
Incidence and Correlates of Physical Violence Among HIV-Infected Women at Risk for Pregnancy in the Southeastern United States

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To identify the incidence and correlates of physical and sexual violence among HIV-infected women at risk for pregnancy, a cross-sectional examination was conducted within a longitudinal study of reproductive decision making. Participants consisted of 275 HIV-infected women 17 to 49 years of age (mean = 30.1 years). Women were predominantly African American (87%) and single (82%), with annual incomes of \$10,000 or less (66%). Overall, 68% of the women reported experiencing lifetime physical and/or sexual violence. Before becoming HIV infected, 65% of the women reported having been physically or sexually abused. After HIV diagnosis, 33% of the women reported experiencing physical or sexual abuse. Women reporting greater violence were more likely to disclose their HIV-seropositive status to their sex partner. Using logistic regression, greater intent to get pregnant (odds ratio [OR] = 0.933), decreased present life satisfaction (OR = 1.048), having three or more children (OR = 0.474), and history of drug use (OR = 0.794) significantly distinguished between women who reported physical and/or sexual violence and those who did not.

Key words: *violence, women, HIV/AIDS, physical and sexual abuse, nursing research*

Over the past decade, the proportion of AIDS cases in adult and adolescent women aged 13 to 49 has tripled, making women of reproductive age one of the fastest growing groups being diagnosed with HIV/AIDS (Centers for Disease Control and Prevention, 2000). Of women diagnosed with HIV/AIDS, African American and Hispanic women represent a disproport-

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Editor's Note: *Blind peer review of this manuscript was handled by a member of the JANAC Editorial Board in isolation of the editor.*

tionate number of cases (Centers for Disease Control and Prevention, 1999). Additionally, the number of newly diagnosed cases of HIV/AIDS has dramatically increased in the southern region of the United States (Centers for Disease Control and Prevention, 1999). Women at highest risk of HIV are more likely to live in poverty and be involved with or connected to substance use activities (Centers for Disease Control and Prevention, 1999; Mizuno, Moneyham, Sowell, Demi, & Seals, 1998; Zierler, Witbeck, & Mayer, 1996). Numerous studies indicate that violence and/or substance use can create an environment in which there is increased HIV risk taking, ultimately leading to HIV infection (Brown, Melchior, & Huba, 1994; Cohen et al., 2000; Rothenberg, Paskey, Reuland, Zimmerman, & North, 1995).

Seals (1996) proposed that many women face the overlapping epidemics of HIV infection, violence, poverty, and substance abuse. Women's experiences with violence may be the result of living in poor communities where violence is the norm and they witness neighborhood muggings and shootings. However, many women are victims of intimate or domestic violence at the hands of husbands, sex partners, or family members. An estimated 4 million women are physically abused by a former boyfriend, a husband, or live-in partner every year (Commonwealth Fund, 1993; U.S. Department of Justice, 1998). Nearly one third of all women in the United States report having been physically or sexually abused by a husband or boyfriend at some point in their lives (Commonwealth Fund, 1999). Coker, Smith, McKeown, and King (2000) reported that more than 55% of the women participating in their study ($N = 1,401$) had experienced some type of intimate partner violence with a male partner. Additionally, a woman is 7 to 14 times as likely as a man to report suffering severe physical assault from an intimate partner (U.S. Department of Justice, 1998), and 50% of the men who physically assault their wives also abuse their children (Straus & Gelles, 1990). This situation has significant public health implications not only for the health and well-being of women, but also for their children.

Available data on domestic violence against women suggest that women of reproductive age, particularly women who are pregnant, are at highest risk of vio-

lence at the hands of an intimate partner (Abbott, Johnson, Koziol-McLain, & Lowenstein, 1995; Martin, English, Clark, Cilenti, & Kupper, 1996; O'Campo, Gielen, Faden, & Kass, 1994). In some studies, women have been found to be at highest risk for violence during pregnancy (Martin et al., 1996; McFarlane, Parker, Soeken, & Bullock, 1992; O'Campo et al., 1995).

The stigma associated with HIV/AIDS and the potential relationship between HIV risk-taking behaviors and violence may be expected to place HIV-infected women at increased risk for violence. Zierler et al. (2000) reported that in a national sample of 2,864 HIV-infected adults, 20.5% of the women participating in their study had experienced physical harm since their HIV diagnosis. Likewise, Sowell, Seals, Moneyham, Guillory, and Mizuno (1999) found that in a sample of 194 HIV-infected women, 15% had experienced at least one episode of physical violence during the past 6 months. Some experts have expressed concerns that HIV-related violence may be associated with partner notification or disclosure of an HIV-seropositive status (Rothenberg & Paskey, 1995). In one survey of medical and mental health professionals treating HIV-infected women, health professionals reported treating female patients who expressed a fear of physical violence (45%), emotional abuse (56%), and abandonment (66%) related to disclosing their HIV status (Rothenberg et al., 1995). Additionally, data from a North Carolina partner notification study demonstrated that despite assurances of confidentiality, there was limited cooperation in both HIV contact tracing and patient referrals (Landis, Earp, & Koch, 1992). However, due to a lack of empirical evidence, the relationship between disclosure of HIV status and physical abuse remains unclear.

Vlahov et al. (1998), in a study of violence in women with or at risk for HIV infection, found high levels of adult physical and sexual abuse for both HIV-seropositive (66.4% and 45.7%, respectively) and HIV-seronegative women (69.2% and 48.4% respectively). However, these researchers reported that incidences of recent violence were lower in HIV-infected women with low CD4 counts when compared to other women in the study. It was hypothesized that these women were exhibiting substantial morbidity related to their illness, and HIV-infected women who do not

exhibit such symptomatology remain at high risk for violence (Vlahov et al., 1998).

The level of violence experienced by HIV-infected women previously reported by other researchers makes further exploration of violence against HIV-infected women a highly significant area of research. Awareness of factors that contribute to physical and sexual violence against HIV-infected women and increased understanding of the relationship between violence and health outcomes will further enable nurses in AIDS care to provide quality care for HIV-infected women.

The above summary constitutes the limited research available on violence in HIV-infected women. This research has primarily focused on women who reside in urban centers located in the Northeast and West Coast regions of the United States (Vlahov et al., 1998; Zierler et al., 1996, 2000). Only one study was found that examined experiences of violence in HIV-infected women in the South, a region where the number of cases of HIV infection in poor and minority women is increasing exponentially (Sowell, Seals, et al., 1999). Therefore, this study was conducted in a cohort of HIV-infected women in the southern United States who were at high risk for pregnancy. The threefold purpose of this study was (a) to identify the incidence of physical and sexual violence both before and after HIV infection, (b) to examine the relationship between disclosure of HIV-seropositive status to current sex partners and a history of physical/sexual violence, and (c) to identify the characteristics that distinguish women who have experienced violence since their HIV diagnosis from those who have not experienced violence.

Method

The data reported in this study were collected in the first of four interviews conducted in a 3-year longitudinal study examining reproductive decision making and factors influencing decisions to take zidovudine in a group of HIV-infected women at increased risk for pregnancy. The sample consisted of 322 women who were recruited from 12 health clinics and AIDS Service Organizations that provide services to women with HIV/AIDS in one of three states, Georgia, North

Carolina, and South Carolina. The clinics and agencies provide a wide range of health care and social services including primary care, case management, and support groups. Recruitment of potential participants from these three southern states was particularly appropriate due to the growing number of HIV-infected women in this region. For the period from July 1998 to June 1999, South Carolina ranked number 5, Georgia number 9, and North Carolina number 16 in new cases of AIDS in the United States (Centers for Disease Control and Prevention, 1999). The clinics and AIDS Service Organizations provide a range of HIV/AIDS-specific services including HIV antibody testing and counseling, early intervention, case management, and treatment of persons across the continuum of HIV disease. Women who participated in the study were of reproductive age and sexually active by self-report. Data for the current analysis (Interview 1) were collected over a 17-month period from 1998 to 1999.

For a number of variables in this study, no measures were available that were specific to women with HIV infection. Therefore, to ensure cultural appropriateness and relevance of the data collection instruments and methods, seven focus groups were conducted with 54 HIV-infected women in the formative phase of this study. Participants in the focus group sessions were recruited from the population of HIV-infected women from which the larger quantitative study sample would be drawn. Based on input from women, study instruments were revised, new measures were developed, and study methods were refined. Where possible, the women's actual words were used in revising and developing items used in study instruments. Therefore, the study methods and data collection measures used in this study were designed specifically for use in this population in order to increase the validity of the results.

Sample

The sample for this report consisted of 275 women enrolled in the larger longitudinal study ($n = 322$) who responded to at least 80% of the items on the scales measuring the variables of interest in this study. Women were included in the larger study if they (a) were verified HIV-seropositive, (b) were 17 to 49 years of age,

(c) were at risk for becoming pregnant (i.e., sexually active, no indwelling contraceptive device such as an IUD or Norplant, or not sterilized), (d) were not currently pregnant, (e) showed no evidence of dementia, and (f) spoke English.

Procedure

At each site, female research assistants recruited all women who potentially met study criteria. A brief screening questionnaire was used to ensure that the women met inclusion criteria. Data were collected using a structured questionnaire. Data collection was conducted at the cooperating agencies or at another mutually agreed upon site that provided both privacy and comfort for the participants. Research assistants read all questions to the participants and recorded their answers on the questionnaire. Women were paid \$40.00 for their participation.

Instruments

Sociodemographic Characteristics

Demographic characteristics were obtained using a questionnaire designed specifically for the study. Participants were asked to provide their age, race, marital status, education, employment status, income, and type of community in which they lived (i.e., urban, suburban, or rural). Additionally, participants were asked to report their total number of children, number of pregnancies and children since being diagnosed with HIV infection, and number of children who were HIV infected. Furthermore, participants were asked to identify their status of illness either as asymptomatic HIV, symptomatic HIV, or AIDS. Stage of illness was verified using reported CD4 counts and symptoms reported in other sections of the questionnaire, with women with CD4 counts below 200 being classified as having AIDS (Centers for Disease Control and Prevention, 1993).

HIV-Related Symptoms

HIV-related symptoms were measured by 19 items that described common problems associated with HIV

infection, including items specific to women such as vaginal infection. The list of items was previously reviewed and approved by two medical experts in the health of HIV-infected women from the Centers for Disease Control and Prevention (Sowell et al., 1997). Participants were asked, "Tell me whether you have had these symptoms during the past 6 months." The responses were coded as "yes" or "no," with affirmative responses being summed for a total score.

Intent to Get Pregnant

Women's intent to get pregnant (have another baby) was measured using a five-item scale developed by the researchers. The scale items asked women to respond to questions such as "Now that you have been diagnosed HIV-positive, do you intend to ever get pregnant?" and "Even if you do not intend to get pregnant, how likely are you to get pregnant in the next year?" To complete the scale, women were asked to respond to the questions using a 5-point Likert-type response scale ranging from *definitely do not intend* to *definitely intend*. The scale score was obtained by summing the item responses, with a possible range of scores being 5 to 20.

Disclosure

Disclosure to current sex partner was measured with a one-item question that asked, "Have you told your current partner that you are HIV infected?"

Drug History

History of drug use was measured using nine items that asked women whether they had ever used tobacco, alcohol, alcohol to intoxication, marijuana, cocaine, heroin, methadone, inhalants, or other substances. Response choices were "yes" and "no" for each item. Affirmative responses were summed to obtain a total number of the different substances a woman had ever used.

Violence

Physical and sexual violence was measured using six items from an eight-item verbal, physical, and sex-

ual abuse scale. The original instrument was developed from existing violence surveys and was modified based on data obtained in a series of focus groups (Sowell, Seals, et al., 1999). The instrument was designed to measure (a) verbal abuse, such as being yelled at, humiliated, or made to feel worthless; (b) physical abuse, such as being punched or kicked, tied up, or threatened with a weapon; and (c) sexual abuse, such as being forced to have sex or perform sexual acts against one's will. For this study, the three items measuring physical abuse and the three items measuring sexual abuse were used. Higher scores indicate greater physical and sexual violence.

Life Satisfaction

Present life satisfaction was measured using the 28 items of the Life Satisfaction Scale related to current life satisfaction (Cantril, 1965). The scale measures satisfaction in seven domains: physical status, family and friends, emotional status, financial state, spiritual well-being, peace of mind, and overall satisfaction with life. For each domain, respondents were asked to indicate where on the 10-point ladder they currently stood. Scores for seven domains are summed for an overall present life satisfaction score. Higher scores indicate greater present life satisfaction.

Stigma

Stigma was measured using a 13-item stigma scale that was previously developed in the qualitative phase of a study of the impact of HIV infection on women and their families (Sowell, Cohen, Demi, & Moneyham, 1992). In the scale, women were asked how often they had specific thoughts and feelings related to being stigmatized in the past 6 months. The items were based on women's descriptions of stigma in the focus groups using the women's words wherever possible. They were asked to respond to items such as "I feel blamed by others for my illness" or "I think my illness is a punishment for things I've done in the past." The 4-point Likert-type response scale ranged from *not at all* to *often*. Higher scores indicate greater perception of stigma.

Data Analysis

The data were entered in the computer by a research assistant and verified by an independent observer. Forty-seven of the original 322 women failed to provide the necessary level of data on the scales used in this study and were dropped from consideration in these analyses. There were no significant differences in major demographic characteristics (age, race, partnership status, education, religion, and income) between women providing data and women who were dropped from the analysis due to not providing the necessary data on study variables. In cases where the women answered at least 80% of the items on the violence scale but not 100% (with the exception of HIV-related symptoms), the mean for that item by age group was calculated and substituted for the missing item. For the remaining 275 women, less than 1% of the data used for the analyses in this study was missing, requiring substitution of mean scores by age or stage of illness. Table 1 shows the age grouping used to calculate these means. In the case of HIV-related symptoms, a frequency table for each symptom was calculated based on women's stage of illness (asymptomatic, symptomatic, or AIDS) and the most likely response for that item based on stage of illness was inserted for the missing item.

Frequencies and percentages were calculated to identify the women's experience of physical and sexual violence before and since becoming HIV infected. The data from the scale to measure the experience of physical and sexual abuse before HIV infection were combined with the scale to measure physical and sexual abuse after HIV infection to determine level of lifetime abuse (physical and sexual violence ever). Subsequently, the women were divided into two groups: those who had a history of physical or sexual violence and those who did not. Cross-tabulations were performed between disclosure of HIV-seropositive status to their current sexual partners and a history of physical/sexual violence. Chi-square was calculated for this cross-tabulation. To identify the characteristics that distinguish women who have experienced violence since their HIV diagnosis from those who have not experienced violence, chi-square or Wilcoxon signed rank tests were performed on individual demographic

and study variables depending on the level of the data. Variables that achieved significance at the $p = .10$ level were entered into a logistic regression model. Logistic regression was performed to examine more closely the associations and predictors of characteristics that distinguish women who have had a history of physical and sexual abuse from those who have not had a history of physical and sexual abuse.

Results

The women in the sample were predominately African American (87%), single (82%), and residing in urban areas (60%). Most had an annual household income less than \$10,000 (66%). Participants ranged in age from 17 to 48 years, with a mean age of 30.1 years ($SD = 6.8$ years). One hundred eighty-three (67%) of the women had a high school education or greater. Participants represented women across the continuum of HIV disease in that 168 (61%) were asymptomatic, 70 (26%) were symptomatic, and 37 (13%) had AIDS. The mean length of time reported since HIV diagnosis was 52.7 months ($SD = 42.4$ months), with a range of 2 to 180 months.

Two hundred twenty-three (81%) of the women reported having one to seven children. Since being diagnosed with HIV infection, 107 (39%) of the women had been pregnant and reported one to six pregnancies since being diagnosed with HIV infection. Fourteen women (5%) reported having at least one HIV-infected child. Thirty-nine (16%) of the women currently lived with a partner or spouse who was HIV infected. When asked whether they desired to have another baby, 98 (37%) of the women indicated they would like to have another baby. Table 1 provides further details of participants' characteristics.

The psychometrics for each of the measurement scales were tested in the study sample. Means, standard deviations, actual score range, and reliability coefficients obtained in this sample are reported in Table 2.

Overall, 187 (68%) women had experienced physical (59%) and/or sexual (52%) violence at some point in their life. Prior to being diagnosed with HIV infection, 175 (65%) women reported having been physi-

cally (57%) and/or sexually (50%) abused. Since becoming HIV infected, 91 (33%) women reported having been physically (26%) and/or sexually (22%) abused. Of those women reporting physical and/or sexual abuse since HIV infection, 69% and 32% had experienced multiple episodes of physical and sexual abuse, respectively. Table 3 provides a detailed breakdown of the incidences and types of physical and sexual violence reported by the women before and after HIV diagnosis. Spearman's rho coefficient of correlation was used to test the relationship of physical and sexual violence before and after HIV diagnosis. Physical and sexual violence before HIV infection was significantly related to physical and sexual violence after HIV infection ($\rho = .47, p = .0001$). Using the Wilcoxon signed rank test, the combined level of physical and sexual violence experienced by the women before becoming HIV infected was statistically greater than the level after becoming HIV infected (signed rank = $-6029, p = .0001$).

Women were asked to identify the perpetrator of physical and/or sexual violence against them. Among women identifying a person or persons committing violent acts against them, intimate partners (husbands, partners, former husbands, or former partners) were the group most often identified. Other individuals identified by women as committing physical and/or sexual violence against them included family members, friends and associates, and strangers. Table 4 shows the number of times specific groups of individuals were identified as the source of violence against study participants.

The women were asked to respond to a single item asking whether they had disclosed their HIV status to their current sexual partner. The participants were classified into two groups, those who had experienced physical and/or sexual violence at some point in their lives and those who had not. These two variables were cross-tabulated and a chi-square test was performed. Sixty-eight of the women reported that they did not have a current sexual partner and were deleted from the analysis. Of the remaining women, 178 (89%) had disclosed their HIV-seropositive status to their current sexual partner and 22 (11%) had not disclosed. A statistically significant relationship was observed between women's history of physical and/or sexual violence

Table 1. Sample Characteristics and Means and Standard Deviations for Selected Variables by Sample Demographics

Characteristic	<i>n</i>	<i>%</i>	Violence Before HIV Infection		Violence Since HIV Infection		Intent to Get Pregnant		Depression		Present Life Satisfaction	
			Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
Race												
African American	222	86.7	9.8	4.3	7.4	2.6	10.0	4.6	22.6	4.3	49.0	11.2
Other	34	13.3	11.2	5.7	7.9	4.2	8.9	4.1	24.6	6.4	43.6	12.0
Missing	19											
Age (years)												
15-27	80	29.1	9.1	4.1	7.1	2.7	11.0	4.8	22.0	6.3	49.4	10.4
28-32	57	20.7	8.9	3.6	7.2	2.3	10.5	4.4	23.6	7.4	47.7	11.6
33-39	91	33.1	10.8	4.8	8.1	3.7	9.0	4.2	23.6	6.1	47.6	11.3
40-48	47	17.1	11.0	4.9	11.0	4.9	8.2	4.4	22.9	6.3	50.0	12.7
Religion												
Baptist	147	53.8	9.8	4.5	7.6	3.2	9.4	4.4	23.4	6.9	49.1	11.5
Other Protestant	80	29.3	8.2	3.1	7.0	2.1	11.3	5.6	21.2	3.5	51.2	10.3
Methodist/AME	24	8.8	10.0	4.4	6.9	2.0	9.9	4.4	22.6	6.5	47.5	11.3
Catholic	13	4.8	14.5	5.1	9.8	5.2	11.1	4.9	24.4	6.3	44.0	11.9
Other	9	3.3	10.9	4.4	7.7	2.6	10.4	5.3	23.1	5.0	48.3	8.1
Missing	2											
Marital status												
Partnered	55	17.8	10.3	5.2	7.3	3.0	10.3	4.8	23.5	7.0	49.9	10.9
Single	220	82.2	9.9	4.3	7.5	2.9	9.6	4.5	22.9	6.3	48.2	11.5
Annual household income												
<\$5,000	81	30.7	10.0	4.1	7.4	2.2	9.2	4.5	23.5	6.8	46.1	12.7
\$5,000-\$9,999	92	34.8	10.6	5.0	7.4	2.5	10.2	4.5	22.1	5.7	49.9	10.8
≥\$10,000	91	35.5	9.4	4.3	7.0	2.1	10.0	4.6	23.1	6.6	50.1	9.8
Missing	11											
Employment status												
Unemployed	180	65.5	10.3	4.6	7.8	3.3	9.5	4.5	23.6	6.3	47.2	11.8
Part-time	53	19.3	9.5	4.3	6.8	1.5	9.7	5.1	23.0	6.7	49.1	9.8
Full-time	42	15.3	9.0	4.0	6.9	2.2	11.0	4.3	20.5	6.6	53.4	9.9
Education												
Less than high school	90	33.0	10.4	4.9	7.6	2.9	10.3	4.8	23.2	6.5	49.0	11.5
High school	102	37.4	10.0	4.6	7.6	3.4	9.4	4.1	23.8	7.1	48.9	11.3
Some college	60	22.0	9.5	3.8	7.1	2.1	9.2	4.7	21.2	5.0	47.7	11.3
College graduate	17	6.2	9.2	4.0	7.4	2.7	11.8	5.2	23.5	5.9	46.3	12.4
Graduate school	4	1.5	7.8	2.9	7.8	3.5	7.5	5.7	23.3	9.5	52.8	8.5
Residence												
Urban	166	60.4	10.4	4.6	7.8	3.3	10.3	4.6	23.3	6.5	48.1	11.9
Suburban	49	17.8	10.3	4.6	7.3	2.6	8.4	4.4	22.3	6.4	50.1	11.0
Rural	60	21.8	8.5	3.7	6.6	1.5	9.3	4.6	22.7	6.5	48.6	10.0
Stage of disease												
Asymptomatic	168	61.1	9.8	4.4	7.4	2.9	10.4	4.3	21.8	5.8	50.6	11.0
Symptomatic	70	25.5	9.3	3.8	7.3	2.2	8.3	4.5	25.0	7.4	45.2	11.2
AIDS	37	13.5	11.9	5.6	8.0	4.0	9.6	5.4	24.9	6.1	45.5	11.5

and disclosure to their current sexual partner ($\chi^2 = 3.9$, $p = .05$). Unexpectedly, this analysis showed that women who had a lifetime history of physical and/or sexual violence were more likely to have disclosed

their HIV serostatus than those who had never experienced such violence.

For bivariate analysis, considering the level of the data, either chi-square or Wilcoxon signed rank tests

Table 2. Research Instruments and Reliabilities Obtained

Variable	Number of Items	Range	Mean	SD	Alpha
HIV symptoms	19	19-37	24.1	4.3	.86
Intent to get pregnant	5	5-25	12.0	5.2	.89
Physical violence before	6	6-24	9.9	4.5	.87
Physical violence since	6	6-24	7.5	2.9	.85
Present life satisfaction	7	16-70	48.5	11.4	.91
Stigma	13	13-49	24.2	7.7	.82

were performed on all major demographic variables and other study variables. Variables that were significant at the $p < .10$ level were age ($Z = 2.3, p = .02$), number of children ($Z = 2.7, p = .01$), stigma ($Z = 2.4, p = .02$), intent to get pregnant ($Z = 1.8, p = .06$), present life satisfaction ($Z = -3.9, p = .00$), and drug history ($Z = 3.7, p = .00$). Logistic regression was performed on the variables that were significant at the $p < .10$ level. The variables that were significant in the final logistic regression model were intent to get pregnant, present life satisfaction, number of children, and history of drug use. Table 5 shows the odds ratios and 95% confidence intervals for these variables. Variables that were significant in univariate analyses but not in the final model were age, race, stigma, and disclosure to current sex partner.

Discussion

This study used a convenience sample of HIV-infected women living in the southern United States. Women participating in this study knew they were HIV infected, and they were receiving HIV-related medical care and/or social services. These women may not be representative of all women with HIV infection; therefore, the current findings should be generalized with caution. However, our results do provide important insights into the incidence and correlates of violence in a population of women in which the rate of HIV is growing rapidly and the research has been limited. This study sought to identify the levels of physical and sexual violence HIV-infected women

experienced before and after being diagnosed HIV-seropositive. Additionally, the researchers sought to determine whether the incidence of physical and/or sexual violence against these women had increased or decreased as a result of their HIV infection. Overall, 68% of the women in this study had experienced physical and/or sexual violence during their lifetime. One hundred sixty-two (59%) women reported experiencing lifetime physical violence, and 136 (50%) reported experiencing sexual violence. These rates of violence are equal to or greater than rates of physical and sexual abuse reported in other groups of women (Abbott et al., 1995; Cohen et al., 2000; Coker et al., 2000; Zierler et al., 1996).

Cohen et al. (2000), in examining domestic violence and childhood sexual abuse in both HIV-infected women and women at risk for HIV infection, reported that 66% of the HIV-infected women and 67% of the noninfected women in their study had experienced domestic violence. Abbott et al. (1995) reported similar findings in women visiting an emergency department, with 54.2% of women reporting experiencing domestic violence. In contrast, McCauley et al. (1995) reported a lower incidence of lifetime violence (32.7%) in a cross-sectional sample of women receiving primary care in community-based internal medicine practices. When focusing on sexual abuse alone, the number of women experiencing lifetime sexual abuse (52%) in this study was 9% higher than that previously reported by Zierler et al. (1996). One explanation for the higher rates of violence reported in this study may be the fact that women were asked to report all incidences of physical and sexual violence they had experienced rather than just incidences that were committed by intimate partners (domestic violence). However, women identified intimate partners as the group most often committing physical and sexual violence against them. A second explanation for the increased level of violence found in this study was that many of the women were very poor and may live in communities that exemplify what Seals (1996) has described as environments of overlapping epidemics of poverty, HIV infection, violence, and substance use. In fact, women identified strangers 47 times as the group responsible for raping them since becoming HIV infected.

In examining physical and sexual violence before and after women had been diagnosed with HIV infec-

Table 3. Frequency of Physical and Sexual Violence Before and After Becoming HIV Infected (*n* = 275)

Type of Violence	Before HIV Diagnosis								After HIV Diagnosis							
	Never		Once		Three or Four Times		More Than Five Times		Never		Once		Three or Four Times		More Than Five Times	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Punched, kicked, beaten up, or injured in a way that left welts, bruises, burns, cuts, or broken bones	137	49.8	41	14.9	39	14.2	58	21.1	218	79.3	18	6.5	17	6.2	22	8.0
Tied up or locked up	241	87.6	20	7.3	5	1.8	9	3.3	263	95.6	7	2.5	2	0.7	3	1.1
Threatened with an object or a weapon	155	56.4	58	21.1	42	15.3	20	7.3	226	82.2	25	9.1	14	5.1	10	3.6
Forced to have sex with someone you did not want to have sex with	162	58.9	54	19.6	31	11.3	28	10.2	228	82.9	26	9.5	16	5.8	5	1.8
Forced to do a sexual act you did not want to do	184	66.9	34	12.4	31	11.3	26	9.5	243	88.4	18	6.5	10	3.6	4	1.5
Raped	168	61.1	63	22.9	29	10.5	15	5.5	234	85.1	26	9.5	12	4.4	3	1.1

Table 4. Number of Times Specific Groups of Individuals Were Identified Committing Acts of Physical and Sexual Violence Against Women in the Study

	Incidents of Violence Before HIV Diagnosis ^a		Incidents of Violence After HIV Diagnosis ^b	
	Physical Violence	Sexual Violence	Physical Violence	Sexual Violence
Intimate partner	218	125	78	32
Parent	16	17	2	2
Sibling	5	5	1	1
Other family member	9	21	4	3
Friend or associate	23	49	20	24
Stranger	13	77	4	47

a. One hundred seventy-nine women reported violence before HIV diagnosis.

b. Ninety-one women reported violence after HIV diagnosis.

tion, the level of physical and/or sexual violence before HIV infection was significantly greater than the level after HIV diagnosis. However, physical and sexual violence before HIV infection was a significant predictor of physical and sexual violence after HIV infection. These findings suggest that physical and sexual violence experienced by women after being diagnosed

Table 5. Logistic Regression of Characteristics of Women Who Had Experienced Physical Violence (*n* = 275)

Variable	Odds Ratio	95% Confidence Interval
Intent to get pregnant	0.933	0.884-0.985
Present life satisfaction	1.048	1.022-1.075
Number of children (three or more)	0.474	0.258-0.869
History of drug use	0.794	0.688-0.917

with HIV infection did not occur as a result of their HIV status but, rather, is the result of women living in situations where violence is prevalent. It is noteworthy that strangers were the second most frequently identified group responsible for sexual violence before and after HIV infection in this study. The level of physical and sexual violence reported by these HIV-infected women not only has the potential to compromise their health and well-being (Constantino, Sekula, Rabin, & Stone, 2000) but also has implications for HIV prevention. We did not ask women whether their HIV infection was related to sexual violence. However, the fact that 39% of the women reported being raped one or more times before HIV diagnosis and 15% reported being raped since HIV diagnosis further underscores

the potential for sexual violence against women to be a source of HIV transmission.

In examining disclosure of HIV-seropositive status to intimate partners, a large number of women who had a current partner (89%) reported they had disclosed their status to their sex partner(s). These findings seem to support those of Gielen, O'Campo, Faden, and Eke (1997), who reported that approximately 88% of the women in their study had disclosed their HIV status to at least one person; usually, disclosure was to a partner and/or family members. Although we did not ask women what the response of their partner had been or whether they feared physical violence if they disclosed they were HIV infected, a statistically significant relationship was noted between a history of physical and/or sexual violence and disclosure to current sex partner. However, rather than decreased disclosure in women who had a history of violence, we found women who had experienced physical and/or sexual violence were more likely to have disclosed to their current sex partner. Future research in this population needs to be conducted to substantiate this finding and to determine the factors influencing greater disclosure in this group.

Although age was not a significant variable included in the final logistic regression model, there was a significant relationship found between women's age and physical and/or sexual violence since HIV diagnosis. In this study, increased age was associated with greater violence. This finding is in contrast to findings in other studies that have shown that greater violence is associated with younger age (McCauley et al., 1995; O'Campo et al., 1994; Vlahov et al., 1998).

Four variables (life satisfaction, history of drug use, number of children, and intent to get pregnant) were significant in the final logistic regression model. Not unexpectedly, women who had experienced violence since becoming HIV infected reported significantly lower life satisfaction than women who had not experienced violence. From the perspective of psychoneuro-immunology, adverse effects on immunity have been observed in women who are experiencing marital discord (Kiecolt-Glaser et al., 1987). Therefore, it is likely that women in violent relationships may experience even greater distress and immunological suppression. Ignoring the violence experienced by women has the potential of undermining adequate treatment of

their HIV infection, as well as negatively affecting their overall quality of life and sense of well-being. Women who have a more positive outlook on life and a higher quality of life may take better care of their health and more adequately manage their illness. Likewise, as has been reported in a number of other studies of violence against women (Abbott et al., 1995; Cohen et al., 2000; McCauley et al., 1995; Vlahov et al., 1998), a history of drug/alcohol use in women was found to be associated with having experienced violence since HIV diagnosis. It is likely that the relationship between drug use and violence is reciprocal. Violence leads to drug use, whereas drug use places women at high risk for violence. Successful intervention to end this vicious cycle will require intensive strategies of treatment and follow-up support.

Findings in this study, that to our knowledge have not been previously reported in HIV-infected women, indicated that having three or more children and an intent to have another child were significantly associated with violence since HIV diagnosis. It may have been that women who had several children stayed in or entered violent relationships due to a need to provide for their children. Often, women have been shown to place the need to provide for their children before their own well-being (Mays & Cochran, 1989; Minkhoff & DeHovitz, 1991; Moneyham et al., 1998). The fact that these women were not only poor and had children but were also HIV infected potentially further limited their options in escaping violent relationships or living situations. Furthermore, the greater intent to have another child in women who experienced violence may have resulted from these women wanting to have a dependent child to love and to return their love and to add value to their lives (Sowell, Phillips, & Misener, 1999). Additionally, women may have incorrectly perceived that violence from a partner or family member (domestic violence) would decrease if she were pregnant or had a baby. The fact that other researchers have reported a link between violence and child abuse (Straus & Gelles, 1990; Vlahov et al., 1998) makes the finding that women who were in or had experienced violent relationships were more likely to want more children as well as already have more children a matter of concern. Although not directly examined in this study, social policies that curtail welfare benefits for women with larger families may have the unintended result of

forcing poor women and their children into violent relationships or situations. Further qualitative and quantitative research is needed to more fully explore HIV-infected women's desire for a baby, especially women who are living with violence, and to examine the effect of violence on women and their dependent children.

Nursing Implications

Clearly, the high incidence of physical and sexual violence against women found in this study underscores the need to address the issue of violence in poor women who are HIV infected or at high risk for HIV infection. A concerning number of women in this study have experienced physical and/or sexual violence. Such violence can directly undermine women's health and serve as a barrier to women's accessing health care services.

Nurses, as the health care professionals in most frequent contact with women with HIV/AIDS, are in a unique position to assess for physical and sexual violence in women and to intervene when violence is identified. Nurses in HIV/AIDS clinics may be the only health care provider whom women are willing to trust with their secrets related to past or current experiences of violence. However, nurses working with women with HIV infection will need to go beyond merely assessing for violence to develop community resources and networks that can support women in dealing with or escaping from situations in which they are physically and/or sexually abused. When women have a history of physical or sexual violence, counseling and peer assistance resources need to be developed to assist them in recovering from these traumatic experiences. For nurses working with HIV-noninfected women who are experiencing physical and sexual violence, it may be particularly important to understand the link between violence and HIV infection. Assisting women to leave situations in which violence occurs can be an important step in HIV prevention efforts.

The findings of our study support previous research: Most women experience violence at the hands of an intimate partner (Commonwealth Fund, 1993; U.S. Department of Justice, 1998). However, the number of women in our study who indicated they had experienced physical and/or sexual violence from associates

or strangers in their community underscores the violent environments in which many HIV-infected women live. Drugs and a history of drug use further increase the likelihood of violence. These findings have implications for nurses in AIDS care at individual and community levels. On the individual level, it is important for nurses to assist women who use drugs in obtaining treatment. Simply removing themselves from drug use situations may be the single most important step in stopping physical and sexual abuse. For women who do not use drugs, providing assistance to leave living situations in which drug use is prevalent may be necessary to facilitate their well-being. It is noteworthy that women who reported experiencing violence were more likely to have three or more children and to intend to have another baby. One possible explanation for these findings is that women who are living in violent domestic situations continue having children in the hope that having more children will make their situation better. Such women need to be referred to individual and/or family counseling to help them identify their motivations for staying in a violent relationship and for bringing another child into a violent environment. Furthermore, it is important for nurses who identify women with children who live in violent situations to also assess for the safety and well-being of the children. Even if a woman elects to stay in circumstances where she is in danger of violence, it may be necessary to work with authorities to ensure the safety of the children.

On a community level, nurses need to be advocates for better policing and protection of women from violence. Collectively, the Association of Nurses in AIDS Care can be a powerful voice demanding that HIV-infected women be provided safe housing, gender-sensitive drug treatment programs, and respectful treatment in the legal system when they report instances of violence against them. It may be particularly important for nurses to work to ensure adequate placement resources for the children of women who are experiencing violence that will allow for women to access treatment and support interventions. Nurses must ensure that HIV-infected women do not become victims of the system as well as victims of physical and sexual violence. Understanding the frequency of violence experienced by HIV-infected women and the potential adverse effects it can have on their health and well-being should encourage nurses in AIDS care to fully

incorporate assessment for violence and interventions for violence against women into their practice.

Acknowledgments

The authors acknowledge the women who participated in this study and the diligent staff of the Southern Women's Health Project. This research was funded through the National Institute of Nursing Research (1R01 NR04374-01A1).

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