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Acceptance of HIV Antibody Testing Among Women in Domestic Violence Shelters

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Abstract

The purpose of this study was to examine which factors derived from an adapted version of the Health Belief Model are associated with HIV testing among women at domestic violence shelters in the rural south (N = 112). Participants were administered self-report questionnaires to assess for test acceptance and were offered private and free HIV rapid testing. A logistic regression analysis was performed. Results indicated that higher perceived susceptibility and higher PTSD symptoms predicted a greater likelihood of HIV test acceptance. The most common reason given for not testing was a lack of time. Implications are discussed.

Keywords

Rapid HIV testing; domestic violence; intimate partner violence; HIV and IPV

Two epidemics that face women today, and in particular African American women, are HIV and intimate partner violence (IPV). In 2005, women constituted 26% of HIV/AIDS cases in the United States (Centers for Disease Control and Prevention [CDC], 2005), with 69% of those being among African American women. The national rate of AIDS cases in 2005 was 25 times higher in African American women (the group with the fastest growing number of persons contracting HIV in the US (CDC, 2007a; McNair & Prather, 2004) than in White women (50 and 2 per 100,000, respectively; CDC, 2008). Moreover, heterosexual contact

poses the greatest risk for HIV infection among African American women, especially those who are young and live in the South (Lee & Fleming, 2001), in particular Mississippi (CDC, 2002). Similarly alarming is the fact that intimate partner violence (IPV) includes approximately 1.5 million women in the United States who are raped or otherwise physically assaulted by a current or former spouse, cohabitating partner, or date each year (Tjaden & Thoennes, 2000).

HIV and Intimate Partner Violence

There is accumulating evidence to suggest that there is a link between the epidemic of IPV and HIV (Dunkle et al., 2004; Gielen, McDonnell, Burke, & O'Campo, 2000; Rountree, Pomeroy, & Marsiglas, 2008). Women with IPV have many risk factors for HIV infection. For instance, women with IPV are significantly more likely than those without IPV to report high STD/HIV risk perceptions and gender-based risks including sexual control by male partners (Raj, Silverman, & Amaro, 2006), increased risk for further abuse when they ask their primary partner to use condoms (Wingood & DiClemente, 1997), to engage in sex with a risky sexual partner (El-Bassel, 1998), to self-report STIs (Laughon et al., 2007; Martin et al., 1999), and to worry about the acquisition of HIV (Wingood & DiClemente, 2000). Women with IPV are also more likely to have contracted STIs in the previous year (El-Bassel et al., 1998) and are less likely to have been tested for HIV (Molitor, Ruiz, Klausner, & McFarland, 2000) than those without IPV.

In addition to having rapidly rising high rates of HIV infection, African American women are also vulnerable to IPV; 29% percent are victimized by their intimate partner at some point in their lives (CDC, 2007b). Tjaden & Thoennes (2000) reported a slightly higher incidence rate of IPV in the African American community than in the White community. However, after controlling for income levels and prevalence of community violence, more violence was found in families distressed economically, which are frequently African American. Given the high risk of HIV infection among African-American women and, in particular, among those with a history of IPV victimization, there is a critical need for these women to know their HIV serostatus so prevention or treatment efforts can be initiated.

Importance of HIV Testing

Early detection of HIV is essential to health care for the infected person and to the reduction of the spread of the disease. Late testers are defined as individuals who acquire AIDS within one year of their HIV diagnosis. Late testers are more likely to be African American or Hispanic (CDC, 2003) and to be exposed to HIV through heterosexual contact (CDC, 2003). Delayed diagnosis and treatment of HIV increases young women's risk of acquiring AIDS (Eng & Butler, 1997; CDC, 2005) while early diagnosis can reduce morbidity and mortality, prolong the duration and quality of life (Rosenberg & Poon, 2000), and reduce HIV risk behaviors after learning about one's serostatus (Bond, Lauby, & Batson, 2005, CDC, 1999).

HIV Testing in Domestic Violence Shelters

Although there is a significant public health need for early detection of HIV, providing testing services continues to be a challenge because testing is not often offered in locations

that are accessible to high-risk populations like women victimized by IPV. In an effort to fill the gap in health care accessibility, the CDC has implemented a model for diagnosing HIV infections outside of the traditional medical settings (CDC, 2005). Domestic violence shelters could potentially be one of these non-traditional settings. As yet, these shelters have not been used as a site for testing, despite research that suggests women with IPV are a high-risk for HIV infection and that there are more than 1,600 domestic violence shelters throughout the country (National Coalition Against Domestic Violence [NCADV], 2005). The philosophy of these shelters is to encourage and empower (NCADV, 2005). Because the decision to get an HIV test may lead to an increase in self-efficacy, engagement in routine HIV testing, and advancement of the knowledge of HIV healthcare, domestic violence shelters are ideal settings for testing. To our knowledge no studies have examined whether HIV testing in domestic violence shelters would be acceptable to the women residents. Thus, the aim of this research was to examine which factors may be related to acceptance of HIV testing among women who report recent IPV and reside in domestic violence shelters in Mississippi, where rates of HIV infection are high and IPV ranks the second highest in the nation (NCADV, 2005). In order to examine which factors might be most salient for our target population in relation to receiving an HIV testing, we have used the Health Belief Model (HBM), which is a major organizing framework for explaining and predicting acceptance of health behavior recommendations (Austin, Ahmad, McNally, & Stewart, 2002; Rosenstock, Strecher, & Becker, 1994).

The HBM consists of five components, four originals and one additional: (1) Perceived susceptibility: The subjective perception of the risk of contracting a health condition, (2) Perceived severity: Subjective feelings concerning the seriousness of contracting an illness or of leaving it untreated (including evaluations of both medical and clinical consequences and possible social consequences). (3) Perceived benefits: The belief in the effectiveness of strategies designed to reduce the threat of illness. (4) Perceived Barriers: The potential negative consequences that may result from taking particular health actions, including physical, psychological, and financial demands (Rosenstock, 1974) and, (5) Self-Efficacy: The belief in being able to successfully execute the behavior required to produce the desired outcomes. The HBM has been used successfully for building HIV prevention and intervention programs (Ogden, 2003) and has demonstrated considerable utility in predicting screening for other diseases such as Tay Sachs, tuberculosis (Rosenstock, Strecher, & Becker, 1994), and HIV testing including HIV/AIDS sexual risk behaviors (Payne et al., 2006).

In order to provide a more comprehensive model than the traditional HBM and to identify factors related to acceptance of HIV testing among women in domestic violence shelters we have included two other factors as components of the HBM that appear to be pertinent to acceptance of HIV testing in IPV: male partner risk and posttraumatic stress disorder (PTSD). Male partner risk is important to HIV risk because abusive men are more likely than non-abusive men to be more controlling of sexual decision making (e.g. using condoms, deciding on vaginal and/or anal sex), show greater promiscuity (Raj et al., 2006; Erickson, 1998; Silverman & Williamson, 1997), and be more likely to engage in drug and alcohol abuse and risky sexual behaviors (Lipsky, Caetano, Field, Bazargan, 2005; Plect, Sonenstein, & Ku, 1993). The second factor PTSD is one of the most prevalent psychiatric

disorders in battered women (Golding, 1995; Delahanty, Bogart, & Figler, 2004), and has been associated with high rates of risky sexual behaviors (Hutton et al., 2001). Researchers have postulated that the link between PTSD and HIV risk may exist because PTSD symptoms may present as interpersonal skill deficits which impair a woman's ability to assess risk, to utilize effective problem-solving skills, and to communicate effectively when negotiating safe sex behaviors (El-Bassell, Caldeira, Ruglass, & Gilbert, 2009). Hence, we expected that women with higher levels of PTSD may be more likely to accept HIV testing, because of their higher degree of HIV risk.

METHOD

Participants

A total of 131 women participated in the study. Recruitment took place at three battered women shelters in rural Mississippi. The sample was divided among three domestic violence shelters in the state: Shelter A (46% of the participants), Shelter B (40% of the participants), and Shelter C (14% of the participants). Most (112 women) met criteria for recent IPV according to empirically validated cut-off scores of the Women's Experience with Battering Scale ([WEB]; Coker, Pope, Smith, Sanderson, & Hussey, 2001). Participants had an average age of 32 years old (Table 1). Seventy-six percent were African American, 19% were white/Caucasian, and .8% identified as Hispanic. Forty-four percent of the women classified themselves as single/never married, 23.7% reported being separated, 20.6% were married, 7.6% were divorced, 1.5% were widowed and 63% were high school graduates.

Procedures

Women who had completed the shelter's intake processes and those who used the services of the shelters were asked to participate in the study. They were recruited on weekdays during group counseling sessions and weekly meetings. Informed consent procedures included the option of a free private and confidential HIV rapid testing. For those participants who chose to receive HIV rapid testing, standard confidential pre-test and post-test counseling was provided by the PI who is certified by the State Department of Health Division of STD/HIV for HIV. Prevention Counseling was conducted immediately before testing and upon receipt of test results (with an estimated total duration time of 15–20 minutes). Each participant was tested with a Uni-Gold™ Recombigen® HIV Antibody Test which is an FDA approved test requiring a finger-stick blood sample. Testing was offered after the completion of the self-report measures.

Measurements

A demographic questionnaire assessed age, ethnicity, marital status, education, living arrangements outside of the shelter, willingness to get a HIV test, and health seeking behaviors. Capasa Health Protection Questionnaire (Erickson, 1989) was used to assess for perceived susceptibility to HIV. Four items were scored on a 1–5 point rating scale ranging from “disagree strongly” to “agree strongly.” Cornbach's alpha for the susceptibility subscale is .84 (DeHart, & Birkimer, 1997). Perceived Severity Inventory measured perceived severity of HIV using four items. Responses range from “not at all severe” to “very severe.” This inventory was adapted and expanded by Payne et al. (2006). Perceived

Benefits Inventory (Dorr, Kruecheberg, Strathman, & Wood, 1999) measured four perceived-benefit of HIV testing items that were scored on a 5 point rating scale ranging from “disagree strongly” to “agree strongly.” Reliability as measured by Cronbach’s alpha was .75 (Champion, 1999). Perceived Barriers Inventory consisted of four items with responses that ranged from 1–4 from “Not at all difficult” to “Very difficult.” Higher numbers indicate more perceived difficulty. This inventory was adapted from *Psychosocial correlates of voluntary HIV antibody testing in college students* by (Dorr et al. 1999). Self-efficacy was measured by the General Self-Efficacy Schwarzer Scale (Schwarzer, 1992): This scale had ten items and assessed a woman’s general confidence in her ability to handle difficult situations using a 5 point rating scale ranging from “not at all true” to “exactly true.” Cronbach’s alphas ranged from .76 to .90, with the majority in the high .80s. The scale is unidimensional (Schwarzer & Fuchs, 1996).

HIV and IPV Measurements

Male partner HIV risk, was assessed through four items asking whether, to the participant’s knowledge, her partner had ever injected drugs, had sex with other people while in the relationship with the participant, had sex with other people who have injected drugs, or been infected with an STI. The second IPV variable, PTSD symptoms were measured by the Davidson Trauma Scale ([DTS]; Davidson, Smith, & Kudler, 1995). It provides a 5-point measure of the frequency (“not at all” to “every day”) and the severity (“not at all” to “extremely distressing”) of each of the 17 symptoms listed in the DSM-IV-TR. This scale has been validated in women with interpersonal trauma (Zlotnick, Davidson, Shea, & Pearlstein, 1996). Additionally, the HIV Anxiety Scale and The STI Anxiety Scale (Wingood & DiClemente, 1997), which measures participants’ perceptions of HIV and STI risks in their current main relationship. These four-item scales used a four-point response format ranging from Very worried to Not worried at all. The HIV Testing and Return Inventory was represented by a categorical variable: 0 = no HIV test, 1 = an HIV test and returned for results. The HIV Testing Refusal Inventory was examined by a single question indicating why the participant chose not to receive HIV testing: (1) I do not feel I am at risk for HIV; (2) I do not want to know if I am HIV positive; (3) I am not sure if my results will be kept private; (4) I do not have time; (5) I want to be tested but not in this environment; (6) other ____.

Results

Thirty-five percent (N = 39) of participants consented to be tested for HIV and all tested were negative. The mean scores for predictor variables are shown in Table 2. An omnibus logistic regression was performed with HIV test acceptance as the dependent variable, and the expanded Health Belief Model variables (perceived susceptibility, perceived barriers, perceived severity, perceived benefits, perceived male partner risk behaviors, self-efficacy, PTSD, and perceived STI) as the independent variables. The full HBM model was statistically significant, $X^2(8, N=112) = 24.93, p < .01$, indicating that the model was able to distinguish between respondents who tested and did not test. The model as a whole explained between 20% (Cox & Snell R^2) and 27% (Ngelkerke R^2) of the variance in test acceptance and correctly classified 76% of cases. Two of the eight variables were significant

predictors of test acceptance. Higher perceived susceptibility predicted a greater likelihood of HIV test ($z = 3.75$, $p = .05$). Higher PTSD symptoms scores also predicted a greater likelihood of test acceptance ($z = 11.95$, $p = .00$; Table 3). The most common reason given for not testing was a lack of time, followed by not feeling at risk for HIV, not wanting to test at the shelter, and other. Confidentiality and not wanting to know HIV status were uncommon reasons for not testing.

Discussion

The present study examined which HBM factors were related to acceptance of HIV testing among battered women. To better address the needs of our target population (battered women), we expanded the HBM to include IPV variables, male partner risk behaviors and PTSD. Results indicated that the HBM predictor variables perceived susceptibility, perceived barriers, perceived severity, perceived benefits, perceived male partner risk behaviors, self-efficacy, PTSD, and perceived STI explained 27% variance for acceptance of HIV testing in a sample of battered women living in a shelter. These findings were consistent with other studies that have found support for an expanded HBM as a full comprehensive model in the prediction of testing (Vermeer, Bos, Mbwanbo, Kaaya, & Schaalma, 2009; Maguen, Armistead, & Kalichman, 2000). For instance, a study with Tanzanian medical students found that the model explained 31% of the variance of intention to participate in HIV testing (Maguen, Armistead, & Kalichman, 2000) and another study including Scottish gay men found that 28% of the variance in HIV testing behavior was explained (Flowers, Knussen, & Church, 2003).

The current study found that perceived susceptibility and the IPV-specific variable, PTSD, were the only factors that were significantly related to acceptance of HIV testing. More specifically, the higher degree of perceived HIV risk susceptibility the greater the likelihood that battered women followed through with an HIV test. This finding suggests that perhaps an awareness of HIV risks increases women with IPV receptiveness to HIV testing. However, in the current study, our measure of perceived susceptibility did not assess whether the women based their perceptions of HIV risk on known HIV risk factors. Results also indicated that higher PTSD symptoms were associated with greater probability of HIV testing. PTSD is associated with great risks for HIV (El-Bassel et al 2009) and therefore women might have perceived themselves as vulnerable to HIV. It is encouraging that these women might recognize their risks and are willing to be proactive in self-care behaviors while residing at a domestic violence shelter. They accepted HIV testing perhaps as a “window of opportunity” to change by taking control of their own well-being.

The present study's negative findings include women's perception of partner's risk behaviors which was not significantly related to HIV test acceptance, after accounting for other HBM model predictors. Women might not be fully aware of all their risks. According to Cianelli, Ferrer, and McElmurry (2008), low-income rural women's understanding of HIV is often limited. For example, while women may realize that condom use is a safe sex practice, they may believe such misconceptions such as practicing proper hygiene and having a single partner reduces the risk of HIV infection. This study also found that women at domestic violence shelters tend to have many pressing matters to consider including

where to live following their stay at the shelter, hence, taking an HIV test may be perceived by some as compounding pressure due to potential positive test results. The other variables that were found to be non significant were perceived benefits, perceived barriers, perceived severity, and self-efficacy. The lack of a significant relationship may have been due to the small sample size. Additionally, multicollinearity yielded highly correlated values between such variables as perceived severity and perceived barriers and therefore may not give valid results about which predictors are redundant with others.

Overall, 35% of the women in the domestic violence shelters received testing. These findings suggest that there are women in domestic violence shelters who are amenable to HIV testing without an intervention to encourage this behavior. Thus, our findings suggest that domestic violence shelters may be a suitable setting for HIV testing. However our study found that the majority of the women did not test. The study found that the main reason for declining testing (Table 4) at the domestic violence shelter was “I would test in this environment but I do not have time.” Although women reported that they would test in the domestic violence shelter they tended to have many demands that competed with HIV testing times such as work schedules, school schedules, and attending to children. This accounted for another 39% of the sample. Because many women reported a lack of time as being a major factor for not receiving testing, it is possible that victimized women have difficulty in prioritizing and planning of health related issues and treatments. This difficulty may be as a result of impairments in executive functioning caused by repeated abuse (specifically blows to the head area). Exercising executive functioning skills such as planning and organizing may be a barrier to care provision for these women. The second factor that the participants endorsed for declining testing is “I do not feel I am at risk for HIV.” Eighteen percent of women did not perceive themselves to be at risk, which suggest that these women might be more amenable to testing when provided with information about their possible risks. This result also suggests that women in domestic violence shelters need to be assessed for HIV knowledge, especially in terms of acquiring the infection, and treatment of it. A notable percentage of the sample also expressed their distrust of the test being for the sole purpose of HIV. Some believed it was a drug test and feared that if they tested positive they would be required to leave the shelter. Despite efforts to inform them of the contrary, some of the women still refused testing, noting that they would rather take the risk of not knowing a positive result than to have to deal with an immediate need to find shelter.

In light of the findings of this study that a version of the HBM, which was expanded for our target population (battered women) was significantly related to HIV testing, and that one of the two most predictive variables was the variable that was added, future studies could include greater modifications of the HBM than the current study to increase the predictive power of the HBM for women with IPV and for other populations that could benefit from screening tests. These factors could include non-cognitive factors known to be predictive of various health behavior practices (Zak-Place & Stern, 2004). More specifically, future models could include social norms like entrenched traditional gender roles that can facilitate or impede behavior change in terms of HIV testing in women victims of IPV. In this way, if we can identify factors, especially those that are amenable to change that can lead to increased HIV testing in women with IPV, then programs within the domestic violent

shelters can be developed to target these factors to increase acceptance of HIV testing in this vulnerable and difficult-to-reach population.

Limitations

There are several limitations to these data. First, this was a primarily correlational study and therefore causation was not applied. Second, the sample was taken from women using the services of and/or residing in domestic violence shelters in the southern United States. Many of them live in rural areas. Thus generalizability of our findings to more urban areas, to other race and ethnic groups, and to women with IPV who do not reside in domestic violent shelters is unknown. Furthermore, African American women were the majority of the sample, and therefore, racial and ethnic differences were not able to be made. Although African American women are at greater risk to both IPV and HIV, women in other racial, ethnic, and cultural groups should not be ignored as minimizing their risk may lead to the minimization of intervention and prevention research and programs aimed at reducing their at-risk behaviors. A third limitation was the amount of time allocated for testing at the sites. Testing was done within a 2 to 3 hour span on each testing day and at different times at each site and only the PI conducted the testing. Because time was mentioned as the most frequent barrier to testing, if testing were offered all day and with more than one tester, then possibly more women would have been tested.

Despite these limitations, the current study is the first study to examine which factors may be related to acceptance of HIV testing in battered women living in a shelter. Our findings suggest that an expanded version of the HBM may be useful in predicting HIV testing in this population of women, and in particular the factors, perceived susceptibility and PTSD severity may play a salient role. Additionally, our results suggest that offering HIV testing in domestic violence shelters may provide a unique opportunity to a high-risk group of women with little access to care.

Implications for Practice and Policy

Based on the literature that strongly suggests that women with IPV are at increased risk of contracting HIV (El-Bassel, Gilbert, Wu, Go, & Hill, 2005) and our findings that women found HIV testing acceptable in the domestic violent settings, funding (vouchers) for HIV testing in domestic violent shelters should be provided in order that women can go to a participating health clinic to get tested if they choose. Currently, most shelters give vouchers to women for other medical care such as for injuries sustained during a violent act. Extending coverage of such vouchers to include HIV testing may remove barriers to HIV testing and increase HIV risk reduction knowledge for women at high-risk of contracting the disease, thus curbing the spread of it. Additionally, domestic violence shelters could include information about HIV risks and testing (eg brochures, didactic sessions) in their in-take policy, which may increase the likelihood of battered women viewing HIV information as standard care, reducing high risk HIV practices, and getting HIV testing and care provision.

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Table 1

Demographic Information of Sample (N=112)

<u>Demographic</u>	<u>Category</u>	<u>Average/Percentage</u>
Age	18 to 65	32 years
Race/Ethnicity	African American	76%
	Caucasian American	19%
	Hispanic American	.8%
Marital Status	Married	20.6%
	Single/Never Married	44%
	Separated	23.7%
	Divorced	7.6%
	Widowed	1.5%
Education	Never graduated High School	27%
	High School Graduate/GED	63%
	Some College/Graduate	10%

Table 2**Measures**

Variable	N	M	SD	MIN	MAX
Perceived Susceptibility	112	11.3	3.9	4	20
Perceived Benefits	112	12.3	4.0	4	20
Perceived Barriers	112	9.7	3.4	3	15
Perceived Severity	112	12.2	4.0	4	20
Self-Efficacy	112	27.6	6.3	15	40
Perceived Partner Risk Behaviors	112	1.7	1.2	0	4
PTSD	112	61.2	26.2	0	119

Table 3
Binary Logistic Regression Primary and Secondary Variables Predicting HIV Rapid Test Acceptance

	B	S.E	Wald	df	p	Odds Ratio	95.0% CI Odds Ratio	
							Lower	Upper
Perceived Susceptibility	.12	.06	3.75	1	.05	1.13	1.13	1.27
Perceived Barriers	.06	.07	.82	1	.36	1.07	.93	1.20
Perceived Severity	.03	.06	.23	1	.63	1.03	.86	1.06
Perceived Benefits	-.45	.07	.33	1	.56	.95	.83	1.17
Perceived Partner Risk Behaviors	-.27	.21	1.61	1	.20	.75	.50	1.05
Self-Efficacy	.01	.03	.05	1	.82	1.00	.95	1.08
PTSD	.03	.01	11.9	1	.00	1.03	1.00	1.03

Table 4

Reasons for declining HIV rapid testing (N = 89)

Reason(s)	(n)	% (n)
I do not feel I am at risk for HIV	16	18
I do not want to know if I am HIV positive	2	2.2
I am not sure if my result will be kept private	8	9
I would be tested in this environment but I do not have time	35	39.3
I want to be tested but not in this environment	14	15.7
Other (e.g., I just tested 30 days ago, I'm not feeling well today)	14	15.7