

# HIV-Risk Practices Among Homeless and Low-Income Housed Mothers

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**BACKGROUND.** Knowledge of human immunodeficiency virus (HIV) and its risk behaviors have not been systematically studied in homeless mothers. The identification of the factors associated with HIV-risk practices will guide interventions for low-income housed and homeless women.

**METHODS.** We interviewed 220 homeless and 216 low-income housed mothers living in Worcester, Massachusetts, to gather information on demographic, psychosocial, and HIV-risk practice characteristics. We used standardized instruments and questions drawn from national surveys. The primary study outcome was high HIV-risk behavior.

**RESULTS.** Although homeless mothers were more likely than low-income housed mothers to report first sexual contact at an early age, multiple partners during the last 6 months, and a history of intravenous drug use, homelessness was not associated with high HIV-risk practices. Both homeless and low-income housed mothers demonstrated misconceptions about HIV transmission through casual contact. Among high-risk women, approximately 75% perceived themselves as having low or no risk for contracting HIV. A history of childhood victimization, adult partner violence, or both placed women at a significantly increased likelihood of high HIV-risk practices. African American race, knowledge about HIV, and self-perception of risk were also significantly associated with high-risk practices.

**CONCLUSIONS.** Homeless mothers are a subgroup of poor women at high risk for HIV and should be targeted for preventive interventions. In addition, there are potentially modifiable factors associated with HIV-risk practices in both low-income housed and homeless mothers that should be directly addressed.

**KEY WORDS.** Risk factors; women; domestic violence; knowledge, attitudes, practice. (*J Fam Pract* 1999; 48:859-867)

In recent years, the rate of human immunodeficiency virus (HIV) infection has grown rapidly among women, primarily through heterosexual contact.<sup>1</sup> In 1993, acquired immune deficiency syndrome (AIDS) was the fourth leading cause of death among women aged 25 to 44.<sup>2</sup> Social, economic, and cultural forces powerfully influence the susceptibility of women to HIV infection. Approximately 75% of AIDS cases in women have been documented among poor African Americans or Hispanics.<sup>1,3</sup> Various reports have documented conditions of poverty related to HIV risk and AIDS,<sup>3,4</sup> while others have described the relationship of sex-based inequalities involving drug usage patterns, sexuality, and violent victimization to HIV

infection and risk behaviors among women.<sup>3</sup>

Among the urban poor, homeless women appear to be a subgroup who may have an added risk of HIV infection. Single women and their children make up more than one third of the overall homeless population.<sup>5</sup> Although mothers who are homeless are at high risk for HIV infection because of poverty, minority status, and high rates of childhood and adult victimization experiences,<sup>3,6-9</sup> it is unclear if the homeless condition confers additional risk of HIV infection.

Few reports have examined the knowledge and risk behaviors of homeless women in general<sup>10-15</sup> — homeless mothers, specifically — in relation to HIV.<sup>16-18</sup> With the exception of a recently published report describing higher rates of adverse risk practices among a large sample of homeless mothers,<sup>18</sup> studies have been limited by small sample sizes, a lack of comparison groups, or inclusion of nonrepresentative samples.<sup>13-17</sup> No studies have examined the unique contribution of homelessness or factors associated with family homelessness, such as domestic violence, to HIV-risk practices.

As part of a comprehensive epidemiologic study of homeless families in Worcester, Massachusetts, we examined knowledge of HIV and the risk profile of

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homeless and low-income housed mothers. We also examined the contribution of potential explanatory factors, including homelessness, to high HIV-risk behaviors.

## METHODS

### STUDY POPULATION

We used a cross-sectional observational design to recruit a sample of sheltered homeless families and a comparison group of low-income housed (never homeless) families in Worcester, Massachusetts (1990 US census population estimate = 169,000).

In Massachusetts, as in many midsize and large American cities, the vast majority of homeless families are headed by single women. We enrolled only families headed by women with children younger than 17 years who were living together. We used the definition of "homeless" developed by the US Congress of having spent more than 7 consecutive nights in a car, abandoned building, public park, shelter, nonresidential building, or other non-dwelling.<sup>19</sup> In Worcester, the overwhelming majority of families who become homeless go directly to a shelter; thus, we enrolled only families currently living in a shelter.

From August 1992 to July 1995, 220 families were enrolled from Worcester's 9 emergency shelters, transitional housing facilities, and 2 welfare hotels. Hotels are used to house families when there is a shortage of beds in the emergency shelters. We asked all families who had been in a shelter for at least 7 days to participate in multi-session interviews carried out by trained study staff. We approached 361 families; 102 refused to participate, and 39 dropped out before completing the interviews. Women who refused to participate and those who did not complete the interviews were similar to study participants in terms of race, marital status, number of children, and welfare status. Homeless women who refused to participate were younger and less likely to have graduated from high school.

The comparison group of 216 families was enrolled from never-homeless families headed by women who were receiving Aid to Families with Dependent Children and who came to the Worcester Department of Public Welfare (DPW). To obtain a sample of low-income housed women, interviewers were stationed at the DPW office on rotating days of the week. Most of the women we recruited were coming to the DPW for a redetermination of their benefit eligibility, which requires a face-to-face appointment every 6 months.

We approached 395 housed women to take part in the study; 148 refused to participate, and 31 women did not complete the interview series. Those who refused to participate were similar to study participants with respect to age, marital status, and number of children. The housed women who refused to participate were less likely to have graduated from high school. The 31 women who did not complete the interviews were less likely to have completed high school but were otherwise similar.<sup>8</sup>

### DATA COLLECTION

Information from homeless women and their families was collected during 3 or 4 interview sessions lasting a total of approximately 10 hours. The multisession format was used to reduce respondent fatigue and to allow time for the interviewers and respondents to develop a relationship. Informed consent was obtained before the initial interview. Homeless women were interviewed in a private room at the shelter; the comparison group of housed women were interviewed in their homes or at a community-based project office. The women received a \$10 voucher redeemable at local stores for participation in each interview session.

During the interviews we gathered comprehensive demographic, income, and housing information. Whenever possible, we chose standardized interview instruments on the basis of their previous use with low-income and minority populations. We used existing Spanish versions of standardized instruments when they were available. All other questions were translated into Spanish by bilingual and bicultural translators. Because of the sensitive nature of some of the questions, our interviewers were women who earned a bachelor's or master's degree in an applied field, such as social work or psychology.

Using the modified Personal History Form,<sup>20</sup> an instrument designed for use with homeless and low-income persons, we collected information about housing, income, education, jobs, and family life events. The Personal Assessment of Social Supports<sup>21</sup> was used to determine the mother's support and resource base. Study participants were asked to name as many as 7 people who played a role in their lives and the quality of the relationships they had with those people.

We used the New York Assessment Instrument for Women (NYAIW)<sup>22</sup> to gather information about the mother's lifetime experiences of physical and sexual victimization. The NYAIW includes established measures of intimate violence. We assessed the context of violent acts using the Conflict Tactics Scale.<sup>22</sup> We determined lifetime prevalence of selected mental health and substance use disorders, including mood disorders, anxiety disorders, posttraumatic stress disorders, somatoform disorders, eating disorders, and alcohol and other drug abuse or dependence, using the nonpatient version of the structured clinical interview from the *Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, Revised (DSM-III-R)*.<sup>23</sup> Emotional distress was assessed using the Symptom Checklist 90-R global severity index,<sup>24</sup> which provides a summary score that reflects the number of symptoms of distress in the last 7 days and their intensity across 9 symptom groups. We measured emotional strengths with the 10-item Rosenberg Self-Esteem Scale,<sup>25</sup> and we assessed negative feelings about the future using the 20-item Beck Hopelessness Scale.<sup>26</sup>

We gathered substance use information using a series of questions specific to alcohol, cocaine, and other



drugs. Frequent alcohol use was defined as consumption of 3 or more drinks every day or nearly every day during the last 2 years for housed mothers and in the 2 years before becoming homeless for the homeless mothers. Frequent use of marijuana, cocaine, heroin, or sedatives was defined as using the substance at least 3 or 4 times a month in the same time frame as specified for the measure of alcohol use. We also asked each respondent if she had ever used an intravenous drug.

Using questions from the National Health Interview Survey (NHIS),<sup>27</sup> we asked women whether they had ever received a diagnosis of selected medical conditions and if they still suffered from the condition. Sexually transmitted diseases included gonorrhea, syphilis, herpes, chlamydia, pelvic infection, genital warts, and HIV/AIDS.

We asked women questions related to HIV knowledge, self-perception of risk, and risk practices for HIV infection. We assessed HIV knowledge using 18 questions taken from the NHIS<sup>28</sup> and scored them according to the number of correct responses. Women with less than 15 correct responses were scored as having poor HIV knowledge. We also asked the women if they perceived their HIV risk to be nonexistent, low, medium, or high. We recorded sexual practices, including age at time of first sexual contact, number of lifetime partners, number of partners in the last 6 months, amount of unprotected sex within the past 6 months, and any partners with HIV or a history of intravenous drug use. The primary study outcome — high HIV-risk behavior — was assessed using criteria from previous studies.<sup>29-32</sup> Women who responded affirmatively to any of the following factors were defined as being at high risk for HIV infection: history of intravenous drug use, a sexual partner who was either HIV-positive or an intravenous drug user, having ever had a sexually transmitted disease, or having had multiple partners in the last 6 months with whom they did not use a condom on at least one occasion. Additional questions included whether they had made changes in their sexual practices because of the threat of HIV, and if they experienced any barriers to condom use. We also questioned women about HIV testing.

## DATA ANALYSIS

We examined differences in demographic and behavioral characteristics between homeless and low-income housed women, as well as between the high and low HIV-risk groups, using chi-square tests for categorical variables and the *t* test for continuous variables. All statistical tests were 2-tailed. To develop a model of factors associated with HIV-risk practices, we used a stepwise logistic regression model to control for potentially confounding variables that might influence the principal outcome of high-risk practices for HIV infection. The variables entered into the model included age, race, housing status, income, any lifetime mental health disorder, self-esteem score, hopelessness score, social sup-

ports, age at first sexual intercourse, number of lifetime partners, childhood sexual abuse, adult partner violence, HIV knowledge, and self-perception of HIV risk. We selected variables for inclusion in the regression model on the basis of univariate associations with high-risk behavior or the possibility of a priori confounding. The variables controlled for in the final model included race, housing status, HIV knowledge, history of childhood sexual abuse, adult partner violence, both childhood sexual abuse and adult partner violence, self-perception of HIV risk, and lifetime prevalence of any *DSM-III-R* disorder, excluding substance abuse.

## RESULTS

A total of 220 homeless mothers and 216 low-income housed mothers completed all interview sessions. In examining differences in demographic, mental health, social support, and victimization history characteristics between the groups, we found homeless mothers were significantly younger than low-income housed mothers and less likely to have completed high school or received a general equivalency diploma (Table 1). Homeless women had significantly lower annual incomes and had moved a greater number of times in the past 2 years. Homeless mothers experienced significantly more emotional distress than their housed counterparts and scored lower on the self-esteem index. Rates of childhood and adult victimization were high in both groups.

### RISK FOR HIV EXPOSURE

Differences in HIV knowledge, risk perception, and risk-related practices between homeless and housed mothers are presented in Table 2. Overall, levels of knowledge about HIV transmission were good and did not differ significantly between homeless and housed mothers. Three questions related to HIV transmission yielded the greatest percentage of incorrect responses. Half of homeless and housed mothers believed that HIV could be contracted from kissing an infected person. More than a fourth of both groups believed they could catch HIV from being coughed on, and 28% and 30% of homeless and housed women, respectively, believed that HIV could be contracted by using public toilets. Another area of misconception involved measures to prevent HIV transmission, with half of both sets of mothers incorrectly answering items related to diaphragm and spermicide effectiveness in preventing HIV. Fifteen percent of both groups were unaware that condom use can prevent HIV transmission.

Several differences in sexual practices were observed between homeless and low-income housed mothers. The mean age and distribution of first sexual contact was younger for homeless women. Homeless women had significantly more lifetime partners and were also more likely to have had multiple partners in the last 6 months. Among homeless women with multiple sexual partners



TABLE 1

Sociodemographic Characteristics of Sheltered Homeless and Low-Income Housed Mothers

Characteristic	Homeless (n = 220)	Housed (n = 216)	P
<b>Demographics</b>			
Mean age, years	26.2	28.5	<.005
Race, %			
White	32.7	45.4	
African American	22.7	10.2	<.005
Hispanic		43.2	42.1
Mean income, past year, in dollars	7910	9988	
< \$7000, %	46.0	17.2	<.001
\$7000 to \$15,000, %	48.0	77.2	
> \$15,000, %	5.9	5.6	
Education, %			
Some or no high school	46.3	36.5	
High school graduate/GED	42.8	45.5	<.001
Some college	10.8	18.0	
Mean number of moves in past 2 years	3.8	1.8	<.001
<b>Mental Health</b>			
Any lifetime DSM-III-R disorder, %	52.0	48.0	0.40
Major depression, %	45.0	42.8	0.65
Posttraumatic stress disorder, %	36.2	34.1	0.66
Mean emotional distress*	0.9	0.7	<.025
Mean self-esteem†	31.6	32.9	<.025
Hopelessness‡	3.8	3.5	0.34
<b>Social Support</b>			
Mean nonprofessionals in network	3.8	4.7	<.001
<b>Victimization History</b>			
Sexual molestation in childhood, %	43.1	41.2	0.69
Physical violence in childhood, %	66.5	59.5	0.13
Physical violence by partner, %	63.3	58.1	0.27
Childhood sexual molestation and adult partner violence, %	33	32	0.97

GED denotes general equivalency diploma; DSM-III-R, *Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, Revised*.

\*Assessed using the Symptom Checklist-90-R Global Severity Index, where, on a scale of 1 - 4, higher numbers indicate a greater number of symptoms and greater severity.

†Measured with the Rosenberg Self-Esteem Scale, where, on a scale from 10 - 40, higher scores indicate greater self-esteem.

‡Assessed using the Beck Hopelessness Scale, where, on a scale of 0 - 20, higher scores indicate greater feelings of hopelessness.

those with good HIV knowledge to have been tested (65% vs 79%). Women who did not know their risk of HIV exposure were tested with less frequency than those who claimed to know their risk (61% vs 80%). Overall, approximately 75% of women in the entire sample reported they had made some changes in their sexual behavior because of HIV.

Frequent alcoholism was higher among low-income housed women than the homeless. Although overall rates of cocaine and heroin use were low, homeless women were significantly more likely to report frequent cocaine or heroin use and have a history of intravenous drug use (Table 2).

**FACTORS ASSOCIATED WITH HIGH-RISK PRACTICES**

Overall, 171 women (39% of the total study sample) were classified as being at high risk for HIV, with significantly more homeless than housed mothers in this category. The characteristics of the sample according to HIV-risk classification are shown in Table 3. African American women were significantly more likely to be considered at high risk. Women with mental health problems as reflected by higher rates of depression, posttraumatic stress disorder, emotional distress, lower self-esteem, and hopelessness, or a diagnosis of lifetime alcohol/substance abuse were more likely to be considered at high risk.

Victimization history was significantly related to being at

during the last 6 months, 63% reported at least one occasion when condoms were not used; 81% of low-income housed mothers with multiple partners reported unprotected sex. Approximately 75% of homeless and housed mothers reported at least one barrier to condom use.

Significantly more homeless women than low-income housed women had been tested for HIV. Women with poor HIV knowledge were significantly less likely than

high risk for HIV exposure. Specifically, women in the high-risk group were more likely to have been sexually or physically abused during childhood and to have experienced physical violence by a partner. Of women in the high-risk group, there was an approximate twofold greater risk of both childhood abuse and adult partner violence than with women in the low-risk group.

High-risk women reported their first sexual contact at



an earlier age and reported significantly more lifetime partners than low-risk women. We categorized the woman's knowledge of HIV modes of transmission as "good" in 81% of those in the high-risk group and 58% of those in the low-risk group. HIV testing was more common among women in the high-risk group.

Perception of HIV risk was related to risk group classification. Among high-risk mothers, approximately 75% perceived themselves as having low or no risk of contracting HIV, and 16% reported that they did not know their risk of HIV infection. Only 14% of high-risk women correctly perceived their own risk as being medium or high, indicating a discrepancy in perception of risk and actual risk in these women. In the low-risk group, most women correctly perceived their HIV risk. Women who perceived themselves as being at medium

or high risk for HIV were nearly 5 times as likely to be in the high-risk group as those who perceived that they were not at risk. After adjusting for potential confounding factors, the univariate association of homelessness to high-risk practices was attenuated, though homeless mothers remained at increased risk for HIV.

The crude and multivariable adjusted odds of being at high risk for HIV infection are shown in Table 4. After controlling for previously described covariates, African American women were significantly more likely to be considered at high risk. Paradoxically, women with good HIV knowledge were more likely to belong to the high-risk group.

A history of childhood sexual victimization or adult partner violence placed women at significantly greater likelihood of being at high risk for HIV. Because we were interested in examining the association between sexual victimization during childhood and adult partner violence, we included an interaction term in our model to examine the joint effect of these variables on the likelihood of being at high risk for HIV. We found a strong independent relationship between experiences of child and adult victimization and HIV-risk behavior: Women who had experienced childhood abuse and violence as adults were significantly more likely to be in the high-risk group.

TABLE 2

### HIV Knowledge, Risk-Related Behaviors, and Risk Perception Among Sheltered Homeless and Low-Income Housed Mothers

Factor	Homeless (n = 220)	Housed (n = 216)	P
<b>HIV-Related Knowledge, %</b>			
Good	70.5	64.4	0.17
Poor	29.5	35.7	
<b>Sexual Practices</b>			
Mean age at first sexual intercourse, years	15.8	16.8	0.11
< 15, %	31.8	24.5	
15% to 17, %	50.5	48.2	<.05
> 18, %	17.7	27.3	
Mean number of lifetime sexual partners	10.4	5.4	<.001
Multiple partners in past 6 months, %	14.1	7.4	<.025
Unprotected sex in past 6 months, %	53.0	47.0	0.84
Past partner at risk for HIV, %*	13.2	9.3	0.20
<b>Substance Abuse, %</b>			
DSM-III-R alcohol/drug abuse disorder	41.6	34.7	0.14
Frequent alcohol use	30.9	48.2	<.001
Frequent cocaine use	18.8	3.2	<.001
Frequent heroin use	4.6	0.9	<.025
History of intravenous drug use	8.3	1.8	<.005
<b>Perception of HIV Risk, %</b>			
High	3.6	0.9	
Medium	5.9	5.1	0.13
Low or none	71.8	79.5	
Don't know	18.6	14.4	
<b>Ever Tested for HIV, %</b>	79.6	69.4	<.05
<b>Ever Treated for Sexually Transmitted Disease, %</b>	55.0	48.2	0.15

DSM-III-R denotes *Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, Revised*;  
HIV, human immunodeficiency virus.

\*Partner has history of intravenous drug use or is HIV-positive.

## DISCUSSION

This is the first study to investigate HIV knowledge, the nature of high-risk practices, and predictors of HIV-related risk behaviors among a community sample of homeless and low-income housed mothers. We found that both homeless and low-income housed mothers had adequate knowledge of HIV-related risk practices but underestimated their overall risk. Although homeless mothers participated in more high-risk behaviors, the relationship between homelessness and HIV risk was attenuated after controlling for other factors associated with risk for HIV infection. We observed a strong association between high-risk practices and child and adult victimization with high rates in both groups of women. These findings highlight areas for preventive services for homeless women, specifically, and extremely



TABLE 3

**Factors Associated with High-Risk Practices Among Sheltered Homeless and Low-Income Housed Mothers**

Factor	High-Risk (n = 171)	Low-Risk (n = 265)	P
<b>Sociodemographics</b>			
Mean age, years	27.6	27.2	0.54
Race, %			
White	40.4	38.1	<.001
African American	25.7	10.6	
Hispanic	28.7	41.5	
Mean income, past year, in dollars	9639	8554	<.05
< \$7000, %	32.8	33.6	0.54
\$7000 to \$15,000, %	60.2	61.9	
> \$15,000, %	7.0	4.5	
Education, %			
Some or no high school	42.1	47.2	0.38
High school graduate/GED	45.6	38.9	
Some college	12.3	14.0	
Currently homeless, %	56.7	46.4	<.05
Mean number of moves in past 2 years	3.1	2.6	0.10
<b>Mental Health</b>			
Any lifetime DSM-III-R disorder, %	71.9	55.9	<.001
Major depression, %	50.3	39.7	<.05
Posttraumatic stress disorder, %	41.3	31.2	<.05
Emotional distress, mean*	0.9	0.7	<.005
Self-esteem, mean†	31.4	32.8	<.05
Hopelessness, mean‡	4.3	3.2	<.005
<b>Substance Abuse</b>			
Alcohol/substance abuse disorder, %	57.3	25.8	<.001
Frequent alcohol use, %	41.5	38.1	0.48
Frequent cocaine use, %	21.8	4.2	<.001
<b>Social Support</b>			
Nonprofessionals in network, mean	4.3	4.2	0.68
<b>Victimization History</b>			
Sexual molestation in childhood, %	58.2	31.8	<.001
Physical violence in childhood, %	70.0	58.6	<.05
Physical violence by partner, %	76.9	50.4	<.001
Childhood sexual molestation and adult partner violence, %	50.0	28	<.001
<b>Sexual Practices</b>			
Mean age at first sexual intercourse, years	15.4	16.9	<.01
< 15, %	53.7	46.3	<.001
15 to 17, %	34.9	65.1	
>18, %	30.6	69.4	
Mean number of lifetime sexual partners	12.8	4.9	<.01
<b>HIV-Related Knowledge, %</b>			
Good	81.3	58.5	<.001
Poor	18.7	41.5	
Ever Tested for HIV, %	80.1	70.9	<.05
Perception of HIV risk, %			
High	4.7	0.8	<.001
Medium	9.9	2.7	
Low or none	69.6	79.6	
Don't know	15.8	17.1	
1 or More Barriers to Condom Use, %	85.4	74.7	<.025

Note: High-risk practices include a history of multiple sexual partners and no condom use during the past 6 months, history of intravenous drug use, sexually transmitted disease in the past, or past partner at risk (HIV-positive or intravenous drug use history).

GED denotes general equivalency diploma; DSM-III-R, *Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, Revised*; HIV, human immunodeficiency virus.

\*Assessed using the Symptom Checklist-90-R Global Severity Index, where, on a scale of 1 - 4, higher numbers indicate a greater number of symptoms and greater severity.

†Measured with the Rosenberg Self-Esteem Scale, where, on a scale from 10 - 40, higher scores indicate greater self-esteem.

‡Assessed using the Beck Hopelessness Scale, where, on a scale of 0 - 20, higher scores indicate greater feelings of hopelessness.

poor women, in general.

As described previously,<sup>18</sup> when compared with their low-income housed counterparts, homeless women reported higher rates of HIV-risk practices. Although our findings describe higher rates of risk behavior among homeless women than those previously reported,<sup>10,12,15,16,33-35</sup> the results are difficult to compare, since most research to date has focused on individual homeless adults,<sup>10,12, 33</sup> used mixed samples of men and women,<sup>16, 33</sup> lacked comparison groups,<sup>10, 13-16, 33-35</sup> or sampled women who have already exhibited high-risk behaviors.<sup>12-15, 34, 35</sup> Thus, previous studies may not be generalizable to homeless mothers who have young children and may face a different set of exigencies that contribute to HIV risk.

The number of lifetime sexual partners, a factor associated with higher risk for sexually transmitted diseases and cervical cancer,<sup>36, 37</sup> was 2 times higher among homeless mothers than in the low-income housed group. The rate of sexual intercourse at a young age was significantly higher in homeless than in housed mothers, and several times higher than that described in other studies.<sup>30</sup> These findings may be partly explained by the high rates of family disruption, especially out-of-home placements, among the homeless sample. Early age of first intercourse has been consistently associated with more sexually transmitted diseases,<sup>30, 38-40</sup> cervical cancer,<sup>30, 41, 42</sup> and greater numbers of sexual partners,<sup>30</sup> it also may be a marker for other risky behaviors, such as no condom use and less discrimination in partner choice.<sup>30</sup>

Our results do not suggest an independent relationship between homelessness and HIV high-risk practices. Although previous reports described high prevalence rates of HIV among homeless samples,<sup>43,44</sup> only one study documented an association between homelessness and high-risk practices.<sup>10</sup>



TABLE 4

## Crude and Multivariable Adjusted Odds Ratios of High-Risk Practices According to Selected Characteristics

Factor	Unadjusted		Adjusted	
	OR	95% CI	OR	95% CI
Race				
White	1.0	—	1.0	—
African American	2.30	(1.31 - 4.04)	2.18	(1.18 - 4.03)
Hispanic	0.65	(0.41 - 1.03)	0.88	(0.53 - 1.46)
Other	0.51	(0.22 - 1.15)	0.69	(0.28 - 1.69)
Housing status, homeless	1.51	(1.03 - 2.23)	1.30	(0.84 - 2.00)
Good knowledge	2.08	(1.36 - 3.18)	1.70	(1.06 - 2.70)
Childhood sexual abuse	1.22	(0.63 - 2.37)	2.80	(1.24 - 6.31)
Physical violence by partner	1.10	(0.72, 1.69)	2.31	(1.25, 4.26)
Childhood sexual molestation and adult partner violence	2.95	(1.95, 4.46)	4.31	(2.33, 7.94)
Self-perception of risk as medium or high	4.37	(2.04, 9.35)	4.66	(1.20, 10.91)
Lifetime DSM-III-R disorder	2.03	(1.34, 3.06)	1.42	(0.89, 2.27)

Note: Controlling variables included each of the variables listed in this table.

OR denotes odds ratio; CI, confidence interval; DSM-III-R, *Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, Revised*.

Most of the previous studies have focused on adult individuals and have not differentiated between the unique contribution of homelessness and factors that are highly associated with street life, such as mental illness or substance abuse.<sup>10-12, 33-35, 44</sup>

Our sample of low-income women who participated in high-risk behaviors failed to perceive themselves as susceptible to HIV, a finding that has been reported elsewhere.<sup>45-47</sup> Denial may be an adaptive response to the complex conditions of poverty. It is likely that the unremitting stress experienced by extremely poor women may lessen their sense of urgency about the risk of HIV. Although some of our sample's misconceptions about HIV risk related to casual contact and condom and spermicide use could lead to an underestimation of risk, it is not unusual for individuals engaged in life-threatening behavior to incorrectly perceive their risk.<sup>45, 46</sup> Although insufficient by itself to influence protective behaviors, realistic assessment of risk is a necessary step toward behavioral change.<sup>45, 48</sup>

As in other studies,<sup>3,5,7,9,49-52</sup> we found a strong independent relationship between experiences of child and adult victimization and HIV-risk behavior. Victimization profoundly compromises a woman's physical and mental health and may lead to increased HIV-risk behaviors. Child abuse, particularly sexual assaults, often produces

severe and long-lasting trauma responses, including psychological and medical symptoms, diminished trust, pervasive fear, and a difficulty in forming supportive relationships as adults.<sup>53,54</sup> For some women, the feelings of powerlessness, hopelessness, and low self-esteem associated with childhood victimization make it difficult to be self-protective. In addition, childhood violence also predisposes women indirectly to high-risk practices through its association with substance abuse.<sup>3,51</sup>

For women in abusive adult relationships, the decisions about sexual activity are generally controlled by their partners. When women fear loss of financial support or a violent response if demands for safe sex are made, they are understandably less able to protect themselves sexually.<sup>3,49,50</sup> It is more difficult to practice safe sex in the context of sexual coercion, which is common in the lives of many low-income women.<sup>50</sup> High rates of victimization may also explain our study's finding that women with higher self-perceived HIV risk were more likely to engage in high-risk behaviors, a result that

runs counter to models of increased protective behavior in the context of higher estimates of personal susceptibility.<sup>47</sup>

The prevention of HIV among low-income women presents family physicians with a difficult challenge. It is critical to routinely screen for histories of victimization and, if possible, address the link between these experiences and sexual decision making. Efforts to specifically address the needs of these women may range from encouraging condom use to referring them to local HIV prevention programs that offer sexual communication skills training, social support, and risk-related knowledge. However, HIV risk must be viewed as only one of many challenges low-income women face, and it must be addressed in the context of their broader need for empowerment and economic self-reliance. Referrals to address education and vocational needs are imperative.

Our findings confirm the disproportionate rate of HIV infection in African American women.<sup>1</sup> However, our results do not indicate an increase in risk behaviors among Hispanic women (most of whom who are Puerto Rican in our study). This result contradicts other studies that describe high HIV prevalence rates and risk behavior in this subgroup.<sup>1,57</sup>

Unlike previous studies that identified an association between high levels of emotional distress, depression,



poor self-esteem, and HIV-risk practices in homeless women and those in drug recovery,<sup>11,13-15</sup> mental health factors were not significantly associated with HIV-risk behavior in our multivariate analyses. Although these differences may be related to measurement issues or variations in sample characteristics, the predictive capacity of mental health characteristics in relation to risk practices appears diminished in the context of other more significant factors, such as violent victimization.

Our study addresses limitations in previous research through inclusion of a comparison group of low-income housed (never homeless) women, the identification of risk factors among a community rather than using a high-risk sample, and an in-depth assessment of HIV knowledge and risk behaviors.

### LIMITATIONS

Several limitations must be considered in interpreting our study results. Our sample was drawn from only one city with a distinctive ethnic population and, therefore, can best be generalized to small and mid-sized cities with a similar population. The accuracy of self-reports could have been limited by a desire to deliver socially desirable information; however, previous studies suggest that data related to sexual behavior are dependable.<sup>60</sup> Additionally, retrospective recall of the number and nature of sexual activities may be less accurate after a long period and may result in underreporting. Finally, we cannot comment on self-efficacy and coping strategies, which have been identified by other studies<sup>11,13-15</sup> as important determinants of HIV-risk practices.

### CONCLUSIONS

Homeless mothers, most of whom are still of childbearing age, constitute a subgroup of low-income women at high risk for HIV. They are an important target group for developing and implementing preventive interventions. However, our findings highlight the importance of addressing the relationship between child and adult victimization experiences and subsequent risk behavior in low-income women in general. Maximizing opportunities for low-income women to acquire the skills and information necessary for economic and social equity must accompany strategies for strengthening their safe-sex negotiation skills. For extremely poor mothers, the risk of contracting HIV infection is one of many immediate threats to their survival. Ignoring the complex context in which HIV risk occurs will only lead to failed interventions for this vulnerable group of women.

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