Published in final edited form as:
J Interpers Violence. 2013 November ; 28(16): 3223–3241. doi:10.1177/0886260513496902.

Victimization Experiences, Substance Misuse and Mental Health Problems in Relation to Risk for Lethality among African-American and African-Caribbean Women

Bushra Sabri, Dr. [Post-doctoral],
Fellow at Johns Hopkins University

Jamila K. Stockman, Dr. [Assistant Professor],
University of California, San Diego

Desiree Betrand, Ms. [Research Coordinator],
Caribbean Exploratory NIMHD Research Center of Excellence at the University of the Virgin Islands

Doris W. Campbell, Dr. [Visiting Professor and Co-Director],
Caribbean Exploratory NIMHD Research Center of Excellence at the University of the Virgin Islands

Gloria B. Callwood, Dr. [Associate Professor and Director], and
Caribbean Exploratory NIMHD Research Center of Excellence at the University of the Virgin Islands

Jacquelyn C. Campbell, Dr. [Professor]
Johns Hopkins University

Abstract

The purpose of this study was to investigate the association of intimate partner victimization experiences, mental health, and substance misuse problems with the risk for lethality among women of African descent. Data for this cross-sectional study were derived from a large case-control study examining the relationship between abuse status and health consequences. Women were recruited from primary care, prenatal or family planning clinics in Baltimore and the US Virgin Islands. Logistic regression was used to generate the study findings. Among 543 abused women, physical and psychological abuse by intimate partners, comorbid PTSD and depression symptoms, and PTSD-only problems significantly increased the likelihood of lethality risk. However victims' substance misuse and depression-only problems were not associated with the risk for lethality. Additionally, PTSD symptoms mediated the relationship between severe victimization experiences and risk for lethality. Practitioners should pay attention to victimization experiences and mental health issues when developing treatment and safety plans. Policies to fund integrated services for African-American and African-Caribbean women with victimization and related mental health issues, and training of providers to identify at-risk women may help reduce the risk for lethality in intimate partner relationships.

Keywords

Victimization; Lethality Risk; PTSD; Depression

Correspondence concerning this article should be addressed to Bushra Sabri at bushrasabri@gmail.com.

Intimate partner violence (IPV) is a pervasive social and public health problem. Evidence suggests IPV disproportionally affects African-American (AA) and African- Caribbean (AC) women. Approximately 4 out of every 10 women of African descent experienced IPV in their lifetime (Black et al., 2011). The deleterious effects of victimization by an intimate partner have been well-established. The most significant adverse effect is female homicides or *femicides* (Campbell et al., 2003; Campbell et al., 2009). AA women may be at a higher risk for femicide by their intimate partners than women from other racial/ethnic groups (Paulozzi et al., 2001). In a multi-site case-control intimate partner femicide (IPF) study of 12 geographically diverse US cities, 45% of the femicide or attempted femicide victims, were found to be AA (Campbell et al., 2008). Despite growing evidence that women of African descent are at increased risk for IPF, there have been few efforts to examine and address the risk for IPF in these populations. Additional research is needed to examine factors related to the risk of femicide among this disproportionately vulnerable group of women. An understanding of risk factors is critical in the development of prevention and intervention efforts. Most studies on IPF generally focus on the characteristics and behaviors of perpetrators, with less attention to the characteristics of women that place them at risk for IPF. Experiences of severe victimization, mental health (MH), and substance misuse problems may compromise women's ability to accurately perceive potential danger in their relationships, or to take protective actions. Therefore, this study examined women's victimization experiences, MH and substance misuse problems as factors related to high risk for IPF.

Intimate Partner Violence (IPV) Victimization and Risk for IPF

The association between IPV and IPF has been empirically well-established (Campbell et al., 2003; Campbell et al., 2009; Farlane et al., 2005). IPV has been found to be the most significant risk factor for IPF (Campbell, Sharps, Gary, Campbell, Lopez, 2002). In a study of IPFs in North Carolina between 1991 and 1993, IPV was reported in approximately 70% of spousal murders (Morocco et al., 2003, as cited in Wiltsey, 2008). Severe victimization experiences, either physical, psychological, or both, have detrimental effects on women's health and safety. For instance, research shows an association between IPV and injuries among women in abusive relationships (Antai, 2011; Campbell, 2002). Experiences of severe physical abuse (e.g., attempted strangulation) and infliction of serious injuries are markers of women being at high risk for IPF (Mitchell & Anglin, 2009; Wiltsey, 2008). Psychological abuse in the form of intimidation and controlling behavior has also been significantly associated with high risk for IPF (Campbell et al., 2003). The present study contributes to the literature on risk factors for IPF by examining severe victimization experiences as indicators of dangerousness in intimate partner relationships among AA and AC women.

Women's Mental Health and Risk for IPF

Evidence suggests a relationship exists between women's MH, severe victimization experiences and/or risk for IPF (e.g., Sato-Dilorenzo, & Sharps, 2007). Severe victimization experiences can have adverse effects on MH, causing disorders such as PTSD, depression (Sabri et al., 2013; Houry, Kimball, & Rhodes, 2006; Jones, Hughes, & Unterstaller, 2001; O'Campo, Woods, Jones, Dienemann, & Campbell, 2006; Straus et al., 2009) or comorbid PTSD and depression (Cascardi, O'Leary, & Schlee, 2009; O'Campo et al., 2006). Victimization-related psychological distress in the form of PTSD increases the risk for other health-related problems such as depression and substance misuse (Breslau, Davis, Peterson, & Schultz, 1997).

Abused women presenting with MH problems may be at-risk for serious harm or lethality (Edwards et al., 2006). In a sample of primarily Caucasian women, high levels of PTSD symptoms were found to be related to high risk for IPF (Woods, 2000). Poor MH may further entrap women in abusive relationships, and limit their ability to escape from dangerous partners. For instance, PTSD symptoms may interfere with women's ability to access resources and to actively engage in safety planning (Perez & Johnson, 2008). In a longitudinal study of 320 abused women, PTSD symptoms limited women's ability to establish safety, and were positively associated with experiences of future severe violence (Perez & Johnson, 2008). Thus, PTSD and depression problems may increase the likelihood of women being at high risk for IPF.

Substance Misuse and Risk for IPF

Drug and alcohol problems increases the risk of victimization by an intimate partner (Kaysen et al., 2008; Jones et al., 2001; Schafer, Caetano, & Cunradi, 2004; Wiltsey, 2008), including victimization in the form of homicide. In a study by Sharps and colleagues (2003), 23% of the victims of intimate partner homicides and attempted-homicides were found to use alcohol and/or drugs during the incident (Sharps and colleagues, 2003). In another research study, substance misuse was found to be significantly associated with women being at high risk for lethality (Sato-DiLorenzo & Sharps, 2007). Substance misuse often starts as a way of coping with the trauma of abuse, with isolation from social support systems, and with partners' coercive and controlling behaviors (Swan, Farber, & Campbell, 2000). Specifically, for AA women, substance misuse may also be related to additional stressors such as instability in family relationships, racism, poverty, and MH problems (Turner, & Wallace, 2003). In a study of 676 women with protective orders, women's substance misuse was a significant factor in women's experiences of severe physical and sexual IPV within the last year of the relationship (Shannon, Logan, Cole, & Walker, 2008). Using substances may make women more vulnerable to victimization (or lethal violence victimization), or with increasingly severe violence, women are likely to cope by using alcohol or drugs (Shannon et al., 2008).

Mediation Effect of Substance Misuse and Mental Health

Although studies have established a relationship between severity of victimization by an intimate partner and risk for IPF (Campbell et al., 2003; Mitchell & Anglin, 2009), additional research is needed to investigate the pathway through which victimization by an intimate partner increases the risk for IPF. The post-traumatic stress response to victimization may be a critical aspect of this relationship. Psychological distress after trauma (e.g., PTSD and depression) has been found to be associated with both victimization and risk for IPF (Perez & Johnson, 2008; Woods, 2000). In addition, an intersecting epidemic with psychological distress is substance misuse, which has also been shown to increase the risk for victimization and IPF (Sato-DiLorenzo & Sharps, 2007; Shannon, Logan, Cole, & Walker, 2008). Given the interrelatedness between psychological distress and substance misuse, as well as their associations with victimization and IPF, it is plausible that both may function as mediators in the relationship between severity of victimization by an intimate partner and risk for IPF.

Study Rationale and Purpose

To the best of our knowledge, researchers have not examined the relationships between severity of physical abuse, psychological abuse, and high risk for IPF comparing samples of AA and AC women. Further, researchers have not evaluated the extent to which substance misuse and mental health mediates the relationship between severity of victimization in intimate partner relationships and risk for IPF. Therefore, the purpose of this study was

twofold. First, we investigated the relationship between severe victimization experiences, substance misuse and MH and women's risk level for IPF. It was anticipated that severity of victimization, MH and substance misuse would be positively associated with high risk for IPF. Second, we explored the potential mediating effect of MH and substance misuse problems on the relationship between severity of victimization and risk level for IPF. It was assumed severe victimization experiences would lead to MH and substance misuse problems among women, which in turn, would elevate their risk for IPF. Further, we investigated whether the relationships between severity of victimization, MH, and substance misuse existed for both AA and AC women. The severity of victimization in this study included physical and psychological abuse by an intimate partner.

Method

Study Sample and Procedures

This cross-sectional research was part of a large multi-site case-control study comparing abused and non-abused AA and AC women. Women were recruited from primary care, prenatal or family planning clinics in Baltimore, Maryland in the mainland US and St. Croix and St. Thomas in the US Virgin Islands (USVI). English and Spanish-speaking women of African descent, aged 18–55, who were in an intimate relationship within the past 2 years, were eligible for enrollment. For this study, the sample consisted of 543 women who reported lifetime experiences of physical, sexual, and/or psychological abuse by a current or former intimate partner. Women who reported no history of abuse were excluded.

Women who consented to participate in the study completed a 30-minute, audio computer-assisted self-interview (ACASI). A $20 gift card was provided as incentive for those who screened into the study and completed the interview. All study procedures were approved by Institutional Review Boards of Johns Hopkins University, the University of the Virgin Islands and the National Institute on Minority Health and Health Disparities.

Measures

Risk for IPF—Risk for IPF was assessed using 20 dichotomous items from the *Danger Assessment* (DA) instrument (20 items; alpha=0.83; Range=−3–36). The DA is a clinical and research instrument developed to assist women in assessing their danger of being murdered or seriously injured by their intimate partners (Campbell, Webster, & Glass, 2009). A weighted scoring system identified women at the following levels of danger: variable danger (<8), increased danger (8–13), severe danger (14–17) and extreme danger (≥18). Women who scored higher than 13 on the DA were classified as being at high risk for IPF, and those who scored 13 or below, were classified in the low risk group.

Severity of victimization—Measures for victimization included psychological and physical abuse by intimate partners. The *Women's Experiences of Battering* (WEB; 10 items, alpha=1.00;range=0–71) was used to measure psychological abuse. The following six domains of the WEB captured psychological abuse: perceived threat, altered identity, managing, entrapment, yearning, and disempowerment (Smith, Earp, & DeVellis, 1995). Each item was rated using a 6-point Likert scale ranging from 1 (Strongly disagree) to 6 (Strongly agree). Higher scores indicate higher levels of psychological abuse.

The *Severity of Violence Against Women Scale* (SVAWS; 46 items; alpha=0.94)) was used to measure physical abuse. Women were asked how often in the past year they experienced various types of physically abusive behavior from their abusive partner or their current or most recent partner for those who never had an abusive partner. The items were rated using a 4-point scale ranging from 0 (never) to 4 (not in the last year but it did happen before).

Continuous severity scores for physical abuse items were created using a weighted scoring system (Marshall, 1992). The scores ranged from 0–54, with higher scores indicative of more severe physical abuse.

Mental health—The *Primary Care Post-traumatic Stress Disorder Screening* (PC-PTSD) was used to measure PTSD. The PC-PTSD (4 items; alpha=0.78) is a self-report screening tool designed to assess PTSD symptoms in the past month (range 0–4).A score of 3 or higher is the cut-off for clinically significant PTSD symptoms. The *Center for Epidemiologic Studies Depression* (CESD-10) was used to measure the presence of depressive symptoms. The CESD-10 (10 items; alpha=0.80) is a brief screening measure for assessing levels of past-week depressive symptoms (range 0–29). A score of 10 or higher is the cut-off for clinically significant depressive symptoms. Each symptom item is rated according to its frequency of occurrence using a 4-point scale ranging from 0 (rarely or none of the time; <1 day) to 3 (All of the time; 5–7 days).

Women who met criteria for both clinically significant PTSD and depressive symptoms were categorized as having co-morbid PTSD and depression. Women who met criteria for PTSD but not depression were categorized as the PTSD-only group. Those who met criteria for depression but not PTSD were assigned to the depression-only group.

Substance misuse—To measure drug use, women responded to the item “How often have you had (problems with drug use) in the past year? Women who reported ever using street drugs, over-the-counter, drugs not prescribed or taken in a way that was not recommended responded to the following levels of use: “once,” “a few times,” “many times,” and every day or almost every day.” The *Alcohol Use Disorders Identification Test* (AUDIT-C) was used to measure past year alcohol use. The AUDIT-C is a 3 item brief alcohol screen that is used to identify individuals with alcohol use disorders. The scores range from 0–12, with higher scores indicating that a woman’s drinking is affecting her health and safety.

The following variables related to the risk for IPF were included as confounders in the multivariate model: age, experiences of severe injuries in the past year, type of relationship with the abusive partner (i.e., spouse or common-law, ex-spouse, boyfriend, ex-boyfriend), and whether women ever cohabited with the abuser. Severity of injuries was measured using a scale of 1–5 (a value of 1 indicated no injuries, 2 indicated facial injuries or other bruises on the body, 3 indicated burns, broken bones, eye or dental injuries, 4 indicated head injuries with or without loss of consciousness and miscarriage, and 5 indicated being hurt by a weapon, having injuring that required surgery, stitches, and emergency room services or hospitalization). We also controlled for site and ethnic differences.

Data Analysis Procedures

Bivariate analyses were conducted using Pearson’s Chi-square tests for dichotomous variables and T-tests for continuous variables. Using multivariate binary logistic regression modeling techniques, we tested the independent effects of severity of victimization, mental health problems (i.e., co-occurring PTSD and depression, PTSD-only problems, depression-only problems), and substance misuse (i.e., alcohol and drugs) on the dichotomous outcome (high versus low risk of IPF). Data were analyzed overall and by ethnicity (AA and AC women). Multivariate models were adjusted for the effects of age, ethnicity, severity of injuries, relationship with the abusive partner, cohabitation with the abuser and study site. Results were presented as unadjusted and adjusted odds ratios with 95% confidence intervals. Analyses were conducted using SPSS version 19.

Mediation effects of MH and substance misuse were tested using a bootstrapping approach for dichotomous outcomes by Preacher and Hayes (2008). The SPSS macro created by Preacher and Hayes (2008) generated 95% bias-corrected bootstrap confidence intervals for all indirect effects using 5000 bootstrap samples. The effects were considered as significant when the bias corrected and accelerated confidence interval did not include zero.

Results

Characteristics of the Sample

The study consisted of 543 African-American (n=159; 29.3%) and African-Caribbean (n=384; 70.7%) women, with a mean age of 29.3 years. The sample consisted of AA or AC women of African or Black descent (n=495; 91.2%), Spanish, Latino or Hispanic descent (n=38; 7%), and women of other mixed descent (n=10; 1.8%). Over fifty percent of women (n=311; 57.2%) had a high school diploma or less than high school education. Approximately half (51%, n=277) of the women were unemployed, and 71.6% were in the low income range (n=389). The majority were in a current relationship with the abusive partner (55%; n=299; Table 1).

Severity of Victimization and Risk for Intimate Partner Femicide

The bivariate results showed among the total sample of women, those in the high risk IPF group had higher average scores for physical (10.7 vs 3.46) and psychological abuse (42.6 vs 31.8) than women in the low risk IPF group. Although there was no significant difference between AA and AC women in scores on physical and psychological abuse, AA high risk women had higher physical and psychological abuse scores than AC high risk women (Table 1).

In the multivariate analysis (Table 2), severe physical (OR=1.05) and psychological abuse (OR=1.04) experiences significantly increased the likelihood of AA women being at high risk for IPF (p<.05). For AC women, only severity of psychological abuse was associated with women being at high risk for IPF (OR=1.04; p<.05).

Women's Mental Health and Risk for Intimate Partner Femicide

In bivariate analyses, MH problems were significantly related to the risk for IPF (Table 1). More than half of the women with co-morbid PTSD and depression were at high risk for IPF (56.1% vs 23.1%, p<.05). For both AA and AC women, the relationship between co-morbid PTSD and depression and risk for IPF was significant. For AC women, the relationship between PTSD-only problems (versus non-PTSD-only problems) and risk for IPF approached significance (p=.05).

In the multivariate model (Table 2), the relationship between comorbid PTSD and depression, and risk for IPF were found to be significant in the combined sample and the AC sample (Odd ratios ranged from 2.19–3.80, p<.05). Furthermore, AC women with PTSD-only problems were found to be significantly at high risk for IPF (OR=3.53; p<.05). No differences were found between depression-only problems and risk for IPF for neither AA nor AC women.

Women's Substance Misuse and Risk for Intimate Partner Femicide

Bivariate analysis indicated significant differences between high risk and low risk IPF group and drug use but not alcohol use (Table 1). A greater proportion of women in the high risk group for IPF than those in the low risk group reported using drugs in the past year (18.9% vs 9.5%, p<.05). Further, a higher percentage of AA women in the high risk group for IPF reported ever using drugs in the past year, when compared to proportion of AA women in

the low risk group (27.3% vs 13.3%, $p<.05$). In the multivariate model, drug use did not remain significant. Alcohol use approached significance for AA women. Every one unit increase in alcohol use was associated with 1.24 times increased likelihood of AA women being at high risk for IPF ($p=.06$; Table 2). Substance misuse was not significantly associated with risk for IPF among AC women.

Mediating Effects of Mental Health and Substance Misuse

PTSD significantly mediated the effect of severity of IPV on the risk for IPF (Table 3). The total indirect effect exerted through PTSD was significantly different from zero, as its 95% confidence interval did not contain zero. The direct path from severity of victimization by an intimate partner to PTSD was statistically significant. The path from PTSD and risk for IPF was also significant ($p<.001$). No significant paths were noted between substance misuse, depression and risk for IPF. The indirect effects of depression and substance misuse were also not statistically significant.

Discussion

The present study extends past work on risk factors for IPF by examining the relationship between severe victimization, substance misuse, MH, and dangerousness in intimate partner relationships, in a sample of AA and AC women. The findings suggest severe psychological and physical abuse experiences are associated with women being at high risk for IPF. These findings support prior research by Campbell et al. (2003) that have established a link between partner's abuse and risk for IPF. For instance, in severely abusive relationships, women live under a constant threat of danger, a chronic sense of fear, and lack of control (Jun, Rich-Edwards, Boynton-Jarrett, & Wright, 2008). Their powerlessness may increase the likelihood of experiencing more severe abuse including IPF.

When MH problems were examined, positive associations were found between comorbid PTSD and depression and risk for IPF. Some symptoms of PTSD and depression (e.g., hopelessness, emotional numbness, mistrust) relate to lowered sense of belongingness and lack of social support. For instance, women suffering from depression may feel paralyzed or incapable of taking action, and those experiencing PTSD may be fearful or avoidant (Edwards et al., 2006). Such symptoms may compromise the ability to seek help for dangerous intimate partner relationships. However, women's PTSD and depression symptoms may also reflect an emotional impact from their safety seeking. Women who attempt to leave their abusive relationships often feel vulnerable and fearful of being harmed or killed by their abusive partners. Thus, these women may experience greater psychological distress than other women (Edwards et al., 2006). Research shows that the risk for IPF increases for women who are in the process of separating from their partners (Campbell, Glass, Sharps, Laughon & Bloom, 2007).

Research shows victimization by an intimate partner increases the risk for both PTSD and IPF (Campbell et al., 2009; Woods, 2000). This may account for a significant relationship between PTSD symptoms and dangerousness in relationships for AC women. However, MH problems were not associated with AA women being at high risk for IPF. One explanation for these findings is that characteristics of the abusive relationship may pose a greater risk for AA women than their own MH problems. Severe victimization experiences were the only significant factors that were associated with AA women being at high risk for IPF.

Women's substance misuse, however, was not significantly related to the risk for IPF. This finding is consistent with research that shows partner's substance misuse is a stronger predictor of risk for IPF (Campbell et al., 2003) than women's substance misuse. In further analysis examining the mediating effects of MH and substance misuse problems on the risk

for IPF, depression or substance misuse did not appear as mediators. Women's PTSD was the only significant mediator in the mediation analysis. Directions of significant paths suggested severe experiences of IPV may lead to PTSD symptoms, which, in turn, may place women at high risk for IPF. This shows PTSD symptoms need attention in safety planning for abused women. Research has shown problems with PTSD may inhibit women's ability to effectively cope with abuse and to keep themselves safe (Perez & Johnson, 2008).

The present investigation has limitations that should be considered. First, the sample was homogeneous in terms of race, indicating that results may not generalize to abused women from other racial/ethnic groups. Second, the cross-sectional nature of the study limits the arguments for temporal conclusions about the relationships examined and, therefore, the results should be interpreted with caution. For example, PTSD, depression, and substance misuse may be sequelae of IPF risk. Third, the measures used for PTSD, depression, and substance misuse problems were screening measures and did not diagnose for PTSD, depression, or substance abuse or dependence. Fourth, other mental health problems such as anxiety disorders that may interact with depression and PTSD could not be included in the analysis because data was not collected for problems besides PTSD and depression. Finally, the different timeframes used to measure some conditions (e.g., depressive symptoms assessed within the past week, alcohol use assessed in the past year) could have resulted in measurement error leading to non-differential misclassification bias. Inadvertently, this may have biased the results towards the null. Despite these limitations, this study contributes to the literature on risk factors for IPFs among AA and AC women.

Conclusions and Implications for Practice

The current investigation has implications for work with abused women who are at risk for IPF. Practitioners working with abused women should assess women for MH problems, not only for interventions but also for their cooperation in safety planning. Abused women's abilities and readiness to address safety guidelines depends on their MH status and beliefs related to their capabilities. PTSD symptoms may interfere with effective coping and ability to seek help. Practitioners can help women understand the effects of traumatic experiences on their MH. Women can be helped to restructure their negative beliefs and to identify their own sources of personal empowerment. Trauma-focused assessment and interventions are necessary to enable women to be safe and to protect themselves from dangerous situations. Intervening early with at-risk women may reduce their risk for becoming victims of IPF. Women in MH settings should be assessed for severity of physical and psychological abuse, given the associations of violence victimization experiences with women's MH. Finally, - since women of color are at increased risk for IPF, targeted prevention efforts that are culturally tailored and reach out to abused women of color despite barriers to formal help-seeking behaviors, will contribute substantially to averting potentially lethal incidents.

Acknowledgments

This study was supported by a subcontract with the Caribbean Exploratory NIMHD Research Center of Excellence, University of the Virgin Islands (P20MD002286). Dr. Sabri was also supported by NICHD (T32HDO64428) and Dr. Stockman was also supported by NIDA (K01DA031593), NIMH (R25MH080665) and NIMHD (L60MD003701).

REFERENCES

Antai D. Traumatic physical health consequences of intimate partner violence against women: what is the role of community level factors? BMC Women's Health. 2011; 11(56):1–13. [PubMed: 21247478]

Black, MC.; Basile, KC.; Breiding, MJ.; Smith, SG.; Walters, ML.; Merrick, MT.; Chen, J.; Stevens, MR. The National Intimate Partner and Sexual Violence Survey (NISVS): 2010 Summary Report. Atlanta, GA: National Center for Injury Prevention and Control, Centers for Disease Control and Prevention; 2011.

Breslau N, Davis GC, Peterson EL, Schultz L. Psychiatric sequelae of PTSD in women. Archives of General Psychiatry. 1997; 54(1):81–87. [PubMed: 9006404]

Campbell DW, Sharps PW, Gary F, Campbell JC, Lopez LM. Intimate partner violence in African American women. Online Journal of Issues in Nursing. 2002; 7(1):5–5. [PubMed: 12044219]

Campbell JC. Health consequences of intimate partner violence. Lancet. 2002; 359:1331–1336. [PubMed: 11965295]

Campbell J, Campbell DW, Gary F, Nedd D, Price-Lea P, Sharps PW, Smith C. African American women's responses to intimate partner violence: An examination of cultural context. Journal of Aggression, Maltreatment and Trauma. 2008; 16(3):277–295.

Campbell JC, Glass N, Sharps P, Laughon K, Bloom T. Intimate partner homicide: Review and implications of research and policy. Trauma, Violence & Abuse. 2007; 8(3):246–269.

Campbell JC, Webster DW, Glass N. The danger assessment: Validation of a lethality risk assessment instrument for intimate partner femicide. Journal of Interpersonal Violence. 2009; 24(4):653–674. [PubMed: 18667689]

Campbell JC, Webster D, Koziol-McLain J, Block CR, Campbell DW, Curry MA, Gary FA, et al. Risk factors for femicide in abusive relationships: Results from a multisite case control study. American Journal of Public Health. 2003; 93(7):1089–1097. [PubMed: 12835191]

Cascardi M, O'Leary KD, Schlee KA. Co-occurrence and correlated of posttraumatic stress disorder and major depression in physically abused women. Journal of Family Violence. 1999; 14(3):227–248.

Edwards TA, Houry D, Kemball RS, Harp SE, McNutt L, Straus H, Rhodes KV, Cerulli C, Kaslow NJ. Stages of change as a correlate of mental health symptoms in abused, low-income African American women. Journal of Clinical Psychology. 2006; 62(12):1531–1543. [PubMed: 16897735]

Houry D, Kemball R, Rhodes KV. Intimate partner violence and mental health symptoms in African American female ED patients. American Journal of Emergency Medicine. 2006; 24:444–50. [PubMed: 16787803]

Jones L, Hughes M, Unterstaller U. Post-traumatic stress disorder in victims of domestic violence: A review of the research. Trauma, Violence & Abuse. 2001; 2(2):99–119.

Jun H, Rich-Edwards JW, Boynton-Jarrett R, Wright RJ. Intimate partner violence and cigarette smoking: Association between smoking risk and psychological abuse with and without co-occurrence of physical and sexual abuse. American Journal of Public Health. 2008; 98(3):527–535. [PubMed: 17600272]

Kaysen D, Pantalone DW, Chawla N, Lindgren KP, Clum GA, Lee C, Resick PA. Posttraumatic stress disorder, alcoholism, and physical health concerns. Journal of Behavioral Medicine. 2008; 31(2): 115–125. [PubMed: 18095150]

Marshall LL. Development of the severity of violence against women scale. Journal of Family Violence. 1992; 7:103–121.

McFarlane J, Malecha A, Gist J, Watson K, Batten E, Hall I, Smith S. Intimate partner sexual assault against women and associated victim substance use, suicidality, and risk factors for femicide. Issues in Mental Health Nursing. 2005; 26:953–967. [PubMed: 16203648]

Mitchell, C.; Anglin, D. Intimate partner violence: A health-based perspective. Oxford University Press; 2009.

Moracco KE, Runyan CW, Butts JD. Female intimate partner homicide: A population based study. Journal of the American Medical Women's Association. 2003; 58(1):20–25.

O'Campo P, Woods A, Jones S, Dienemann J, Campbell J. Depression, PTSD, and comorbidity related to intimate partner violence in civilian and military women. Brief Treatment and Crisis Intervention. 2006; 6(2):99–110.

Paulozzi LJ, Saltzman LA, Thompson MJ, Holmgreen P. Surveillance for homicide among intimate partners-United States, 1981–1998. CDC Surveillance Summaries. 2001; 50(SS-3):1–16. [PubMed: 11678352]

Perez S, Johnson DM. PTSD compromises battered women's future safety. Journal of Interpersonal Violence. 2008; 23(5):635–651. [PubMed: 18272729]

Preacher KJ, Hayes AF. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. Behavior Research Methods,. 2008; 40:879–891. [PubMed: 18697684]

Sabri B, Bolyard R, McFadgion A, Stockman JK, Lucea MB, Callwood GB, Coverston CR, Campbell JC. Intimate partner violence, depression, PTSD, and use of mental health resources among ethnically diverse black women. Social Work in Health Care. 2013; 52(4):351–369. [PubMed: 23581838]

Sato-DiLorenzo A, Sharps PW. Dangerous intimate partner relationships and women's mental health and health behaviors. Issues in Mental Health Nursing. 2007; 28:837–848. [PubMed: 17729169]

Schafer J, Caetano R, Cunradi CB. A path model of risk factors for intimate partner violence among couples in the United States. Journal of Interpersonal Violence. 2004; 19(2):127–142. [PubMed: 15005998]

Shannon L, Logan TK, Cole J, Walker R. An examination of women's alcohol use and partner victimization experiences among women with protective orders. Substance Use & Misuse,. 2008; 43(8–9):1110–1128. [PubMed: 18649234]

Sharps PW, Campbell JC, Campbell DW, Gary FA, Webster DW. Risky mix: drinking, drug use, and homicide. NIJ Journal. 2003; (250):8–13.

Smith PH, Tessaro I, Earp JA. Women's experience with battering: a conceptualization from qualitative research. Women's Health Issues. 1995; 5:197–182.

Straus H, Cerulli C, McNutt LA, Rhodes KV, Conner KR, Kemball RS, Kaslow NJ, Houry D. Intimate partner violence and functional health status: Associations with severity, danger, and self-advocacy behaviors. Journal of Women's Health. 2009; 18:625–631.

Swan, S.; Farber, S.; Campbell, D. Violence in the lives of women in substance abuse treatment: Service and policy implications. The Connecticut Women's Consortium. 2000. Retrieved from http://www.womensconsortium.org/pdf/swan001025.pdf

Turner WL, Wallace B. African American substance use: Epidemiology, prevention, and treatment. Violence Against Women. 2003; 9(5):576–589.

Wiltsey, MT. Risk factors for intimate partner homicide (Dissertation, Drexel University). 2008. Retrieved from http://idea.library.drexel.edu/bitstream/1860/2713/1/Wiltsey_Michael.pdf

Woods SJ. Prevalence and patterns of post-traumatic stress disorder in abused and post abused women. Journal of Interpersonal Violence. 2000; 21(3):309–324.

Table 1

Sample Characteristics by Risk Level for Intimate Partner Femicide of Abused African-American and African-Caribbean Women, Baltimore, MD and USVI (n=543)

	Total Sample (N=543)			African-American (N=159)			African-Caribbean (N=384)		
	High (N=127)	**Low (N=329)**	**p**	**High (N=44)**	**Low (N=90)**	**p**	**High (N=83)**	**Low (N=239)**	**p**
Age(M, SD)	28.41(7.49)	29.56(9.26)	0.17	29.82(7.69)	31.26(10.49)	0.37	28.92(8.68)	27.66(7.33)	0.20
Education N (%									
Did not graduate high school	25(19.7)	49(15.0)		10(22.7)	19(21.3)		15(18.1)	30(12.7)	
High school graduate	56(44.1)	128(39.3)		22(50.0)	39(43.8)		34(41.0)	89(37.6)	
Some college	26(20.5)	96(29.4)	0.21	8(18.2)	20(22.5)	0.85	18(21.7)	76(32.1)	0.28
College graduate	20(15.7)	53(16.3)		4(9.1)	11(12.4)		16(19.3)	42(17.7)	
Employment N (%)									
Employed	59(46.5)	170(51.7)		17(38.6)	41(45.6)		42(50.6)	129(54.0)	
Unemployed	68(53.5)	159(48.3)	0.32	61.4(27)	49(54.4)	0.44	41(49.4)	110(46.0)	0.59
Relationship with the abuser N (%)									
Spouse/Common Law	9(7.2)	41(12.7)		4(9.3)	12(13.3)		5(6.1)	29(12.4)	
Ex-Spouse	8(6.4)	17(5.2)		5(11.6)	4(4.4)		3(3.7)	13(5.6)	
Boyfriend	37(29.6)	124(38.3)	0.09	10(23.3)	15(16.7)	0.26	27(32.9)	109(46.6)	**0.01**
Ex-boyfriend	54(43.2)	111(34.3)		16(37.2)	47(52.2)		38(46.3)	64(27.4)	
Other	17(13.6)	31(9.6)		8(18.6)	2(13.3)		9(11.0)	19(8.1)	
Ever lived in the same household with the abusive partner N (%)									
Yes	89(70.1)	198(60.6)	0.05	37(84.1)	55(61.1)	.007	52(62.7)	143(60.3)	0.71
No	38(29.9)	129(39.4)		7(15.9)	35(38.9)		31(37.3)	94(39.7)	
Severity of Injuries (M, SD)	3.49(1.45)	2.88(1.61)	**0.00**	3.65(1.21)	2.95(1.65)	**0.01**	3.41(1.56)	2.85(1.60)	**0.01**
Severity of Victimization (M, SD)									
Physical (.00–53.9)	10.7(14.0)	3.46(6.48)	**0.00**	13.1(16.7)	3.99(7.89)	**0.00**	9.45(12.3)	3.27(5.87)	**0.00**
Psychological (.00–71)	42.6(14.4)	31.8(15.2)		44.2(14.7)	32.3(17.2)	**0.00**	41.8(14.3)	31.6(14.4)	**0.00**

J Interpers Violence. Author manuscript; available in PMC 2013 November 01.

	Total Sample (N=543)			African-American (N=159)			African-Caribbean (N=384)		
	High (N=127)	**Low (N=329)**	**p**	**High (N=44)**	**Low (N=90)**	**p**	**High (N=83)**	**Low (N=239)**	**p**
Mental Health Problems									
Comorbidity of PTSD-depression N (%)	24(28.9)	19(7.9)	**.00**	13(29.5)	10(11.1)	**.01**	24(28.9)	19(7.9)	**.00**
PTSD-only symptoms N (%)	9(10.8)	10(4.2)	.05	1(2.3)	3(3.3)	.60	9(10.8)	10(4.2)	.05
Depression-only symptoms N (%)	28(33.7)	70(29.3)	.45	15(34.1)	43(47.8)	.13	28(33.7)	70(29.3)	.45
Substance Misuse N (%)									
Used drugs in past yr	24(18.9)	31(9.5)	**0.00**	12(27.3)	12(13.3)	**0.04**	12(14.5)	19(8.0)	.08
Used drugs in past yr	103(81.1)	297(90.5)		32(72.7)	78(86.7)		71(85.5)	219(92.0)	
Alcohol use problem N (%)	29(23.6)	59(18.9)	.27	14(32.6)	18(20.9)	.14	15(18.8)	41(18.1)	.90

Note: M=Mean; SD= Standard Deviation

Table 2

Bivariate and Multivariate Models Examining Covariates for High Risk for Intimate Partner Femicide among Abused African-American and African-Caribbean Women, Baltimore, MD and USVI (n=543)

	Total Sample (*N*=543)				**African-American Women (*N*=159)**				**African-Caribbean Women (*N*=384)**			
	Unadjusted		***Adjusted***		***Unadjusted***		***Adjusted***		***Unadjusted***		***Adjusted***	
	OR (C.I.)	***P***	***OR (C.I.)***	***P***	***OR (C.I.)***	***P***	***OR (C.I.)***	***P***	***OR (C.I.)***	***P***	***OR (C.I.)***	***P***
Severity of Victimization by an Intimate Partner												
Physical abuse	1.05(1.02–1.07)	.00	1.05(1.02–1.08)	.00	1.06(1.02–1.11)	.00	1.05(1.01–1.10)	.03	1.04(1.00–1.08)	.04	1.04(0.99–1.08)	.07
Psychological abuse	1.04(1.02–1.05)	.00	1.03(1.02–1.05)	.00	1.04(1.01–1.07)	.00	1.04(1.01–1.08)	.02	1.03(1.01–1.06)	.00	1.04(1.01–1.06)	.00
Women's Mental Health												
Comorbidity of PTSD and depression	2.36(1.15–4.86)	.02	2.19(1.03–4.65)	.04	0.81(0.22–2.95)	.52	1.08(0.25–4.56)	.92	4.23(1.72–10.4)	.00	3.80(1.45–9.97)	.01
PTSD-only	2.43(0.91–6.51)	.07	2.34(0.84–6.53)	.10	0.65(0.05–8.92)	.40	0.37(0.02–6.70)	.50	3.81(1.28–11.3)	.01	3.53(1.12–11.12)	.03
Depression-only	1.45(0.84–2.49)	.17	1.31(0.74–2.29)	.35	0.61(0.23–1.59)	.45	0.66(0.21–2.04)	.47	2.23(1.13–4.39)	.01	1.76(.86–3.61)	.12
Women's Substance Misuse												
Drug Use	1.28(0.64–2.59)	.48	1.26(0.59–2.68)	.55	2.17(0.74–6.37)	.10	1.38(0.36–5.23)	.64	0.89(0.33–2.36)	.81	1.08(0.36–3.13)	.89
Alcohol Use	1.07(0.95–1.20)	.27	1.08(0.95–1.22)	.27	1.16(0.94–1.43)	.18	1.24(0.98–1.56)	.06	1.04(.89–1.23)	.62	1.03(0.86–1.24)	.72

Note: Adjusted model controlled for the effects of age, ethnicity, severity of injuries, relationship with the abusive partner, cohabitation with the abuser and site differences; OR=Odd Ratios; CI=Confidence Intervals

Table 3

Assessment of Mental Health and Substance Misuse as Mediators in the Relationship Between Intimate Partner Victimization and High Risk for Intimate Partner Femicide among Abused African-American and African-Caribbean Women, Baltimore, MD and USVI (n=543)

Independent Variable (IV)	Mediators	Dependent Variable (DV)	Effect of IV on M (a)	Effect of M on DV (b)	Direct Effect of IV on DV (c^1)	Indirect Effect ($axb)^1$) 95% CI	Total Effect of IV on DV (c)
Psychological Abuse	PTSD	Risk for IPF	0.033***	0.276*	0.035**	.0096(.0021–.0164)	0.045***
	Depression		0.058*	0.015		.0008(−.0013–.0045)	
	Drug Use		0.001	0.186		.0002(−.0005–.0023)	
	Alcohol Use		−.0008	0.089		.0000(−.0019–.0013)	
Physical Abuse	PTSD	Risk for IPF	0.049***	0.349**	0.045**	.0177(.0071–.0284)	0.062***
	Depression		0.199***	0.001		.0002(−.0091–.0095)	
	Drug Abuse		0.006**	0.129		.0007(−.0036–.0069)	
	Alcohol Use		0.031**	0.069		.0023(−.0009–.0109)	

Note: Bootstrap results for indirect effects; Number of bootstrap resamples: 5000;

*** p<.0001;

** p=<.001;

* p=<.01; The coefficients presented are unstandardized coefficients;

1 ab represent mean of the indirect effect estimates calculated across all bootstrap samples; CI are bias corrected and accelerated confidence intervals for the indirect effects; Mediation models were run adjusting for the effects of age, site differences, ethnicity, relationship with the abuser, cohabitation with the abuser, and severity of injuries.