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Original Contribution

Characteristics of Perpetrators in Homicide-Followed-by-Suicide Incidents: National Violent Death Reporting System—17 US States, 2003–2005

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Homicide-followed-by-suicide (referred to as ''homicide-suicide'') incidents are rare events but can have a profound impact on families and communities. A better understanding of perpetrator characteristics and how they compare with those of other homicide suspects and suicide decedents might provide insight into the nature of these violent acts. This report is based on 2003–2005 data from 17 US states participating in the National Violent Death Reporting System, a unique, incident-based, active surveillance system that integrates data on violent deaths from multiple sources. Of the 408 homicide-suicide incidents identified, most incidents were committed with a firearm (88.2%) and perpetrated by males (91.4%), those over 19 years of age (97.6%), and those of white race (77.0%); however, just over half of filicide (killing of children)-suicides (51.5%) were perpetrated by females. Over 55% of male homicide-suicide perpetrators versus 26.4% of other male suicide decedents had prior intimate partner conflicts ($P < 0.001$). In fact, having a history of intimate partner conflicts was even common among homicide-suicide perpetrators who did not victimize their intimate partners. Recognition of the link between intimate partner conflicts and homicide-suicide incidents and strategies involving collaboration among the court/legal and mental health systems might prevent these incidents.

homicide; suicide; violence

Abbreviation: NVDRS, National Violent Death Reporting System.

A homicide-followed-by-suicide (hereafter referred to as ''homicide-suicide'') incident is generally defined as a 2-stage sequential act in which a person kills 1 or more individuals and then commits suicide shortly thereafter (1–3). Although homicide-suicide incidents are relatively rare events, they account for approximately 1,000–1,500 violent deaths annually or 20–30 violent deaths weekly (3). Homicide-suicide incidents can have long-term traumatic effects on those closely associated with the incident and frequently have a profound psychological impact on communities (4). Some incidents involve multiple fatalities among individuals unrelated to the perpetrator, as did the 2007 shooting incidents at Virginia Polytechnic Institute and State University and the 1999 incident at Columbine High School (5); however, for the vast majority of homicide-suicide incidents, the homicide victim is a current or former female intimate partner of a male perpetrator (1–3).

Some studies have proposed typologies for categorizing these incidents to help guide future research into this phenomenon (3, 6). These typologies are typically based on the victim-perpetrator relationships and generally include the following, by order of commonality: intimate partner-related homicide-suicide incidents (approximately 42%–69% of homicide-suicide incidents); familicide (killing of all family members in a household) or filicide (killing of children)-suicide incidents (18%–47% of homicide-suicide incidents); and extrafamilial homicide (killing of nonfamily members)-suicide incidents (12%–26% of homicide-suicide incidents) (1, 7). Some incidents are also of mixed type, where there are familial and extrafamilial victims involved.

Several studies have evaluated homicide-suicide incidents within selected populations (e.g., among the elderly) (8), in individual states (7, 9–12), and across multiple cities (13) and other countries (14–16). Few population-based

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studies on homicide-suicide incidents from multiple states are available in the literature. Using 2003–2004 data from the National Violent Death Reporting System, Bossarte et al. (2) estimated that only 11% of homicide-suicide perpetrators have a documented mental health condition and that approximately 30% are intoxicated at the time of the incident. Over 85% of perpetrators were male, and more than 70% were non-Hispanic white. Additionally, over 70% of victims in homicide-suicide incidents were female, and over 55% of victims were current or former intimate partners. Approximately 20% of victims are the perpetrator's children, stepchildren, or other relatives. Approximately 80% of homicide-suicide incidents occurred in either the victim's or perpetrator's home, and over 80% were committed with a firearm. These findings were similar to those from earlier studies (7, 9–12, 17–21).

Circumstances leading up to these violent events have also been described in several studies. These include estrangement associated with divorce or breakup (1, 3, 10, 11, 13, 14, 17), real or perceived infidelity (1, 3, 14), mercy killing or death pact (2, 3, 22), and loss of employment or financial problems (2). Some events are also likely to be idiosyncratic of a perpetrator's delusions or psychopathology (5, 23).

Although previous studies have expanded our knowledge about the characteristics of homicide-suicide incidents, many areas require further exploration. For example, there is little information comparing perpetrator characteristics across types of homicide-suicide incidents (typology based on the victim-perpetrator relationship). Similarly, there is little information available with respect to how characteristics of homicide-suicide perpetrators compare with those who commit homicide alone or those who commit suicide alone. Such information may lead to an increased understanding of etiologic factors related to the perpetration of homicide-suicide incidents (1, 3) and may inform the development of prevention and intervention efforts.

The primary objective of this study was to describe perpetrators across a full range of homicide-suicide incidents that occurred within a multistate, population-based surveillance system. Additionally, we compared homicide-suicide perpetrators with other suicide decedents and with other homicide suspects to assess differences and similarities. To the authors' knowledge, no study to date has had sufficient samples to do this kind of analysis by use of multiple data sources.

MATERIALS AND METHODS

Data source

The National Violent Death Reporting System (NVDRS) is an incident-based, violent death surveillance system that combines data from multiple sources. Data collection for the NVDRS began in 2003 in 7 states (Alaska, Maryland, Massachusetts, New Jersey, Oregon, South Carolina, and Virginia). In 2004, 6 states were added (Colorado, Georgia, North Carolina, Oklahoma, Rhode Island, and Wisconsin). In 2005, 4 states were added (California, Kentucky, New Mexico, and Utah), bringing the total (as of 2008) to 17 states. Data collection is statewide with the exception of California, which collects data in only 4 counties (Los Angeles, Riverside, San Francisco, and Santa Clara).

Information is gathered from participating states on all suicides, homicides, legal intervention deaths, unintentional firearm deaths, and deaths for which the manner is undetermined (24, 25). The NVDRS includes information on the victims of violent death, the suspected perpetrators and their relationships to the victims, the involved weapons, and the circumstances leading up to the injury event (24, 26). Data from coroner and medical examiner reports, toxicology reports, various law enforcement records, supplemental homicide reports, and death certificates are linked into a single data repository. Several optional reports can also be linked into the data set, depending on the states' preferences. These include crime lab reports, firearm trace reports from the Bureau of Alcohol, Tobacco, and Firearms, and child fatality reviews. Such integrated data provide greater insight into the nature of violent deaths than does any single data source (24).

States manage data collection typically through state health departments or a subcontracted entity, such as a medical examiner's office. Data are gathered and coded by trained abstracters in each state. Data may be extracted from various reports or imported electronically from other systems (i.e., Bureau of Vital Statistics' death certificate files or medical examiner's data sets). All data are reviewed by the abstracter to ensure accuracy of the codes (27). To maintain consistency among abstracters, each abstracter follows a strict NVDRS coding manual. Additionally, for quality control purposes, 10% of all narratives are reviewed by staff of the Centers for Disease Control and Prevention to ensure accurate coding of circumstances preceding the violent death. The NVDRS has been described in further detail elsewhere (24, 27).

Case finding

The data used for this analysis represent the calendar years 2003–2005. Case identification was conducted from an NVDRS database that was updated through June 2007. Homicide and suicide incidents were identified by the manner of death recorded from the death certificates. Homicide-suicide incidents were defined as suicide incidents where the perpetrator committed at least one homicide within 1 calendar day prior to his or her suicide death. Incidents were categorized as homicide-suicide, homicide-only, or suicide-only incidents.

The homicide-suicide incidents were further categorized on the basis of the victim-perpetrator relationship. Information on the victim-perpetrator relationship was obtained from the narratives of the law enforcement, coroner, and medical examiner reports. In general, these narratives are based on information gathered from the victim's neighbors, friends, family members, and other acquaintances.

Between 2003 and 2005, there were 420 homicide-suicide incidents, 20,188 suicide-only incidents, and 5,932 homicide-only incidents where 1 perpetrator is reported (homicide-only incidents were excluded if the perpetrator was either unknown ($n = 2{,}388$) or the incident had multiple perpetrators ($n = 1{,}516$)). It should be noted that information

regarding trial results and convictions of suspected perpetrators is not included in the NVDRS. Therefore, in the remainder of this report, the term ''suspects'' is used, which includes both perpetrators and ''suspected'' perpetrators.

Of the 420 homicide-suicide incidents identified, the victim-perpetrator relationship could not be identified in 12 incidents; therefore, these incidents were excluded from this study. For the remaining 408 homicide-suicide incidents, 304 (74.5%) involved current or former intimate partners (this included spouse, former spouse, girlfriend, boyfriend, former girlfriend, and former boyfriend). There were 33 (8.1%) filicide-suicide incidents; these included child, stepchild, and foster child (child of the suspect, including both young and adult children). Additionally, there were 29 (7.1%) ''other'' family-related homicide-suicide incidents (including parent, sibling, grandchild, grandparent, in-law, stepparent, child of suspect's boyfriend or girlfriend, intimate partner of suspect's parents, foster parent, other family member) and 42 (10.3%) extrafamilial homicide-suicide incidents (babysitter, acquaintance, friend, roommate, current or former coworker, rival gang member, other person known to victim, or stranger).

Intimate partner-related homicide-suicide incidents were further divided into 2 categories, those with only intimate partners ($n = 280$, 68.6% of total incidents) and those with intimate partners and one or more additional victims ($n = 24$, 5.9% of total incidents). For the majority of the intimate partner-related incidents that had other victims ($n = 16$), the additional victims were children. For 8 incidents, the additional victims were friends, strangers, or other family members.

Analysis

Homicide-suicide perpetrators were compared across the various types by calculating frequency distributions of demographic factors (i.e., age, sex, race, and ethnicity) and various health-related and preceding life-event circumstances known to be risk factors for suicide and/or homicide (all health-related and circumstance information was gathered from the narratives written in the various law enforcement and coroner and medical examiner reports). These factors included having a current mental health condition, having a history of substance abuse problems, being suspected of intoxication at the time of the event, having a history of suicide attempts, having serious physical health problems (e.g., chronic pain or cancer), having a history of intimate partner conflict, having a history of other relationship problems, and having job or financial problems (28–31). Comparisons were also made regarding whether the perpetrator disclosed suicide intent (indicating signs of premeditation), whether the perpetrator was receiving mental health treatment (i.e., currently in mental health treatment or using antidepressants), and whether the perpetrator committed the act out of the belief that he or she was relieving some form of suffering (i.e., mercy killing). Because cell sizes were often small, Fisher's exact tests were used to assess statistical significance for all categorical variables. The significance of observed differences in median age across the subtypes was evaluated by the Kruskal-Wallis test.

Perpetrators of homicide-suicide incidents were also compared with those who only committed suicide and those who only committed homicide. This analysis was stratified by sex, because male and female perpetrators often have different characteristics and preceding circumstances (3). For this analysis, 3 homicide-suicide perpetrators, 5 suicide decedents, and 843 homicide suspects were excluded because the sex of the perpetrator was unknown. Bivariate analyses using Fisher's exact tests and a Wilcoxon test were conducted to assess significant differences in demographic variables.

Odds ratios were used to compare homicide-suicide perpetrators with other suicide decedents on the basis of the same health-related and life-event circumstances listed in the previous analysis. Because the NVDRS is a violent death surveillance system, less information is available with respect to the characteristics of suspected perpetrators who are still living. Therefore, we were unable to compare homicide-suicide perpetrators with homicide-only suspects with respect to these factors. Multivariable logistic regression analysis was used to calculate adjusted odds ratios; each model adjusted for age and racial/ethnic differences in order to make the two groups more comparable. Fisher's exact tests and the Wilcoxon test were conducted by using the SAS for Windows 9.1 statistical package (SAS Institute, Inc., Cary, North Carolina). The multivariable logistic regression analyses were conducted by using the Stata/SE for Windows 10.0 statistical package (StataCorp LP, College Station, Texas).

RESULTS

The demographic characteristics of the homicide-suicide perpetrators, stratified by homicide-suicide type, are presented in Table 1. Overall, perpetrators were mostly male (91.4%), over 19 years of age (97.6%) (median age, 43 years), of white race (77.0%), and of non-Hispanic ethnic status (89.5%). Most homicide-suicide perpetrators (64%) were aged between 20 and 49 years, ranging from 76.2% of the extrafamilial homicide-suicide incidents to 61.4% of the intimate partner-only homicide-suicide incidents. However, a high proportion (37.1%) of intimate partner-only homicide-suicide perpetrators were 50 years of age or older.

Among incidents with male perpetrators, the vast majority of victims were female intimate partners (77.7%); 4% were children. In contrast, the victims of female homicide-suicide perpetrators were most likely to be children (48.6%); 40% of victims were male intimate partners. Thus, over half (51.5%) of the filicide-suicide incidents were committed by female perpetrators.

The majority of homicide-suicide incidents (>85%) were committed by perpetrators that were not suspected of being in a depressed mood or having a mental health condition by family members or friends. However, a third of filicide-suicide perpetrators were reported to be depressed or to have a current mental health problem (Table 2). Furthermore, for all types of homicide-suicide incidents, the majority of the perpetrators did not have prior reports of alcohol or substance abuse problems, a history of suicide attempts, or

Table 1. Demographic Characteristics of Homicide-Suicide Perpetrators, National Violent Death Reporting System, 2003–2005

Characteristics	Total Perpetrators (*N* = 408)		Perpetrators by Homicide-Suicide Type										*P* Value
			Intimate Partner Only (*N* = 280)		Intimate Partner + Other (*N* = 24)		Filicide (*N* = 33)		Other Family Related (*N* = 29)		Extrafamilial (*N* = 42)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Sex													<0.001
Male	373	91.4	269	96.1	21	87.5	16	48.5	27	93.1	40	95.2	
Female	35	8.6	11	3.9	3	12.5	17	51.5	2	6.9	2	4.8	
Age group, years													0.040
10–19	10	2.4	4	1.4	1	4.2	0	0.0	2	6.9	3	7.1	
20–49	261	64.0	172	61.4	16	66.7	22	66.7	19	65.5	32	76.2	
≥50	137	33.6	104	37.1	7	29.2	11	33.3	8	27.6	7	16.7	
Median age, years	43.0		44.0		41.5		41.0		41.0		41.0		0.034
Race													0.670
White	314	77.0	214	76.4	19	79.2	25	75.8	21	72.4	35	83.3	
Black	86	21.1	61	21.8	5	20.8	6	18.2	8	27.6	6	14.3	
Other	8	2.0	5	1.8	0	0.0	2	6.1	0	0.0	1	2.4	
Ethnicity													0.335
Hispanic	39	9.6	32	11.4	0	0.0	3	9.1	2	6.9	2	4.8	
Non-Hispanic	365	89.5	245	87.5	24	100.0	30	90.9	26	89.7	40	95.2	
Unknown	4	1.0	3	1.1	0	0.0	0	0.0	1	3.4	0	0.0	

physical health problems. However, with the exception of the filicide-suicide perpetrators, about 1 in 5 perpetrators was suspected of being intoxicated at the time of the incident.

Only 4.9% of the homicide-suicide incidents were believed to have been the result of a mercy killing (Table 2). Of the 20 homicide-suicide incidents that were precipitated by this circumstance, 19 (95%) of them involved an intimate partner.

Approximately 10% of the perpetrators were currently in mental health treatment at the time of committing the homicide-suicide incident; the highest proportion (21.2%) was among those who committed filicide-suicide incidents (Table 2). Furthermore, for those with toxicology reports, a high proportion (36.4%) of the filicide-suicide perpetrators were found to be on antidepressant medications, suggesting that they had previously sought treatment for clinical depression or another mood disorder.

The most common weapon used by homicide-suicide perpetrators, regardless of the victims involved, was a firearm (Table 2). In general, 88.2% of homicide-suicide perpetrators, ranging from 72.7% of filicide-suicide perpetrators to 97.6% of extrafamilial homicide-suicide perpetrators, used a firearm to commit the violent act.

With the exception of the other-family-related type of homicide-suicide incidents, intimate partner conflict was the most common preceding life-event factor among perpetrators (53.9%) (Table 2). In addition to the intimate partner-related homicide-suicide incidents, these problems were also common among filicide-suicide perpetrators (36.4%) and extrafamilial-related homicide-suicide perpetrators (35.7%).

Demographic characteristics of homicide-suicide perpetrators were compared with those of suicide-only decedents and homicide-only suspects (Table 3). An estimated 92.1% ($n = 373$) of homicide-suicide perpetrators were male, compared with 78.2% ($n = 15{,}793$) of suicide-only decedents and 89.7% ($n = 4{,}569$) of homicide suspects. For both males and females, approximately 60% or more of the perpetrators were aged between 20 and 49 years across all groups (homicide followed by suicide, suicide only, and homicide only). A significant proportion of male homicide-suicide perpetrators and suicide-only decedents were aged 50 years or older (33.2% and 37.9%, respectively). Compared with male homicide-suicide perpetrators, a higher proportion of male homicide-only suspects were aged 10–19 years. This same pattern was observed for females. Similarly, for both male and female perpetrators, the vast majority of homicide-suicide perpetrators and suicide-only decedents were white non-Hispanics. Male and female homicide-only suspects were more evenly distributed among white (29.2%), black (47.4%), and other races (21.3%). However, for male homicide-only suspects who victimized an intimate partner, the distribution by race differed in that 40.2% were white and 39% were black (data not shown).

Table 4 compares the health, mental health, and life-event factors of homicide-suicide perpetrators with those of suicide-only decedents. Compared with males who died by suicide, male homicide-suicide perpetrators were significantly less likely to have reports of depressed mood, mental health problems, alcohol or substance abuse problems, a history of suicide attempts, physical health problems, mental health treatment, or job or financial problems or to have

Table 2. Perpetrator Health Characteristics, Mental Health Service Use, Primary Weapon Used, and Life-Event Factors, National Violent Death Reporting System, 2003–2005

Characteristics	Total Perpetrators ($N = 408$)		Perpetrators by Homicide-Suicide Type										*P* Value
			Intimate Partner Only ($N = 280$)		Intimate Partner + Other ($N = 24$)		Filicide ($N = 33$)		Other Family Related ($N = 29$)		Extrafamilial ($N = 42$)		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Health characteristics													
Current depressed mood	51	12.5	33	11.8	2	8.3	7	21.1	3	10.3	6	14.3	0.564
Current mental health problem	56	13.7	27	9.6	4	16.7	11	33.3	7	24.1	7	16.7	0.002
Alcohol dependence	25	6.1	18	6.4	0	0.0	1	3.0	3	10.3	3	7.1	0.588
Other substance abuse problems	23	5.6	13	4.6	1	4.2	1	3.0	1	3.4	7	16.7	0.058
Suspected intoxication	91	22.3	64	22.8	6	25.0	4	12.1	6	20.7	11	26.2	0.733
History of suicide attempts	14	3.4	9	3.2	2	8.3	2	6.1	0	0.0	1	2.4	0.359
Physical health problem	35	8.6	29	10.4	1	4.2	5	15.2	0	0.0	0	0.0	0.021
Other mental distress resulting in mercy killing	20	4.9	19	6.7	0	0.0	0	0.0	1	3.4	0	0.0	0.172
Mental health service use													
Current mental health treatment	39	9.6	20	7.1	4	16.7	7	21.2	3	10.3	5	11.9	0.049
Current use of antidepressants[a]	17	12.0	11	11.5	1	11.1	4	36.4	1	10.0	0	0.0	0.042
Primary weapon used													0.104
Firearm	360	88.2	249	88.9	20	83.3	24	72.7	26	89.7	41	97.6	
Sharp instrument	15	3.7	11	3.9	1	4.2	2	6.1	1	3.4	0	0.0	
Poison	11	2.7	7	2.5	1	4.2	2	6.1	1	3.4	0	0.0	
Hanging and suffocation	8	2.0	4	1.4	2	8.3	1	3.0	0	0.0	1	2.4	
Other	14	3.4	9	3.2	0	0.0	4	12.1	1	3.4	0	0.0	
Life-event factors													
Intimate partner conflicts	220	53.9	174	62.1	14	58.3	12	36.4	5	17.2	15	35.7	<0.001
Other relationship problems	40	9.8	5	1.8	6	25.0	5	15.2	17	58.6	7	16.7	<0.001
Job or financial problems	42	10.3	29	10.4	4	16.7	6	18.2	2	6.9	1	2.4	0.136
Disclosed intent	53	13.0	38	13.6	2	8.3	4	12.1	5	17.2	4	9.5	0.873

[a] The results pertain to those with toxicology reports (i.e., intimate partner only = 96; intimate partner + other = 9; filicide = 11; other familicide = 10; extrafamilial = 16).

disclosed intent. They were significantly more likely to have a history of intimate partner conflicts. Further analysis of the 208 male homicide-suicide perpetrators who had a history of intimate partner conflict revealed that 191 (92%) of these perpetrators used a firearm in the homicide-suicide incident (Appendix Table 1). Furthermore, 75 (39.3%) of these 191 perpetrators were believed to have retaliated in response to a divorce request or breakup. In addition, 14 (7.3%) of these 191 perpetrators were currently in mental health treatment, and 34 (17.8%) were currently or recently in court for family-related issues (i.e., divorce, custody, child support) or were recently issued a restraining order.

When compared with female suicide-only decedents, female homicide-suicide perpetrators were less likely to be intoxicated at the time of the incident and less likely to have a prior history of suicide attempts. However, the 2 groups were similar in that a large proportion of female homicide-suicide perpetrators were identified as being in a depressed mood (28.6%), currently having a mental health problem (42.9%), currently being in treatment for a mental health condition at the time of the incident (31.4%), and having a history of intimate partner conflict preceding the incident (34.3%) (Table 4).

DISCUSSION

Similar to previous research, this study found that most homicide-suicide incidents were perpetrated by white males in middle to late adulthood. Also consistent with previous research, this study found that most homicide-suicide incidents were committed with a firearm (2, 7, 9–11, 17, 20), the majority of victims were either current or former intimate partners, and a substantial number of victims were children (2, 9, 10). We also found that having a history of intimate partner conflict was highly common among most

Table 3. Demographic Characteristics of Homicide-Suicide Perpetrators, Other Suicide Decedents, and Other Homicide Suspects, National Violent Death Reporting System, 2003–2005

Characteristics	Homicide-Suicide Perpetrators (*N* = 405)		Other Suicide Decedents (*N* = 20,183)		*P* Value	Other Homicide Suspects (*N* = 5,089)		*P* Value
	No.	%	No.	%		No.	%	
Male	373		15,793			4,569		
Age group, years					<0.001			<0.001
10–19	9	2.4	910	5.7		545	11.9	
20–49	240	64.3	8,888	56.3		2,598	56.9	
≥50	124	33.2	5,987	37.9		330	7.2	
Unknown	0	0.0	8	0.1		1,096	24.0	
Race					<0.001			<0.001
White	285	76.4	14,078	89.2		1,336	29.2	
Black	82	22.0	1,219	7.7		2,165	47.4	
Other	6	1.6	495	3.1		973	21.3	
Unknown	0	0.0	1	0.0		95	2.1	
Ethnicity					<0.001			0.007
Hispanic	36	9.6	704	4.5		385	8.4	
Non-Hispanic	333	89.3	14,952	94.7		2,176	47.6	
Unknown	4	1.1	137	0.8		2,008	44.0	
Female	35		4,390			520		
Age group, years					0.999			0.002
10–19	1	2.9	239	5.4		37	7.1	
20–49	21	60.0	2,533	57.7		306	58.9	
≥50	13	37.1	1,616	36.8		51	9.8	
Unknown	0	0.0	2	0.1		126	24.2	
Race					0.326			<0.001
White	29	82.9	3,907	89.0		197	37.9	
Black	4	11.4	285	6.5		195	37.5	
Other	2	5.7	198	4.5		124	23.9	
Unknown						4	0.8	
Ethnicity					0.111			0.999
Hispanic	3	8.6	144	3.3		32	6.2	
Non-Hispanic	32	91.4	4,202	95.7		276	53.1	
Unknown	0	0.0	44	1.0		212	40.8	

homicide-suicide perpetrators, even those who did not victimize their intimate partners in the homicide-suicide incident (e.g., extrafamilial homicide-suicide and filicide-suicide incidents). Our findings also suggest that homicide-suicide perpetration, particularly by males, is mostly preceded by intimate partner conflicts/violence as opposed to other determinants of suicidal behavior.

Although the demographics of homicide-suicide perpetrators, in general, differed from those of other homicide suspects, the demographics of males who perpetrated intimate partner-related homicide-suicide incidents were more similar to those of male suspects in intimate partner homicides. In addition, circumstances surrounding many of the intimate partner-related homicide-suicide incidents were similar to those of intimate partner violence (e.g., divorces or separations) (32). Primary prevention of intimate partner violence (preventing violence before it starts) using promising, effective strategies is an important step toward reducing the occurrence of homicide-suicide incidents and the violent deaths of intimate partners, children, family, friends, and even strangers that are associated with these incidents. Such strategies include changing social norms, role modeling, and mentoring adolescents and young adults to help them develop and sustain healthy, respectful relationship behaviors (32).

Our finding that many of these perpetrators were currently involved in a family legal court case at the time of the incident also highlights the importance of reducing fragmentation between the court/legal system and the mental

Table 4. Characteristics of Homicide-Suicide Perpetrators Versus Other Suicide Decedents, National Violent Death Reporting System, 2003–2005

Characteristics	Homicide-Suicide Perpetrators (*N* = 405)		Other Suicide Decedents (*N* = 20,183)		Homicide-Suicide Perpetrators Versus Suicide Victims	
	No.	%	No.	%	Adjusted Odds Ratio[a]	95% Confidence Interval
Males	373		15,793			
Current depressed mood	41	11.0	6,345	40.2	0.2	0.1, 0.3
Current mental health problem	41	11.0	5,314	33.6	0.3	0.2, 0.4
Alcohol dependence	24	6.4	2,585	16.4	0.3	0.2, 0.5
Other substance abuse problems	22	5.9	1,997	12.6	0.4	0.3, 0.6
Intoxication suspected	89	23.9	4,193	26.5	0.8	0.6, 1.1
History of suicide attempts	11	3.0	2,224	14.1	0.2	0.1, 0.3
Physical health problem	30	8.0	3,231	20.5	0.3	0.2, 0.5
Current mental health treatment	28	7.5	3,950	25.0	0.3	0.2, 0.4
Intimate partner conflicts	208	55.8	4,172	26.4	3.6	2.9, 4.5
Other relationship problems	35	9.4	1,270	8.0	1.3	0.9, 1.8
Job or financial problems	36	9.6	2,705	17.1	0.5	0.4, 0.7
Disclosed intent	48	12.9	3,934	24.9	0.5	0.3, 0.6
Females	35		4,390			
Current depressed mood	10	28.6	1,951	44.4	0.5	0.2, 1.0
Current mental health problem	15	42.9	2,428	55.3	0.6	0.3, 1.2
Alcohol dependence	1	2.9	540	12.3	0.2	0.0, 1.6
Other substance abuse problems	1	2.9	662	15.1	0.2	0.0, 1.3
Intoxication suspected	2	5.7	934	21.3	0.2	0.1, 0.9
History of suicide attempts	3	8.6	1,287	29.3	0.2	0.1, 0.8
Physical health problem	5	14.3	949	21.6	0.6	0.2, 1.6
Current mental health treatment	11	31.4	2,046	46.6	0.5	0.3, 1.1
Intimate partner conflicts	12	34.3	992	22.6	1.9	0.9, 3.9
Other relationship problems	5	14.3	429	9.8	1.7	0.6, 4.4
Job or financial problems	6	17.1	553	12.6	1.4	0.6, 3.5
Disclosed intent	5	14.3	1,027	23.4	0.5	0.2, 1.4

[a] Adjusted for age, race, and ethnic status.

health system. Recognition of the link among family court issues, mental distress, and homicide-suicide violence might help to improve communication between these two systems. Innovative approaches that might facilitate this communication without slowing the legal processes include using case managers to rapidly evaluate access to firearms, gather histories of domestic violence, and make referrals to mental health providers for those in need of counseling.

Furthermore, the fact that some perpetrators had previously been issued restraining orders highlights the need for effective interventions, once the violence has occurred. For example, a number of integrated domestic violence courts have been specifically designed to improve defendant accountability and to enhance victim safety (33). By working with a wide spectrum of stakeholders (e.g., civil attorneys and law enforcement, probation, and parole professionals), judges in these courts gain greater access to much needed information. These courts also increase coordination among criminal justice and community-based social service agencies to provide rapid and comprehensive victim advocacy and links to appropriate services (34).

In contrast to intimate partner-related homicide-suicide perpetrators, a high proportion of filicide-suicide perpetrators were found by this study to be in mental health treatment at the time of the incident. This finding may be expected because approximately half of these incidents are committed by females (35, 36), and females are more likely than males to seek care for mental health conditions (37, 38). This study also found that many of the filicide-suicide perpetrators who sought mental health treatment committed the violent act with a firearm. Feeling distressed, sad, or depressed and having access to a weapon of lethal means

are associated with increased risk of lethal violence (39). The fact that many filicide-suicide perpetrators sought treatment before the incident indicates the potential opportunity for mental health providers to play a role in reducing the risk of homicide-suicide incidents involving children. For example, for parents who seek treatment for mental health conditions, providers may be able to evaluate access to firearms in the household, to obtain additional help for caregiving responsibilities, and to recruit family members to help monitor the patient's treatment and progress (3).

The results from this study are subject to at least 4 limitations. First, because this study used a 24-hour period to define homicide-suicide incidents, the number of homicide-suicide incidents may have been underestimated. Second, the information on mental health and substance abuse is not routinely reported by all investigators, and relevant data sources (e.g., medical records) are not required for the NVDRS; therefore, this study probably underestimated the prevalence of these factors. Furthermore, because such histories are typically provided by family members and friends, the accuracy of the information is often unknown (2). Third, little information is available on the homicide-only suspects, thereby limiting our ability to compare them with homicide-suicide perpetrators. Fourth, medical investigators and police officers may be more or less likely to seek specific information (e.g., history of depression), depending on whether the event is a homicide-suicide incident, a suicide-only incident, or a homicide-only incident. This could account for the low prevalence of these characteristics among homicide-suicide perpetrators found in this study. These characteristics were found to be prevalent among filicide-suicide perpetrators, suggesting that this bias is unlikely, although investigators might be more inclined to assess mental health factors among those who perpetrate violence on children.

This study improves our understanding of homicide-suicide incidents by using the multistate NVDRS. Continued data collection will allow for better descriptions of homicide-suicide perpetrators, which will further inform prevention and intervention efforts to address this important public health problem.

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Appendix Table 1. Characteristics of Homicide-Suicides Committed by Males Having Intimate Partner Problems and Using a Firearm, National Violent Death Reporting System, 2003–2005

Characteristics	Homicide-Suicide Incidents (*N* = 191)	
	No.	%
Preceding circumstance		
Intimate partner recently requested separation	75	39.3
Suspected spouse of having an affair	20	10.5
Intimate partner argument	19	10.0
Current mental health treatment and current/recent court action		
Current mental health treatment	14	7.3
Current court/legal actions (i.e., family-related disputes (divorce, custody and child support disputes), restraining order)	34	17.8