Violence Screening and Viral Load Suppression Among HIV-Positive Women of Color

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Abstract

Recent research suggests intimate partner violence (IPV) is commonly experienced by many people living with HIV/AIDS, which can complicate their care. We introduce a novel approach to screening for history of violence among 102 women of color living with HIV and receiving care at an outpatient public health clinic. Using a composite measure composed of data from a variety of screening tools, we were able to determine that 70.6% of the women had a history of violence using the composite measure, and that 43% screened positive using multiple screening tools. Although overall viral load suppression rate was high at 81.4%, women with a history of violence were less likely to be virally suppressed when compared to those without such a history (76.4% versus 93.3%, $p < 0.05$). Our findings suggest using a variety of screening questions at entry and at follow-up care appointments may be key to identifying and supporting women survivors who may not disclose violence when first asked. Future research should foster further development, analysis, and use of a variety of screening tools such as those used in this study.

Introduction

LIKE HIV/AIDS, VIOLENCE AGAINST WOMEN is also an epidemic. According to the Centers for Disease Control and Prevention (CDC) 2011 National Intimate Partner and Sexual Violence Survey (NISVS), 1.6 million women were raped in 2011 in the US.¹ During their lifetimes, nearly 1 in 5 American women have been raped, 1 in 6 have been stalked, and 1 in 5 have been survivors of severe physical violence by an intimate partner. The 2011 NISVS found women of color experienced the highest rates of sexual violence. Similarly, women of color continue to be disproportionately impacted by the HIV epidemic, although new cases of HIV among women have been decreasing.²

IPV and other forms of violence can be both a risk factor and a consequence of HIV.^{3,4} A 2012 meta-analysis found 55.3% (95% CI 36.1–73.8) of women living with HIV were also survivors of IPV.⁵ In an analysis of a nationally representative sample of 2864 adults living with HIV and receiving medical care, Zierler et al.⁶ reported 20.5% of women experienced physical harm since their HIV diagnosis, of whom half reported being HIV-positive as the motive for the

violence. IPV and fear of IPV have been associated with substance use, multiple sex partners, and exchange sex, coercive sex, challenges negotiating safe sex, having sex with men who are HIV-positive or have HIV risk factors such as injection drug use, and increased risks for HIV and other sexually transmitted infections (STIs).^{6,7} Although IPV survivors may be more likely to get tested for HIV than women who do not experience IPV,⁸ fears of IPV can complicate and even deter disclosure of HIV or other STIs by women to their male partners, since it can trigger violence.^{9,10}

IPV can be a formidable barrier to access of health care for women living with HIV.¹¹ IPV survivors have much poorer physical and mental health than those who do not experience IPV.^{1,12} IPV is associated with poorer health outcomes for people living with HIV, including detectable viral loads, low CD4 counts, ART failure, and high no-show rates for HIV care.^{13,14}

In this article, we introduce a novel approach to screening for history of violence among 102 women of color living with HIV and receiving HIV primary care at an outpatient clinic in Chicago, IL. Initially, we were interested in understanding

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the prevalence of women living with concerns of violence and how this related to care outcomes. However, we were surprised by early differences we saw in screening tools, specifically that identification of violence concerns appeared lower on a standardized measure of violence versus another locally adapted screening tool. We found using multiple screening tools administered across participants' engagement in care led to a higher identification rates among women living with a history of violence. We postulated disclosure may have been facilitated by asking different kinds of questions over time, presumably after some rapport was established between the participants and their peer patient navigator who conducted all interviews. Finally, we explored how history of violence might impact viral load suppression.

Methods

Study participants

Between 2010 and 2013, the Ruth M. Rothstein CORE Center, Chicago, IL, recruited 392 women into a Peer Patient Navigation intervention, Project WE CARE (Women Empowered to Connect And Remain Engaged in Care), funded through the HRSA Special Projects of National Significance Women of Color (SPNS WOC) initiative. Participants were systematically randomized into either the multisite evaluation (MSE) ($n = 146$) or the local evaluation ($n = 246$). As part of a secondary analysis of local evaluation data, we explored the relationship between history of violence and viral load suppression by screening for history of violence, HIV care efficacy, medication problems, and viral load suppression. The analytic sample was composed of 102 women who completed all of the interviews (baseline, and 3, 6, and 12 month follow-ups).

Data collection procedures

Screening tools administered at baseline included the Women's Experience of Battering (WEB) Scale, a three question Emergency Room (ER) screen for violence, and a question measuring fear of partner as a barrier to care. A follow-up question regarding how the participant became HIV-infected was asked at 3 months, and included a response for sexual assault. Finally, an acuity assessment was administered at baseline and every 6 months, and included a question regarding the level of safety in the participant's relationship. Disclosure on any one screening tool was coded as a positive for Violence Screen.

The WEB scale¹⁵ adopted from the MSE baseline instrument and described elsewhere¹⁶ assesses possible loss of power and control in relationships. Prior studies suggest a score of 20 or greater constitutes a positive test for IPV.^{13,14,17} Reliability for the current sample was strong (Cronbach's Alpha = 0.96).

Three screening questions were adopted for our baseline interview from our ER partners at Stroger Hospital and included three yes/no questions: Have you ever been emotionally or physically abused by your partner or someone important to you? Are you afraid of a past or current partner? and Has anyone forced you to have sexual activities? Women responding affirmatively to one or more items were identified as screening positive for IPV and in need of referral for community-based IPV services.

TABLE 1. CORE CENTER WOMEN OF COLOR PARTICIPANTS ENROLLED IN VIOLENCE SUBSTUDY

Variable	Response	Percent/ number
Race	African American	78% (78/102)
	Latina	14% (14/102)
	Multi-racial/white	8% (8/102)
Age	Mean	44 years
	Range	22–68 years
Relationship status	Single	76% (75/102)
	Separated or divorced	15% (15/102)
	Married	7% (7/102)
	Widowed	2% (2/102)
	Missing	3% (3/102)
Housing status	Renting house or apartment	61% (62/102)
	Unstably housed	39% (40/102)
Sexual orientation	Heterosexual	93% (94/102)
	Gay/lesbian	2% (2/102)
	Bisexual	5% (5/102)
	Missing	1% (1/102)
Education	Elementary school (6 th grade or less)	1% (1/102)
	Less than high school/GED	24% (24/102)
	High school/GED	61% (58/102)
	Associates degree	11% (11/102)
	Bachelors degree	1% (1/102)
	Missing	7% (7/102)
Employment status	Working full time	7% (7/102)
	Working part time	13% (13/102)
	Not working but looking	38% (37/102)
	Not working not looking	19% (18/102)
	In school	2% (2/102)
	Not working due to disability	20% (20/102)
	Homemaker	5% (5/102)
Monthly income	No Income last month	25% (25/102)
	\$1–\$500 last month	16% (16/102)
	\$501–\$1000 last month	46% (46/102)
	\$1001–\$1500 last month	8% (8/102)
	\$1501–\$2000 last month	1% (1/102)
	\$2001–\$3000 last month	1% (1/102)
	\$3001–\$4000 last month	1% (1/102)
	Do not know	1% (1/102)
	Refused to answer/missing	3% (3/102)
Care engagement status at the time of project enrollment	Newly diagnosed (diagnosed within 6 months)	34% (35/102)
	In sporadic care (only 1 visit in preceding 12 months)	26% (26/102)
	New to care (old diagnosis; never in care)	15% (15/102)
	Lost to care (no visits in preceding 12 months)	10% (10/102)
	“At risk” of dropping out of care (transferring care or experiencing psychosocial crisis)	15% (16/102)

A retrospective assessment of early care barriers adopted from the MSE and described elsewhere¹⁸ included a question on whether a woman's fear of her partner posed a barrier to her seeking care. Possible responses included "A great deal," "Somewhat," and "Not at all," along with "Do not know," "Refused to answer," and "NA" options. Responses of "A great deal" and "Somewhat" were treated as positive indicators of IPV.

During 3-month follow-up visits, we asked participants how they became HIV-infected, including "How likely is it that you became infected with HIV as a result of being forced to have sex with someone who may have been infected?" Responses were recorded on a 4-point scale ranging from "Most likely" to "Not at all likely," with an additional option of "Do not know." Responses of "Most Likely," and "Somewhat Likely" were treated as a positive indicator of violence.

Finally, one item of an acuity assessment instrument administered at 6-month intervals asked women to identify their current level of safety in their relationship(s), with coded responses of facing current life-threatening violence and/or abuse (3); having fears of safety (emotional, sexual, or physical safety) (2); having experienced abuse or domestic violence in the past (1); and not having experienced abuse or domestic violence ever (0). Responses were identified as acuity violence concerns if a patient reported 1, 2, or 3.

HIV care plan efficacy. This 3-item assessment asked clients to rate their confidence in following and sticking with their HIV care plan on a 4-point scale of 1–4 (No Confidence to Very Confident) approximately 3 months following enrollment in the project. Responses were summed, resulting in a total score with higher scores signifying more confidence. Reliability for this sample was good (Cronbach's Alpha=0.79).

Problems with medications. This 18-item assessment, modified from the AIDS Clinical Trials Group (ACTG) Adherence Baseline Questionnaire,¹⁹ asked clients the frequency of medication problems on a 5-point scale of 1–5 (All

of the time to Never) at their 12-month follow-up interview. Items were reversed scored and averaged, resulting in higher scores signifying more problems. Reliability for this sample was strong (Cronbach's Alpha=0.90).

Viral load suppression was measured by obtaining from the clinical record the most recent viral load result within the 12 months following baseline as suppressed (<200 copies/mL) or not suppressed (≥200 copies/mL). This definition is slightly different than the HRSA HIV/AIDS Bureau's core performance measure reported by Blank et al.²⁰ because we did not exclude patients who were not retained in care.

Demographic survey questions relating to race, age, relationship status, housing status, sexual orientation, educational status, employment status, monthly income, and care continuum status were adopted from the SPNS WOC MSE explained elsewhere.¹⁷ Care continuum status at the time of project enrollment was adapted from the MSE item to identify at risk patients who were transferring into care or experiencing psychosocial crises. All instruments and informed consent forms were reviewed and approved for use by the Institutional Review Board of the Cook County Health and Hospitals System.

Data analysis

Descriptive summaries were used to explore distributions of study variables and to ensure data quality. Cronbach's alpha was used to determine the reliability of the WEB, HIV care plan efficacy, and problems with medications measures. Chi-square tests of association and point-biserial correlations were used to examine bivariate relationships between psychosocial variables and viral load suppression. Preliminary estimates of convergent validity of newly developed questions were established by point-biserial correlations with WEB scores. A binary logistic regression with blockwise entry of predictors was used to identify the relationship between history of violence and viral suppression after controlling for HIV care plan self-efficacy and medication

TABLE 2. FREQUENCY OF VIOLENCE CONCERNS BY TYPE OF SCREENING TOOL (N=102)

<i>Components of composite screening indicator</i>	<i>Criteria for concern/ history of violence</i>	<i>N (%)</i>	<i>Cases uniquely identified N (%)</i>
Baseline WEB scale	Scores ≥ 20	17 (16.7%)	2 (1.9%)
Baseline violence screening tool	Endorsement of 1 or more screening items	42 (41.2%)	8 (7.8%)
Baseline screening question #1: Have you ever been emotionally or physically abused by your partner or someone important to you?	Yes	37 (37.3%)	–
Baseline screening question #2: Are you afraid of a past or current partner?	Yes	15 (14.7%)	–
Baseline screening question #3: Has anyone forced you to have sexual activities?	Yes	21 (20.5%)	–
Baseline barrier to HIV care – "Thought that partner might hurt you"	"A great deal" and "Somewhat"	26 (25.5%)	3 (2.9%)
HIV Infection through sexual assault	"Most likely" and "Somewhat likely"	26 (25.5%)	4 (3.9%)
Acuity violence question- Administered at baseline and every 6 months	Report of past or current concerns of safety	42 (41.2%)	8 (7.8%)
Composite history of violence screening	Positive screening on any components	72 (70.6%)	

TABLE 3. DESCRIPTIVE STATISTICS ON PREDICTORS AND OUTCOME VARIABLE (N=102)

Variable	Mean (SD, range)	Frequency (%)
Composite history of violence		72 (70.6%)
3-month HIV care plan self-efficacy ^a	11.59 (0.96, 7–12)	74 (72.6%)
12-month medication problems ^b	1.24 (0.37, 1–2.72)	38 (37.3%)
12-month viral load suppression		83 (81.4%)

^aScale range is 3–12; higher scores indicate greater self-efficacy.

^bScale range is 1–5; higher scores indicate more problems with medications.

problems. Data were analyzed using SPSS (IBM Corporation, released 2011. IBM SPSS Statistics for Windows, Version 20. Armonk, NY: IBM Corp.).

Results

Demographics

As summarized in Table 1, the majority of women participating in the study were heterosexual, single, and African American. Mean age was 44 years old (range 22–68 years) and 73% had completed high school/GED or more in education. Over half reported renting a house or apartment (63%); the remaining 37% were fragilely housed (with most living in someone else's house or apartment and a minority in substance use treatment facilities, halfway homes, or shelters). The majority were unemployed and reported a monthly income of less than \$1000. Regarding care engagement status, nearly half were new to HIV primary care (34% of the women were newly diagnosed; 15% were new to care with diagnoses older than 6 months). Over one third were suboptimally engaged (26% were sporadically engaged and 10% were lost to care). All women in the study had been under a prescription for ART either prior to project enrollment or at that time.

Rates of violence concerns identified by the composite measure and its individual components are listed in Table 2. Overall, more than two thirds of the sample (70.6%) indicated a history of violence using the composite measure (i.e., positive on at least one screening tool). More than half of women having a history of violence were identified using two or more component measures (44 of 72, 61.1%), and 35% of the overall sample (36 of 102) identified a history of sexual assault on one or more of the components. Individual components identified concerns of violence in 14.7–41.2% of the sample. The two screening questions identifying the highest percentages of concerns were the acuity violence

assessment and the baseline ER screening question, which identified 41% and 37% of participants as having a history of violence, respectively.

Each of the screening tools made a unique contribution to the identification of patients with history of violence. The percentage of women uniquely identified by each individual component measure and not by any other component ranged from 1.9% to 7.8% (Table 2). All newly developed baseline screening tools were moderately correlated with baseline WEB scores (rpb 0.284–0.320, $p < 0.05$) supporting an initial exploration of convergent validity.

Overall, patients reported very high self-efficacy around following their HIV care plans. In general, they reported being “somewhat” to “very confident,” and 72.6% reported being “very confident,” as shown in Table 3. Participants reported few problems with medications, with them occurring mostly “sometimes” to “rarely,” with 37.3% reporting no problems.

While the overall viral load suppression rate was high at 81.4% (83/102), women with a history of violence were less likely to be suppressed when compared to those without such a history [76.4% versus 93.3%, χ^2 (1, $n = 102$) = 4.01, $p < 0.05$]. The relationship between viral load suppression and history of violence was significant only for the composite screening variable. Individual screening components were not significantly related to viral suppression.

Adjusted Odds Ratios from the logistic regression models predicting viral load suppression are shown in Table 4. The first model included HIV care plan self-efficacy, and medication problems. In the second model, the composite measure of history of violence was added as a predictor. Both models were significant [χ^2 Model 1 (1, $n = 102$) = 13.32, $p < 0.01$; χ^2 Model 2 (1, $n = 102$) = 5.92, $p < 0.01$] and after controlling for HIV care plan self-efficacy and medication problems, history of violence significantly improved the fit of the model [χ^2 Change (1, $n = 102$) = 5.92, $p < 0.01$]. The Hosmer-Lemeshow test indicated a good fit between the data and model, and no standardized residuals exceeded ± 3 . In Model 2, greater self-efficacy for HIV care was associated with an increased likelihood of viral suppression, with a 1-point increase in self-efficacy score associated with a 1.8 times increase in likelihood of viral suppression. Problems with medications and a history of violence were both significantly related with a decreased likelihood of viral suppression. A 1-point increase in medication problems score was associated with a 6.6 times decrease in the likelihood of being suppressed, and women reporting a history of violence were 8 times less likely to be virally suppressed.

Discussion

We found over 70% of the women participating in our study were survivors of violence. Each of the five tools uniquely contributed to identifying women with histories of

TABLE 4. MULTIVARIATE LOGISTIC REGRESSION PREDICTING VIRAL SUPPRESSION (N=102)

Variable	Model 1 AOR	(95% CI)	p	Model 2 AOR	(95% CI)	p
HIV care plan self-efficacy	1.99	(1.17, 3.37)	0.01	1.84	(1.10, 3.09)	0.02
Medication problems	0.32	(0.08, 1.25)	0.10	0.15	(0.03, 0.83)	0.03
History of IPV				0.12	(0.02, 0.93)	0.04

violence, suggesting the utility of using a variety of IPV and violence screening tools over the course of providing HIV care to women. Asking questions multiple times in a variety of ways may be key to identifying women who may not disclose violence when first asked. Although overall retention was excellent for this intervention, women experiencing histories of violence were less likely to be suppressed, similar to the findings of Machtinger et al. with regard to recent trauma.²² Women reporting a history of IPV were almost 8 times less likely to be virally suppressed, even after accounting for important explanatory variables such as HIV care plan self-efficacy and problems with medications.

Limitations

Our findings may be limited due to use of newly developed measures that have not been formally validated. Our sample size was also small, limiting generalizability of our findings, and we acknowledge our results do not illustrate the IPV challenges that occur in other HIV populations. Another important caveat of our study is that our screening tools were not solely limited to IPV, and thus may have also captured experiences with violence relating to child abuse and other forms of violence. Medication problems reported by the study participants were low, possibly due to a response bias to downplay medication adherence concerns of clinical staff.

Recommendations

We recommend the use of a variety of screening questions at entry and follow-up care appointments to better identify and provide support to HIV-positive women who may not disclose violence when first asked. Additional research is needed to further the development, analysis, and use of a variety of screening tools such as those used in this study. Multimodal screening and counseling for violence should become routine in primary care. The development and incorporation of trauma-informed assessment and care models should also be considered to assure continuity of care and improved health outcomes.

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