

# Murder-Suicide: A Review of the Recent Literature

Scott Eliason, MD

There has been recent widespread media coverage of events that involve murder-suicide. In this paper, the author does an extensive literature review of studies about murder-suicide. The purpose is to determine whether the incidence of murder-suicide is increasing and what its risk factors are. The results of this review show that the incidence of murder-suicide remains at under 0.001%. Risk factors for murder-suicide are based on relationship between perpetrator and victims, history of domestic violence, sex or perpetrator and victim, age of perpetrator, presence of divorce/separation, use of weapon, and history of mental illness. This paper shows that the incidence of murder-suicide is low, stable, and similar to what has been reported in the past. There are, however, some distinct risk factors for murder-suicide including: substance abuse (not as common), mostly male perpetrators, depression (more common), and older male caregivers are at risk.

*J Am Acad Psychiatry Law* 37:371–6, 2009

On June 26, 2007, a professional wrestler strangled his wife, suffocated his 7-year-old son, and then hanged himself.<sup>1</sup> On January 18, 2008, an aunt was taking her niece and nephew to her house for a weekend stay.<sup>2</sup> While en route, she pulled over, took off her clothes and those of her niece and nephew, and carried the children into on-coming traffic. All three were killed. On that same day in New Jersey, an executive vice-president of a bankrupt mortgage company broke his wife's neck and then killed himself by jumping off a bridge.<sup>3</sup> On February 14, 2008, a former student walked into a crowded auditorium at Northern Illinois University and shot 21 people, killing six of them, before he shot and killed himself.<sup>4</sup>

These tragic events are examples of murder-suicide, defined as a homicide that is followed by the suicide of the perpetrator within one week.<sup>5</sup> Some experts consider the homicides to be simply a side effect of the suicide, wherein the specific decision to kill oneself precipitates a perceived necessity to kill others. Other experts say that murder-suicide cannot be categorized with either homicides or suicides but is actually a distinct behavior. Although there are some common risk factors among perpetrators of ho-

micide, suicide, and murder-suicide, the latter behavior has some distinct characteristics. Although murder-suicide is a rare event, it is widely publicized in the media, and therefore such events may seem to be increasing in frequency. This review examines whether the rate of murder-suicide is rising.

In this article the information collected by Marzuk *et al.*<sup>5</sup> in 1992 summarizing the data on murder-suicide up to that point will be reviewed. Then, after a review of the current literature, the recent incidence and the characteristics of murder-suicide will be examined.

## Background

As of 1992, the incidence of murder-suicide in the United States and other western countries was shown to be stable throughout the previous 40 years. The incidence did not change even though the homicide-only rates may have been higher in one area or extremely low in another. In 1983, Coid<sup>6</sup> reviewed 17 studies from 1900 until 1979 that involved 10 nations and found that the murder-suicide incidence was surprisingly similar and constant. He found the incidence to be between 0.2 and 0.3 per 100,000. In countries and states with high homicide rates, the percentages of those that were murder-suicides were low, and in those places with low homicide rates, the percentage of murder-suicides was high. The same was found with the suicide rate. Marzuk *et al.*<sup>5</sup> also

Dr. Eliason is Clinical Instructor, Department of Psychiatry, University of Washington, and Behavioral Health Medical Director, State of Idaho Department of Health and Welfare. At the time of submission, Dr. Eliason was a Forensic Fellow at the University of California San Francisco. Address correspondence to: Scott Eliason, MD, 1720 Westgate Drive, Suite B, Boise, ID 83704. E-mail: seliason1@gmail.com

described a survey from *Time* magazine that looked at the murder-suicide rate in one week and conservatively estimated that the incidence in the United States was 0.2–0.3/100,000 per year.

Murder-suicides occur across all demographics, but who commits them? Marzuk *et al.*<sup>5</sup> proposed a set of typologies that describe the relationship between the perpetrator and the victim. These typologies seem to include the majority of murder-suicides. They are: amorous jealousy, declining health, filicide-suicide, familicide, and extrafamilial. These will be discussed further later in the article.

The attention given to murder-suicides in the past several years could make it seem that the incidence is increasing, but the trend has not been well-studied. The landmark papers that have documented the incidence<sup>5,6</sup> were both written before 1993, and many of the studies they relied on were published much earlier. Since 1993, there have been only a handful of studies looking at the incidence. In this article we will review these more recent studies and look at the data involved to determine whether the incidence is increasing.

## Methods

A PubMed search was performed with the terms murder-suicide [ti], homicide-suicide [ti], and homicide-suicide AND families, followed by a search through Psych-info, Sociological Abstracts, and Criminology: A SAGE Full Text Collection for the terms murder-suicide and homicide suicide. The articles by West<sup>7</sup> and Coid<sup>6</sup> were found in the references of the article by Marzuk *et al.*<sup>5</sup> Sixteen papers were reviewed.

## Results

### Incidence of Murder-Suicide

In the following studies, various geographic locations and the overall murder-suicide rate were examined over a period more recent than the previously mentioned papers. Because most states and counties do not keep murder-suicide statistics, the investigators in most studies looked at county medical examiner reports and compiled their murder-suicide data from them. In one study, Malphurs and Cohen<sup>8</sup> conducted internet surveillance for murder-suicide by using a newspaper search engine.

Hannah *et al.*<sup>9</sup> compared the overall murder-suicide rates in central Virginia during two periods:

1980–1984 and 1990–1994. These periods had rates close to the previously calculated incidences at 0.34 and 0.38, respectively, per 100,000. The rates from 1988 to 1991 in Fulton County, Georgia, were examined by Hanzlick and Koponen,<sup>10</sup> and the incidence was slightly higher than expected, at 0.46 per 100,000. Campanelli and Gilson<sup>11</sup> examined records in New Hampshire from 1995 to 2000 and found the incidence to be 0.26 per 100,000.

Malphurs and Cohen<sup>8</sup> conducted an internet survey of newspapers in all U.S. states from 1997 to 1999. They found that the incidence was lower than that determined previously, but their methodology most likely caused an underestimate of the actual number. Comstock *et al.*<sup>12</sup> studied the murder-suicide incidence in Oklahoma between 1994 and 2001. They reviewed the medical examiner records of the state and found that during this time the incidence of murder-suicide was 0.3 per 100,000 and that it was stable during those eight years.

Cohen *et al.*<sup>13</sup> studied murder-suicide in older people and compared the rate in this population to that in younger people. They examined both populations in two different areas in Florida and found that both had an elevated incidence of murder-suicide. The under-55-year age group had an incidence range of 0.3 to 0.7 per 100,000, and the over-55 population had an incidence range of 0.4 to 0.9 per 100,000. Bossarte *et al.*<sup>14</sup> used data from the National Violent Death Reporting System (NVDRS) to study the characteristics of murder-suicide in 2003 and 2004. The database contains data on violent deaths in participating states. They found an incidence of 0.230 per 100,000 in 2003 and 0.238 in 2004.

As shown in Table 1, across jurisdictions the rate seems to have a range similar to that in Marzuk *et al.*,<sup>5</sup> which is 0.2–0.3/100,000 per year. The perception from media reports would be that the incidence is greatly increasing, but the data that we have collected show murder-suicide to be a very rare event that seems relatively constant, remaining at an overall incidence of approximately 0.2–0.3/100,000 per year.

### Characteristics of Murder-Suicide

#### Relationship

Most murder-suicides are spousal/consortial, involving a man killing his wife, girlfriend, ex-wife, or ex-girlfriend. Marzuk *et al.*<sup>5</sup> wrote that, “The triggering event is often the female’s rejection of her lover

**Table 1** Review of Statistics in Studies of Murder-Suicide

| Study                                | Reported Incidence             | Murder-Suicide Incidents, <i>n</i> | Date Range             | Location                           |
|--------------------------------------|--------------------------------|------------------------------------|------------------------|------------------------------------|
| Marzuk <i>et al.</i> <sup>5</sup>    | 0.2–0.3*                       | 11 incidents; 22 deaths            | 1 week in 1989         | United States                      |
| Cohen <i>et al.</i> <sup>13</sup>    | 0.3–0.7 in <55-year age group* | 89 incidents in <55-year group     | 1988–1994              | Southeast and West Central Florida |
| Hannah <i>et al.</i> <sup>9</sup>    | 0.34 and 0.38*                 | 53 incidents;<br>116 deaths        | 1980–1984<br>1990–1994 |                                    |
| Hanzlick and Koponen <sup>10</sup>   | 0.46*                          | 12 incidents; 26 deaths            | 1988–1991              | Fulton County, Georgia             |
| Campanelli and Gilson <sup>11</sup>  | 0.26*                          | 16 incidents                       | 1995–2000              | New Hampshire                      |
| Comstock <i>et al.</i> <sup>12</sup> | 0.3*                           | 73 incidents; 162 deaths           | 1994–2001              | Oklahoma                           |
| Bossarte <i>et al.</i> <sup>14</sup> | 0.23*<br>0.238*                | 65 homicides;<br>144 homicides     | 2003<br>2004           | NVDRS<br>(multiple states)         |

\*Per 100,000.

and her immediate threat of withdrawal or estrangement” (Ref. 5, p 3180). In their newspaper surveillance study, Malphurs and Cohen<sup>8</sup> found that 70.5 percent of all murder-suicides were spousal/consortial. They also found that 10.5 percent were infanticides, 8.7 percent were extrafamilial, and 6.5 percent were familicides (destruction of the entire family). Saleva *et al.*<sup>15</sup> studied homicide-suicide in Finland for one year and found that 90 percent of the victims were spouses and/or children, and 100 percent were family members. Bossarte *et al.*<sup>14</sup> found that homicide-suicides with victims younger than 15 were primarily perpetrated by parents (73.9%).

A subset of spousal/consortial murder-suicides is that of declining health and caregiver. In the older population, a large number of spousal/consortial murder-suicides are a male caregiver killing his ailing wife and then himself.

#### Sex

Most murder-suicides are perpetrated by men. Travis *et al.*<sup>16</sup> found that 100 percent of the perpetrators of murder-suicides committed in England and Wales from 1991 to 2005 were male. The authors then reviewed many papers that mentioned the sex of the perpetrators and found that almost all were male. Of the 21 articles that Travis reviewed, 16 of them reported that more than 90 percent of perpetrators were male. The lowest percentage of male perpetrators was 60 percent, found by West<sup>7</sup> in a study of records from 1948 to 1962. Bossarte *et al.*<sup>14</sup> found that 30.6 percent of men who killed their intimate partner also committed suicide.

#### Age

Most studies reported that the mean age of perpetrators was 40 to 50 years.<sup>8,9</sup> The age ranges,

however, covered almost all decades. In the study by Travis *et al.*,<sup>16</sup> the age range was 19 to 86 years. In a recent paper on filicide-suicide, Friedman *et al.*<sup>17</sup> reported that fathers who killed their offspring and then themselves were usually older (mean age, 38.2 years) than mothers (mean age, 31.8 years). Salari<sup>18</sup> concluded that older men (>60 years) who are suicidal “must be recognized as a potential threat to others, primarily their partner” (Ref. 18, p 441).

Cohen *et al.*<sup>13</sup> found that 83 percent of murder-suicides in the older age groups (over 55 years) were of the spousal/consortial type. In the younger groups the percentage was almost the same, at 79 percent. They found some distinct differences, however, between murder-suicides committed by younger and older people. For example, the older couples were more likely to have medical illnesses, whereas the younger couples were more likely to have a history of verbal discord. Separation was also predominant among the younger couples, but was not as frequent in the older couples. The incidence of murder-suicide in those older than 55 years of age was double that in those younger than 55.

The average age of perpetrators of murder-suicide was much older than that of those who commit homicide alone.

#### Police Families

Violanti<sup>19</sup> studied homicide-suicides perpetrated by police officers against their families. The results suggest that the incidence of homicide-suicide among police officers and their families is increasing. Almost all cases of police family homicide-suicide were committed with the police service firearm.

### Substance Use

Most of the information from murder-suicide studies showed that substance involvement in murder-suicide was about half that found in homicide alone. In the New Hampshire study, 31 percent of perpetrators tested positive for alcohol,<sup>11</sup> and 16 percent had a history of chronic alcoholism. Palermo *et al.*<sup>20</sup> found that 27 percent had used alcohol and 21 percent were legally intoxicated. In England and Wales, Travis *et al.*<sup>16</sup> reported that 30 percent of perpetrators tested positive for alcohol, and 22 percent were intoxicated. Malphurs and Cohen<sup>21</sup> found in a study of older perpetrators of murder-suicide that only 15 percent had alcohol in their urine, equal to the percentage in those committing suicide alone.

In studying filicide-suicides, Friedman *et al.*<sup>17</sup> found that 10 percent of the parents who killed their children had a history of alcohol and drug abuse. The authors commented, however, that this rate was most likely an underestimate, because the presence or absence of drugs and alcohol was not always reported by the medical examiner.

### Criminal History

While past behavior can be a helpful indicator of future behavior, the perpetrators of murder-suicide usually had a low rate of criminal behavior. In their filicide-suicide study, Friedman *et al.*<sup>17</sup> found that only 10 percent of mothers and 25 percent of fathers had a criminal history. In the Florida study of older perpetrators of murder-suicide, Malphurs and Cohen<sup>21</sup> compared two different populations and found that older couples in southeast Florida were five times as likely to be involved in a lawsuit or criminal behavior than were older couples in west central Florida.

### Employment

Full-time employment was not protective of murder-suicides. Palermo *et al.*<sup>20</sup> found that 77 percent of the perpetrators of murder-suicide were employed full time. In the filicide-suicide study,<sup>17</sup> 30 percent of the mothers and 90 percent of the fathers were employed.

### Divorce and Separation

A common contributing factor found in most studies was estrangement. In a study in central Virginia, Hannah *et al.*<sup>9</sup> found that the precipitating co-factor in 48 to 73 percent of the cases was impending divorce or separation. In the New Hamp-

shire study, Campanelli and Gilson<sup>11</sup> found that only 31 percent of the pairs involved occupied the same home at the time of the murder-suicide. Palermo *et al.*<sup>20</sup> found that 31.7 percent had filed for divorce or separated. Comstock *et al.*<sup>12</sup> found in Oklahoma that 30.1 percent had a current divorce or estrangement. Cohen *et al.*<sup>13</sup> reported that more than half of the younger couples involved in murder-suicides had separated.

### Weapon

The overwhelming weapon of choice of the perpetrator of a murder-suicide was a firearm. In the newspaper surveillance study, Malphurs and Cohen<sup>8</sup> found that 85.8 percent of the perpetrators used firearms, whereas Hanzlick and Koponen<sup>10</sup> reported 92 percent. Hannah *et al.*<sup>9</sup> determined that 94 percent used firearms. The New Hampshire study<sup>11</sup> showed that 75 percent killed with firearms. Palermo *et al.*<sup>20</sup> found that 94 percent used firearms. In the Oklahoma study,<sup>12</sup> 97.3 percent of the murder-suicides were carried out with firearms. In their study of older people in Florida, Malphurs and Cohen<sup>21</sup> reported that 100 percent of the incidents involved firearms. Friedman *et al.*<sup>17</sup> noted that in filicide-suicides, firearms were used 73 percent of the time. In England and Wales, Travis *et al.*<sup>16</sup> sought to determine whether tougher gun laws had decreased the rate of murder-suicides. They found that the number of murder-suicides involving firearms decreased to 16 percent, but the overall murder-suicide rate remained constant.<sup>16</sup> In their study, the primary method of homicide was strangulation (36%).

### Sex of the Victim

In almost all murder-suicides (of which most were between intimate partners) the victims were female. Campanelli and Gilson<sup>11</sup> showed that 88 percent of the victims in their New Hampshire survey were female. Their results were consistent with the findings of mostly female victims (83%) in police family homicide-suicides.

### History of Mental Illness

In several studies, the authors commented that the person who knew the perpetrator best was killed, and therefore it would have been difficult to perform a psychological autopsy. Most authors agree that depression was the leading diagnosis found in murder-suicide perpetrators. As noted herein, recent separation or impending divorce was often a major

contributing factor, and Palermo *et al.*<sup>20</sup> noted that depression often follows a breakup and then triggers the murder-suicide event. Campanelli and Gilson<sup>11</sup> found in New Hampshire that 38 percent of those who committed murder-suicide were depressed. Rosenbaum<sup>22</sup> found that most murder-suicide perpetrators had depression, whereas none of the homicide-only sample in his study did. Malphurs and Cohen,<sup>21</sup> in the study of spousal homicide-suicide in older persons, determined that 65 percent of murder-suicide perpetrators were depressed. On autopsy, none of them tested positive for antidepressants. The authors further found that many of the perpetrators had been prescribed benzodiazepines by their primary care physicians. In a study of homicide-suicide in older persons, Cohen *et al.*<sup>13</sup> found that in the two groups of older persons studied, 37 and 19 percent had depression. In 171 cases of murder-suicide, only two of the perpetrators tested positive for antidepressants. In the filicide-suicide study<sup>17</sup> more than 80 percent of the parents had a history of psychiatric problems, and 57 percent were depressed.

#### *History of Domestic Violence*

Although domestic violence is common in filicide alone, only 15 percent of fathers and 30 percent of mothers had a history of committing physical abuse.<sup>17</sup> In other types of murder-suicide, domestic violence seemed to be somewhat more common. In the New Hampshire study,<sup>11</sup> of the spousal/consortial murder-suicides, 54 percent had a history of domestic violence. Rosenbaum<sup>22</sup> found that a history of physical abuse and frequent separations was a risk factor for murder-suicide. Malphurs and Cohen<sup>21</sup> noted when comparing murder-suicide perpetrators to suicide-alone control subjects that 25 percent of the murder-suicide perpetrators had a history of domestic violence compared with only 5 percent of the control subjects. Oddly, the marital relationships of the murder-suicide couples were described overall as being closer than those of couples in which one partner committed suicide alone. The Oklahoma study<sup>12</sup> determined that 9.6 percent of murder-suicide perpetrators had a history of domestic violence.

#### **Comparison of Risk Factors**

How do risk factors for murder-suicide differ from risk factors for suicide or homicide alone? Murder-suicide was disproportionately perpetrated by males. Many of the studies had 100 percent male perpetrators,<sup>10,13,16,21</sup> and the others were close to it. Females

committed almost half of the spousal homicides, yet they very rarely committed murder-suicide.<sup>5</sup> In filicide, fathers were almost two times more likely to kill themselves after murdering a child than were mothers. Murder-suicide perpetrators are usually older than those committing homicide alone.<sup>5,17</sup> In older persons, those who committed murder-suicide were more likely to be caregivers than were those who committed suicide alone.<sup>21</sup> Substance intoxication did not play as big a role in murder-suicide as it did in homicide alone.<sup>11,16,17,20,21</sup> Depression was much more likely in those who committed murder-suicide than in those who committed homicide alone.<sup>22</sup>

Murder-suicide and homicide and suicide perpetrators had some factors in common. Perpetrators of murder-suicide and suicide alone had high levels of depression and low levels of antidepressant treatment. In most, their emotional state at the time of the events was exacerbated by using substances. The weapon of choice was frequently a gun, and having access to one was a risk factor for all three types of occurrence.

#### **Conclusions**

The review showed murder-suicide as a rare event that shares characteristics with both homicide and suicide but has some distinct characteristics. Studies show a relatively constant rate of occurrence that was unrelated to the overall rate of homicides or suicides. It does not seem that the incidence is increasing, although the coverage in the media of murder-suicide may be on the rise.

Because murder-suicide is such a rare event, to screen for it is not feasible without many false positives. However, the literature reveals some characteristics that may be helpful when performing a risk assessment. There are certain clinical presentations that should alert mental health professionals to be suspicious of the risk of possible murder-suicide: a middle-aged man who is recently separated or facing pending estrangement from his intimate partner and who is depressed and has access to firearms; or an older male who is the primary caregiver for a spouse who is ill or debilitated, where there is a recent onset of new illness in the male, depression, and access to firearms. A risk assessment should include determining the chance of involvement not only in suicide and homicide, but also in murder-suicide as a perpetrator or a victim.

References

1. Bluestein G: Benoit strangled wife, smothered son. Available at <http://www.thefreelibrary.com/Benoit+strangled+wife%2c+smothered+son-a01611368888>. Accessed August 21, 2009
2. Hayes V: DA: aunt kills kids, self by walking into I-495 traffic. Available at <http://www.thebostonchannel.com/news/15085846/detail.html>. January 18, 2008. Accessed August 21, 2009
3. Mortgage firm exec jumps to death; wife's body found home. Available at <http://www.nj.com/news/index.ssf/2008/01/13-week>. Accessed August 21, 2009
4. Former student guns down 5 in attack at Northern Illinois University; kills self. Available at <http://www.foxnews.com/story/0,2933,330730,00.html>. Accessed August 21, 2009
5. Marzuk P, Tardiff K, Hirsch C: The epidemiology of murder-suicide. *JAMA* 267:3179–83, 1992
6. Coid J: The epidemiology of abnormal homicide and murder followed by suicide. *Psychol Med* 13:855–60, 1983
7. West DJ: *Murder Followed by Suicide*. London: Heinemann, 1965
8. Malphurs JE, Cohen D: A newspaper surveillance study of homicide-suicide in the United States. *Am J Forensic Med Pathol* 23: 142–8, 2002
9. Hannah SG, Turf EE, Fierro MF: Murder-suicide in central Virginia: a descriptive epidemiologic study and empiric validation of the Hanzlick-Koponen typology. *Am J Forensic Med Pathol* 19: 275–83, 1998
10. Hanzlick R, Koponen M: Murder-suicide in Fulton County Georgia 1988–1991: comparison with a recent report and proposed typology. *Am J Forensic Med Pathol* 15:168–73, 1994
11. Campanelli C, Gilson T: Murder-suicide in New Hampshire, 1995–2000. *Am J Forensic Med Pathol* 23:248–51, 2002
12. Comstock RD, Mallonee S, Kruger E, *et al*: Epidemiology of homicide-suicide events: Oklahoma, 1994–2001. *Am J Forensic Med Pathol* 26:229–35, 2005
13. Cohen D, Llorente M, Eisdorfer C: Homicide-suicide in older persons. *Am J Psychiatry* 155:390–6, 1998
14. Bossarte RM, Simon TR, Barker L: Characteristics of homicide followed by suicide incidents in multiple states, 2003–2004. *Inj Prev* 12(Suppl 2):ii33–ii38, 2006
15. Saleva O, Putkonen H, Kiviruusu O, *et al*: Homicide-suicide: an event hard to prevent and separate from homicide or suicide. *Forensic Sci Int* 166:204–8, 2007
16. Travis A, Johnson L, Milroy C: Homicide-suicide (dyadic death), homicide and firearms use in England and Wales. *Am J Forensic Med Pathol* 28:314–18, 2007
17. Friedman S, Hrouda D, Holden C, *et al*: Filicide-suicide: common factors in parents who kill their children and themselves. *J Am Acad Psychiatry Law* 33:496–504, 2005
18. Salari S: Patterns of intimate partner homicide suicide in later life: strategies for prevention. *Clin Interv Aging* 2:441–52, 2007
19. Violanti JM: Homicide-suicide in police families: aggression full circle. *Int J Emerg Ment Health* 9:97–104, 2007
20. Palermo GB, Smith MD, Jentzen JM, *et al*: Murder-suicide of the jealous-paranoia type: a multicenter statistical pilot study. *Am J Forensic Med Pathol* 8:374–83, 1997
21. Malphurs J, Cohen D: A statewide case-control study of spousal homicide-suicide in older persons. *Am J Geriatric Psychiatry* 13: 211–17, 2005
22. Rosenbaum M: The role of depression in couples involved in murder-suicide and homicide. *Am J Psychiatry* 147:1036–9, 1990