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Homicide-Suicide in the Netherlands

An Epidemiology

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Homicides followed by the suicide of the perpetrator are a rare yet very serious form of interpersonal violence that occurs mainly in partnerships and families. No systematic research on homicide-suicide has ever been conducted in the Netherlands. This study provides an overview of the international homicide-suicide literature. Additionally, this article describes, for the first time, the incidence and patterns of homicide-suicide in the Netherlands and compares these to homicides not followed by suicide. To do so, an existing record containing all homicide cases in the Netherlands in the period 1992-2006 was used. Additional information on homicide-suicide events was retrieved through newspaper analysis. A total of 135 people died in 103 events. Homicide-suicide occurs with an annual incidence of 0.07 to 0.02 per 100,000 persons per year. People who commit homicide-suicide cannot be easily equated to those accused of other types of homicide.

Keywords: *homicide-suicide; murder-suicide; family homicide; extended suicide; epidemiology*

In the Netherlands, approximately 200 persons die per year as a result of lethal violence (Nieuwbeerta & Leistra, 2007). In addition, roughly 1,500 people per year end their own lives (Central Bureau for Statistics [CBS], 2007). Usually, these dramatic acts occur separately, yet in some cases they take place together in a so-called homicide-suicide. Homicide-suicide is a generic term referring to a homicide and a subsequent suicide by the same actor.

Although many studies have been published describing homicide-suicide events and incidents in different cities, regions, and countries, surprisingly, in the Netherlands, no systematic research on the homicide-suicide phenomenon has ever been conducted. As these acts are not recorded in official crime statistics, not even the yearly number of events and victims is known. This is surprising as homicide-suicides constitute an emerging public health concern, victimizing not only those directly involved in the act, but also relatives, friends, and acquaintances. Given the fact that

multiple victims are involved, the degree of secondary victimization tends to spread drastically. Homicide-suicides lead to shock and incomprehension among society at large. It is therefore crucial to study this significant type of homicide.

Another reason for studying homicide-suicides is related to the relative lack of comprehensive theories on the homicide-suicide phenomenon. Most studies either tend to view homicide-suicide as a variation of homicidal or suicidal behavior. According to the former view, a suicide follows out of feelings of guilt, shame, or a fear of consequences related to the homicide (e.g., Guttmacher, 1960; Henry & Short, 1954; Lester & Lester, 1975; Selkin, 1976; Stack, 1997).

The aim of the current study is fourfold. First, it seeks to provide an overview of the international homicide-suicide literature, addressing its incidence, typology, and accordingly, the different types of homicide-suicide. Second, it aims to describe, for the first time, the incidence and patterns of homicide-suicide in the Netherlands. To do so, we analyzed data of all homicide-suicides that occurred in the period 1992-2006. Third, we not only described the overall patterns of homicide-suicide, but thanks to our extensive data collection efforts we were also able to differentiate between the different types of homicide-suicide. Fourth, this article statistically compares these homicide-suicides to homicides not followed by suicide.

Previous Findings

Incidence

A review of recent international epidemiological studies reveals not only that overall, homicide-suicide is a relatively rare event, but also that substantial cross-national differences exist (see Table 1).¹ In recent years, the proportion of homicide-suicides has ranged from as low as 1.4% in Georgia (Hanzlick & Koponen, 1994) to almost 15% of all recorded homicides in New Hampshire (Campanelli & Gilson, 2002).

In comparison to the United States, England and Wales have a relatively high homicide-suicide incidence: recent accounts report 1-7% of all homicides in England and Wales to involve a homicide-suicide (Barraclough & Clare Harris, 2002). Examining Australian data, Carcach and Grabosky (1998) classified roughly 6% of all homicides as homicide-suicides.

When comparing the overall rate of homicide-suicides within and between countries, Coid (1983) held that the proportion of homicide-suicide in a given country increases as the homicide rate increases. On one hand, in countries with an already high frequency of homicide, the proportion committed by those who kill themselves is small. On the other hand, countries with a low frequency of homicide have a relatively greater percentage of homicide-suicides and other types of abnormal homicides. Milroy (1995a) tested Coid's (1983) hypotheses and found that although the rates of homicide-suicide fluctuate, they do not fluctuate as much as the homicide

Table 1
Comparative Frequencies and Rates of Homicide-Suicides

Country	Study	Period	Homicide-Suicides		Rate per 100,000 Population
			N	Percentage	
Australia	Carcach and Grabosky (1998)	1989-1996	144	5.5	0.22
England and Wales	Barracough and Clare Harris (2002)	1988-1992	144	1.0	NA
England, Yorkshire, and Humbershire	Milroy (1993)	1975-1992	52	4.6	0.07
France	Saint-Martin, Bouyssy, and O'Byrne (2007)	2000-2005	10	11	1.55
Hong Kong	Chan, Beh, and Broadhurst (2002)	1989-1997	49	6.0	0.09
United States, Chicago	Stack (1997)	1965-1990	267	1.64	NA
United States, Florida	Cohen et al. (1998)	1988-1994	171	2.5-12	0.5-0.7
United States, Georgia	Hanzlick and Koponen (1994)	1988-1991	12	1.4	0.46
United States, Kentucky	Currens et al. (1991)	1985-1990	67	6	0.30
United States, New Hampshire	Campanelli and Gilson (2002)	1995-2000	16	14.7	0.26

Note: NA, data not available.

rate. His study revealed that on the whole, those countries with higher rates of homicide-suicide are those in which the homicide rate is high and accordingly, the percentage of killing with firearms is very high; availability of weapons may therefore be a contributing factor. Felthous and Hempel (1995) also found a comparative stability in the rates of homicide-suicide and argued that, as homicide-suicides involve predominantly intimate (family) victims and the rate of these killings fluctuate not as much as the suicide and homicide rate do independently, homicide-suicides rates are subject to similar influences and are of comparable stability as the rate of intimate homicide. In one of the first epidemiological studies on suicide, Durkheim (1897/1951) found that the suicide rate was even more stable than that of general mortality. He argued that the number of suicides is the same as long as society itself does not change. Given their stability over time, homicide-suicide rates could thus also be explained as variances of the suicide rate.

Types of Homicide-Suicide

Marzuk, Tardiff, and Hirsch (1992) were the first to propose a classification system that categorized homicide-suicides by type of victim-perpetrator relationship. The four most common types of homicide-suicide according to this typology are uxoricide-suicide (the killing of an intimate partner with a subsequent suicide of the actor), filicide-suicide (the killing of a child and a suicide of the perpetrator), familicide-suicide (the killing of spouse and children and a subsequent suicide of the perpetrator), and finally, the killing of nonfamily members followed by suicide.

Later classification systems have incorporated factors such as psychopathology (Felthous & Hempel, 1995), motive (Harper & Voigt, 2007; Palermo et al., 1997; Wallace, 1986), and precipitating stressors (Hanzlick & Koponen, 1994). Although these broader classification systems can be helpful in some retrospective analyses of homicide-suicide cases, they are too specific to apply to cases in which the contribution to the offense is not known or when other data surrounding the event are limited. As the perpetrator of a homicide-suicide typically dies, classifying a case based on systems of assumed psychopathology or motives is particularly prone to speculation.

In further discussing homicide-suicides, the classification scheme of Marzuk et al. (1992) will be used as a taxonomy, as this system has been used by many others throughout the years in both the presentation of case study material and in further analyses of homicide-suicide acts. In addition, previous research has shown that the relationship between victim and perpetrator is of great importance in understanding the dynamics underlying homicide-suicides (e.g., Carcach & Grabosky, 1998; Stack, 1997). We completed Marzuk et al.'s classification by adding a fifth category consisting of the killing of other family members followed by suicide. These types are discussed in more detail below.

Uxoricide-suicide. The first category refers to uxoricide-suicide: the killing of an intimate partner and the subsequent killing of oneself. The killing of one's spouse is not only the most common type of domestic homicide, but it is also the most prevalent of cases of homicide-suicide (Bourget, Gagne, & Moamai, 2000; Dutton & Kerry, 1999; Malphurs & Cohen, 2002; Marzuk et al., 1992). Uxoricide-suicides are typically committed by males. These perpetrators are found to be older compared to those not committing suicide (Belfrage & Rying, 2004; Lund & Smorodinsky, 2001). Reasoning that homicide-suicides involve a high degree of mental disorders, Felthous and Hempel (1995) argue that an older age may be a function of mental disorders, depressive and paranoid conditions increasing with age. Second, they state that an older perpetrator will have had time to establish an intimate relationship lasting long enough for bonding, dependence, turmoil, and instability to develop.

Epidemiological studies report a twofold division in cases of spousal homicide-suicide: the first centering on a pathological type of possessiveness and the latter clustered around a theme of old age and ill-health, resembling so-called suicide pacts. Cohen (1961, p. 145) defined a suicide pact as "a mutual arrangement between two people who resolve to die at the same time and, nearly always, in the same place." West (1965) was one of the first ones to point out that death in a suicide pact may be difficult or even impossible to distinguish from homicide followed by suicide or even an accident. Other, more recent studies support this claim, pointing out that in a suicide pact one person coerces the other to join rather than the pact consisting of two voluntary cooperators, thereby resembling a homicide-suicide (e.g., Fishbain, D'Achille, Barsky, & Aldrich, 1985; Hemphill & Thornley, 1969; Rosenbaum, 1983, 1990; Young et al., 1984).

In uxoricide-suicides that do not take the form of a suicide pact, a high occurrence of previous abuse has been reported cross-culturally (e.g., Lindqvist & Gustafsson, 1995; Malphurs & Cohen, 2005; Morton, Runyan, Moracco, & Butts, 1998; Palermo, 1994; Stack, 1997; Starzomski & Nussbaum, 2000). A fear of losing control over the victim is a recurrent theme in these cases, also referred to as the "male proprietariness theory" (Daly & Wilson, 1988; Wilson & Daly, 1993; Wilson, Daly, & Daniele, 1995). According to this theory, men exhibit a tendency to think of women as sexual and reproductive "property" that they can own and exchange. When this control is lost, for example, in cases of (suspected) infidelity, the male cuckold responds with violence in a last attempt to regain control. Sometimes, this results in lethal violence. Research indicates that such an event is typically triggered by the female's rejection of her lover, a threat of withdrawal or estrangement (Bourget et al., 2000; Dutton & Kerry, 1999; Morton et al., 1998). Some regard the perpetrator as primarily suicidal and his suicide as premeditated, whereas others believe that the suicide arises out of remorse of a primary homicidal act (e.g., Berman, 1979; Guttmacher, 1960; Henry & Short, 1954; Lester & Lester, 1975; Stack, 1997).

Filicide-suicide. The second category distinguished by Marzuk et al. (1992) is filicide-suicide² and involves cases in which the perpetrator kills his children

and subsequently himself.³ Previous studies have reported filicide-suicide to be the second most common type of homicide-suicide after uxoricide-suicide (e.g., Barraclough & Clare Harris, 2002; Malphurs & Cohen, 2002; Marzuk et al., 1992; Milroy, 1993; Stack, 1997; Wolfgang, 1958). Although filicide is historically known to be an offense primarily committed by women, recent studies indicate that fathers are just as likely or even more likely to be involved in cases of filicide-suicide (Byard, Knight, James, & Gilbert, 1999; Cooper & Eaves, 1996). It has been suggested that the latter finding might be a by-product of the fact that men are more likely to commit suicide than women (Shackelford, Weekes-Shackelford, & Beasley, 2005). Parents committing filicide-suicide are found to be older than those committing filicide without a suicide. The victims, accordingly, tend to be older as well (Shackelford et al., 2005). Suicide is uncommon when mothers kill a child less than 1 year of age (Felthous & Hempel, 1995). The same accounts for stepparents who kill children. With regard to the number of victims per homicide-suicide event, Shackelford et al. (2005) found that filicides including multiple victims were more likely to end in the perpetrator's suicide than were filicides that include a single victim. The authors attributed this difference to the role of more severe psychopathology present in the perpetrator.

The main aim of filicidal parents is reported to be their own self-destruction, with the children being killed as part of an extended suicide: the children constitute an extended part of the self that is taking along in death.⁴ The motive for killing is considered to be pseudoaltruistic: a parent decides there would be no one else to care for the child(ren) after having committed suicide (Marleau, Poulin, Webanck, Roy, & Laporte, 1999; Messing & Heeren, 2004; Milroy, 1995b; Somander & Rammer, 1991; West, 1965). Other researchers point out that a child might be in danger of becoming a part of a filicide-suicide when the perpetrator's primary aggression is directed toward the spouse—in these events, children are killed in a deliberate attempt to make the spouse suffer (Holden, Burland, & Lemmen, 1996; Wilson et al., 1995). This has also been referred to as the Medea complex, as in the ancient myth Medea sought to hurt her estranged husband Jason by killing their mutual children.

Familicide-suicide. Familicide-suicide constitutes an overlap between uxoricide-suicide and filicide-suicide: the killing of both spouse and child(ren), whose perpetrators are also referred to as family annihilators. Familicides are almost exclusively committed by men (Adelson, 1961; Byard et al., 1999; Harder, 1967; Marleau et al., 1999; Somander & Rammer, 1991), typically in their 30s or 40s (Ewing, 1997), and usually older than those who commit filicide (Alder & Polk, 2001). Frazier (1975) described two main types of familicidal perpetrators, namely the suicide-by-proxy type and the murder-by-proxy type. The first refers to a husband and father who feels despondent over the fate of the family unity and takes his own life as well as that of his

child(ren) and spouse to protect them from perceived pain and suffering to come following the loss of a job or a breakdown of the family union. The murder-by-proxy type applies to cases in which victims are chosen because they are identified with a primary target against which revenge is sought. In this light, a man might slaughter all of his children because he regards them as an extension of his wife, and he seeks to get even with her.

Killing of other family members followed by suicide. This category—originally not distinguished by Marzuk et al., but considered as empirically important—comprises homicide-suicides involving the killing of first- to third-degree family members who have not been included in one of the aforementioned categories. This category mainly consists of the killing of one's parents (parricide) followed by suicide and the killing of siblings (siblicide) followed by suicide. Many parricidal perpetrators report a history of physical, sexual, or mental abuse (Heide, 1993; Koenraadt, 1996). Some researchers point to the rare occurrence of suicide following parricide: for the perpetrator, no other choice is left but to kill the other or the self; in other words, the parricide becomes a deliberate outcome of choosing a homicide or a suicide rather than a combination hereof (e.g., Dutton & Yamini, 1995; Meloy, 1992). In other parricides, dangerous antisocial boys might kill their parents for instrumental gain. In such cases, suicide rarely follows (Heide, 1992).

Extrafamilial homicide-suicide. The final category consists of extrafamilial homicide-suicides involving victims outside the family realm. Such cases are very rare. With regard to the motive underlying these cases, several researchers (e.g., Hickey, 1991; Mullen, 2004) have pointed to the idea of "payback time." The perpetrators are reported to have been bullied in childhood and are known as having few friends. They perceive the world as unjust: sometimes their victims are specific people whom they have a grudge against; usually, however, random people who represent the world at large have to "pay for the caused harm." Feelings of rejection, failure, and loss of autonomy create frustration and anger that inevitably overwhelms these perpetrators. Frustration and anger transform into a need to strike back (Dietz, 1986). Many mass killers commit suicide at the crime scene by shooting themselves with the same weapon that killed others, or are shot by the police. The latter, also referred to as "suicide by cop" has been defined as an incident in which a suicidal individual attempts to get law enforcement to kill him (Mohandie & Meloy, 2000). It has been found that overt suicidal intent or a preparedness to die while committing the homicide is invariable in these cases (Andersen et al., 2001; Cantor, Mullen, & Alpers, 2000; Hempel, Meloy, & Richards, 1999; Mullen, 2004).

Homicide-suicide versus homicide. So far, few studies have undertaken the endeavor to compare homicide-suicide to homicide not followed by suicide. West (1965) found that homicide-suicide had "an overwhelming" domestic nature compared to a matched homicide sample, as they were more likely to involve a spouse

and/or child(ren). In his study sample, perpetrators were more likely to be older, female, and without previous convictions for violent offenses. Later, in an analysis of homicides in Chicago, Stack (1997) found that homicide-suicides were more likely to involve a male perpetrator and a female victim compared to homicides not followed by suicide. Also, homicide-suicide perpetrators were generally older than nonsuicidal perpetrators. Stack held that the closer the ties between the perpetrator and the victim in a homicide, the greater the likelihood of suicide. He attributed this greater likelihood to a greater ensuing guilt in the perpetrator. An Australian study comparing homicide to homicide-suicide by Carcach and Grabosky (1998) also reported the latter to primarily involve (estranged) partners; the second most common were homicide-suicides concerning parents killing their children. The authors found that both victim and perpetrator of a homicide-suicide incident were more likely to be Caucasian and to be employed compared to homicides not followed by suicide. In addition, the perpetrator of homicide-suicide was more likely to be older than the victim compared to homicides not followed by suicide. With regard to the modus operandi, the authors reported homicide-suicides to be more likely to occur at home and to involve firearms.

Method

Data

The aim of this study is to give a complete and reliable overview of the incidence and patterns of homicide-suicides in the Netherlands in the period 1992-2006 and to compare these to homicides not followed by suicide.

The year 1992 was used as a cutoff point. Before 1992, no uniform registration systems for homicides in the Netherlands were available; accordingly, the homicide incidence and characteristics of homicide cases were not known. From 1992 onward, all homicides that took place in the Netherlands were registered by the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR)⁵ and included in the Dutch Homicide Monitor 1992-2006 (for a detailed description of this source, see Nieuwbeerta & Leistra, 2007). From this database, all homicides involving a subsequent suicide of the perpetrator were extracted and compared to homicides not involving a suicide. Information on homicide-suicides was enriched by newspaper articles. Data on homicide-suicide events was included in a new database entitled "Homicide-Suicide 1992-2006" (Postulart & Nieuwbeerta 2007).

A relatively limited number of homicide-suicide characteristics are available, such as the time and place of the homicide, the type of weapon used, the location of the body as well as victims' and perpetrators' gender, age, ethnicity, nationality, and the type of the relation between the perpetrator and the victim(s) and whether the homicide case was solved by the police. The database contains 103 homicide-suicide cases. The sub-dataset of homicide-suicides was compared to the main dataset

including homicides not followed by a suicide. Logistic regression analysis was used to determine the probability that a homicide would result in a homicide-suicide and to assess the effect of each variable in the model. Given the relative lack of detail in these data sources, the present study aims to describe the nature and incidence of homicide-suicide, rather than test individual theories relating to the homicide-suicide phenomenon.

Dutch Homicide Monitor

The Dutch Homicide Monitor includes all offenses that have taken place between 1992 and 2006, which have been categorized as either murder (article 289 and 291 Code of Dutch Criminal Law) or manslaughter (article 287, 288, and 290 Code of Dutch Criminal Law), together comprising the category homicide. Basic demographic details such as age, gender, and ethnicity of the perpetrator as well as the relationship between victim and perpetrator can be extracted from these data. In some cases, offense details are included as well. The information in the Dutch Homicide Monitor comes from various sources, which partially overlap and complement each other, and include the following:

All newspaper articles related to homicide generated by the Netherlands National News Agency (ANP). In the period 1992-2006, the ANP has published more than 13,000 newspaper articles related to homicide in the Netherlands. In these articles much information is available on the characteristics of the homicides, the perpetrators, and the victims.

The Elsevier Annual Report. From 1992 onward, the weekly magazine Elsevier publishes an annual report on all homicides that have taken place. This report is based on both ANP articles and police files.

Files from the National Bureau of Investigation (NRI). From 1992 onward, information on homicides in the Netherlands has been collected by the NRI as part of the National Police Force (KLPD). The information available in these files concerns the date and location of the homicide, the homicide method, as well as basic demographic characteristics of both victim and perpetrator.

Files from the Public Prosecution Office. This database files the judicial procedures of a homicide.

Files from the Judicial Information Service and the Ministry of Justice.

Files from the Criminal Justice Knowledge Center (WODC). In addition to files from the KLPD and the Public Prosecution Service, these files contain detailed information stemming from interviews with investigators who were in charge of the homicide event (e.g., Smit et al., 2001).

Newspaper Articles on Homicide-Suicide

For this article additional information on individual homicide-suicide cases was collected from print media to supplement the data with background information that

was not included in the database. Printed media surveillance has been proven useful to estimate the number of intentional injuries, including homicide-suicide (Aderibigbe, 1997; Danson & Soothill, 1996a, 1996b; Malphurs & Cohen, 2002). In the Netherlands, all articles from the six main national newspapers from 1992 onward are indexed in the online computer database LexisNexis. Given the fact that homicide-suicides are not always reported on a national level, a regional newspaper database, the Wegener Archive, was included as well. This archive contains seven regional newspapers. In both the databases, keyword searches were applied. The newspaper articles are used to enrich the data of the homicide-suicide database.

Inclusion Criteria

To compare the findings of this study to other international epidemiological studies, similar inclusion criteria are used as reported elsewhere (Campanelli & Gilson, 2002; Chan, Beh, & Broadhurst, 2003, Marzuk et al., 1992). The criteria for identifying a domestic homicide-suicide include one or more person(s) who has/have committed a homicide (article 287-291 Code of Dutch Criminal Law) followed by a successful suicide (ICD-10 codes X60-X84). The event was included if the suicide took place within 1 week of the preceding homicide.

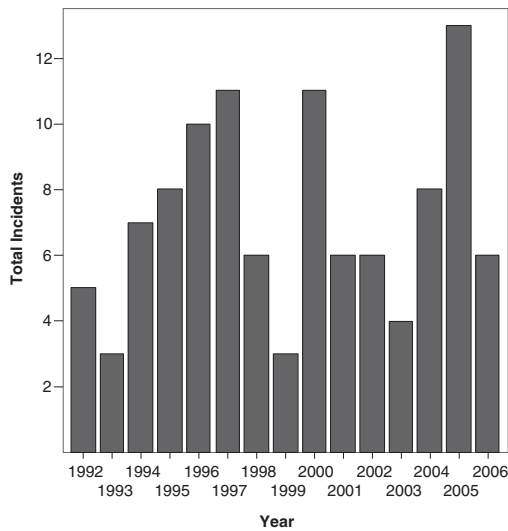
When the perpetrator killed multiple victims, the relationship with the primary victim was coded. For example, cases in which a spouse and a stranger were killed were categorized as uxoricide-suicides rather than as extrafamilial homicide-suicides.

Incidence Rates

In the period 1992-2006, 103 homicide-suicide events took place involving 135 deaths. In this period, homicide-suicide occurred on average seven times per year, equivalent to approximately 4% of all homicides per year and 0.5% of all suicides per year. No seasonal variation could be established. The homicide-suicide incidence was highest in 2000 and 2005 ($N = 11$) and lowest in 1993 and 1999 ($N = 3$; Figure 1). This cannot be ascribed to one specific type of homicide-suicide (Table 2).

In Figure 2 the homicide, suicide, and homicide-suicide rates are displayed for the period 1992-2006. In this period, the suicide rate slightly decreased from 13 suicides per 100,000 in 1992 to 12 suicides per 100,000 in 2006. With the exception of 2006, in which there was a clear reduction in the number of homicides (Nieuwebeerta & Leistra, 2007), in the period 1992-2006, the homicide rate per 100,000 remained fairly constant. The same accounts for the number of domestic homicides, which involved approximately 35% of all recorded homicides per year. In the same period, the homicide-suicide rate was relatively stable, varying from 0.07 to 0.02 per 100,000 per year.

Figure 1
Homicide-Suicide in the Netherlands, 1992-2006



Types of Homicide-Suicide

Table 2 gives an overview of the homicide-suicide incidents in the period 1992-2006 by type. The majority of events were spousal and consortial homicide-suicides ($N = 52$; 50%), followed by homicide-suicides involving children ($N = 19$; 18%). The third most prevalent category constituted extrafamilial homicide-suicides ($N = 13$; 13%). In total, nine cases (9%) were familicide-suicides and three cases involved the killing of other family members followed by suicide (3%). The spousal/consortial homicide-suicides were prevalent in most years of the analysis.

The 103 homicide-suicides involved a total of 135 victims. All cases involved one perpetrator. In 79% there was one victim involved. Cases including multiple victims mainly constituted uxoricides in which a rival or a bystander was killed, filicides in which there were multiple child victims and familicides, which by definition include multiple victims.

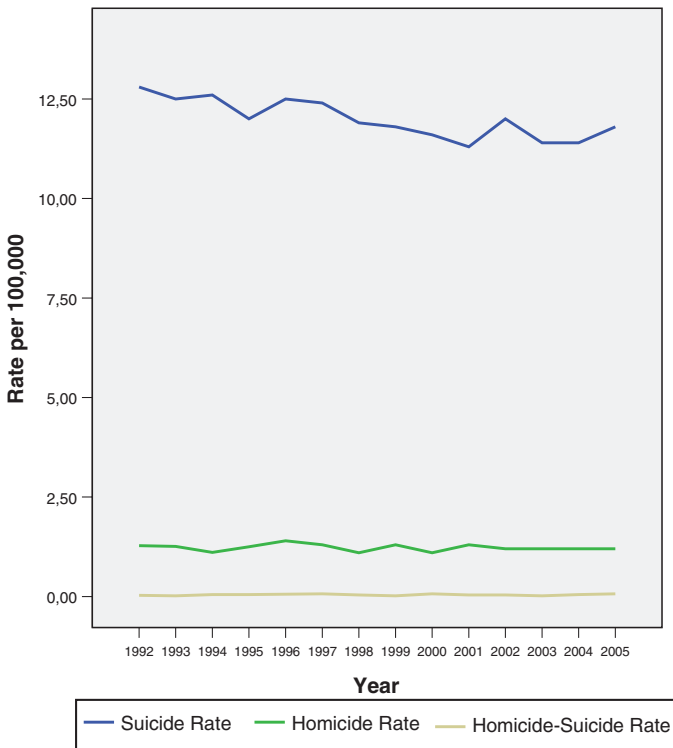
Victims

In total there were 43 male (32%) and 92 female victims of homicide-suicide (68%) in the Netherlands in the period 1992-2006 (Table 3). The differences in

Table 2
Characteristics of Homicide-Suicide Cases in the Netherlands, 1992-2006

Case Year	Uxoricide-Suicide	Filiicide-Suicide	Familicide-Suicide	Other Family	Extrafamilial Homicide-Suicide	Unknown	Total	
							N	Percentage
1992	3	1	0	0	1	0	5	5
1993	0	1	1	1	0	0	3	3
1994	3	0	1	0	1	1	6	6
1995	6	0	0	1	2	0	9	9
1996	2	4	0	0	4	0	10	10
1997	6	1	0	0	2	1	10	10
1998	0	1	3	0	1	1	6	6
1999	1	2	0	0	0	0	3	3
2000	4	2	0	0	2	3	11	11
2001	5	1	0	0	0	0	6	6
2002	6	0	0	0	0	0	6	6
2003	4	0	0	0	0	0	4	4
2004	5	3	0	0	0	0	8	8
2005	4	2	3	1	0	1	11	11
2006	3	1	1	0	0	0	5	5
Number of victims								
1	47	12	0	2	13	7	81	79
2	3	5	3	1	0	0	12	11
3	2	2	4	0	0	0	8	8
4	0	0	2	0	0	0	2	2
	52 (50%)	19 (18%)	9 (9%)	3 (3%)	13 (13%)	7 (7%)	103	

Figure 2
Homicide, Suicide, and Homicide-Suicide in the Netherlands, 1992-2006



gender in different types of homicide-suicide are considerable: more than half of the male victims are children who died in a filicide-suicide or a familicide-suicide. The gender distribution is particularly skewed in uxoricide-suicide, as only 6 victims were male (10%) compared to 52 female victims (90%). In filicide-suicides more boy ($N = 15$; 54%) than girl ($N = 13$; 46%) victims were observed. In familicide-suicides there were a total of 12 male victims (46%) compared to 14 female victims (54%). In the category of extrafamilial homicide-suicides, male victims ($N = 9$; 69%) were overrepresented compared to female victims ($N = 4$; 31%) over all incident types. The age of the victims ranged from a couple of months to 84 years. The mean age of the victims was 30. The age of the victims depended strongly on the type of homicide-suicide: whereas in uxoricide-suicide cases, the mean age of the victim was 43, in filicide-suicide the victim was on average 5 years old.

Table 3
Characteristics of Homicide-Suicide Victims in the Netherlands, 1992-2006

Victims	Uxoricide-Suicide	Filicide-Suicide	Familicide-Suicide	Other Family	Extrafamilial Homicide-Suicide	Unknown	Total	
							N	Percentage
Gender								
Male	6	15	12	0	9	1	43	32
Female	52	13	14	3	4	6	92	68
Age								
<17	2	28	16	0	1	2	49	36
18-25	8	0	0	1	1	2	12	9
26-40	25	0	8	0	6	3	42	31
41-65	18	0	1	1	5	0	25	19
>66	5	0	1	1	0	0	7	5
Ethnicity								
Dutch	31	17	6	0	7	4	65	48
Surinamese	6	1	2	0	1	0	10	7
European	4	0	0	0	1	1	6	4
Turkish	1	0	0	0	1	0	2	1
North African (including Moroccan)	0	0	0	0	2	0	2	1
Other	3	0	0	1	1	0	5	4
Unknown	13	10	18	2	0	2	45	33
Method								
Firearm	25	3	3	1	7	3	48	36
Pointed weapon	18	6	6	0	4	1	36	27
Striking weapon	2	0	0	1	1	0	7	5
Physical maltreatment	2	0	0	0	1	0	3	2
Strangulation	11	12	12	0	0	1	24	18
Other	0	4	4	0	0	0	8	6
Unknown	0	3	3	1	0	2	9	7
	58 (43%)	28 (21%)	26 (19%)	3 (2%)	13 (10%)	7 (5%)	135	

Despite the fact that for many victims their ethnicity⁶ could not be traced, it was found that most victims were either Dutch ($N = 65$; 48%) or Surinamese ($N = 10$; 7%). Compared to the general population, those of an ethnicity other than Dutch were overrepresented.

Most homicide-suicides were committed by firearms ($N = 48$; 36%), followed by pointed weapons such as knives ($N = 36$; 27%) and strangulation ($N = 24$; 18%). In 10 victims the cause of death could not be determined. Most uxoricide-suicide victims were killed by firearms ($N = 25$; 43%), followed by pointed weapons ($N = 18$; 31%) and strangulation ($N = 11$; 19%). Filicide-suicides were mainly committed by less violent means such as strangulation or smothering ($N = 12$; 43%). Other types of homicide-suicide were mainly committed by firearms.

Perpetrators

The majority of the homicide-suicides in the Netherlands were committed by men (Table 4): 93 cases were male-perpetrated (90%) homicide-suicides and 10 cases were perpetrated by females (10%), who committed filicide-suicide ($N = 6$), uxoricide-suicide ($N = 2$), or extrafamilial homicide-suicide ($N = 1$).

The youngest perpetrator was 16 years old, and the oldest was aged 85. The mean age of the perpetrators was 44. The mean age was highest for uxoricide perpetrators (48 years), followed by extrafamilial homicide-suicide perpetrators (45 years), familicide-suicide perpetrators (40 years), filicide-suicide perpetrators (38 years), and finally, those having killed other family members (38 years).

Similar to the victims, in many cases the ethnicity of the perpetrator could not be determined (32%). The majority of the perpetrators were Dutch ($N = 43$; 42%) and Surinamese ($N = 11$; 11%). Again, those of another ethnicity than the Dutch were overrepresented. The majority of the homicide-suicide cases are intraethnic: the victim and perpetrator are both of the same ethnicity (63%).

Suicide was typically committed with a firearm ($N = 35$; 34%), followed by hanging ($N = 8$; 8%), and pointed weapons ($N = 6$; 6%). In 67%, the perpetrator committed suicide by the same method with which he or she committed the homicide.

Homicide-Suicide Versus Homicide

Table 5 shows the results of the comparison between homicide-suicides and homicides not followed by a suicide. Homicide-suicides were more likely than other homicides to occur at home, that is, inside the victims and/or perpetrator's house (80% vs 47%). Conversely, homicide-suicides were less likely to occur in an urban area (32% vs 43%)—these urban areas involved the three major cities in the Netherlands: Amsterdam, Rotterdam, and The Hague. Compared to other types of homicide, homicide-suicides were more likely to involve multiple victims than other homicides (20% vs 5%). In homicide-suicides, victims were more likely to be

Table 4
Characteristics of Homicide-Suicide Perpetrators in the Netherlands, 1992-2006

Perpetrators	Uxoricide-Suicide	Filiicide-Suicide	Familicide-Suicide	Other Family	Extrafamilial Homicide-Suicide	Unknown	Total	
							N	Percentage
Gender								
Male	50	13	9	3	12	6	93	90
Female	2	6	0	0	1	1	10	10
Age								
<17	0	0	0	0	1	0	1	1
18-25	5	0	0	1	0	3	9	9
26-40	17	11	5	1	9	4	47	46
41-65	25	7	4	1	3	0	40	39
>66	3	0	0	0	0	0	3	3
Ethnicity								
Dutch	24	11	3	1	2	2	43	42
Surinamese	7	2	1	0	1	0	11	11
European	0	0	0	0	4	0	4	4
Turkish	2	0	0	0	1	0	3	3
North African (including Moroccan)	2	0	0	0	0	0	2	2
Other	4	1	2	0	0	0	7	7
Unknown	13	5	3	2	5	5	33	32
	52 (50%)	19 (18%)	9 (9%)	3 (3%)	13 (13%)	7 (7%)	103	

Table 5
Characteristics of Homicide-Suicides Versus Other Homicides in the Netherlands, 1992-2006

	Homicide-Suicide (<i>N</i> = 103)	Other Homicides (<i>N</i> = 3203)
Incidents (%)		
Location		
Domestic sphere	80**	47
Urban	32**	43
Multiple victims involved	21**	5
Involving firearm	36	37
Victims		
Female	68**	29
Age (mean)	28.2**	36.4
Child (age < 12 years)	33**	4
Dutch ethnicity	48**	52
Perpetrators		
Male	90	90
Age	40.9**	30.9
Dutch ethnicity	42*	46

Note: When multiple victims were involved in a homicide or homicide-suicide, the characteristics of the first victim were used for statistical analysis.

* $p < .05$. ** $p < .01$.

female (68% vs 29%). In addition, homicide-suicide victims were overall found to be younger (28 years) than victims of other types of homicide (36 years). A child victim (i.e., a victim younger than 12 years) was significantly more often involved in homicide-suicides compared to homicides not followed by suicide (33% vs 4%). In addition, compared to other homicides, victims were more likely to be of Dutch ethnicity (48% vs 52%). Perpetrators of homicide-suicide were significantly older (41 years) than perpetrators of other types of homicide (31 years). Finally, homicide-suicide perpetrators were more likely to be of Dutch ethnicity (42% vs 46%).

Table 6 represents the results of the logistic regression analysis used to determine the probability that a homicide would result in a homicide-suicide and to assess the effect of each variable in the model. As can be seen in Table 6, homicides that take place at home raise the odds of a subsequent suicide 2.3 times. Homicides involving multiple victims increase the odds of suicide 3.3 times. When a firearm is involved, the risk of a subsequent suicide increases 2.9 times. With regard to both perpetrator and victim characteristics, homicides in which the victim is a child under the age of 12 raise the odds 4.4 times. Homicides in which the victim is of Dutch ethnicity increase the risk of suicide 1.7 times. Finally, an older age of the perpetrator and a younger age of the victim raise the odds of suicide 3.4 times.

Table 6
Results From Logistic Regression Model. Odds of a Homicide Being
Followed by Suicide According to Incident, Victim, and Perpetrator
Characteristics in the Netherlands, 1992-2006 (N = 103)

	Logistic Coefficient	SE	Odds Ratio
Incidents			
Location domestic	0.840**	.29	2.316
Multiple victims	1.197**	.29	3.310
Firearm involved	1.073**	.284	2.924
Victim and perpetrator characteristics			
Victim is a child	1.475**	.365	4.371
Victim is female	1.090*	.509	2.974
Victim is Dutch	.522*	.265	1.685
Victim is younger than perpetrator	1.266**	.305	3.408

Note: SE, standard error.

* $p < .05$. ** $p < .01$.

Discussion

By making use of a newly established database Homicide-Suicide 1992-2006, we were able to give, for the first time, a systematic overview of all homicide-suicide cases in the Netherlands. In contradiction to other recent studies (e.g., Campanelli & Gilson, 2002; Harper & Voigt, 2007; Saint-Martin, Bouyssy, & O'Byrne, 2008; Saleva, Putkonen, Kiviruusu, & Lönnqvist, 2007), the current study includes a relatively large number of homicide-suicide cases, which strengthens the reliability of our results. The aims of this study were to provide an overview of the international research literature to describe the incidence and patterns of homicide-suicide in the Netherlands and to differentiate specific types of homicide-suicide. Additionally, this article statistically compared these homicide-suicides to homicides not followed by suicide.

Incidence Rates

In total 103 homicide-suicides occurred in the Netherlands in the period 1992-2006, which equals approximately seven homicide-suicides per year and constitutes 4% of all homicides. This number remained fairly constant over time. The Dutch rate is comparable to rates found in the same period in other European regions such as England, Yorkshire, and Humbershire (Milroy, 1993). However, the Dutch rate seems to be much lower than current rates in other parts of the Western hemisphere (see Table 1). This could be because of the relatively small sample size of studies finding a high proportion of homicides ending in the suicide of the perpetrator. Another

explanation could be sought in relative lenient gun legislation and more readily available firearms in regions where the proportion of homicide-suicides is high.

The current findings seem to contradict Coid's (1983) epidemiological laws. Although the homicide rate in the Netherlands is considerably lower than in other countries such as the United States, the homicide-suicide rate is, overall, also lower than in the United States and not, as Coid (1983) argued, higher. The present findings are rather supported by Felthous's and Hempel's (1995) assertion: homicide-suicides more closely resemble domestic homicide statistics instead of national homicide figures. Whereas there was a sharp decline in the number of Dutch homicides in 2006, the number of domestic homicides occurring per year has remained fairly constant. According to this assumption, homicide-suicide rates are subject to similar influences and are of comparable stability as the rate of domestic homicide. Also, based on their stability over time, on an epidemiological level, homicide-suicide could be considered as more closely resembling homicide than suicide.

Homicide-Suicide Characteristics

Our findings on the main characteristics of homicide-suicides are overall in line with those reported in international studies. Almost all homicide-suicides in the Netherlands took place between (estranged) partners, lovers, and children, thereby underlining the domestic nature of such events—a finding consistent with other recent studies (Brown & Barraclough, 2002; Campanelli & Gilson, 2002; Malphurs & Cohen, 2002). The majority of the homicide-suicides in the Netherlands were committed by men in their 30s or 40s; the mean age of these homicide-suicide perpetrators is much higher than for homicide in general, the majority of those convicted being less than 30 years of age. Although in a large number of cases the ethnicity of the perpetrator and the victim could not be established, it was found that those of an ethnic minority were overrepresented. This was particularly applicable to Surinamese perpetrators. Previous studies by Garssen, Hoogenboezem, and Kerkhof (2006, 2007) demonstrated that suicide rates among Surinamese immigrants in the Netherlands are high compared to the rates of the native Dutch population. These rates are particularly elevated among Hindustani and young Creole men. The authors suggested that these increased suicide rates may reflect high levels of mental illness; identity problems; disappointments related to the progress of migration, high expectations with respect to education, work, and income; and the responsibilities for family. In particular, among the Hindustani, explanations for increased suicidal behavior can be found in factors such as rigid family traditions, limited independence combined with strict social control, and arranged marriages, the last increasing the likelihood for marital strife. Explanations for suicidal behavior among this group could also be applicable to homicide-suicide events. Further, qualitative research should assess this premise.

Types of Homicide-Suicide

When we examined the types of homicide-suicide, our findings showed to be consistent with findings from other international studies. Uxoricide-suicides were mainly committed by males who killed both the victim and himself with a firearm (e.g., Belfrage & Rying, 2004; Bourget et al., 2000; Eastal, 1993; Dawson, 2005; Harper & Voigt, 2007). Swatt and He (2006) suggested that the lack of suicidal behavior among women who killed their intimate partner can be explained by the liberation they feel after having been freed from their tormentor, rather than a feeling of guilt and a wish to be reunited with the victim.

The majority of filicide-suicide cases were committed by men, a finding consistent with other studies (Byard et al., 1999; Cooper & Eaves, 1996). This can partially be ascribed to the fact that men are more likely to commit suicide than women (Shackelford et al., 2005)—relatively more lethal suicide methods generally employed by men could explain the lower likelihood of survival after a suicide attempt. The majority of the child victims, however, were killed by smothering/strangulation. This can be explained by the presence of female perpetrators in this sample, who tend to use relatively nonviolent *modi operandi* (Byard et al., 1999; Milroy, 1993). In addition, it was found that a great proportion of the filicide-suicides involved multiple children—a finding that has previously been ascribed to more severe forms of psychopathology in the perpetrator (Shackelford et al., 2005).

Corresponding to other studies, familicide-suicides were exclusively committed by men (Adelson, 1961; Byard et al., 1999; Harder, 1967; Liem & Koenraadt, 2008; Marleau et al., 1999; Somander & Rammer, 1991). From a psycho-evolutionary point of view such as postulated by Daly and Wilson (1988), women do not regard their children and their intimate partners as property that can either be controlled or taken along in death in the way men do.

The killing of other family members followed by suicide was found to be very rare: on one hand, this can be attributed to the already low incidence of the killing of other family members in the Netherlands. On the other hand, the low incidence of a suicidal outcome in this type of homicide can be a reflection of the motives underlying parricides and siblicides: the first reported to be motivated by instrumental gain or a desire to be freed from abuse or a restricted relationship, whereas the latter typically being induced by sibling rivalry. It can be argued that these motives are primarily centered on doing away with the victim, rather than a wish to be reunited with the victim or to prolong the relationship with the victim in death.

Finally, killing sprees such as school shootings and other types of mass killings were not encountered in this study: all extrafamilial homicide-suicides involved one victim besides the perpetrator.

Homicide-Suicide Versus Homicide

In comparing homicide-suicides to homicides not followed by suicide, the data reveal similar patterns as those reported in other parts of the Western world such as the United States (Stack, 1997) and Australia (Carcach & Grabosky, 1998). Similar to previous studies, it was found that the odds of suicide are considerably increased when the relational distance between victim and perpetrator is smaller. Stack (1997) has attributed this finding to a greater ensuing guilt and self-blame in the perpetrator. In this light, the suicide following the homicide is perceived as reactive rather than premeditated. However, literature on various forms of homicide-suicide shows that these acts are often carefully planned (e.g., Berman, 1979; Dawson, 2005). We propose that, although a subgroup of reactive suicides following a homicide may exist, many of these acts are driven by the perpetrator's feelings of dependency on the victim. When the dependent relationship between victim and perpetrator is threatened to end, for example, by divorce or custody issues relating to the children, the perpetrator wishes this relationship to continue. In killing the victim(s) and subsequently committing suicide, he retains the relationship that could not be maintained in life.

Future Research

Although all homicide-suicide cases that occurred in the Netherlands in the period 1992-2006 have been included in this study, detailed information was often not available. Much information was therefore retrieved from print media, yet the selection bias in reporting restricted us from obtaining all necessary information. Future research should attempt to overcome this difficulty by applying the so-called psychological autopsy method as first described by Shneidmann (1981). The psychological autopsy method has been useful in the study of suicide (e.g., Cavanagh et al., 2003; Conwell et al., 1996; Isometsä, 2001) and could well be applied to those having died in a homicide-suicide to get a more extensive view of the psychopathological, motivational, and circumstantial characteristics of these acts.

Notes

1. We restricted ourselves to studies involving data from roughly the same time period (1992-2006).
2. In Anglo-Saxon as well as in French literature, a special vocabulary is devoted to refer to the killing by parents of their own children, generally under the notion of infanticide or filicide. Strictly speaking, the term infanticide refers to a child victim between 1 day and 1 year old. Filicide, also used to denote the entire category of killing one's child, officially includes both children aged 1-12, and a late type of filicide, which includes children older than 13. Those not surviving the first 24 hr of their lives are referred to as victims of neonaticide (Resnick, 1970). The latter type has appeared to be clearly distinct from the other two in terms of psychological processes underlying the killing as well as sociodemographic characteristics. For the sake of clarity, filicide will be referred to as an overlapping term to include both filicide and infanticide.

3. Näcke (1908) was the first one to term this phenomenon as an "Erweiterter Selbsttötung," or as an "extended suicide," thereby indicating the perpetrator's perception as regarding the victim as an extended part of the self: the other is, as it were, integrated with the self (Harder, 1967).

4. Palermo (1994) understands extended suicide to involve a perpetrator killing himself after taking the life of his partner, who he considers to be "his extended self," in that way preventing her to have a relationship with anyone else but him and thereby upholding his "human dignity." This dynamic is believed to diverge from its original, filicidal context and hence to blur its actual connotation to such an extent that this interpretation will be kept into account, but not applied.

5. The Netherlands Institute for the Study of Crime and Law Enforcement (NSCR) is one of the research institutes of the Netherlands Organization for Scientific Research (NWO). The NSCR aims at studying—in a fundamental, interdisciplinary manner—the interaction between crime and law enforcement.

6. Someone was defined as having an ethnicity other than Dutch when either one or both parents originated from another country. The major immigrant groups in the Netherlands constitute other Europeans, Turkish, Moroccans, Surinamese and Antillean immigrants.

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