feelings of condom use self-efficacy, assertiveness in refusing unwanted sex with their partner) were associated with less frequent unprotected sex with their partner after accounting for experiences of abuse and substance use within the relationship. The final goal of the study was to gain a better understanding of how relationship abuse might impact women's engagement in unprotected sex by examining their reasons for not using condoms and whether these reasons differed systematically between women in abusive vs non-abusive relationships.

We investigated these associations in two distinct subgroups of indigent women, those living in temporary homeless shelters and those living in low-income housing. Although the problems of substance abuse, violence and certain high-risk sexual behaviors tend to be more widespread among homeless than low-income housed women (e.g. Wechsberg et al., 2003; Wenzel et al., 2004; Wood et al., 1990), we are not aware of any previous studies that have examined whether there are substantive differences between these subgroups in the impact of substance use and violence on engagement in unprotected sex. If differences are found, it would suggest the need to target intervention efforts to the special needs of these subgroups of women.

Methods

Participants

Participants in the full sample were 898 women who were recruited for a larger study examining experiences of drug use, violence and HIV risk among two subgroups of impoverished women: those living in temporary shelter settings (n = 460) and those living in low-income housing (n = 438). The study area was the central region of Los Angeles County, California (approximately

a 15-mile radius from downtown Los Angeles). Women were eligible for the larger study if they were between the ages of 18 and 55, spoke and understood English as their primary language and did not have significant cognitive impairment. Individual computer-assisted face-to-face structured interviews were conducted by trained female interviewers, with interviews lasting approximately one to one-and-a-half hours. Women were paid $15 for their participation. The research protocol was approved by the institutional review board of RAND and a certificate of confidentiality was obtained from the US Department of Health and Human Services to help protect participants' privacy.

The present analyses are restricted to women who met the following additional criteria for the past six months: (a) they had a male primary (steady) partner with whom they were not currently living; (b) they were not physically separated from their partner for the entire six months; (c) they were not pregnant; (d) they were not refraining from condom use because they were trying to get pregnant; (e) to the best of their knowledge, they were not HIV-positive; and (f) the outcome measure of frequency of unprotected sex was not missing. These restrictions resulted in an analysis sample of 290 women (133 sheltered and 157 housed; see following section for housing status definitions). Characteristics of the sample can be found in Table 1.

Procedure

We define as 'sheltered homeless' those women who were sampled from facilities with a simple majority of homeless residents (persons who would otherwise live in the streets or who sleep in shelters and have no place of their own to go). Although women sampled from these facilities were not initially screened for homelessness on an individual basis, 50 percent of them indicated that they currently did not have a regular place to stay (e.g. own house, apartment or room, or the home of a family member or friend) and 92

Table 1. Description of housed and sheltered women (weighted analysis)

Variable	*Housed (n = 157)* *% or Mean*	*Sheltered (n = 133)* *% or Mean*
Days of unprotected sex in a typical month	*M* = 6.09 (SD = 8.02)	*M* = 7.30 (SD = 8.08)
Age (range = 18–55)	*M* = 31.46 (SD = 9.64)	*M* = 33.97 (SD = 9.49)
Years of education	*M* = 12.44 (SD = 1.41)	*M* = 11.90 (SD = 2.06)
African American	82	57
Had multiple partners	19	38
Drug use by respondent:		
None	86	65
Marijuana, sedatives, analgesics only	13	9
Any hard drug use	<1	26
Drug use by primary partner:		
None	73	65
Marijuana, sedatives, analgesics only	24	11
Any hard drug use	3	25
Drinking to intoxication by respondent:		
None	64	71
Yes, but no probable dependence	34	13
Probable dependence in past year	2	16
Drinking to intoxication by partner	32	35
Relationship abuse:		
No psychological, physical or sexual	57	44
Psychological only	37	35
Any physical or sexual	6	21
Ever asked partner to use condom	65	50
Assertiveness in refusing sex (range = 1–5)	*M* = 4.39 (SD = .95)	*M* = 4.13 (SD = 1.12)
Self-efficacy for condom use (range = 1–5)	*M* = 4.42 (SD = .73)	*M* = 4.26 (SD = .79)

percent indicated that they had previously stayed in a homeless setting (e.g. mission or homeless shelter, the street) because they had no regular place to stay. We sought a representative sample of women living in the diverse array of temporary lodging options available in Los Angeles County. Thus, the sheltered sample was drawn from homeless emergency shelters, transitional living facilities, single room occupancy (SRO) hotels, board-and-care and voucher hotels, detox and rehabilitation centers, mental health facilities and HIV/AIDS transitional homes in the study area. Domestic violence shelters were excluded from the sampling frame because their addresses and locations are not published. Specifically, sheltered women were drawn from 51 shelters in Los Angeles County and selected by means of a stratified random sample, with shelters serving as sampling strata. A proportionate-to-size (PPS) stratified random sample would have been overly burdensome on the larger shelters, so small departures were made from PPS and corrected with sampling weights. The response rate was 86 percent for sheltered women.

We defined as 'low-income housed' those women who were sampled from Section 8 private project-based HUD-subsidized apartments in the study area. To qualify for Section 8 housing, a person can make no more than 50 percent of the median income for Los Angeles County. We included all such apartment buildings within the study area that were reported by HUD to consist entirely of Section 8 project-based apartments not specifically designated to house elderly or disabled tenants. Housed women were drawn from 66 HUD Section 8 apartment buildings with buildings serving as sampling strata. As was the case for shelters, a PPS stratified random sample would have been overly burdensome on the larger buildings, so small departures were made from PPS and corrected with sampling weights. Once a unit was sampled from a building, we took a simple random sample of one woman resident within every selected unit. The response rate was 76 percent for housed women. A full description of the sampling design is provided elsewhere (Elliott, Golinelli, Hambarsoomian, Perlman, & Wenzel, 2006).

For both groups of women, a trained female interviewer approached each prospective respondent who had been sampled, introduced herself as an interviewer for the RAND Survey of Women in Los Angeles County and sought oral consent to administer a brief eligibility screener for the study. Women who completed the screener and were deemed eligible were then invited to participate in the study. If they agreed to participate, they either provided written consent and completed the interview at that time or scheduled the interview to be conducted within the next few days.

Study variables

Control variables Demographic control variables were race/ethnicity (African American vs other), age and years of education. We also controlled for whether women had multiple sex partners of any type (e.g. primary, casual, need-based) in the past six months, given its potential relevance to substance use, relationship abuse and engagement in unprotected sex.

Frequency of unprotected sex Frequency of unprotected sex in a typical month was calculated by multiplying two items. The first item asked women how often they had sex with their partner in a typical month (*once a month or less*, *2–3 times per month*, *once a week*, *2–3 times per week*, *4–6 times a week*, *every day*) and this value was converted through linear interpolation into a point estimate of the number of days that they had sex (using 1.1, 2.6, 5.5, 12.2, 21.7, 28.8, respectively). The second item asked how often a male condom was used when they had sex with their partner (*always*, *more than half the time*, *about half the time*, *less than half the time*, *never*) and this value was converted into an estimate of the proportion of sexual acts that were unprotected (using 0, .25, .50, .75, 1, respectively). These two values were multiplied to generate an estimate of the number of occasions of unprotected sex in a typical month. A log transformation was then applied to this variable because it was positively skewed, which resulted in the distribution approximating normality.

Relationship abuse Abuse was operationalized as physical, sexual and psychological abuse and was assessed with a series of behavior-based questions designed to elicit disclosure, based on the revised Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996), the

National Women's Study (Kilpatrick, Edmunds, & Seymour, 1992) and our previous work (Wenzel, Leake, & Gelberg, 2000). Women were asked 13 questions about whether they experienced different types of physical abuse with their primary partner during the past six months ranging from less severe acts (e.g. 'throw something at you that could hurt') to very severe acts (e.g. 'use a knife or gun on you'). Four questions asked whether the women had experienced forced vaginal, anal and oral sex and other undesired sexual acts with their primary partner during the past six months. Psychological abuse was assessed using three items from the Psychological Maltreatment of Women Inventory (Tolman, 1999), asking whether the women experienced the following events from their primary partner during the past six months: being treated as if they were stupid or inferior; having to report where they have been and what they have been doing; and being sworn at or called names. Based on this information, women were classified as to whether they had experienced any physical abuse, any sexual abuse and any psychological abuse in the past six months. A number of women experienced psychological abuse in the absence of physical or sexual abuse, but few reported physical or sexual abuse in the absence of psychological abuse. Further, few women reported sexual abuse. Thus, we created the following dummy-coded variables to capture relationship abuse: *No abuse* vs *Psychological abuse only* and *No abuse* vs *Any physical or sexual abuse*.

Substance use We asked women if they and their partner had drunk to intoxication in the past six months and created two dichotomous variables from this information: own drinking to intoxication (*Yes/No*) and partner drinking to intoxication (*Yes/No*). Twelve-month alcohol abuse/dependence was assessed with the University of Michigan Composite International Diagnostic Interview (UM-CIDI) Short Forms (Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998). Scores of at least three out of seven items denote probable cases of alcohol abuse/dependence. Given that less than 2 percent of housed women in our sample had probable alcohol abuse/dependence (Wenzel et al., 2004), for sheltered women only we additionally examined two dummy-coded variables assessing levels of alcohol misuse as predictors of unprotected sex: drinking to intoxication, but no probable abuse/dependence (vs no drinking to intoxication) and probable alcohol abuse/dependence (vs no drinking to intoxication). We also asked women if they and their partner had used each of various classes of drugs 'on their own' in the past six months, including sedatives, tranquilizers, amphetamines, analgesics, inhalants, marijuana/hashish, cocaine, crack/freebase, LSD/other hallucinogens, heroin, GHB/Ecstacy and PCP. The majority of housed women and their partners had not used drugs during this period and, among those who used, almost all had exclusively used soft drugs (defined as marijuana/hashish, analgesics, sedatives). Thus, we created two dichotomous drug use variables for housed women: own drug use (*Yes/No*) and partner drug use (*Yes/No*). In the case of sheltered women and their partners, a significant minority had used drugs other than marijuana, analgesics or sedatives during the past six months. Thus, we additionally examined two dummy-coded variables assessing type of drug use by women and their partners as predictors of unprotected sex among sheltered women: soft drug use only (vs no drug use) and any hard drug use (vs no drug use).

HIV self-protection Three variables were used to assess women's potential to engage in HIV self-protective behaviors. First, women indicated whether they had ever asked their partner to use a condom during sex. Second, we assessed their self-efficacy for condom use with a 6-item shortened version of the Self-Efficacy to Condom Use Scale (Jemmott & Jemmott, 1991; 1 = *strongly disagree* to 5 = *strongly agree*; sample alpha = .71). Items asked women about their ability to get condoms and have them available when they are going to have sex, as well as to stop a sexual episode in order to use a condom and put a condom on their partner without ruining the mood. Scores were reversed, as necessary, such that higher scores indicated stronger feelings of self-efficacy. Third, women's assertiveness in refusing unwanted sex from their primary partner was measured by three items from the Sexual Assertiveness Scale for women (Morokoff et al., 1997; sample alpha = .84). A sample item is: 'Over the past six months, how often did you give in and have sex

if your partner pressured you, even if you already said no?' (1 = *never* to 5 = *always*). Scores were reversed, as necessary, such that higher scores indicated greater assertiveness in refusing unwanted sex.

Reasons for not using condoms

Women who did not always engage in protected sex with their partner during the past 6 months were administered a 15-item measure of perceived barriers to condom use. These items are similar to those used in previous studies (e.g. Gelberg, Andersen, Browner, & Wenzel, 1995; St Lawrence et al., 1999), providing possible reasons for not using condoms. Women were asked whether or not each reason was applicable to them.

Statistical methods

The use of a disproportionate random sampling technique and differential non-response rates require the use of design and non-response weights to represent the target population from the sample of respondents. All analyses incorporate these weights and account for the modest design effect that they induce, using the linearization method (Skinner, 1989). There is a small amount of missing data for some variables (generally 0.1–0.5%). We imputed the median value for continuous and ordinal variables, and imputed the modal value for unordered variables. Separate linear regression analyses for housed and sheltered women were conducted to investigate the correlates of the log frequency of unprotected sex. We first investigated bivariate associations of each predictor variable with unprotected sex, then entered all variables into a single model to examine their multivariate associations with unprotected sex. We then focused on women who did not always use condoms with their partner, using chi-squared analysis to compare the proportion of women who endorsed certain reasons for not using condoms by relationship abuse status. Due to some low expected cell frequencies, we used Fisher's Exact Test to assess statistical significance in these analyses.

Results

Table 2 shows results from separate linear regression analyses for housed and sheltered women. These analyses predicted the log frequency of condom use from own and partner's drug use and drinking to intoxication, relationship abuse and women HIV self-protective behavior (asking partner to use a condom, assertiveness in refusing sex and self-efficacy for condom use). Among housed women, bivariate analyses indicated that higher frequency of unprotected sex was significantly associated with both psychological abuse only and physical/sexual abuse (vs no psychological, physical or sexual abuse), as well as not asking the partner to use a condom. In the multivariate model, both psychological and physical/sexual abuse remained significant predictors of unprotected sex. However, the association with asking the partner to use a condom was reduced to marginal significance ($p < .10$). Assertiveness in refusing unwanted sex, which was unrelated to unprotected sex in bivariate analyses, became a stronger and significant predictor in the multivariate model ($p < .05$). Among sheltered women, bivariate analyses indicated that higher frequency of unprotected sex was associated with own drug use and drinking to intoxication, partner drug use and drinking to intoxication, both psychological abuse only and any physical/sexual abuse, not asking the partner to use a condom, less assertiveness in refusing unwanted sex and lower self-efficacy for condom use. The associations of unprotected sex with partner drinking to intoxication, not asking the partner to use a condom and lower condom use self-efficacy remained statistically significant in the multivariate model. Among sheltered women, we had sufficient subsamples to differentiate between soft drug use only and any hard drug use by both women and their partners, as well as drinking to intoxication with and without probable dependence by women (note that information on probable alcohol dependence was not available for partners), as predictors of frequency of unprotected sex (results not shown). Bivariate analyses indicated that unprotected sex was unrelated to soft drug use only by women and their partners, as well as both indicators of drinking to intoxication by women (all ps $> .05$). However, unprotected sex was more frequent among women who engaged in hard drug use ($B = .61$, $p < .05$) and had a partner who engaged in hard drug use ($B = 1.04$, $p < .001$). Neither of these associations

Table 2. Linear regression analyses predicting log frequency of unprotected sex

Variable	*Bivariate* *B*	*Multivariate* *B*
Housed women		
Own drug use	.09	.25
Own drinking to intoxication	.05	–.14
Partner drug use	.17	–.04
Partner drinking to intoxication	.30	.31
Relationship abuse:		
Psychological only (vs no abuse)	.53*	.94***
Any physical or sexual (vs no abuse)	1.59**	1.97***
Asked partner to use condom (1 = yes)	–.68**	–.42+
Assertiveness in refusing sex (range = 1–5)	.16	.30*
Self-efficacy for condom use (range = 1–5)	–.30+	–.24
Sheltered women		
Own drug use	.61*	.40
Own drinking to intoxication	.57*	–.25
Partner drug use	.79**	–.03
Partner drinking to intoxication	1.28***	1.18***
Relationship abuse:		
Psychological only (vs no abuse)	.81**	.24
Any physical or sexual (vs no abuse)	1.06***	.22
Asked partner to use condom (1 = yes)	–.55*	–.44*
Assertiveness in refusing sex (range = 1–5)	–.27*	–.10
Self-efficacy for condom use (range = 1–5)	–.52***	–.41**

Note: Analyses control for age, years of education, race/ethnicity (African American vs Other) and having multiple partners in the past six months
+$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

remained significant in the multivariate model for sheltered women.

As has been found in other studies, relationship abuse was highly related to having a partner who drank to intoxication in our sample, particularly among sheltered women (sheltered: χ^2 (2) = 32.94, $p < .001$; housed: χ^2 (2) = 21.42, $p < .001$). Thus, we conducted secondary analyses to examine the associations of violence with frequency of unprotected sex among women with and without a partner who drank to intoxication. We created two dummy-coded variables: partner is abusive, but does not drink to intoxication (25.5% of sheltered women, 21.6% of housed women) vs no abuse (43.7% of sheltered women, 57.3% of housed women); and partner is both abusive and drinks to intoxication (30.8% of sheltered women, 21.1% of housed women) vs no abuse. In these analyses, relationship abuse included psychological, physical or sexual abuse. Multivariate models are shown in Table 3. Among housed women, experiencing relationship abuse was associated with more frequent unprotected sex regardless of whether or not the partner drank to intoxication. For sheltered women, relationship abuse in the absence of partner intoxication was not associated with more frequent unprotected sex; however, having a partner who was both abusive and drank to intoxication was associated with more frequent unprotected sex.

Among women who reported not always using condoms, we examined their reasons for not using condoms and whether the percentage of women who endorsed each reason differed as a function of relationship characteristics (see Table 4). Because relationship violence, rather than partner substance use, appeared to be the key predictor of condom use among housed women, we restricted our comparisons to women who experienced abuse (psychological, physical or sexual) versus those who did not experience abuse. Among sheltered women, we further differentiated those who experienced

Table 3. Multivariate linear regression analyses predicting log frequency of unprotected sex

Variable	*Housed* *B*	*Sheltered* *B*
Own drug use	.32	.28
Own drinking to intoxication	–.01	–.10
Partner uses drugs	.06	.25
Partner abuse and drinking:[a]		
Abusive and drinks to intoxication	1.29***	1.03***
Abusive, but does not drink to intoxication	.98***	.29
Asked partner to use condom (1 = yes)	–.39+	–.45*
Assertiveness in refusing sex (range = 1–5)	.34*	–.11
Self-efficacy for condom use (range = 1–5)	–.25	–.41**

Note: Analyses control for age, years of education, race/ethnicity (African American vs Other) and having multiple partners in the past six months

[a] Reference group is women without an abusive partner

+$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

abuse and had a partner who drank to intoxication versus those who experienced abuse but did not have a partner who drank to intoxication. Housed women who experienced abuse were less likely than non-abused housed women to report that they did not use condoms because they could not give an STD to their partner or get an STD from their partner. Interestingly, abused and non-abused women did not differ on reasons having to do with concern over their partner's response to requests for condom use, with one exception: abused women were more likely to report not using a condom because their partner might feel that they were accusing him of having an STD. The three groups of sheltered women did not differ in terms of the proportion who reported not using condoms due to lack of concern about STD transmission. However, there were fairly consistent group differences on reasons having to do with

Table 4. Percentage of housed and sheltered women reporting reason for not using condoms with primary partner in past six months, by relationship abuse status

	Housed			*Sheltered*			
Reasons	*No abuse*	*Abuse*	*p =*	*No abuse*	*Abuse, no intox*[a]	*Abuse + intox*[a]	*p =*
You cannot give STD to your partner	44	21	**	42	48	33	
You cannot get STD from your partner	41	11	***	21	45	37	
Partner believes he does not have STD	63	47		58	64	53	
You do not like to use condoms	25	34		45	33	47	
Partner does not like to use condoms	30	36		45	52	67	+
You do not feel right talking to partner about sex and condoms	3	4		0	9	13	*
You do not think of it when high/stoned	2	4		8	9	23	+
Partner may feel accused of having STD	2	15	*	5	18	23	*
Partner may hurt you or beat you up	0	0		0	6	23	**
Partner may think you are unfaithful	5	11		11	21	20	

Note: [a] Intoxication refers to primary partner. Five items are not included due to low endorsement by women: religious reasons (own and partner's); don't know how to use condoms; not able to get condoms; and want to have a baby

+$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$

concern about their partner's response to requests for condom use: the partner does not like to use condoms (marginal), she does not feel right about discussing sex or condoms with her partner, her partner may feel accused of having STD and her partner may hurt her or beat her up. In each case, the proportion of women endorsing these items was lowest in the 'no abuse' group and highest in the 'abuse + partner drinks to intoxication' group. In addition, there was a marginal group difference for not thinking about using condoms when high or stoned; women with an abusive partner who drank to intoxication were more likely to report this as a reason for not using condoms compared to other sheltered women.

Discussion

In the past several years, a growing number of studies have implicated substance use and interpersonal violence as important risk factors for unprotected sex within heterosexual relationships (e.g. Nyamathi et al., 1995b; Wingood & DiClemente, 1998; Wingood et al., 2001). When these interrelated problems are not examined within the same study, which is often the case, it limits our understanding of how they may affect women's HIV-related behavior. There is also a continuing need to better understand HIV risk among poor women of color, a group that is being disproportionately affected by the AIDS epidemic in the United States. To the best of our knowledge, this is the first study to simultaneously examine the relative importance of different types of substance use (excessive drinking vs illicit drug use) by each partner, as well as different types of relationship abuse (psychological abuse only vs physical or sexual violence), to condom use behavior in two probability samples of impoverished women: those living in temporary shelters and those living in low-income housing in Los Angeles County.

Sheltered women engaged in more frequent unprotected sex if they were substance users, had a partner who was a substance user or experienced recent psychological abuse or physical/sexual violence in their relationship. An important caveat to our findings regarding substance use is that when we were able to differentiate between soft versus hard drug use, it was hard drug use that predicted condom use behavior. When these risk factors were considered together, only partner drinking emerged as a significant risk factor for more frequent unprotected sex. Given that partner drinking and relationship abuse were strongly related among sheltered women in this study (e.g. the rate of abuse was 12 percent among partners who did not get intoxicated versus 49 percent among partners who did), we conducted a secondary analysis to examine the associations of violence with frequency of unprotected sex among women with and without a partner who drank to intoxication. Only sheltered women with an abusive partner who drank to intoxication tended to engage in more unprotected sex; those with an abusive partner who refrained from excessive drinking were not at higher risk compared to sheltered women with a non-abusive, non-intoxicated partner. In other words, there appears to be something unique about the combination of relationship abuse and excessive alcohol use by the male partners of sheltered women that puts these couples at increased risk for unprotected sex.

In the case of low-income housed women, neither their own substance use nor use by their partners emerged as a significant risk factor for unprotected sex. Although a substantial proportion of these women and their partners had engaged in drug use (14% and 27%, respectively) and drinking to intoxication (36% vs 32%, respectively) in the past 6 months, there was little reported hard drug use by either partner or signs of alcohol abuse/dependence by the women. Further, at least among the women (for whom we had information on frequency of use), less than 10 percent had used drugs or drank to intoxication more than a half-dozen times in the past 6 months. Thus, it may be the case that the level of substance use was so minimal in these relationships that it had little adverse impact on condom use practices. In contrast, exposure to recent relationship abuse was associated with more frequent unprotected sex among housed women, regardless of whether it involved physical/sexual violence or psychological abuse in the absence of physical/sexual violence. This is an important finding in that studies of relationship abuse and HIV risk among women have tended to focus on exposure to physical or sexual violence (e.g. Wingood et al., 2001; Wyatt et al., 2002). Results

from this study extend this work by suggesting that exposure to psychological abuse within a relationship—such as being treated as inferior, called names or sworn at, having to report on one's whereabouts—decreases women's ability to engage in self-protective behavior even in the absence of recent physical violence in the relationship. Both types of abuse may contribute to unprotected sex because they create an atmosphere of intimidation and threat in which (un)safe sex is the prerogative of the abusive partner and women put up little resistance for fear of triggering further psychological or physical abuse (Kalichman et al., 1998; Maman et al., 2000).

Recent meta-analytic work indicates that the strongest psychosocial correlates of heterosexual condom use include asking the partner to use a condom and condom use self-efficacy (Sheeran, Abraham, & Orbell, 1999). However, this work has largely been based on community and student samples, and the impact of these HIV self-protective behaviors on condom use has often been examined in the absence of other factors that may have a more direct impact on women's sexual decision making. Thus, a second goal of this study was to determine whether three factors that we believed were related to women's potential to engage in HIV self-protective behavior—requesting condom use, feelings of self-efficacy for condom use and assertiveness refusing unwanted sex—were associated with less frequent unprotected sex after accounting for the presence of psychological abuse, physical or sexual violence and substance use within the relationship. We found more support for the possible impact of these self-protective behaviors on condom use among sheltered than housed women. Sheltered women who asked their partner to use a condom and had higher self-efficacy for condom use were engaged in less frequent unprotected sex, an association that remained significant in multivariate analyses. This finding suggests that encouraging women to discuss condom use with their partner and strengthening their feelings of self-efficacy may increase condom use in this high-risk group, despite the greater challenges that they may face in attempting to practice safer sex. However, as discussed next, such recommendations need to be considered in light of the concerns that some sheltered women have about broaching the topic of condom use with their abusive partners.

The final goal of the study was to gain a better understanding of how relationship abuse might impact women's engagement in unprotected sex by examining reasons for not using condoms among the women who did not consistently use them, as well as whether these reasons differed systematically between women in abusive versus non-abusive relationships. It is interesting to first note that the most commonly cited reasons for not using condoms, regardless of housing or abuse status, included not feeling susceptible to STDs and their own and/or their partner's dislike of using condoms. Thus, perceived barriers to condom use among impoverished women (see also Crosby, Yarber, & Meyerson, 1999) share some commonalities with barriers identified in quite different populations, such as college undergraduates (Prince & Bernard, 1998; Seal & Palmer-Seal, 1996). However, we found that women in abusive relationships were more likely than non-abused women to indicate that they did not use condoms because their partner might feel accused of having a sexually transmitted disease. Further, among sheltered women, those in abusive relationships were more likely to indicate that they did not use condoms because they felt uncomfortable talking to their partner about sex and condoms, and worried that their partner might hurt them or beat them up. Endorsement of each of these reasons was most likely among abused women with a partner who also drank to intoxication; for example, nearly one-quarter of these women thought that their partner might respond violently if they tried to use a condom with him. Although encouraging women to communicate with their partner about safer sex may be effective in promoting condom use in non-abusive relationships, these findings suggest that simple recommendations to 'talk to your partner about condoms' will be ineffective for many abused women who fear that this discussion will trigger a violent response. Clearly, other strategies are needed to encourage safer sex practices in these relationships.

Strengths of this study include the large probability-based sample of impoverished women, as well as the ability to investigate the correlates of unprotected sex in subsamples of sheltered

homeless and low-income housed women. None the less, it is unclear whether the results generalize to other types of impoverished women (e.g. homeless women living on the streets) or women in other geographic areas. It is also a limitation of the study that our examination of unprotected sex was restricted to relationships with non-cohabitating primary partners, given previous research indicating that the predictors of condom use differ across partner types (Crosby et al., 2000). It was not feasible to interview the male partners of these women; thus, it is a limitation that our findings are based exclusively on the women's reports of substance use, relationship dynamics and HIV-related behaviors. Finally, we used shortened versions of some measures in order to reduce the length of the interview and acknowledge the use of these abbreviated measures as a limitation of the study.

A recent meta-analysis (Logan, Cole, & Leukefeld, 2002) evaluated the effectiveness of published HIV-prevention interventions targeting adult heterosexual populations, concluding that these interventions have had little impact on sexual risk behavior. These authors speculated that the ineffectiveness of past interventions might be largely due to the inadequate attention that has been paid to important social and contextual factors such as those examined in this study. Although it is important to empower women and help them develop the knowledge and skills they need to protect themselves from HIV, this alone may be insufficient for women who are in high-risk or power-imbalanced relationships. Results from this study of impoverished women emphasize the need for more comprehensive HIV-prevention interventions that address issues of substance use and victimization within the relationship.

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