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ORIGINAL ARTICLE

Correlates of Intimate Partner Stalking Precipitated Homicides in the United States

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Abstract

Intimate partner stalking is a significant health and safety concern in the United States, yet research on this phenomenon remains minimal. The purpose of this study is to examine the correlates of homicides precipitated by intimate partner stalking among a sample of homicide victims. This cross-sectional study included a subsample of adult homicide cases classified as intimate partner violence victims ($N = 6028$) between 2003 and 2015 on the National Violent Death Reporting System (NVDRS). The analysis explored victim- and suspect-related factors' associations to homicide precipitated by intimate partner stalking. Bivariate associations were examined using Pearson's correlation and Fisher's exact test. Those meeting a significance threshold of .25 were included in the final analysis. Missingness was addressed with multiple imputation. The logistic regression analysis examined victim (marital status, education level, and geographic region of the homicide) and suspect (age, sex, firearm, and documented history of abuse towards victim) variables' associations to homicide precipitated by intimate partner stalking. The findings suggest that the victim's marital status, suspect's sex, suspect's use of a firearm, geographic region of the homicide, and a documented history of abuse of victim by the suspect had significant relationships with homicide precipitated by intimate partner stalking. The associations between death by firearm and previously documented history of abuse with homicide precipitated by intimate partner stalking have substantial implications for the criminal justice system. Limitations of the NVDRS dataset, recommendations for research, policy and prevention are discussed.

Keywords Stalking precipitated homicides · Intimate partner violence · Correlates · NVDRS

In 2016, more than 22% of homicides in the United States (US) were carried out by an intimate partner (Ertl et al. 2019). The Center for Disease Control and Prevention (CDC) (2015) classifies such deaths as intimate partner homicide or "incidents in which violence or the threat of violence by a person against his or her current or former intimate partner results in the violent death of one or more people" (p. 78). To understand this phenomenon, researchers have examined multiple correlates and possible risk factors (Campbell et al. 2007; Ertl et al. 2019; Spencer and Stith 2018; Spitzberg and Cupach 2007). Apart from the vastly examined correlates, such as intimate partner violence (IPV) and access to lethal means (Spencer and Stith 2018), the literature has identified stalking as a risk factor of intimate partner homicides (Campbell et al. 2007; Spitzberg and Cupach 2007).

Per the CDC, stalking is defined as harassing or threatening behaviors used by a perpetrator that cause safety concerns for the victim (Black et al. 2011). Intimate partner stalking is a specific subtype of stalking that occurs when such patterns of behavior are directed from a former spouse, boyfriend, girlfriend, partner, or cohabitant (Tjaden and Thoennes 2002). In addition to intimate partner stalking being a correlate of intimate partner homicide, the two phenomena have multiple predictors in common, such as gender (Tjaden and Thoennes 1998), relationship status (Logan et al. 2007a, b; McFarlane et al. 1999), IPV (Brady and Hayes 2018; Nobles et al. 2018; Sheridan and Davies 2001), and job performance problems (Logan et al. 2007b; Logan and Walker 2009). Despite their connection, there is little research on homicides precipitated by

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intimate partner stalking. Additionally, little is known regarding the risk factors for death precipitated by intimate partner staking among intimate partner homicide victims. The current study aims to address this knowledge gap by examining the correlates of homicides precipitated by intimate partner stalking among a U.S. intimate partner homicide sample.

Literature Review

Intimate Partner Homicide

Due to intimate partner homicide's prevalence and often fatal outcome, it is a significant public health concern. Results from a systematic review estimate that globally between 9.2% to 18.2% of homicides are committed by an intimate partner (Stöckl et al. 2013). Per the most recent report by the Federal Bureau of Investigation (2019), in 2018, 10% of all U.S. homicide victims were killed by their intimate partner. Given that homicide perpetrators are not always identified, the portion of intimate partner homicide cases may actually be larger. For example, according to the CDC, current or former intimate partners may be the perpetrators of more than one in five homicide cases (Ertl et al. 2019).

Intimate Partner Homicide Perpetration. Research has identified several demographic correlates of intimate partner homicide perpetration. Kivisto's (2015) study findings suggest that: (a) Men are four times more likely than women to kill their intimate partner, (b) male IPV perpetrators who kill their intimate partner are more likely to be older than those who perpetrate nonfatal abuse, and (c) around half of male IPV homicide perpetrators have less than a high school diploma. Additional risk factors include the perpetrator's employment status and substance use. For example, Campbell et al.'s (2003) research suggest that the perpetuator's lack of employment is one of the strongest risk factors for intimate partner femicide. Lastly, study findings suggest a connection between substance use and intimate partner homicide, but there is a lack of consensus about the strength of the relationship (Brady and Hayes 2018; Spencer and Stith 2018).

There is a consensus in the literature regarding intimate partner homicide risk factors related to the perpetrator's history of violence and threats. The two most significant risk factors for intimate partner homicide are a previous history of abuse by the perpetrator and the perpetrator's access to a firearm (Campbell et al. 2007; Spencer and Stith 2018). In the US, firearms are the predominant weapon used in intimate partner homicides (World Health Organization 2014). Moreover, previous threats against the victim with a weapon and verbal threats are strong risk factors of committing intimate partner homicide (Brady and Hayes 2018; Campbell et al. 2003; McFarlane et al. 2002; Sheridan and Davies 2001).

Intimate Partner Homicide Victimization Study findings consistently report that a larger proportion of women are killed by an intimate partner than men. An estimated 50% of female homicide victims compared with 7.5% of male homicide victims in the US are killed by a current or former intimate partner (Ertl et al. 2019). Victims of life-threatening abuse are more likely to report having left their partner within the last 12 months than victims of non-life-threatening abuse (Brady and Hayes 2018). Women who separated from an abusive partner, left the partner, or asked the partner to leave; are three to four times more likely to experience homicide as compared to those with no such history (Campbell et al. 2003). Lastly, intimate partner stalking victimization is also a strong risk factor for intimate partner homicide (McFarlane et al. 1999).

Aside from the previously mentioned factors, there is a lack of consensus on other risk factors for intimate partner homicide victimization. For example, Brady and Hayes (2018) found that age, race, and educational attainment were not correlated with the likelihood of life-threatening abuse. However, results from another study suggested otherwise. McFarlane et al. (2002) reported that attempted or actual homicide victims were on average, four years older than women who were abused but not murdered. They also reported that African American women were at a higher risk of intimate partner homicide than white women, along with women who did not graduate from high school.

Intimate Partner Homicide's Relation to Intimate Partner Stalking. As previously stated, intimate partner stalking is a strong risk factor of intimate partner homicide (McFarlane et al. 1999). On average, 7.5 million people are stalked every year in the US (Backes et al. 2020). The majority of those are stalked by current or former intimate partners (Sheridan and Davies 2001). U.S. national estimates suggest that 61% of female and 44% of male stalking victims have been stalked either by a current or former partner. These percentages equate to about 9% of women and 3% of men in the general population experiencing some of the non-fatal or the fatal effect of intimate partner stalking (Breiding et al. 2014). Non-fatal effects include symptoms of post-traumatic stress disorder, anxiety, and depression (Basile et al. 2004; Logan et al. 2007a); loss of efficiency at work; and significant economic hardships (Basile et al. 2006; Max et al. 2004). For example, among women who obtained domestic violence protective orders, those stalked were more likely to report problems at work than those who were not stalked (94.6% compared to 76.1% for non-stalked women). These women were more likely to report experiencing harassment on the job, having trouble concentrating, and missing work because of illness (Logan et al. 2007b). The fatal effect of intimate partner stalking may be death as the victims may die at the hands of the perpetrator.

Several characteristics associated with intimate partner homicide are also associated with intimate partner stalking

victimization. Similar associations of the two include gender, relationship status, and IPV. Specifically, more women are likely to be victims of intimate partner stalking than men (Tjaden and Thoennes 1998). Intimate partner stalking victimization is more frequently reported among victims who are no longer in a relationship with the perpetrator (Logan et al. 2007a, b; McFarlane et al. 1999). Previous physical abuse from a partner is associated with a higher likelihood of stalking victimization (Backes et al. 2020). For instance, McFarlane et al. (1999) found that stalking prevalence among IPV victims was higher for those who reported physical abuse than those who did not report it. Logan et al. (2007a) found that women who experienced stalking were more likely to report violence within the first 6 months of the relationship than those who did not report experiencing stalking. Despite the similarities between correlates of intimate partner stalking and intimate partner homicide, there is little research on homicides precipitated by intimate partner stalking.

Current Study

In sum, while past studies have explored the correlates of intimate partner homicide and intimate partner stalking, few studies have focused on homicides precipitated by intimate partner stalking. Additionally, previous research has suffered from the use of samples that are not from diverse states and regions. Further, exploring correlates in isolation to a discussion on prevention has been a significant gap in the previous research. Given these limitations, the purpose of the present study was to explore correlates of homicides precipitated by intimate partner stalking and delve into a discussion on preventive efforts.

Methods

We derived the data for this cross-sectional exploratory study from the National Violent Death Reporting System (NVDRS) 2003 to 2015 dataset, which contained information on 202,375 violent deaths reported by 27 participating U.S. states. The NVDRS serves as a comprehensive and detailed census of violent deaths across the nation (Blair et al. 2015). After a death, trained abstractors in participating states collect and compile data on the victim, suspect, manner of death, and the circumstances related to the death. Typical data sources utilized by the abstractors include data compiled before the person's death (i.e., admission into the emergency department and National Incident-Based Reporting System [NIBRS]), as well as data compiled after the person's death (e.g., coroner report, death certificate, and law enforcement report documenting the homicide).

Study Sample

The study's sampling frame consists of adult intimate partner homicide cases that were coded as IPV victims (hereafter referred to as IPV victims) on the NVDRS between 2003 to 2015. In order to obtain the sample for the study, we applied five data reduction steps to the original NVDRS dataset (N = 202,375). First, cases coded as 17 and younger were removed, leaving a total of 192,075 cases. Second, suicide cases were removed, leaving a total of 52,780 cases. Third, cases classified as non-IPV homicides were removed, leaving a total of 7683 cases. Per the NVDRS, IPV homicides are "incidents in which violence or the threat of violence by a person against his or her current or former intimate partner results in the violent death of one or more people" (CDC 2015, p. 78). Fourth, cases that were coded as "perpetrators" were removed, leaving a total of 7665 cases. According to the NVDRS, an IPV victim is "the partner in the intimate relationship who is the target of violence perpetrated by his/her intimate partner" (CDC 2015, p. 174). Lastly, to ensure that the sample was solely representative of IPV victims and not IPV-related deaths, the authors reduced the dataset to only include cases where the homicide occurred at the hands of a spouse, ex-spouse, girlfriend/boyfriend, or ex-girlfriend/boyfriend. This step was critical given that, per the NVDRS' IPV homicide definition (CDC 2015), these cases could also include friends, family members, children, or bystanders that were killed as a result of an IPV incident. In sum, the final sample for the study included 6028 cases.

Measures

Dependent Variable. This study's outcome variable is homicide precipitated by intimate partner stalking (no = 0, yes = 1). Only stalking precipitated deaths where the suspect was a current or former intimate partner (i.e., intimate partner stalking) were included in this study's dataset. The CDC defines stalking as "a pattern of harassing or threatening tactics used by a perpetrator that is both unwanted and causes fear or safety concerns in the victim" (Black et al. 2011, p. 27). Such tactics include unwanted phone calls, emails, and cards. In the NVDRS, a case is coded as a stalking precipitated homicide if there was an indication that the "victim had taken out a restraining order because the suspect was stalking her...suspect had stalked the victim before raping and killing her...or suspect stalked victim prior to the attack" (CDC 2015, p. 92).

Independent Variables. For this study, the authors classified the variables into two categories: victim- or suspect-related. The independent variables included one victim-related variable (job performance problem) and two suspect-related variables (documented history of abuse of the victim by the suspect and the suspect's use of a firearm in the homicide). Additionally, the authors included multiple demographic

variables: age, sex, race, marital status, education level, and geographic region of the homicide.

A job performance problem is defined as "experiencing a problem at work (such as tensions with a co-worker, poor performance reviews, increased pressure, feared layoff)" or "having a problem with joblessness (e.g., recently laid off, having difficulty finding a job)" (CDC 2015, p. 110). This binary variable is coded as no = 0 and yes = 1. Cases are coded as "yes" if the victim had experienced "a recent major job problem such as being fired from their job, being demoted or having a serious conflict with his/her boss" (CDC 2015, p. 110). The authors included this variable in the study for its potential in aiding prevention efforts. A documented history of abuse of the victim by the suspect, coded as no = 0 and yes = 1, refers to whether or not "the data sources document a history (or suspected history) of abuse of this victim by this suspect" (CDC 2015, p. 138). Two things must occur for the abstractors to code "yes": 1) a suspect is identified on the violent death police report, and 2) one or more of the data sources explicitly states that there was prior abuse or suspected abuse by that specific suspect. These data sources must have been compiled *before* the victim's death. Due to multiple safety issues, many individuals may have never reported abuse to the police. Thus, while all the cases in our sample are IPV homicides, this variable looks at whether there was a documented history of abuse of the victim by the suspect in data sources compiled *before* the homicide. The last independent variable is the suspect's use of a firearm (i.e., non-powder or powdered guns) in the homicide, which refers to whether the suspect used a firearm to kill the victim, coded as no (did not use a firearm) = 0 and yes (did use a firearm) = 1. The authors generated this variable by using the NVDRS' "weapon type" (i.e., the type of weapon used to inflict the fatal injury).

The authors included information on the age, sex, and race of both the victim and the suspect. Both the victim's and suspect's ages presented with multiple outliers. Thus, these variables were transformed from continuous to categorical: 18 to 29 = 0, 30 to 39 = 1, and 40 and older = 2. The sex of the victim in the NVDRS contained three response categories: male, female, and unknown. No individuals were identified as "unknown" in this study's sample; thus, the response choice was dropped, leaving male = 0 and female = 1. For consistency purposes, the authors did the same with the suspect's sex. In the NVDRS, both the victim's and the suspect's race were divided into six categories, all of which exhibited poor within cell distribution. Thus, the authors collapsed both victim race and suspect race into three categories: White = 0, Black = 1, and Other = 2. "Other" includes American Indian, Asian or Pacific Islander, two or more races, and unknown.

The NVDRS contains information only on the victim's marital status and education level. As coded by the NVDRS, the victim's marital status presented with poor within cell distribution. The NVDRS divided marital status into seven classifications, of which six were present in the sample: 1) married, civil union, or domestic partnership; 2) married, civil union, or domestic partnership, but separated; 3) never married; 4) widowed; 5) divorced; and 6) single, not otherwise specified (CDC 2015). Due to the limited number of cases across multiple categories, the authors dichotomized the variable into married = 0 or not married = 1. Only "married, civil union, or domestic partnership" was coded as married. All others were coded as not married. Similarly, education level presented with poor within cell distribution and was collapsed from nine categories into four: less than a high school education = 0, high school or GED diploma = 1, college degree = 2, or unknown = 3. Lastly, the authors generated a variable for geographic region of the homicide. The authors derived data for this variable from the NVDRS' state codes, which specify the state in which the homicide occurred. Homicides in this study's sample occurred across 27 states. Specifically, eight states were in the Northeast, seven in the South, five in the Midwest, and seven in the West. When creating the categories for this variable, the authors followed the U.S. Census Bureau's (2018) geographic regional groupings: Northeast-US = 0, South-US = 1, Midwest-US = 2, and West-US = 3.

Analysis of Data

Univariate and Bivariate Analyses. Descriptive statistics were used to identify sample characteristics, variable distributions, and missingness. These univariate statistics revealed a 20% missingness in the documented history of abuse of the victim by the suspect variable. Thus, an analysis was conducted to determine this variable's missingness mechanism and to decide on an appropriate way to handle it (Allison 2002; Tabachnick and Fidell 2001). First, the authors used Little's (1988) Missing Completely at Random (MCAR) test, which tests the null hypothesis that the missing data is MCAR. Results from this test suggested that the missingness was not completely random, $p < 0.05$ (Li 2013). The authors chose to use a multiple imputation method (MI), as scholars commonly cite it as the least biased method for handling missingness (Schafer and Graham 2002; Tabachnick and Fidell 2001). For this study, MI was carried out via selecting several auxiliary variables and using 16 seeds (Allison 2012; Graham et al. 2007). Since all variables for this study are categorical, the MI analysis imputed the values using a logistic regression model. After addressing missingness, the authors ran a series of chi-square tests to examine all the variables' bivariate relationships. The authors used Fisher's exact test instead of chi-square for variables that contained an expected frequency of five or less in one or more of their cells.

Multivariate Analysis. Variables were selected for inclusion in the final multivariate analysis if they had a significance level of .25 or less at the bivariate level (Bursac et al. 2008). By using a .25 significance threshold instead of a .05 at the bivariate level, the identification of variables that may have indicated a

reasonable association with the outcome was increased while still omitting irrelevant ones (Bursac et al. 2008). To assess for multicollinearity, the authors examined the variance inflation factor of each variable and flagged those above five, as well as ran a series of Pearson correlations and flagged correlations above .70 (Tabachnick and Fidell 2001). Multicollinearity concerns appeared between the victim's age and the suspect's age ($r = .71$, $p < .001$; VIFs = 1.76 and 1.73, respectively) and the victim's sex and suspect's sex ($r = -.92$, $p < .001$; VIFs = 6.21 and 6.15, respectively). From these sets of variables, only the suspect's age and sex were chosen for inclusion in the final multivariate analysis, to avoid victim-blaming.

The final multivariate analysis included a logistic regression to examine whether the victim's marital status, education level, and geographic region of the homicide along with the suspect's age, sex, use of a firearm in the homicide, or a documented history of abuse of the victim by the suspect were significantly associated with homicide precipitated by intimate partner stalking. Statistical significance was set at a p value of .05 or less. For a logistic regression with seven predictor variables, a minimum sample size of 350 cases is suggested (i.e., 50 cases per variable) (Wright 1995). This study exceeded that minimum sample size. Data analyses were performed using Stata version 12 (StataCorp 2017). Pearson's chi-square test, McFadden R^2, Cox-Snell R^2, and classification tables were used to assess the goodness of fit in the final logistic regression model (Wright 1995). The final logistic regression using MI compared reasonably well to the non-imputed logistic regression: The models' explained variance was similar, and each of the variable's contribution did not exceed .05%. Thus, this study presents the results of the former.

Results

Of the 6028 IPV homicide cases, 60 cases were homicides precipitated by intimate partner stalking. Tables 1 and 2 show the sample characteristics. The tables are divided between victim and suspect variables across homicide precipitated by intimate partner stalking and those not precipitated by intimate partner stalking.

In the sample, 50% of the IPV homicides occurred in the Southern US ($n = 3017$). The IPV homicide victims were predominantly female (76.96%, $n = 4639$). More than half of them were White (52.57%, $n = 3169$), and nearly half were age 40 or older (48.36%, $n = 2915$). The majority of them were not married (58.45%, $n = 3158$). For the victims in our sample whose education level was known, there was a fairly even distribution across the education levels ranging from less than a secondary degree (12.81%, $n = 734$) to a college degree (19.72%, $n = 1130$). Job performance problems were not commonly reported for the victims (0.2%, $n = 12$). The suspects in our sample were predominantly male (78.15%, $n = 4706$). More than half of them were White (50.43%, $n = 3040$) and age 40 or older (58.99%, $n = 3556$). Nearly 56% of them used a firearm to kill the victim ($n = 3336$). Most of the cases in our sample had no documented history of abuse of the victim by the suspect (80.1%, $n = 3851$).

Bivariate Associations of Stalking Precipitated Homicides among IPV Victims

The bivariate results showed that several victim and suspect variables were significantly associated with homicide precipitated by intimate partner stalking (see Table 3). Specifically, the results suggested significant bivariate associations between homicide precipitated by intimate partner stalking and the victim's sex ($p = .003$), age (χ^2 (2) = 4.68, $p = .096$), marital status (χ^2 (1) = 19.87, $p = .001$), education level ($p = .191$), and geographic region of the homicide ($p = .007$). The bivariate analysis suggested no significant associations between homicide precipitated by intimate partner stalking and the victim's race or job performance problems.

Similar to the victim characteristics, results from the bivariate analysis suggested significant associations between the suspect's age (χ^2 (2) = 6.38, $p = .031$), sex ($p = .003$), the suspect's use of a firearm in the homicide (χ^2 (1) = 6.07, $p = .014$), and a documented history of abuse of the victim by the suspect (χ^2 (1) = 14.87, $p = .001$) with the homicide precipitated by intimate partner stalking. At the bivariate level, results suggested no significant association between the suspect's race and homicide precipitated by intimate partner stalking.

Multivariate Associations of Stalking Precipitated Homicides among IPV Victims

The final logistic regression model ($N = 6028$) examining homicide precipitated by intimate partner stalking included victim (marital status, education level, and geographic region of the homicide) and suspect (age, sex, firearm, and documented history of abuse towards victim) variables (see Table 4). While the model exceeded the recommended sample size, it presented with somewhat wide confidence intervals (CIs). These CIs are discussed in the limitations section.

The model explained 13.23% (McFadden's $R^2 = .1323$) of the variance in homicides precipitated by intimate partner stalking outcomes and correctly classified 90.9% of the cases (χ^2 (13) = 78.17, $p < 0.001$). Table 4 shows the full model. Among IPV homicides, victims who were not married were 5.09 times more likely to experience homicide precipitated by intimate partner stalking than those who were married ($p < .001$, 95% CI [1.35–9.99]). Male suspects were more likely to carry out homicides precipitated by intimate partner stalking as compared to female suspects (OR = .16, $p < .05$, 95% CI [.08–.89]). The likelihood that a suspect used a firearm for a homicide

Table 1 Descriptive characteristics of the victims in the study

Victim variable	*n*	Weighted %	Missing %	Homicide precipitated by intimate partner stalking[a] (*n*)	Homicide not precipitated by intimate partner stalking (*n*)
Age					
18–29	1522	25.25		15	1507
30–39	1591	26.39		9	1582
40 ≤	2915	48.36		36	2879
Sex					
Male	1389	23.04		5	1384
Female	4639	76.96		55	4584
Race					
White	3169	52.57		34	3135
Black	1927	31.97		19	1908
Others[b]	932	15.46		7	925
Marital status			0.15		
Not-married	3518	58.45		52	2493
Married	2501	41.55		8	3466
Education level			4.94		
< High school degree or GED	734	12.81		5	729
High school degree or GED	1467	25.60		9	1458
College degree	1130	19.72		16	1114
Unknown	2399	41.87		22	2377
Geographic region of the homicide			0.02		
Northeast US	1103	18.30		4	1099
Southern US	3017	50.06		30	2987
Midwest US	667	11.07		14	653
West US	1240	20.57		12	1228
Job performance problems					
No	6016	99.80		58	5957
Yes	12	0.20		2	11

Notes: The study sample consists of 6028 intimate partner homicide cases on the National Violent Death Reporting System between 2003 to 2015

[a] In our sample there was 60 cases of homicides precipitated by intimate partner stalking

[b] "Others" refers to individuals who were identified as Non-White, Non-Black, American Indian, Asian or Pacific Islander, those with two or more races, and whose race was unknown

precipitated by intimate partner stalking were 2.01 times higher in comparison to those that did not use a firearm ($p < .05$, 95% CI [1.09–3.96]). Having a documented history of abuse of the victim by the suspect tripled the odds of a homicide precipitated by intimate partner stalking compared to there being no such documented history ($p < .001$, 95% CI [1.77–5.96]). The greatest odds for a homicide precipitated by intimate partner stalking were among IPV victims in the Midwest US (OR = 5.90, $p < .05$, 95% CI [1.03–8.99]). The victim's education level and the suspect's age were not significant in the model.

Discussion

Past research has pointed to a pronounced dearth in empirical evidence on homicides precipitated by stalking among IPV victims (Owens 2016). To address the gaps in past research, this study examined the correlates of homicide precipitated by intimate partner stalking among a sample of U.S. IPV victims. Although stalking and IPV are major risk factors for intimate partner homicide, they are often underreported, leading to inaccurate estimates (Baum et al. 2009). The underreporting is highlighted by this study's sample and findings. First, we found that a small proportion of IPV homicides were classified as stalking precipitated homicides ($n = 60$, 1%). Second, among our sample of IPV homicides, less than 20% of the cases had a documented history of abuse of the victim by the suspect. The low proportions found in our study corroborate previous evidence according to which victims are hesitant in filing cases of abuse by their perpetrator. For example, some victims of stalking may not think that they are victims of a crime and, therefore, do not notify law enforcement. Others may be afraid

Table 2 Descriptive characteristics of the suspects in the study

Suspect variable	*n*	Weighted %	Missing %	Homicide precipitated by intimate partner stalking[a] (*n*)	Homicide not precipitated by intimate partner stalking (*n*)
Age					
18–29	1124	18.65		10	1114
30–39	1348	22.36		6	1342
40 ≤	3556	58.99		44	3512
Sex			0.52		
Male	4706	78.15		56	4650
Female	1291	21.44		4	1287
Race					
White	3040	50.43		34	3006
Black	1939	32.17		17	1922
Others[b]	1049	17.40		9	1040
Firearm			1.11		
No	2625	44.04		17	2608
Yes	3336	55.96		43	3293
Documented history of abuse of victim by the suspect			20.24		
No	3851	80.10		32	3819
Yes	957	19.90		22	935

Notes: The study sample consists of 6028 intimate partner homicide cases on the National Violent Death Reporting System between 2003 to 2015

[a] In our sample there was 60 cases of homicides precipitated by intimate partner stalking

[b] Others refers to individuals who were identified as Non-White, Non-Black, American Indian, Asian or Pacific Islander, those with two or more races, and whose race was unknown

of their stalker and hence be hesitant to file a report with the police (Logan and Walker 2019). Moreover, police officers are more likely to charge suspects with misdemeanors rather than felony offenses, especially when stalking victims appear to not be so distraught (Backes et al. 2020; Center for Problem-oriented Policing 2004; Lynch 2015; Tjaden and Thoennes 2001). The low proportion of stalking-precipitated homicides in our study, could also be due to the way the variable is constructed in the NVDRS data. For example, the NVDRS does not provide a timeline for what constitutes a "precipitated" event, nor does it specify if the stalking was recorded before or at the time of the homicide. This lack of specificity may have contributed to the small number of identified intimate partner stalking precipitated homicides.

The study findings highlight and reiterate the strong relationship between gender and intimate partner stalking. Specifically, men in comparison to women were more likely to be suspects of stalking precipitated homicides in our sample. This finding is consistent with previous literature on intimate partner stalking and intimate partner homicides (Campbell et al. 2003, 2007; McFarlane et al. 1999; Spencer and Stith 2018; Tjaden and Thoennes 1998). The study also provides us with new information on possible correlates of homicides precipitated by intimate partner stalking. The findings note that IPV victims from the Midwest were more likely to experience homicides precipitated by stalking in comparison to victims who resided in the Northeast. To our knowledge, this is the first study that has explored the differences between geographic regions in stalking precipitated homicides.

Most significantly, the study highlights implications related to the use of a firearm and previously documented history of abuse that can be used for prevention purposes. Specifically, in our sample, the use of a firearm by the suspect doubled the odds of an intimate partner stalking precipitated homicide. The study also found that victims in our sample who were not married at the time of death were more likely to experience a homicide precipitated by intimate partner stalking. Lastly, IPV victims with a documented history of abuse by the suspect were three times more likely to experience homicides precipitated by intimate partner stalking in comparison to those without a documented history of abuse by suspects.

Limitations

Before delving into a further discussion on the implications of our study, limitations related to the NVDRS dataset need to be discussed. First, due to an inconsistency in data-sharing agreements across states in reporting deaths to the NVDRS (Paulozzi et al. 2004), there arise discrepancies in classifying and coding these events. Second, not all 50 states report deaths

Table 3 Bivariate associations for homicide precipitated by intimate partner stalking

Variable	χ^2	*DF*	*p*
Victim variables			
Age	4.68	2	.096*
Sex[a]	–	–	.003*
Race	.76	2	.684
Marital status	19.87	1	.001*
Education level[a]	–	–	.191*
Geographic region of the homicide[a]	–	–	.007*
Job performance problems[a]	–	–	.256
Suspect variables			
Age	6.38	2	.031*
18–29 vs 30–39			
18–29 vs 40 ≤			
30–39 vs 40 ≤			
Sex[a]	–	–	.003*
Race[a]	–	–	.694
Firearm	6.07	1	.014*
Documented history of abuse of victim by the suspect	14.87	1	.001*

Notes: χ^2 = chi-square; DF = degrees of freedom

*$p < .25$

[a] Fisher's exact test was used to measure the association homicide precipitated by intimate partner stalking and those variables that contained an expected frequency of five or less in one or more of their cells. Thus, the *p* value reported for these variables is based on Fisher's exact test

within the NVDRS, further deflating the numbers and weakening the strength of the analysis (Blair et al. 2015). Third, the datasets presented with an issue of missingness and poor variable within cell distribution. The authors had to recode most variables, which may have led to the creation of superfluous binaries, and also had to rely on MI, increasing the likelihood of a Type 1 error (Allison 2002). Additionally, some of the variables chosen for the analysis presented with variability, as suggested by their somewhat wide CIs shown in Table 4. To verify that the CIs were not a result of model saturation, the authors ran a truncated model. Even in that model, the CIs continued to be somewhat wide. Because of the dependent variable's distribution and its measurement, as well as the exploratory and descriptive purpose of the study, the authors chose a logistic regression as it makes no assumptions regarding the dependent variable's distribution. Based on this study's key findings, future research should consider using different type of analyses that has yet to be used with the NVDRS dataset. Lastly, there are a limited number of variables that focus on suspect characteristics in the NVDRS data. Due to very few variables, it becomes challenging to perform an analysis on suspect characteristics, pushing researchers to continue focusing on victim characteristics. Additionally, continuing to focus on victim characteristics has limited researchers from engaging in prevention efforts.

Implications for Research, Prevention, Intervention, and Policy

Notwithstanding the limitations mentioned above, there are significant implications of the findings. Several women may be facing job-related problems and loss of productivity at work as a result of intimate partner stalking (Logan et al. 2007b). Given that at the bivariate level job performance problems' was close to the level of statistical significance (0.25), it may be prudent for employers to provide support to victims by liaising with the criminal justice system and conducting safety planning/awareness workshops. Delivering timely support to such victims may prevent intimate partner homicides. The high-odds ratio for stalking precipitated homicides by an ex-partner or for victims who had previously reported abuse by the suspected killer, indicates the seriousness of stalking among IPV victims and a lack of responsiveness by the criminal justice system. The results show that when investigating IPV cases, police officers need to explore whether the victim has experienced prior stalking. If stalking is present, it may indicate the potential for more serious violence, including homicide in the future, and require the criminal justice system's early intervention to prevent fatal outcomes. In such cases, it is imperative for police officers to encourage victims to seek restraining orders against the suspect or to file a police report against the suspect.

Table 4 Logistic regression results for homicide precipitated by intimate partner stalking

Variable	*B*	SE	*OR*	95% CI	*p*
Victim's marital status					
Married (Ref)					
Not-married	1.63	.39	5.09	[1.35, 9.99]	.001***
Victim's education level					
< High school degree or GED (Ref)					
High school degree or GED	−.26	.57	.77	[.25, 2.35]	.645
College degree	.66	.52	1.94	[.69, 5.41]	.207
Unknown	.57	.54	1.77	[.62, 5.08]	.288
Geographic region of the homicide					
Northeast US (Ref)					
Southern US	.50	.56	1.65	[.55, 4.96]	.372
Midwest US	1.78	.59	5.90	[1.03, 8.99]	.003**
West US	.80	.59	2.23	[.70, 7.06]	.174
Suspect's age					
18–29 (Ref)					
30–39	−.65	.56	.52	[.17, 1.57]	.245
40 ≤	.62	.38	1.85	[.88, 3.90]	.104
Suspect's sex					
Male (Ref)					
Female	−1.29	.61	.16	[.08, .89]	.031*
Firearm					
No (Ref)					
Yes	.69	.31	2.01	[1.09, 3.69]	.024*
Documented history of abuse of victim by the suspect					
No (Ref)					
Yes	1.18	.31	3.25	[1.77, 5.96]	.001***
McFadden R^2	.1323***				
Cox-Snell R^2	.138				

Notes: $N = 6028$. Ref = indicates the reference or comparison group; *B* = unstandardized beta; *OR* odds ratio, *CI* confidence interval

* $p < .05$. ** $p \leq .01$. *** $p \leq .001$

In many instances, the victims are unaware of their rights under the legal system, making it crucial for the criminal justice responders to provide victims with this information (Logan et al. 2006). Additionally, officials from the criminal justice system are also encouraged to liaise with IPV intervention agencies to ensure that victims are promptly assisted. Furthermore, as pointed out by Backes et al. (2020), there is an urgent need to understand the effectiveness of existing batterer intervention programs before applying them to intimate partner stalking. Researchers and practitioners are encouraged to collaborate with the criminal justice system on this front.

All 50 states in the US have made stalking a criminal offense (Catalano 2012). However, state laws pertaining to stalking differ in the degree of fear, distress, and intent of the stalker that qualifies as a stalking incident. For instance, some states require that the victim must have been frightened before being stalked as a precursor to qualify as being a stalking victim (Catalano 2012). In addition to the criminalization of stalking, law enforcement needs to identify appropriate programs and partner with IPV service providers to make referrals so that victims can receive the support that they need to keep themselves safe (Center for Problem-oriented Policing 2004; Lynch 2015; Tjaden and Thoennes 2001).

The role of the geographic region in stalking precipitated homicides needs to be explored further to examine how each state collects information on violent deaths, which may account for the differences between regions. For example, the State of Georgia collects information on violent deaths from the child fatality review, supplemental homicide report, and through the news, in addition to sources of information uniform to all states, such as coroner/medical examiner reports, toxicology reports, death certificates, and law enforcement reports (Bayakly 2019). Other states may collect information

from different or additional sources, which may contribute to certain regions reporting higher rates of stalking precipitated homicides. Additionally, the differences in stalking laws between states may contribute to the differences in the reports of homicides precipitated by intimate partner stalking. Last, but most important, the differences in the manner of death classifications by abstractors may also contribute to discrepancies in the number of stalking precipitated homicides reported by region. Researchers are encouraged to continue focusing on this topic and to investigate the differences across regions. Examining these distinctions can propel the creation of stalking laws and interventions/ preventions specific to each region.

Homicides precipitated by stalking among IPV victims by firearm point toward the need for urgent discussions about firearms restrictions for IPV offenders. The US federal law prohibits domestic abusers who have been convicted of domestic violence misdemeanors and abusers subject to certain domestic violence protective orders from purchasing or possessing guns (U.S. Department of Justice 2015). However, there are many gaps in federal law. The federal laws do not apply to many abusers who victimize non-spouse partners, to convicted stalkers, nor to others subject to protective orders. These loopholes in federal law allow access to guns by convicted stalkers and abusers subject to domestic violence protective orders that cover the period before a hearing. More than 50% of female homicide victims are killed with guns, which makes the situation even more alarming (U.S. Department of Justice 2015).

In addition, federal laws fail to require domestic abusers to surrender their firearms and are weakened because not all states report all prohibited abusers (Giffords Law Center to Prevent Gun Violence 2018). Stronger checks are needed on the part of the criminal justice system to ensure that abusers against whom IPV cases have been filed are asked to relinquish their guns. Per the current rules, IPV abusers with restraining orders are prohibited from having guns. However, this law only applies in case the perpetrator is either still married to the victim or has a child or previous history of cohabitation with the victim (Law Center to Prevent Gun Violence 2014). Closing loopholes in federal law would contribute to a reduction in the number of intimate partner homicides associated with stalking, as state laws that closed loopholes in federal law were found to be associated with a significant reduction in intimate partner homicides (Vigdor 2006; Zeoli 2010).

There is little research specifically on stalking and firearms; however, our study demonstrates the association between stalking precipitated homicides and firearms. Intimate partner violence often co-occurs with child maltreatment and endangers the safety of children in such households. Therefore, the impact of guns is not limited to intimate partners and often extends to families and children (Parsons 2018). Keeping firearms out of the possession of repeated offenders and stalkers is an important preventive measure that would significantly contribute to reducing stalking precipitated homicides among IPV victims.

Men being the suspect in 56 out of 60 cases of homicides precipitated by intimate partner stalking in our study is not surprising, considering that the preponderance of perpetrators of sexual violence, stalking, and intimate partner violence are men. Specifically, for stalking, 15.2% of women have experienced stalking in the US, with 4.2% of women being stalked in the 12 months before taking the survey. For men, these numbers were considerably lower, with 5.7% and 2.1% respectively. Moreover, 88.3% of the stalkers were men for female stalking victims, while 44.6% of the stalkers were women for male victims of stalking (Breiding et al. 2014). Even with this clear disparity of stalking victimization and perpetration across genders, the proportion of the suspects for homicides precipitated by intimate partner stalking in our study being men (93%) is striking. This finding suggests that male perpetration of intimate partner stalking is much more lethal than female perpetration of intimate partner stalking. The lethality of male perpetration of intimate partner stalking begs careful consideration from the criminal justice system when it investigates stalking incidents, determines the granting of protective orders against male stalkers, and works with service providers to assure victims' safety.

Finally, it is critical for the NVRDS data to include additional variables, such as suspect related variables (e.g., mental health, substance use, employment status, and criminal record) and the victim's separation status from the suspect. Past research has shown that leaving an abuser is the most dangerous time for a victim of domestic violence. Several reasons such as the abuser trying to enhance their power and control or simple anger translating into stalking and violence could increase the danger faced by a victim who decides to leave the abuser (Halket et al. 2014; Riggs et al. 2000; Stahly 2008). The marital status variable in the NVDRS dataset does not provide information about separation from the abuser at the time of homicide. Incorporating this information in the NVRDS data will help enhance our understanding of who may be at risk of being the victim of or committing homicides precipitated by intimate partner stalking. Ultimately, including important variables such as separation from the abuser could lead the researchers and practitioners to engage in strategic prevention efforts, controlling the victimization and deaths experienced by victims.

Overall, the present study provides a noteworthy contribution in an understudied area. The findings provide pathways for future scholars and practitioners to build evidence-based knowledge in the realm of homicides and intimate partner stalking. Given the seriousness of homicides resultant of intimate partner stalking, it is imperative for stakeholders from academia and practice to strategically partner in prevention endeavors.

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