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Correlates of Intimate Partner Homicide among Male Suicide Decedents with Known Intimate Partner Problems

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Abstract

Objective—Intimate partner (IP) problems are risk factors for suicide among men. However, there is little understanding of why some male suicide decedents who had such problems killed their partners before death (i.e., ‘IP homicide-suicide’) while most of these decedents did not. To inform prevention efforts, this study identified correlates of IP homicide among male suicide decedents with known IP problems.

Methods—We examined IP homicide correlates among male suicide decedents aged 18+ years who had known IP problems using 2003–2015 National Violent Death Reporting System data. Prevalence odds ratios and 95% confidence intervals were estimated for demographic, incident, and circumstance variables. IP homicide-suicide narratives were examined to identify additional prevention opportunities.

Results—An estimated 1,504 (5.0%) of 30,259 male suicide decedents who had IP problems killed their partner. IP homicide-suicide perpetration was positively correlated with suicide by firearm and precipitating civil legal problems but negatively correlated with mental health/substance abuse treatment. An estimated 33.7% of IP homicide-suicides occurred during a breakup; 21.9% of IP homicide-suicide perpetrators had domestic violence histories.

Conclusions—Connections between the criminal justice and mental health systems as well as stronger enforcement of laws prohibiting firearm possession among domestic violence offenders may prevent IP homicide-suicides.

Keywords

suicide; domestic violence; homicide-suicide; murder-suicide

Homicides-followed-by-suicides (hereafter referred to as “homicide-suicides”), and sometimes known as “murder-suicides” are incidents defined as violent acts where a person kills one or more individuals and then dies of suicide (Knoll, 2016; Marzuk, Tardiff, & Hirsch, 1992; Violence Policy Center, 2015). These incidents are projected to account for roughly 1,000–1,500 violent deaths annually in the United States (Marzuk et al., 1992; Violence Policy Center, 2015). The majority of homicide-suicide incidents are intimate

partner (IP) related homicide-suicides (Bossarte, Simon, & Barker, 2006; Eliason, 2009; Flynn, Gask, Appleby, & Shaw, 2016; Knoll & Hatters-Friedman, 2015; Logan et al., 2008; Marzuk et al., 1992; Regoeczi & Gilson, 2018). Logan and colleagues (2008) estimated that 75% of homicide-suicides in a multi-state study involved a victim who was a current or former IP of the perpetrator (Logan et al., 2008), which means roughly 2 to 3 domestic partners die per day in such incidents. Other studies provided similar statistics (Comstock et al., 2005; Flynn et al., 2016). These incidents most often involve a male perpetrator and a female IP homicide victim (e.g., current or former girlfriend or spouse) (Bossarte et al., 2006; Eliason, 2009; Flynn et al., 2016; Knoll & Hatters-Friedman, 2015; Logan et al., 2008; Marzuk et al., 1992; Regoeczi & Gilson, 2018). Perpetrators are mostly (>60%) non-Hispanic white men (Bossarte et al., 2006; J. E. Logan et al., 2008), and of middle-aged adulthood (Bossarte et al., 2006; Krulewitch, 2009; Logan et al., 2008; Regoeczi & Gilson, 2018). Homicide and suicide deaths in these incidents are also most often (>80%) the result of firearm-related injuries (Bossarte et al., 2006; Logan et al., 2008; Regoeczi & Gilson, 2018).

IP problems are common risk factors for suicide among adult men in general (Logan, Skopp, Karch, Reger, & Gahm, 2012; Logan, Hall, & Karch, 2011; Stone et al., 2018). However, there is little understanding of why some male suicide decedents who had such problems killed their partner before death (hereafter referred to as 'IP homicide-suicide') while the overwhelming majority of male suicide decedents who had IP problems did not. Screening for IP problems in isolation of other predictors would greatly overestimate men at risk of perpetrating IP homicide-suicide, even among men who have suicidal intentions. Therefore, it is challenging for clinicians, counselors, or even acquaintances to know when they should engage in reducing risk of IP homicide if they are concerned and monitoring risk of suicide (DeLeo D, Bertolote J, & Lester, 2002; Fowler, Jack, Lyons, Betz, & Petrosky, 2018; Knoll, 2016).

Also, more evidence is needed to identify the best settings (e.g., medical/mental health systems, criminal justice system, and victim service programs) to identify potential perpetrators of IP homicide-suicide. In England and Wales, one study estimated that 40% of homicide-suicide perpetrators access medical care (a general practitioner) or seek counseling within a month prior to perpetrating the violence, indicating that medical clinicians could play a role in prevention efforts (Flynn et al., 2016). Perpetrators of IP homicide-suicide may also have prior interactions with the criminal justice system and therefore this setting may provide opportunities for prevention. One study found among 439 defendants of the Bronx Misdemeanor Domestic Violence Court, an estimated 72% of the defendants had prior arrests and 57% had prior assault charges (Puffett & Gavin, 2004).

Even if researchers cannot fully uncover why some men kill their partners before dying by suicide, understanding correlates of IP homicide perpetration among male suicide decedents who had known IP problems could provide insight into how and when to safeguard partners when monitoring men at risk of suicide (Flynn et al., 2016). Among a sample of male suicide decedents who had IP problems, we explore mental health and life-stress correlates of IP homicide. We also comprehensively reviewed narratives of the IP homicide-suicide

cases for additional circumstances that could provide potential opportunities to prevent these violence acts.

METHODS

Data Source

We used 2003–2015 National Violent Death Reporting System (NVDRS) data to study our objectives. NVDRS is a state-based surveillance system that collects details on violent deaths from death certificates, coroner/medical examiner reports, law enforcement reports, and toxicology reports. All data sources are linked in NVDRS by incident, and the victim and perpetrator information is linked so that violent events involving multiple victims can be studied. NVDRS captures details on decedent demographic characteristics, decedent toxicology results, the mechanisms/weapons involved, incident characteristics, the victim-suspect relationships in homicides, and the preceding and precipitating health and life-stress related circumstances. States manage data collection through state health departments or a subcontracted entity, where data are gathered and coded by trained abstractors. All data are reviewed to ensure accuracy of the codes and adherence to the NVDRS coding manual (Paulozzi, Mercy, Frazier, & Annet, 2004). Abstractors also write narratives based on information provided in law enforcement and coroner/medical examiner reports. NVDRS has been described in detail elsewhere (Lyons, Fowler, Jack, Betz, & Blair, 2016).

Study Population and Study Groups

The NVDRS database included data from 27 states; states were added incrementally. Data collection began in 2003 in seven states (i.e., Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia). Six states began collection in 2004 (i.e., Colorado, Georgia, North Carolina, Oklahoma, Rhode Island, and Wisconsin), three began in 2005 (i.e., Kentucky, New Mexico, and Utah), one began in 2011 (i.e., Ohio), one began in 2014 (i.e., Michigan), and nine began in 2015 (i.e., Arizona, Connecticut, Hawaii, Kansas, Maine, Minnesota, New Hampshire, New York, and Vermont).

The NVDRS incident variable (i.e., “incidentcategory_c”) was used to identify “single homicide followed by suicide” and “multiple homicide followed by suicide” incidents. Using the victim-perpetrator relationship fields, homicide-suicides were limited to those where the suicide decedents killed a current or former IP; they could have killed multiple victims but one had to be an IP. From these incidents, data on the suicide decedent (a.k.a., the homicide-suicide perpetrator) were kept for analysis. The other suicide decedents were identified using the NVDRS abstractor assigned manner of death variable (i.e., “abstractorassignedmannerofdeath_c”).

Both groups of suicide decedents were then refined to males aged 18 years or older who had known circumstance information and had IP problems that were considered to precipitate the suicide or homicide-suicide; NVDRS definition of “IP problems” is “problems with a current or former intimate partner that appear to have *contributed to the suicide*.” (note-NVDRS homicide-suicide cases can sometimes be automatically coded for having known preceding circumstances because of the preceding homicide; therefore, the authors reviewed

all IP homicide-suicide cases to confirm these incidents actually had information on circumstances prior to the homicide). Details on the sample selection process are provided in figure 1. Based on the NVDRS definition of “homicide-suicide,” this study was limited to incidents where the homicides occurred within 24 hours of the suicide. Also, there were recent concerns that studying homicide-suicides in NVDRS is problematic in that the system is believed to misclassify other forms of violence as “homicide-suicide” (Knoll, 2016; McNally, Patton, & Fremouw, 2016). This concern resulted from a misperception that NVDRS does not have a unique code identifying homicide-suicide cases. NVDRS “homicide-suicide” cases are uniquely identified and assigned as such in the “incidentcategory_c” variable. To further reduce these concerns in this study, data coders reviewed all narratives for the IP homicide-suicide cases to verify they were in fact IP homicide-suicides. No cases were excluded after this review.

Variables of Interest

The variables examined included suicide decedent demographic characteristics, incident characteristics, and the precipitating and preceding circumstances of death. Demographic variables included age, race/ethnicity, marital status, and military status. (Note – Some IP homicide-suicide perpetrators who killed their spouse were listed as “widowed” in the NVDRS marital status field. The narratives of these cases were reviewed and the perpetrator was recoded as “married” if the narrative stated he killed his spouse). Incident variables included location and mechanism of death. Precipitating and preceding circumstances of death included the standard NVDRS variables collected for suicide incidents. Precipitating circumstances included: physical health problems (e.g., cancer, pain-related conditions); civil legal problems; financial problems; job problems; and other relationship problems. These factors have been cited elsewhere as precipitating circumstances of homicide-suicide (Bossarte et al., 2006; Fowler et al., 2018; Logan et al., 2008; Violence Policy Center, 2015) and risk factors for suicide (DeLeo D et al., 2002). Other preceding circumstances included: current depressed mood; mental health conditions; alcohol problems; other substance abuse problems; alcohol use at the time of death based on toxicology reports; current mental health or substance abuse treatment; history of mental health or substance abuse treatment; history of suicide attempts; disclosure of suicide intent; and leaving a note. For each suicide decedent, these circumstances are either categorized as being “present” or “not present *or unknown*.”

To collect circumstance information, coroner/medical examiner and law enforcement agents gather forensic evidence and interview family members, friends, and others associated with the decedent as well as witnesses to the death (U.S. Department of Justice, 1999). This process is conducted to the best of the investigators’ ability. Investigators commonly document the circumstances with available evidence. Details on the standard NVDRS variable definitions are provided in the online codebook (Centers for Disease Control and Prevention, Available from URL: www.cdc.gov/injury).

The authors also reviewed and qualitatively coded the coroner/medical examiner and law enforcement narratives of the IP homicide-suicides to identify the most common circumstances that presented opportunities for prevention based on operational definitions

developed by the authors. Circumstances included: perpetrator had a history of domestic violence; perpetrator had a current restraining order; the couple had previous law enforcement contact for domestic disputes; perpetrator had contact with courts regarding domestic violence; perpetrator was jealous over real or imagined infidelity; and the couple were in the process of breaking up. For incidents where the perpetrator was aged 65 years or older, circumstances involving health problems that may have contributed to the incident were also coded. Such circumstances included: perpetrator expressed caregiver burden over victim's health problems; perpetrator expressed physical health problems and being unable to care for his spouse; and IP victim or perpetrator were having issues with a long-term care facility. All circumstance variable definitions are provided in the online material (eBox 1).

Analysis

Suicide decedent demographic characteristics, incident characteristics, and precipitating/preceding circumstances of death were described stratified by whether the suicide decedent perpetrated IP homicide. Logistic regression was used to estimate prevalence odds ratios (ORs) and 95% confidence intervals (95% CIs) to examine associations between each variable and IP homicide-suicide perpetration among this suicide population. IP homicide-suicide was treated as an outcome variable to prevent multiple comparisons. Crude and adjusted ORs (aORs) are provided. The aOR regression model included all demographic variables, incident variables, and precipitating and preceding circumstances to identify the most robust individual correlates of IP homicide among this suicide population. Last, we quantified the descriptive circumstances that present opportunities for prevention among the IP homicide-suicide incidents that were qualitatively coded by two abstractors using the NVDRS law enforcement and coroner/medical examiner narratives. A Kappa score of 0.97 was obtained suggesting strong inter-rater reliability.

RESULTS

There were 30,259 male suicide decedents who had precipitating IP problems selected for this study. Of these suicide decedents, 1,504 (5.0%) killed their current or former IP before death (Figure 1). Among the IP homicide-suicide perpetrators, 75.1% were aged 35 years or older, 61.3% were of non-Hispanic white race/ethnicity, 58.7% were married, and 72.6% never served in the military (Table 1). For the other suicide decedents, an estimated 62.6% were aged 35 years or older, 82.8% were of non-Hispanic white race/ethnicity, 51.7% were married, and 75.0% never served in the military. Multiple demographic characteristics were associated with higher prevalence of IP homicide-suicide perpetration. In both crude and adjusted analyses, IP homicide-suicide perpetration was higher among all adult age groups older than 34 years versus the 18–34 year age group, racial/ethnic minorities versus non-Hispanic whites, and those widowed versus those never married or single unspecified (all aORs were significant at the 0.05 level). Also, IP homicide-suicide perpetration was less prevalent among those who ever served in the military versus those who never served (aOR = 0.74; 95% CI = 0.63–0.85).

Incident characteristics of IP homicide-suicide are also provided in Table 1. Both IP homicide-suicide and suicide incidents most commonly (76.8%) occurred in residential

areas; however, IP homicide-suicides were more prevalent in residential areas versus transport, recreational, commercial, and natural areas when compared to other suicides. An estimated 89.1% of the IP homicide-suicide perpetrators used a firearm in their suicides (most used the same mechanism in the homicides). The use of a firearm was 1.6 times more common among IP homicide-suicide perpetrators versus the other suicide group. Crude and adjusted analyses also showed that IP homicide-suicide was significantly less common in suicides when the perpetrator/suicide decedent used mechanisms other than a firearm in the suicide death (i.e., poisoning, strangulation, other mechanisms such as multiple mechanisms or stabbing).

Standardized circumstances collected in NVDRS that correlated with IP homicide-suicide are presented in Table 2. For the IP homicide-suicide perpetrators, the top five prior circumstances were having: left a note (15.6%); a mental health condition (11.6%); disclosed intent (11.6%); a current depressed mood (10.0%); and a history of mental health or substance abuse treatment (9.5%). Among the IP homicide-suicide perpetrators who were tested for alcohol and had a result, 37.5% tested positive. For the other suicide decedents, the top five prior circumstances were having: a current depressed mood (43.9%); a mental health condition (37.1%); disclosed intent (35.7%); left a note (31.5%); and a history of mental health or substance abuse treatment (31.2%). Among the other suicide decedents who were tested for alcohol and had a result, 49.3% tested positive.

IP homicide perpetration was less prevalent among suicide decedents identified as having known: financial problems (aOR: 0.75; 95%CI: 0.60–0.94); job problems (aOR: 0.63; 95%CI: 0.48–0.81); other relationship problems (aOR: 0.69; 95%CI: 0.56–0.86); physical health problems (aOR: 0.71; 95%CI: 0.56–0.91); a current depressed mood (aOR: 0.26; 95%CI: 0.22–0.32); mental health conditions (aOR: 0.44; 95%CI: 0.33–0.59); alcohol problem (aOR: 0.36; 95%CI: 0.29–0.44); tested positive for alcohol (aOR: 0.67; 95%CI: 0.58–0.78); a history of suicide attempts (aOR: 0.36; 95%CI: 0.26–0.50); disclosed intent (aOR: 0.35; 95%CI: 0.30–0.42); and written a note (aOR: 0.58; 95%CI: 0.50–0.68) (Table 2). In contrast, IP homicide perpetration was more prevalent among suicide decedents identified as having civil legal problems versus those not identified with such problems in the adjusted analysis (aOR: 1.33; 95%CI: 1.05–1.69).

Among suicide decedents who used a firearm, the prevalence of IP homicide-suicide perpetration was 7.8% (Table 3). Further, among those who used a firearm, the prevalence of IP homicide-suicide perpetration was four times higher (aOR: 4.27; 95%CI: 3.78–4.82) for those who *did not* have any record of mental health or substance abuse related suicide risk factors¹ compared to those who were known to have at least one of these factors (21.0% versus 4.7%) (Table 3). This difference was significant after adjusting for all remaining variables.

Additional circumstances that could potentially provide opportunities to prevent IP homicide-suicides are described in Table 4. A high proportion of IP homicide-suicides

¹For this analysis, mental health and substance abuse related risk factors included: current depressed mood; current mental health condition; substance abuse problem; current/past history of mental health or substance abuse treatment; prior suicide attempts; or prior suicidal disclosure.

occurred when the victim and perpetrator were in the process of breaking up (33.7%). Also, 21.9% of perpetrators had histories of domestic violence and 18.3% were known to be jealous over perceived or real infidelity. Prior to 16.8% of the incidents, there was either law enforcement involvement for a domestic dispute between the couple, the perpetrator was in court for domestic violence, or the perpetrator had a current restraining order placed against him. An estimated 12.2% of the perpetrators threatened to kill the victim. In 31.3% of the IP homicide-suicide incidents, there were multiple potential opportunities to intervene according to these circumstances captured.

Among male IP homicide-suicide perpetrators age 65 years or older, perpetrator or victim physical health issues were mentioned as contributing factors in 43.7% of the incidents (Table 4). The three most common types of health issues were victim health issues (34.2%), perpetrator health issues (26.1%), and perpetrator caregiver burden (16.1%). An estimated 27.1% of these incidents had more than one of the listed physical health reasons.

DISCUSSION

The prevalence of IP homicide-suicide among this adult male suicide decedent population was higher among decedents who were older versus younger, minority versus non-Hispanic white race/ethnicity, and non-military affiliates versus current or former military service members. Other circumstances that positively correlated with IP homicide-suicide among this population were “use of a firearm” in the suicidal act and having precipitating civil legal problems. All of the mental health and substance abuse related circumstances were known to be present less often among the IP homicide-suicide perpetrators compared to the other suicide decedents, which suggests there is limited capacity for mental health clinicians to reach and identify those at risk of IP homicide-suicide.

The lack of identified or reported mental health and substance abuse related conditions among IP homicide-suicide perpetrators may be attributed to the investigators being more concerned about or focused on understanding the perpetrators’ histories of violence. Violent reactions to breakups, histories of domestic violence, jealousy, and homicidal threats on the victims were highly common among this population of IP homicide-suicide perpetrators; these characteristics and behaviors have also been discovered among other male domestic violence offenders (Capaldi, Knoble, Shortt, & Kim, 2012; Centers for Disease Control and Prevention, <https://www.cdc.gov/violenceprevention>; Kantor GK & Jasinski JL, 1998; Nessel et al., 2017; Puffett & Gavin, 2004; Sabri et al., 2014; Stith SM, Smith DB, Penn C, Ward D, & Tritt D, 2004).

Many IP homicide-suicide perpetrators also had previous interactions with courts and law enforcement for prior domestic violence charges suggesting that the criminal justice system can potentially create prevention opportunities *following* arrests and adjudication. While arrests for domestic violence alone have been shown to help protect women from violence (Campbell et al., 2003); the findings in this study suggest that stronger mandates to enter mental health treatment or domestic violence prevention programs following arrests are needed. Based on some of the reviews of the IP homicide-suicide narratives, arresting the perpetrator seemed to have elevated his anger and prompted retaliation. Further, over a

hundred perpetrators had protective orders filed against them by the victim and yet these orders were violated, which shows that protective orders are not a perfect solution to prevent these violent incidents and provide safeguards for intimate partners.

One out of three IP homicide-suicide incidents were preceded by a break up, usually the female victim breaking up with the male perpetrator. Among these cases, a substantial proportion of the incidents occurred immediately in response to the victim filing divorce papers, serving the papers, packing belongings, or trying to have the perpetrator removed from the residence. These findings suggest that more resources are needed to protect women during the process of divorce or separation, especially if their partner has a history of domestic violence and is making threats.

This study was another among many showing the high prevalence of firearm use in homicide-suicides (Logan, Walsh, Patel, & Hall, 2013; Lyons et al., 2016; Regoeczi & Gilson, 2018; Violence Policy Center, 2015). The Lautenberg Amendment, an amendment to the Omnibus Consolidated Appropriations Act of 1997 and enacted by the 104th United States Congress, made it unlawful for those convicted of “misdemeanor crime of domestic violence” to possess firearms; an extension of law prohibiting anyone convicted of a felony and anyone subject to a domestic violence protective order from possessing a firearm (U.S. Department of Justice, <https://www.justice.gov/jm/criminal-resource-manual-1117-restrictions-possession-firearms-individuals-convicted>). Yet, many of the IP homicide-suicide perpetrators who used a firearm had histories of domestic violence. Stronger enforcement of these laws may help prevent IP homicide-suicide. Diez and colleagues (2017) found states that have statutes to help strengthen the enforcement of the federal laws had a 14% lower firearm-related IP homicide rate compared to states without such statutes.

Among those who legally own firearms, safe storage practices might help prevent firearm fatalities in the event there is escalated IP conflict. Other research has provided evidence to suggest that safe storage of firearms can serve a protective function against suicide (Khazem et al., 2016). The reasoning is that some firearm suicides are fatal reactions to suicide impulsivity; Simon and colleagues (2001) found that 24% of a sample of youth and young adults aged 13–34 years who survived nearly lethal suicide attempts spent fewer than five minutes contemplating the act. Safely storing firearms in a manner that requires a little time to unlock cabinets or devices and load the weapon might provide enough time and space between the impulse and the act for an individual to rethink his or her actions (Khazem et al., 2016).

The finding that 78% of the IP homicide-suicide perpetrators were not known to have histories of domestic violence could be the result of the large amount of underreporting of domestic violence in general. The Bureau of Justice Statistics reported that an average of 582,000 or 47% of nonfatal domestic violence victimizations are unreported to law enforcement annually (U.S. Department of Justice, 2017). Reasons for not reporting include fear of reprisal, concerns about losing privacy, and desire to protect the offender (U.S. Department of Justice, 2017; Felson, Messner, Hoskin, & Deane, 2002). Improving processes in the criminal justice system to safeguard victims of domestic violence and protect them from violent retaliation might help victims break their silence and come

forward before fatal violence occurs. More reports of domestic violence to authorities may also help the criminal justice system prevent the possession of firearms among violent offenders.

Prior studies have also found that physical health problems can play a role in IP homicide-suicide incidents involving older adult or elderly victims and perpetrators (Logan et al., 2008; Salari, 2007). These incidents are sometimes presented as “mercy killings” implying they are altruistic acts where the perpetrator intended to relieve an IP victim from physical suffering (Logan et al., 2008). This perception can be debatable. Many of these incidents actually involve the perpetrators’ health problems and/or their perceived or real burden of caregiving for the victim. Salari (2007) found similar results as our study after examining circumstances preceding 225 IP homicide-suicides involving older adults; this study discovered that 30% of the incidents that identified precipitating physical health problems were those of the perpetrator alone (Salari, 2007). Seeking supportive clinical services from assisted living or long-term care facilities may not be a viable or desirable option by many older adults who are strained with health problems. Clinicians may be in the position to help connect elderly who are experiencing overwhelming health problems to geriatric specialists who can help find affordable or reasonable support tailored to the needs of the couple before violence is viewed as an only option.

Some limitations of this study should be considered when interpreting the findings. First, our findings are not nationally representative but only representative of states that participated in NVDRS during the selected study years. Second, abstractors are limited to the information included in the reports. Some law enforcement and coroner/medical examiner reports lack comprehensive descriptions of the incidents thereby limiting the abstractors’ ability to capture all contributing factors. Also, the low prevalence of mental health conditions but high prevalence of interpersonal violence histories among IP homicide-suicide perpetrators could be a reflection of the death scene investigations. Investigators might be inclined to report on histories of violence and not details on mental health when homicides are involved. Third, medical/mental health information documented in NVDRS are not captured from medical records but from coroner/medical examiner reports, family members, and friends of the victims. Therefore, mental health conditions might have been underestimated in the entire study population because this information is limited by the knowledge of the informant. Related to this issue, the lower prevalence of mental health factors among IP homicide-suicide perpetrators could have been partially attributed to the IP deaths, if the IPs were the only informants of this information. However, other details on circumstances most commonly known by the IP (e.g., preceding jealousy, violence) were still uncovered and highly prevalent among IP homicide-suicide perpetrators. Fourth, while the data sources in this study are informative, more psychological autopsy data on suicide decedents and homicide-suicide perpetrators are needed to understand the psychological differences between the two groups to further help mental health clinicians and other agents identify which men at risk of suicide are also at risk of perpetrating homicide (Knoll, 2016). Joiner (2014) offered insights on the clinical nuances of homicide-suicide perpetrators in his book *The Perversion of Virtue: Understanding Murder-Suicide*. He postulated that perpetrators are wrongfully led by one of four perceived interpersonal virtues (i.e., mercy, justice, duty, and glory) in combination with abnormal levels of empathy; perpetrators acting on justice and

glory may have an abnormal lack of empathy while perpetrators acting on mercy and duty may be over-empathetic. Linking psychological autopsy data to IP homicide-suicide data in NVDRS might allow researchers to understand how perpetrators uniquely react to certain life-stress circumstances compared to other suicide decedents, which can inform treatments and other prevention efforts. Finally, although extensive coding training is conducted and help desk support is available daily, variations in NVDRS coding might occur depending on the state abstractor's level of experience. However, states regularly conduct blinded re-abstractation of cases to test consistency of abstraction and identify training needs.

Conclusions

Our findings confirm the necessity of coordinating services among the criminal justice system, victim services, medical and mental health treatments, and domestic violence prevention programs. Coordination across these agencies to identify men at risk of IP homicide-suicide perpetration and refer or mandate them to treatment might provide a stronger and more comprehensive safety net for families in crisis and in need of help.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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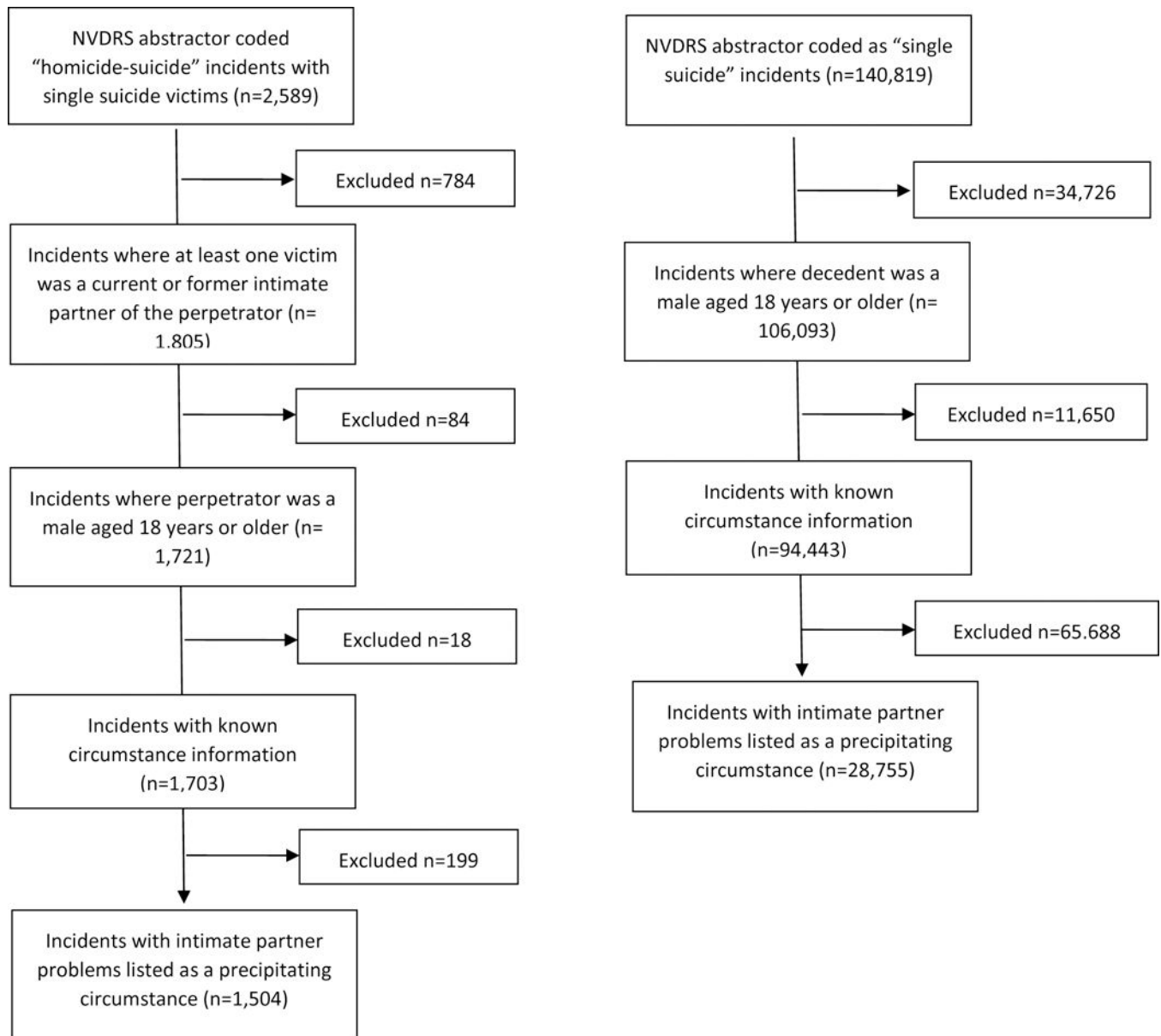


FIGURE 1 — Selection process for study groups based on 2003–2015 National Violent Death Reporting System data²

²The 2003–2015 NVDRS database included data from 27 states; states were added incrementally. Data collection began in 2003 in seven states (i.e., Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia). Six states began collection in 2004 (i.e., Colorado, Georgia, North Carolina, Oklahoma, Rhode Island, and Wisconsin), three began in 2005 (i.e., Kentucky, New Mexico, and Utah), one began in 2011 (i.e., Ohio), one began in 2014 (i.e., Michigan), and nine began in 2015 (i.e., Arizona, Connecticut, Hawaii, Kansas, Maine, Minnesota, New Hampshire, New York, and Vermont)

Demographic and incident correlates of intimate partner (IP) homicide among male suicide decedents who had IP problems, 2003–2015

TABLE 1 —

Characteristic	No. (%) with characteristic		Prevalence odds ratios for IP homicide, 95% confidence intervals	
	IP homicide-suicide perpetrators	Other suicide decedents	Crude	Adjusted ^d
Demographic				
<u>Age (years)</u>				
18–34	373 (24.8)	10,751 (37.4)	referent	referent
35–49	569 (37.8)	10,704 (37.2)	1.53 (1.34, 1.75)	1.92 (1.64, 2.26)
50–64	363 (24.1)	5,855 (20.4)	1.79 (1.54, 2.07)	2.61 (2.17, 3.13)
65+	199 (13.2)	1,445 (5.0)	3.97 (3.31, 4.76)	4.89 (3.87, 6.17)
mean (standard deviation)	46.23 (15.6)	40.47 (13.7)	n/a	n/a
<u>Race/ethnicity</u>				
White, non-Hispanic	922 (61.3)	23,815 (82.8)	referent	referent
Black, non-Hispanic	344 (22.9)	1,840 (6.4)	4.83 (4.23, 5.51)	3.52 (3.02, 4.11)
Hispanic	149 (9.9)	1,793 (6.2)	2.15 (1.79, 2.57)	3.12 (2.54, 3.82)
Other	89 (5.9)	1,307 (4.5)	1.76 (1.41, 2.20)	2.03 (1.59, 2.60)
<u>Marital status</u>				
Never married or single unspecified	327 (21.7)	8,231 (28.6)	referent	referent
Married	883 (58.7)	14,868 (51.7)	1.49 (1.31, 1.70)	1.11 (0.94, 1.31)
Divorced	235 (15.6)	5,304 (18.4)	1.12 (0.94, 1.32)	1.07 (0.87, 1.32)
Widowed	44 (2.9)	221 (0.8)	5.01 (3.56, 7.05)	2.43 (1.61, 3.66)
Unknown	**	**	n/a	n/a
<u>Military Status</u>				
Never served in the Military	1,092 (72.6)	21,572 (75.0)	referent	referent
Ever served in the Military	297 (19.7)	5,314 (18.5)	1.10 (0.97, 1.26)	0.74 (0.63, 0.85)
Unknown	115 (7.6)	1,869 (6.5)	n/a	n/a
Incident				
<u>Location of death</u>				
Residential area	1,195 (79.5)	22,087 (76.8)	referent	referent

Characteristic	No. (%) with characteristic		Prevalence odds ratios for IP homicide, 95% confidence intervals	
	IP homicide-suicide perpetrators	Other suicide decedents	Crude	Adjusted ^a
Transport area (public roads, inside vehicle)	125 (8.3)	2,185 (7.6)	1.06 (0.87, 1.28)	0.76 (0.62, 0.93)
Recreational, commercial, or natural areas	72 (4.8)	1,952 (6.8)	0.68 (0.53, 0.87)	0.74 (0.57, 0.96)
Other ^b	104 (6.9)	2,443 (8.5)	0.79 (0.64, 0.97)	0.83 (0.67, 1.04)
Unknown	**	**	n/a	n/a
<u>Mechanism</u>				
Firearm	1,340 (89.1)	15,884 (55.2)	referent	referent
Poisoning	22 (1.5)	3,006 (10.5)	0.09 (0.06, 0.13)	0.15 (0.10, 0.23)
Hanging, strangulation	59 (3.9)	8,643 (30.1)	0.08 (0.06, 0.11)	0.11 (0.08, 0.14)
Other ^c	81 (5.4)	1,210 (4.2)	0.79 (0.63, 1.00)	0.91 (0.70, 1.17)
Unknown	**	**	n/a	n/a
Total	1,504 (100.0)	28,755 (100.0)		

^aEstimates adjusted for age, race/ethnicity, marital status, military status, incident characteristics, and all other remaining health and stress-related circumstances listed in tables 1 and 2.

^bOther specified locations of death included industrial or construction areas, office buildings, abandoned house/building/warehouse, school bus, child care center, school, synagogue/church/temple, hospital or medical facility, supervised residential facility, farm, jail/prison/detention facility, hotel/motel, bridge, cemetery, parking lot/public garage, railroad tracks, bridge, or other known location.

^cOther mechanisms included non-powder gun, sharp instrument, blunt instrument, personal weapons, fall, explosive, drowning, fire or burns, shaking, motor vehicle, other transport vehicle, intentional neglect, biological weapons, or other known mechanism.

** Data suppressed because of small counts.

Circumstance correlates of intimate partner (IP) homicide among male suicide decedents who had IP problems, 2003–2015

TABLE 2 —

Circumstances ^a	No. (%) with characteristic		Prevalence odds ratios for IP homicide, 95% confidence intervals	
	IP homicide-suicide perpetrators	Other suicide decedents	Crude	Adjusted ^b
<u>Precipitating circumstances</u>				
Civil legal problems	91 (6.0)	2,051 (7.1)	0.84 (0.68, 1.04)	1.33 (1.05, 1.69)
Financial problems	105 (7.0)	4,237 (14.7)	0.43 (0.36, 0.53)	0.75 (0.60, 0.94)
Job problems	72 (4.8)	4,638 (16.1)	0.26 (0.21, 0.33)	0.63 (0.48, 0.81)
Other relationship problems	108 (7.2)	3,749 (13.0)	0.52 (0.42, 0.63)	0.69 (0.56, 0.86)
Physical health problems	90 (6.0)	2,794 (9.7)	0.59 (0.48, 0.73)	0.71 (0.56, 0.91)
<u>Preceding Health circumstances</u>				
Current depressed mood	151 (10.0)	12,634 (43.9)	0.14 (0.12, 0.17)	0.26 (0.22, 0.32)
Mental health condition	174 (11.6)	10,653 (37.1)	0.22 (0.19, 0.26)	0.44 (0.33, 0.59)
Alcohol problem	108 (7.2)	7,214 (25.1)	0.23 (0.19, 0.28)	0.36 (0.29, 0.44)
Other substance abuse problem	126 (8.4)	4,943 (17.2)	0.44 (0.37, 0.53)	1.10 (0.90, 1.35)
Tested for alcohol and results were known	1,114 (74.1)	19,698 (69.0)		
Positive for alcohol among tested	418 (37.5)	9,721 (49.3)	0.62 (0.54, 0.70)	0.67 (0.58, 0.78)
Current mental health/substance abuse treatment	112 (7.4)	7,111 (24.7)	0.25 (0.20, 0.30)	1.16 (0.77, 1.76)
History of mental health/substance abuse treatment	143 (9.5)	8,980 (31.2)	0.23 (0.19, 0.28)	0.94 (0.63, 1.41)
History of suicide attempts	39 (2.6)	5,311 (18.5)	0.12 (0.09, 0.16)	0.36 (0.26, 0.50)
<u>Evidence of Premeditation</u>				
Disclosed intent	174 (11.6)	10,250 (35.7)	0.24 (0.20, 0.28)	0.35 (0.30, 0.42)
left a note	235 (15.6)	9,067 (31.5)	0.40 (0.35, 0.46)	0.58 (0.50, 0.68)
Total	1,504 (100.0)	28,755 (100.0)		

^aFor all circumstances, the referent level includes those not identified as having the circumstance, either they did not have it or it was unknown.

^bEstimates adjusted for age, race/ethnicity, marital status, military status, incident characteristics, and all other remaining health and stress-related circumstances listed in the tables 1–2.

Prevalence of intimate partner (IP) homicide perpetration between those with and without mental health and substance abuse-related suicide risk factors among male suicide decedents who had IP problems and used a firearm in the incident, 2003–2015

TABLE 3

Characteristics	IP homicide- suicide perpetrators	Other suicide decedents	Prevalence (%) of IP homicide among total	Adjusted prevalence odds ratios for IP homicide, 95% confidence intervals ^b
Total	1,340	15,884	7.8%	
Used a firearm and had a record <i>of at least one</i> known mental health or substance abuse-related suicide risk factor ^a	648	13,282	4.7%	referent
Used a firearm and had <i>no record</i> of any mental health or substance abuse-related suicide risk factor ^a	692	2,602	21.0%	4.27 (3.78, 4.82)

^a Factors included current depressed mood; current mental health condition; substance abuse problem; current/past history of mental health or substance abuse treatment; prior suicide attempts, or prior suicidal disclosure

^b Adjusted for demographic variables, location, physical health, and life-stress variables including: civil legal problems; job problems; financial problems; and other relationship variables.

Potential opportunities for prevention among intimate partner homicide-suicide incidents identified in coroner/medical examiner and law enforcement reports

Table 4 —

	No. (%)
Potential opportunities among all perpetrators	
Known history of physical domestic violence by perpetrator	330 (21.9)
Any interaction with law enforcement or courts related to domestic violence	253 (16.8)
A current restraining order was in place against perpetrator by victim at the time of the incident	105 (7.0)
History of law enforcement being called to residence for domestic issues	151 (10.0)
History of court interaction with perpetrator for domestic violence claims	181 (12.0)
Known signs of perpetrator being jealous of current/former intimate partner's relationship (or suspected relationship) with another person	275 (18.3)
Recent discussion of break up, or the couple was in the process of breaking up	507 (33.7)
Perpetrator made threats to kill victim either directly to the victim or to a witness	183 (12.2)
Multiple opportunities ^a	
Had 2–4 opportunities	445 (29.6)
Had over 5 opportunities	25 (1.7)
Total	1,504 (100%)
Extra potential opportunities among perpetrators aged 65 years or older	
Perpetrator or victim physical health reasons were mentioned as a contributing factor	87 (43.7)
Mental or physical burden of caring for the victim was mentioned	32 (16.1)
Perpetrator's physical health issues played a role in the incident	52 (26.1)
Victim's physical health issues played a role in the incident	68 (34.2)
Nursing homes/assisted living played a role in the incident	19 (9.6)
More than one physical health reasons listed above were evident	54 (27.1)
Total	199 (100%)

^a Opportunities included history of physical domestic violence, history of law enforcement contact, history of court interaction, identified jealousy, breakup, and threatened homicide on victim. Having a restraining order was not included because having such orders is included in the history of court interaction variable.