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Factors Related to Posttraumatic Stress Symptoms in Women Experiencing Police-Involved Intimate Partner Violence

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Relationships among intimate partner violence (IPV), Post Traumatic Stress Disorder (PTSD) symptoms, health, and danger, using M.A. Dutton's Empowerment framework, were examined among 423 ethnically diverse women in contact with police due to IPV. Significant predictors of PTSD symptoms in multivariate analysis included Danger Assessment score, poor overall health, abuse leading to pain, victim expectations of future injury victimization, feeling unsafe, and shame. Results provide further evidence supporting routine assessment for violent trauma and PTSD as well as the need for research testing holistic interventions for women traumatized by violence. **Key words:** *danger assessment*, *intimate partner violence*, *PTSD symptoms*

AMONG US women, 18 years or older, approximately 5.3 million intimate partner violence (IPV) victimizations occur each year, with 2 million injuries, 550 000 of which require medical attention.[1] IPV can be physical and/or sexual violence, threats of physical/sexual violence, and/or psychological harm by a current or former partner or spouse. IPV can occur on a continuum and vary in frequency and severity.[2] Nearly 1800 women are killed per year by men. Femicide, murder of women, is the seventh leading cause of premature death for women in the United States and the second leading cause of death for young African American and American Indian/Alaska Native women, aged 15 to 35 years. The cost is loss of precious lives as well as nearly $1 billion in lifetime earnings from victims of IPV homicide.[1,3] The largest perpetrator category (30%-55%) of these femicides are intimate partners (IPs): husbands; boyfriends; partners; or ex-partners.[4] Physical IPV was reported to have preceded the homicide in 65% to 80% of the IP femicide cases.[4,5] Physical, emotional, and near-fatal violence is highly traumatic for victims and results in well-documented physical and mental health sequela,[6,7] including posttraumatic stress disorder (PTSD) symptoms.[8,9] However, our knowledge about near-lethal and lethal

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violence and the pathways that lead to PTSD is still incomplete. Understanding these interactions will help to form a more realistic and holistic approach for addressing the needs of IPV victims who experience severe violence.[9]

PURPOSE AND HYPOTHESES

The purpose of this study was to examine the factors associated with PTSD symptoms among a sample of women who experienced IPV and had an officer come to the scene of an IPV incident to take a report, that is, police-involved IPV (PI-IPV). Using Dutton's empowerment model as a framework,[10] we hypothesized that, controlling for demographic characteristics, the likelihood of experiencing PTSD symptoms will increase with (1) increased risk of future violence, (2) increased severity of violence, (3) the presence of psychological abuse and controlling behavior, (4) poor health and injury due to violence, and (5) increased commitment to the abusive relationship (marriage and children in common).

Theoretical framework

Dutton's empowerment model[10] provides a basis for understanding the social, political, cultural, and economic context of battered women's responses. According to this model, IPV is viewed not only as a discrete episode but also as involving repeated occurrences of violent, abusive, and controlling behaviors by an abusing partner over months and years with traumatic effects. Goals for interventions, therefore, are for safety, shifting the power/control back to the victim, and helping victims heal from the complex series of physical and psychological traumas that have occurred. The model also explicitly posits the psychological effects of abuse, including traumatic effects such as PTSD symptoms and physiological reactivity, with identified mediators of the relationship of IPV and PTSD, namely, institutional response, personal strengths and inner resources, tangible resources and social support, medical factors, current stressors, and positive aspects of the relationship. Although the model was advanced early in the development of science around women's responses to IPV, it is considered a classic and has a holistic approach congruent with nursing science, considering both psychological and physical factors. Current research on PTSD is primarily congruent with the model as originally conceptualized.

To investigate and understand the traumatic sequelae of battering, Dutton[10] suggests that investigators examine 4 dimensions that distinguish battering from other traumas: (1) threat of ongoing traumatization; (2) repeated exposures to trauma; (3) history of similar trauma exposures; and (4) the nature of the relationship with the perpetrator. Of the relationships theorized in Dutton's[10] model, we were able to examine the current IPV relationship, the threat of ongoing victimization (victim's assessment of risk of future violence and indicators of potential lethality), and the relationship with the perpetrator. As part of Dutton's social, cultural, and economic context,[10] we hypothesized that some individual characteristics (such as race/ethnicity and education) would impact PTSD symptoms. We have adapted the model using more recent research as summarized below (Figure 1).

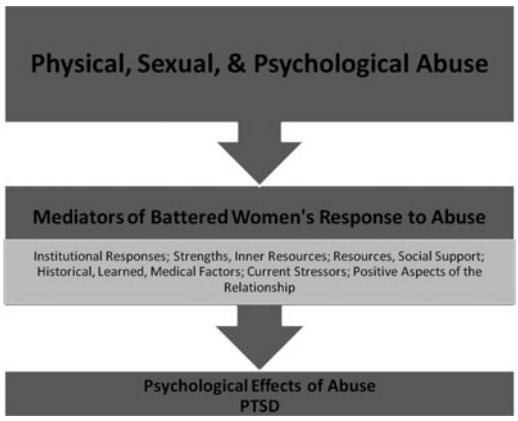

Figure 1. Theoretical model. Adapted with permission from Dutton.[10]

Background and significance

Adverse physical and emotional health consequences of IPV are well documented, both nationally and internationally, but less understood are the consequences of severe near-lethal and lethal violence and its interrelationship with physical/emotional health and PTSD symptom outcome.

IPV, PTSD, and mental health

Posttraumatic stress disorder, depression, and anxiety are the most prevalent mental health sequela of IP trauma documented in Western literature.[6,11] Prevalence of PTSD has been found to be higher in samples of battered women as compared with women who have not experienced battering. As posited in Dutton's model,[10] severity of abuse, previous trauma, and partner control were found to be important precursors to PTSD development.[6] A meta-analysis of US studies found that 31% to 84.4% of women who experienced IPV met PTSD criteria and that the risk for developing IPV-related PTSD and depression was higher than that resulting from childhood sexual assault,[11] thus supporting Dutton's model because of the threat of ongoing traumatization in a continuing relationship with a partner. The California Women's Health Survey, a population-based study, showed positive associations among physical and sexual assault, PTSD symptoms, and binge drinking.[12] PTSD was also associated with higher rates of psychiatric symptoms in a sample of sheltered battered women.[13]

IPV, PTSD, and physical health

There is also much research evidence that women exposed to IPV have multiple physical health problems that are violence related,[6,14] and strongly associated with fear[15,16] and PTSD.[8,9] Abused women with PTSD living in shelters showed health-related problems in the following 4 areas: neuromuscular; stress; sleep; and gynecological problems. The more severe PTSD, the more health problems these women experienced.[8] Women recruited from crisis shelters and community agencies with concurrent IPV, health symptoms, and PTSD showed poorer global sleep quality and nighttime disruptive behaviors.[17] In a population-based sample of California women, those with chlamydia were 5 times more likely to have had a history of multiple abuses.[18] Another population-based sample of more than 6000 California women showed an association among IPV, PTSD, and unemployment, but the association was found with psychological and not physical abuse.[19] Analysis of the California Women's Health Survey showed that psychological abuse, physical violence, sexual coercion, and PTSD were highly correlated with miscarriages.[12]

Mediators of IPV

Recent inquires about IPV and PTSD have focused on possible mediators that affect the strength of the relationship of IPV exposure and the development, severity of PTSD symptoms, as well as the relationship among these variables.[20] This line of study has been productive to begin to identify pathways, models, and predictive factors associated with IPV exposure and PTSD that will eventually lead to preventive interventions. Violence severity and chronicity,[21] victim emotional coping,[22] immune system integrity, attachment anxiety,[23] depression,[21] fear[16], and childhood maltreatment[24] are the variables found in IPV populations that have been implicated in the development of PTSD symptom outcomes. These are congruent with Dutton's model, although she considers some of these as characteristics of the trauma.

Studies with different racial, ethnic, and cultural groups have shown a variety of results when exploring the relationship of IPV exposure and PTSD. In the Chicago Women's Health Risk Study, pregnant black abused women had the highest rate of IPV as compared with all other women yet had the lowest probability for developing PTSD as compared with nonpregnant black and other ethnic-background women. Hispanic abused

women, on the contrary, had decreased probability of both IPV and PTSD as compared with nonpregnant Hispanic women.[25] Study of 234 American Indian/Alaska Native primary care patients revealed that severe IPV was associated with PTSD, anxiety, and major depressive disorder but not with substance abuse.[26] Internationally, 56% of the 105 women presenting to the National Institute of Mental Health and Neurosciences Adult Psychiatric Clinic in South India reported severe violence and sexual coercion positively associated with PTSD symptoms.[27] Using the *Diagnostic and Statistical Manual for Mental Disorders* (*DSM*) criteria, risk for PTSD in a sample of South African men and women was similar for men and women, but women experienced more IPV and childhood sexual assault than men.[28] A review of PTSD studies of Chinese abused women revealed only 4 studies, cautioning comparisons with Western PTSD DSM-IV-TR diagnostic criteria not yet validated for cultural specificity.[29] Thus, knowledge about cultural group variations in the development of IPV-related PTSD and physical/mental health disorders is still in its infancy.

Recent research[30] has focused on particular PTSD symptoms or clusters of symptoms that have differential health outcomes, thus moving the research to analyzing the interplay of the relationships of IPV, PTSD, and physical/emotional health. Our analysis sought to add to the body of knowledge about the predictors of PTSD symptoms from among the factors chosen from the Dutton's empowerment framework.[10]

METHODS AND PROCEDURES

Study design

Data for this cross-sectional survey research study were collected through structured telephone interviews with victims of PI-IPV. Interviews lasted between 45 minutes and 1 hour, and participants were provided with a $15 gift card to thank them for their time. This study was approved by the institutional review boards of the University of Oklahoma Health Sciences Center, Arizona State University, Johns Hopkins University, the Oklahoma State Department of Health, and the Cherokee Nation.

Setting and sample

Police officers recruited eligible participants at the scene of domestic violence incidents across 7 jurisdictions in a single Southwestern state.[31] Women were eligible for recruitment if they had experienced IPV and the officer had reason to believe that either (1) this was a repeat instance of PI-IPV or (2) the victim was in danger from the abuser. When an IPV victim met either one of these criteria, the officer read an advisement statement asking the victim if she would be willing to be contacted by researchers. If the victim was willing to be contacted, the officer gathered 1 to 2 safe telephone numbers and a safe time for researchers to call. This information was forwarded to researchers by the police department.[31] On average, these potential participants were called within 24 hours of researcher receipt of the referral. In total, police departments provided names and contact information for 1137 victims of IPV over approximately 18 months. Of these referrals, 486 (42.74%) were not able to be contacted because of unanswered, disconnected, or wrong numbers and 47 (4.1%) were not eligible (eg, not an IPV victim or were underage). Of the 604 eligible referrals able to be contacted, 164 (27.2%) declined to participate and 440 (72.8%) provided informed consent and participated in the research study.

Of the 440 participants, 37 (8.4%) were missing data on pertinent variables. Twenty cases had limited missing data, and conditional mean imputation was used to insert missing values based on predicted probabilities developed by using regression models. These models predicted known cases, with an average of 81.14% accuracy (range, 73.66%-87.50%). While this technique is neither perfect nor entirely free from bias,[32] it is an improvement on list-wise deletion and

unconditional mean imputation as strategies for handling missing values.[33] The 17 participants deleted from the analysis due to missing data were not different than participants included in terms of demographic information, relationship characteristics, or the independent and dependent variables used in this analysis.

The final model utilized data from 423 (96.1%) of the 440 participants interviewed. For logistic regression models, a sample size of 423 had 80% power to detect an odds ratio of 0.5 or 1.5 for binary or categorical predictor variables and 1.3 or 0.7 for linear independent variables.

Data collection and measurement procedures

After making contact with the referred victim, the interviewer explained the purpose of the study and what participation entailed. If the victim was willing to be part of the research study, the interviewer obtained informed consent verbally. While participants could request that a copy of the consent document be sent to a safe address, having a document tying the participant to a research study on violence in their intimate relationship might be dangerous, and, therefore, verbal consent was deemed a safer option. The telephone interview was conducted at that time or at another time that was safe and convenient for the participant. The telephone survey was confidential (not anonymous). Participants' identifying information was kept in a secure location; databases were stripped of identifying information as soon as the research was completed, and interviewers were instructed not to share identifying information with others. A small gift certificate for time spent in participating in the study was sent to a safe address in a nondescript envelope, with a letter thanking the participant for participating in a women's health survey. Finally, to ensure that the confidentiality of participants was protected, a privacy certificate was obtained from the National Institute of Justice.

Interviewers were trained by using telephone safety precautions, first developed for the Canadian domestic violence survey and since used by this research team in the Risk Assessment Validation Study (RAVE).[34,35] The interviewer's first priority during all contacts with the participant was to maintain participant safety. To achieve this, only female interviewers were used to interview female participants and a cover story was developed (participation in a women's health survey). At the beginning of every conversation, participants were asked whether it was a safe time to talk, and participants were instructed to say "it is not a good time for me to talk now" if, at any time during the conversation, she felt unsafe. Interviewers were also trained to listen for any interruption, disturbance, altercation, or eavesdropping. If, during the phone conversation, the participant indicated that it was not a safe time to talk or the interviewer suspected that it was not a safe time to talk, the interviewer reverted to a list of yes/no questions. Depending on the situation, these questions were about the participant's health (if, eg, eavesdropping was suspected) or about whether the participant was safe and would like the interviewer to contact police (if, eg, the interviewer heard an altercation). Throughout the study period, interviewers met to debrief and share difficult and educational experiences.

Dependent variable: posttraumatic stress symptoms

The dependent variable, PTSD symptoms, was measured by using the Primary Care Posttraumatic Stress Disorder (PC-PTSD) Screen.[36] This instrument is a recommended screen[37] and has been used in population-based research examining the relationship of PTSD to childhood and adult victimization,[38] as well as to screen for PTSD in research among war veterans.[39] The PC-PTSD consists of 4 items examining the symptoms of PTSD: (1) reexperiencing the event (you have had nightmares or thought about it when you did not want to); (2) numbing (you felt numb or detached

from others, activities, or your surroundings); (3) avoidance (you tried hard not to think about it or went out of your way to avoid situations that reminded you of it); and (4) hyperarousal (you were constantly on guard, watchful, or easily startled). Participants were asked whether they had ever experienced these symptoms as a result of their partner's abuse. For each question, a yes response was coded as 1 and a no response was coded as 0. A cutoff score of 3 was used in this analysis and has been found to be optimal with good sensitivity (0.70), specificity (0.84), and efficiency (0.81) among women. Utilizing the clinician-administered PTSD scale as a gold standard, the PC-PTSD was found to correctly classify 78% of cases.[40] Nevertheless, it is important to note that the PC-PTSD is not a diagnostic tool, and, thus, this research examined the outcome of PTSD symptoms and not a PTSD diagnosis.

Independent variables

Following our adaptation of Dutton's[10] empowerment model (Figure 1), it is hypothesized that, controlling for demographic characteristics, the following independent variables will be associated with an increase in the likelihood of PTSD symptoms: (1) increased commitment to the abusive relationship (marriage and children in common); (2) risk of future violence; (3) poor health and injury due to violence; (4) increased severity of violence; and (5) the presence of psychological abuse and controlling behavior. The measurement of these independent variables is explicated below.

Demographic characteristics

Respondents reported their age in years. Respondents self-reported their race/ethnicity, and this was collapsed into the categories: white, African American, Native American, Latina, and other. Participants self-reported their current employment status as employed full/part time or not employed full/part time. Finally, respondents were asked to report their highest level of education: less than high school; high school graduate; some college; college graduate; or any graduate school; this was collapsed into high school degree or less (=0) and some college or higher (=1).

Commitment to relationship

Participants were asked to report their current legal marital status (single, married, or separated/divorced). Being married to their partner is conceptualized as increased commitment over being single, and reporting their legal marital status as separated/divorced is conceptualized as decreased commitment over being single. Participants were asked the number of children in common with their partner. This was dichotomized as not having children with their partner (=0) and having children with their partner (=1); having children with their abusive partner was conceptualized as increased commitment to the relationship.

Risk of future violence/lethality/injury

The danger assessment (DA), a clinical and research instrument that assists battered women in assessing the risk of being murdered by their IP, was administered to participants. DA psychometrics have been evaluated in 6 major studies,[41] supporting predictive validity for actual and attempted femicide (receiver operating characteristic score = 0.90) and reoffending (receiver operating characteristic score = 0.67)[34]; thus, this instrument is ideal for assessing the threat of ongoing traumatization from severe violence. The DA consists of 20 dichotomous items (yes = 1/no = 0), which are weighted and summed to produce an overall score between 0 and 37 (www.dangerassessment.org). The DA score was treated as a linear variable in this analysis, but scores can also be placed into the following categories: variable danger (0-7); increased danger (8-13); severe danger (14-17); and extreme danger (18 or higher).

In addition, to assess self-perceived risk of future injurious victimization, participants were asked to rate the likelihood (on a scale of 0-10, with 0 being no chance and 10 being sure to happen) that their partner would seriously hurt them in the next year.

Physical health and injury

A single item from the Health Status Questionnaire was utilized to measure physical health status; this is one of the most common measures of self-reported health, is strongly associated with other indicators of health, and is generally considered to be both reliable and valid.[42] Participants were asked to respond to the following question taken from the Health Status Questionnaire[43]: "In general, would you say your health is: excellent, very good, good, fair, or poor." This variable was subsequently dichotomized for the purpose of this analysis into excellent, very good, and good (=1) and fair and poor (=0). One dichotomous (yes = 1/no = 0) item regarding experience of physical injury due to IPV, taken from the revised Conflict Tactics Scale (CTS-2),[44] was significant in the final model, "Have you ever experienced physical pain that still hurt the next day because of a fight with your partner?"

Intimate partner violence

The physical assault subscale of the CTS-2[44] was used to assess acts of physical violence that the participant experienced in her relationship. Because of the high levels of violence in this sample (97.4% of participants experienced 1 or more types of physical violence), severe, near-lethal and sexual violence were examined. Severe violence included the following: your partner used a knife or gun on you, punched you, hit you with something that could hurt, choked you (strangulation), beat you up, burned or scalded you on purpose, and kicked you. Near-lethal violence was assessed with 2 dichotomous questions: "Has your partner tried to kill you?" and "Has your partner ever done anything that might have killed you or nearly killed you, whether or not he intended to?" Finally, 3 questions from the sexual coercion subscale of the CTS-2 were used to assess sexual violence: "Has your partner used force to make you have sex?" "Has your partner made you have sex without a condom?" and "Has your partner insisted on sex when you did not want to?" Responses were dichotomized into "this has happened" (=1) and "this has never happened" (=0).

Psychological abuse and controlling behavior

Five of the 10 items from the Women's Experience of Battering (WEB) scale[45] were included in the analysis. These were used as single items, rather than as a scale, to assess specific aspects of the psychological effects of violence on participants. These were (1) "My partner makes me feel unsafe even in my own home," (2) "I feel ashamed of the things my partner does to me," (3) "my partner makes me feel like I have no control over my life, no power, no protection," (4) "I hide the truth from others because I am afraid," and (5) "my partner can scare me without ever laying a hand on me." These items were dichotomized such that 1 indicated that the respondent agreed with the statement and 0 indicated that the respondent disagreed with the statement.

Data analysis

Univariate analyses were used to describe the sample, including individual demographic characteristics and relationship with the perpetrator, risk of future violence/lethality/injury, health status and physical pain due to IPV, violence exposure, and the psychological effects of violence. Bivariate analyses with the outcome of PTSD symptoms were examined, and those variables significant at the $P < .10$ level were examined for inclusion in the final multivariate model. To test the hypotheses, multivariate logistic regression was used to examine the

effect of (1) increased commitment to the abusive relationship (marriage and children in common); (2) poor health and injury due to violence; (3) increased severity of violence; (4) the presence of psychological abuse and controlling behavior; and (5) risk of future violence on the probability of experiencing PTSD symptoms controlling for demographic characteristics. Logistic regression was utilized for this analysis, as it is able to take into account the effect of multiple linear and binary independent variables on a single binary dependent variable (PTSD symptoms). Although regression models predict the likelihood of an outcome based on the independent variables, it is important to note that the cross-sectional nature of these data makes it impossible to know whether the significant variables in the model are causally related to the outcome. The relationships found between independent and dependent variables are associations.

FINDINGS

As described in Table 1, of the 423 women included in the analysis, mean respondent age was 32.64 years (SD = 9.47). Approximately 45% of the survey participants described themselves as white, 33% as African American, 13% as Native American, 7% as Latina, and 7% were placed in the "other" category. The majority of the participants were not currently married either because they had never been married (58.16%) or because they were divorced/separated (18.20%). Slightly less than half (47.04%) of the participants had a child with the perpetrator. In regard to education, approximately half (49.65%) of the participants had some college education or higher. Less than half (41.64%) of the participants were employed full or part time.

As shown in Table 1, this is a sample that has experienced high levels of IPV; 88.65% had experienced severe physical abuse. This includes 18.91% (n = 80) of participants who reported having a knife or gun used on them; 63.03% (n = 266) who reported being hit with something that could hurt; 71.63% (n = 303) who had been strangled; 67.22% (n = 283) who reported being beat up; 7.58% (n = 32) who reported being burned or scalded on purpose; and 38.77% (n = 164) who reported being punched or kicked. Near-lethal violence was reported by nearly half of the participants (45.86%). Sexual abuse was also common with 43.03% of the participants reporting sexual abuse, including 18.05% (n = 76) who were forced to have sex with their partner. Finally, psychological effects of violence were prevalent as well, with between 27% and 57% of the participants responding affirmatively to at least 1 item on the WEB scale.

The dependent variable, PTSD symptoms, is a binary variable (0/1), where participants with 3 or 4 PTSD symptoms were considered to have PTSD symptoms and participants who reported 2 or fewer symptoms were not considered to have PTSD symptoms. Of the 423 participants, 53.19% were classified as experiencing PTSD symptoms by the PC-PTSD. Eighty-five (20.09%) participants experienced no PTSD symptoms; 44 (10.40%) participants exhibited 1 symptom; 69 (16.31%) participants exhibited 2 symptoms; 88 (20.80%) participants exhibited 3 symptoms; and 137 (32.39%) participants exhibited all 4 symptoms.

Logistic regression

Table 2 contains the results of the multivariate logistic regression. The majority of participants' demographic and relationship characteristics were not associated with PTSD symptoms in this multivariate analysis but were retained as control variables. Race/ethnicity is an exception, with African American participants experiencing 60% less PTSD symptoms than white participants. Consistent with the hypothesis, separated/divorced participants are significantly less likely (54%) to report PTSD symptoms. The direction of the relationships of PTSD symptoms with being married and having children in common with the

Table 1. Participant, Relationship, and Violence Characteristics (n = 423)

Variable	Category	N (%) /Mean (SD)
Age	Years	32.64 (9.47)
Danger assessment weighted score	Score: 0-37	16.14 (7.44)
Danger assessment category	Variable danger (0-7)	47 (11.11)
	Increased danger (8-13)	106 (25.06)
	Severe danger (14-17)	95 (22.46)
	Extreme danger (18-37)	175 (41.37)
Participant estimation of likelihood of serious IPV injury (1 year)	Scale: 0-10	2.89 (3.47)
Race/ethnicity[a]	White	191 (45.15)
	African American	139 (32.86)
	Native American	56 (13.24)
	Latina	31 (7.33)
	Other	28 (6.62)
Legal marital status	Single	246 (58.16)
	Married	100 (23.64)
	Separated/divorced	77 (18.20)
Education	High school degree or less	213 (50.35)
	Some college or higher	210 (49.65)
Victim employed: part/Full time	No	247 (58.39)
	Yes	176 (41.61)
Participant has a child in common with abuser	No	224 (52.96)
	Yes	199 (47.04)
Participant overall health rating	Fair/poor	116 (27.42)
	Good/very good/excellent	307 (72.58)
Abuse led to physical pain that hurt the next day	No	76 (17.97)
	Yes	347 (82.03)
Participant experienced serious physical abuse	No	48 (11.35)
	Yes	375 (88.65)
Participant experienced near lethal physical abuse	No	229 (54.14)
	Yes	194 (45.86)
Participant experienced sexual abuse	No	241 (56.97)
	Yes	182 (43.03)
Participant is ashamed of the abuse	No	115 (27.19)
	Yes	308 (72.81)
Participant feels unsafe due to the abuse	No	149 (35.22)
	Yes	274 (64.78)
Participant has no control over her life	No	168 (39.90)
	Yes	253 (60.10)
Hides the truth from others due to fear	No	206 (48.70)
	Yes	217 (51.30)
Participant is afraid of her partner	No	142 (33.57)
	Yes	281 (66.43)
Dependent Variable: PTSD	No (0-2 symptoms)	198 (46.81)
	Yes (3-4 symptoms)	225 (53.19)

[a]Not mutually exclusive/does not total 100%.

Table 2. Multivariate Logistic Regression (n = 423)

Variable	Category	Unadjusted Odds Ratio	Adjusted Odds Ratio
Age	Years (linear)	1.02	1.01
Danger assessment weighted score	Score: 0-37 (linear)	1.15[a]	1.07[b]
Participant estimation of likelihood of serious IPV injury (1 year)	Scale: 0-10 (linear)	1.24[a]	1.15[a]
Race/ethnicity	White	Referent	Referent
	African American	0.54[b]	0.40[b]
	Native American	0.83	0.95
	Latina	0.36	0.58
	Other	0.10	0.56
Legal marital status	Single	Referent	Referent
	Married	0.75	0.59
	Separated/divorced	0.92	0.46[c]
Education	High school degree or less	Referent	Referent
	Some college or higher	1.37	1.37
Victim employed:			
Part/Full time	Yes	1.10	1.39
Participant has a child in common with abuser	Yes	0.69	0.66
Participant overall health rating	Fair/poor	Referent	Referent
	Good/very good/excellent	0.52	0.51[c]
Abuse led to physical pain that hurt the next day	Yes	10.75[a]	8.40[a]
Participant experienced serious physical abuse	Yes	4.22[a]	—
Participant experienced near lethal physical abuse	Yes	4.39[a]	—
Participant experienced sexual abuse	Yes	3.52[a]	—
Participant feels unsafe due to the abuse	Yes	6.98[a]	2.70[a]
Participant is ashamed of the abuse	Yes	7.12[a]	3.01[a]
Participant has no control over her life	Yes	5.05[a]	—
Hides the truth from others due to fear	Yes	2.59[a]	—
Participant is afraid of her partner	Yes	5.44[a]	—
Pseudo R^2			0.3432
N			423

[a] $P < .001$.
[b] $P < .01$.
[c] $P < .05$.

perpetrator, while not significant, were contrary to what was expected.

Risk of future violence/lethality, as measured by the DA, was significantly associated with increased likelihood of PTSD symptoms. A 1-point increase in the DA score was associated with an adjusted odds ratio of 1.07. Holding all other variables at the mean, for each 4-point increase in the DA score, the likelihood of PTSD symptoms increases between 4.62% and 6.86%. Similarly, holding all other variables at the mean, a participant with the mean variable danger score (rounded = 4) has a 31.8% chance of

experiencing PTSD symptoms and a participant with the mean extreme danger score (rounded = 23) has nearly double this chance (63.31%). An increase in the participant's estimation of the likelihood that her partner will seriously hurt her in the next year is also associated with a significant increase in the likelihood of PTSD symptoms (adjusted odds ratio = 1.15 for each 1-point increase). Holding all other variables at the mean, for each 1-point increase in participant's estimation of the likelihood that her partner will seriously hurt her in the next year, the likelihood of PTSD symptoms increases between 2.76% and 3.5%. A participant who believes that there is no chance that her partner will seriously hurt her in the next year has a 41.77% chance of PTSD symptoms, holding all other variables constant. This increases to a 62.42% chance if her estimation is slightly higher than neutral and a 74.46% chance of PTSD symptoms if she has no doubt that her partner will hurt her in the next year.

Consistent with the hypotheses, physical health was significantly and negatively related to PTSD symptoms in the multivariate analysis; participants reporting good, very good, or excellent health were 49% less likely to experience PTSD symptoms. Experiencing physical pain due to abuse that hurt the following day was significantly associated with PTSD symptoms, with more than an 8-fold increase associated with a positive response on this item. While severe violence, near-lethal violence, and sexual assault were associated with PTSD symptoms in bivariate analyses, contrary to hypotheses, these variables did not remain significant in multivariate analyses. Post hoc analyses found significant relationships between DA score and severe violence ($t = -6.90$, $P < .001$), near-lethal violence ($t = -10.80$, $P < .001$), and sexual violence ($t = -9.64$, $P < .001$), as well as between participant estimation of the likelihood of their partner causing serious injury in the next year and severe violence ($t = -2.54$, $P < .01$), near-lethal violence ($t = -5.28$, $P < .001$), and sexual violence ($t = -3.68$, $P < .001$).

Two items from the WEB scale were associated with an increase in PTSD symptoms in the multivariate analysis, though all items were associated with PTSD in bivariate analyses. This is consistent with the hypotheses. If the participant reported that she is ashamed of the abuse that her partner inflicts on her, there is an associated 3-fold increase in PTSD symptoms. Similarly, there is a significant increase in PTSD symptoms if the participant reports feeling unsafe due to the abuse, with an adjusted odds ratio of 2.70.

DISCUSSION

Of the 423 participants, 53% were classified as experiencing PTSD symptoms by the PC-PTSD. This is within, but at the high end of, the range found in other studies. The women in this sample have experienced high levels of severe violence and were in contact with the police due to these experiences of violent victimization, and this is congruent with research findings that show an association of PTSD with severity of battering. White women had significantly higher PTSD scores than the African American women. The lack of association between PTSD and other ethnicities in our study may be due to relatively low numbers of participants in the Native American, Latina, and other groups. Since other studies do not show similar results, further investigation of the effects of race/ethnicity on PTSD symptoms in women with severe IPV is warranted.

Our findings support prior research, indicating that fear is a powerful predictor of PTSD.[16,46,47] In fact, in this sample, while experiences of severe, near-lethal, and sexual violence were significant in bivariate analyses, these were not significant in the multivariate analysis. Rather, risk of future violence/lethality, self-perceived risk of injury due to abuse, and feeling unsafe were significant predictors of PTSD; these factors reasonably invoke or indicate serious fear. Thus, in this sample, fear appears to be a

more powerful predictor of PTSD symptoms than experiences of violent victimization. In addition, similar to previous research demonstrating that victims are accurate in assessing their own risk,[41,47] we found a linear relationship such that the more a woman believes that her partner is likely to hurt her in the next year, the higher her levels of PTSD symptoms. This finding is consistent with the theoretical model proposed by Dutton[10] and demonstrates that fear of future violence and/or injury should be taken seriously by nurse practitioners in clinical assessments of IPV, as it is a predictor of PTSD.

Similarly, the overall DA score, measuring risk of homicide, was clearly associated with PTSD symptoms, as one would expect, given the level of danger in the situation and the women's fairly accurate appraisal of their risk. The risk factors measured in the DA include variables such as abuse during pregnancy, forced sex, and threats of homicide. The association of the DA score with PTSD symptoms speaks to the traumagenic properties of these forms of IPV for women. These have been supported in prior research, but the implications for nursing theory, practice, and research have not been well considered. The need for assessment of IPV among pregnant women is fairly well accepted in nursing but is focused more on the physical health and safety of the mother and unborn child than on mental health implications. Similarly, sexual assault is a frequent part of IPV for women, and although considered in terms of gynecological and reproductive health by practitioners, it is less considered in psychological and psychophysiological interactions.

It is important to note that this research was limited because of the cross-sectional nature of the data. The lack of ability to be able to determine time ordering in cross-sectional analyses, such as ours, is a frequent feature of trauma and health outcomes research and will be solved only with more longitudinal research. Another limitation of this research was that we screened for PTSD among this sample and did not diagnose PTSD and thus measured PTSD symptoms rather than PTSD. While the PC-PTSD is a valid and reliable screen for PTSD, it is not a diagnostic tool, and future research should examine the variables associated with PTSD diagnosis or longer PTSD symptom measures. We did not ask women in this sample about childhood experiences of abuse or other types of violent victimization. Because there is a developing literature on PTSD as a mediator between childhood and adult victimization, future research should take into account multiple life experiences of violent victimization.

These limitations, however, are balanced by the strengths of this study. Women were recruited after being in contact with police due to IPV. This is a unique sample that has experienced relatively severe forms of violence and is at high risk for homicide. Risk of homicide and future violence was measured with a reliable and valid lethality risk-assessment measure as well as using women's perceptions of their own risk. Future research should seek to replicate the relationship between risk for future violence and PTSD.

IMPLICATIONS FOR FURTHER RESEARCH AND NURSING PRACTICE

Research and theoretical development

Our findings support Dutton's model[10] that distinguishes battering from other traumas and suggests adding a fifth dimension to consider: the risk of near-lethal and/or lethal physical harm. Not all traumas (eg, a drive-by shooting) have the risk for future near-lethal and/or lethal violence, but as found in this study, that risk was high for women who experienced severe IPV, and it is significantly associated with psychological outcomes—specifically, the increased likelihood of PTSD symptoms. Near-lethal and/or lethal violence risk are a distinct potential for a large proportion of women who experience IPV and can be studied as a differentiating factor with IPV traumas for further development within the Dutton model.

Dutton's mediators of battered women's responses to abuse should be tested to see the interrelationships of how each affects and

changes specific psychological and physical responses. For example, based on this sample and holding all other variables at the mean, a woman who rates her health as fair/poor, with a DA score in the extreme range (eg, 23) and has a belief, however slight, that her partner will hurt her with the next year, has approximately an 80% chance of screening positive for PTSD symptoms. However, a woman who rates her health as good/very good/excellent, has a DA score in the variable range (eg, 4), and has no belief that her partner will hurt her within the next year has approximately a 20% chance of screening positive for PTSD symptoms. Therefore, changes in the DA score, health, and self-perceived risk can have a major impact on the likelihood of PTSD symptoms. Dutton classifies these as mediators, and while this suggests a mediating relationship, future research should examine specifically these relationships.

Mediators can also inform development of IPV preventive practice strategies such as use of lethality assessment protocols (an example of an institutional support) within hospitals, clinics, and community settings that can be investigated for the changes and effects they cause on battered women's psychological and physical well-being.

Since this study supported that PTSD symptoms were best interpreted as a sequelae of violence rather than a precursor, future research can examine this relationship in both bivariate and multivariate analyses, with the possibility that PTSD mediates the relationship of severe violence and fear with physical health outcomes. Our finding that African American women in IPV scored lower on PTSD symptoms suggests that more investigation is needed with culturally diverse populations to test associations of IPV, PTSD, and physical/mental health, so we can determine evidence-based and culturally specific practices.[48]

Nursing practice

Our finding that physical health and experiences of pain in women with severe IPV are associated with PTSD symptoms supports and emphasizes the need for nurses in clinical practice to use IPV danger/lethality assessments and primary care screens for PTSD. However, the co-occurrences among PTSD, IPV, fear, and women's emotional/physical health form complex interrelationships that may impede a woman's ability to ask for help and access resources for IPV care and therein affect her safety in an already-dangerous situation. Help for severely abused victims such as the women in this sample is even more crucial because of their high risk for lethality.[49] Consistent findings of the co-occurrence of IPV with multiple mental and physical health problems (eg, depression and anxiety) and, in this study, with PTSD, should alert health care practitioners and advocates to screen all women (not just women who self-report) for IPV and PTSD in hospitals, clinics, shelters, and community settings.[13] Unfortunately, PTSD symptoms are often not recognized as IPV sequela and are frequently treated with psychotropic medications without recognizing or intervening with the IPV and/or PTSD directly, thus potentially putting victims at an even-greater risk for lethal IPV.[50]

The intersection of multiple abuses seen in this study supports an expanded clinical conceptualization of PTSD that encompasses the experiences of victims of IPV, not only with severe, prolonged, and repeated abuses but also with abuses that are diverse and intersect with one another. Herman[51] suggests inclusion of a new classification of PTSDs called complicated or complex PTSD with type I and type II categorizations to reflect severe, prolonged, and diverse abuses. This type of classification would enhance evidence-based diagnostic categories that more accurately reflect the experiences of abuse survivors.

Advanced practice nurses in primary care settings, emergency rooms, medical surgical units, obstetrics/gynecology, and mental health and clinic settings have a pivotal role in health care screening, assessment, and referral for the physical and emotional sequelae of IPV-related PTSD. However, to do this, nurses must know not only about IPV but also about the relationship of IPV to PTSD and

how they influence the assessment and intervention process, from the perspective of both victim and nurse. Presenting psychological symptoms in women should be assessed in the context of IPV and PTSD and not so readily diagnosed as psychiatric disorders without first assessing for trauma. Also, more trauma-focused treatment resources, rather than psychiatric services, should be available and more research is needed to gather evidence of the efficacy of such treatment modalities for IPV victims.

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