Mental Illness in Homicide-Suicide: A Review

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Homicide followed by suicide (H-S) is a lethal event in which an individual kills another individual and subsequently dies by suicide. This article presents a review of research carried out in Asia, Australia, Canada, Europe, and the United States of America over the past 60 years on the prevalence of mental illness among the perpetrators of H-S. Analysis of the available data indicated a great disparity in the results of the different studies. Overall, depression was the most frequent disorder reported (about 39% of the cases in the 20 studies that assessed depressive disorders), followed by substance abuse (about 20% in 10 studies) and psychosis (about 17% in 11 studies). This review, therefore, indicated that mental illness plays an important role in H-S. The prevention of these events depends on the identification and treatment of psychiatric disorder in potential perpetrators.


Homicide followed by suicide (H-S) refers to an incident in which an individual kills another person and subsequently takes his or her own life. Although H-S events are rare when compared with other violent deaths, this form of lethal violence produces stronger emotional feelings in the public when compared with a homicide or a suicide taken alone. The emotional reaction is even stronger in cases of mass murder or when children are involved.

Studies on H-S are scarce, and most were performed in the United States. The most extensive studies have focused on Australia, England and Wales, Fiji, Hong Kong, Italy, the Netherlands, and the United States. There have also been studies of smaller regions: London and other regions of the United Kingdom; Paris; regions of Finland; Durban, South Africa; and, in the United States, Chicago, North Carolina, and Oklahoma.

Most of these studies are descriptive, and many focus on regions of a country or on cities. The samples often cover a limited period. A few studies include the whole nation, but not all have enough information to provide statistically reliable data. Evidence suggests that the percentage of H-S cases relative to the total number of homicides varies greatly across nations, ranging from 3 to 60 percent. Such a wide range of variation raises important questions regarding cultural and structural factors underlying homicide-suicide patterns (e.g., Refs. 3, 8, 15) and indicates the importance of carrying out typological studies of H-S in different countries and cultures.

Briefly, the conclusions of these studies indicate that H-S usually occurs between family members (or among people who know each other well). The murderers are usually males, and the victims are usually females. The victims are usually younger than the murderers. When compared with other forms of homicide, the percentages of adult female and child victims are higher. It has also been argued that homicide-suicides are different from both homicides and suicides, occupying a distinct epidemiological

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domain, which nonetheless has similarities with both homicide and suicide.¹

Some research has focused on the psychological variables that may motivate the murderer, and several models of H-S pathways have been proposed. Proposed classifications of H-S have been based on the relationship between the murderer and the victim(s), the apparent motivation for the crime,²⁻⁴ psychiatric variables,⁵ and investigative profiles developed by the FBI.⁶ It is typically believed that a considerable proportion of persons who kill themselves after killing another person are psychiatrically disturbed,¹⁵⁻²⁷ even if cultural factors influence the definition of mental illness and explain possible variations in the findings.

Male perpetrators of H-S are typically depressed, but not psychotic,²⁷ although they may experience delusional jealousy.¹ Estimated rates of mental illness, primarily depression, range from 20 percent²⁸⁻²⁹ to 75 percent.¹⁵⁻²⁷ Coid,³⁰ while finding considerable consistency in H-S rates across countries, noted that there was nonetheless twice the variation as that seen in the rates of psychiatric disorder in ordinary homicides, and he speculated that this could be because H-S is a hybrid of mentally normal and abnormal homicides. A major problem is that data about mental illness in H-S are usually retrieved unsystematically because of problems in obtaining anamnestic information.

The purpose of the present study was to collect data about the prevalence of mental illness in perpetrators of H-S from published studies. The goal was to give an initial description of the prevalence of mental illness in H-S. The results have implications for the health care and criminal justice systems and suggest possible strategies for prevention. A critique of the studies in the field, gaps in knowledge, and recommendations for policy and future research are presented in the Discussion section.

Materials and Methods

In August 2011, we performed a PubMed, MedLine, and Psych-info search (only English language) using the terms homicide-suicide, murder-suicide, and homicide followed by suicide in the title; filicide-suicide in the title or in the abstract and mental illness in the text; and mass murdered or mass murderer in the title and suicide in the text. The combined search strategies produced, in order, 137, 13, and 5 publications, respectively. Among these, 126, 12, and 5, respectively, were original works published in periodicals. The analysis of these articles indicated that 76, 12, and 4 articles, respectively, were relevant to our review because they had data on mental illness. Studies that were not clear about the percentages of perpetrators who were psychiatric patients or the diagnostic criteria were eliminated. We decided to include studies that used newspaper surveillance as a research methodology, because our purpose was to provide an initial analysis of mental illness in H-S using all possible sources. The final sample included 30 studies.

Results

Table 1 summarizes, in chronological order, all of the studies that referred to mental illness in samples of H-S. The first studies appeared in Europe. Virkunen⁳¹ found a prevalence of 15 percent for mental illness in 126 perpetrators of H-S occurring in Finland during a 16-year period (1955–1970). In the same population, Saleva et al.² examined 10 cases of H-S during one year (April 1987 to March 1988) and found that 40 percent of the offenders had major depression and another 30 percent had a suspected mental disorder. In addition, 20 percent of the perpetrators had alcohol abuse/dependence without having a psychotic disorder. In Iceland, Gudjonsson and Petursson³² examined four cases that took place between 1900 and 1979 and found psychosis in 75 percent of perpetrators.

In England, two important studies were performed in Yorkshire and the Humber region. In the first, Milroy¹⁴ found that 21 percent of the 52 perpetrators over an 18-year period (1975–1992) had mental illness, while Gregory and Milroy⁴⁵ reported a rate of 7 percent in 30 perpetrators from subsequent years (1993–2007). In France, Lecomte and Fornes¹⁵ analyzed cases in Paris between 1991 and 1996 and found that 84 percent of the 56 perpetrators had mental illness. Finally, Shiferaw et al.⁴⁴ reported that 47 percent of the 23 perpetrators in Geneva between 1956 and 2005 had mental illness. Dogan et al.⁴⁸ found that, in 10 cases from Konya, Turkey, between 2000 and 2007, 40 percent of the perpetrators had a psychiatric disorder.

In the United States, the first study with data about mental illness in H-S was performed by Allen.²⁸ She studied the phenomenon in the city of Los Angeles for 10 years (1970–1979) and found that 18
<table>
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<th>Authors</th>
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<th>Nation/City</th>
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<th>Kind of Mental Illness (MI)</th>
<th>% of MI in Treatment Before the H-S</th>
<th>% MI</th>
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<tr>
<td>Virkunnen\textsuperscript{31}</td>
<td>1955–1970</td>
<td>Finland</td>
<td>126</td>
<td></td>
<td>Central Statistical Office, hospital records</td>
<td>Schizophrenia, paranoid psychosis, psychotic depression</td>
<td>10</td>
<td>2</td>
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<td>Gudjonsson and Petursson\textsuperscript{32}</td>
<td>1900–1979</td>
<td>Iceland</td>
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<td>Police records, interviews with police, medical reports</td>
<td>Psychotic illness</td>
<td>75</td>
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<td>Allen\textsuperscript{26} and Rosenbaum\textsuperscript{27}</td>
<td>1970–1979</td>
<td>Los Angeles</td>
<td>104</td>
<td>Couples only (70.6% of the total of 17 H-S cases)</td>
<td>Police files</td>
<td>Depression</td>
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<td></td>
<td>1978–1987</td>
<td>Albuquerque, New Mexico</td>
<td>12</td>
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<td>Police files, interviews with family and friends, hospital records</td>
<td>Depressive disorders (major depression, bipolar, dysthymia)</td>
<td>75</td>
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<td>Milroy\textsuperscript{34}</td>
<td>1975–1992</td>
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<td>Coroners’ records</td>
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<td>21</td>
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<td>Buteau et al.\textsuperscript{33}</td>
<td>1988–1990</td>
<td>Quebec</td>
<td>39</td>
<td></td>
<td>Coronial services</td>
<td>Any mental disorder (substance abuse included), depression</td>
<td>67</td>
<td>31</td>
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<tr>
<td>Milroy et al.\textsuperscript{29}</td>
<td>1985–1989</td>
<td>Victoria, Australia</td>
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<td></td>
<td>Coronial services</td>
<td>Depression, erotomania, morbid jealousy (Othello syndrome)</td>
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<td>Cohen et al.\textsuperscript{22}</td>
<td>1988–1994</td>
<td>Florida (west central and southeastern)</td>
<td>48</td>
<td>Twenty-seven cases of spousal H-S in old couples in west central Florida and 21 in Southeastern Florida</td>
<td>Complete medical examiner files and newspaper reports</td>
<td>Depression, other mental illnesses, alcohol/drug abuse</td>
<td>6</td>
<td>6</td>
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<tr>
<td>Mston et al.\textsuperscript{20}</td>
<td>1988–1992</td>
<td>North Carolina</td>
<td>99</td>
<td>Only cases involving female victims (&lt;15 years old) and perpetrated by an intimate partner</td>
<td>Database of the Office of the Chief Medical Examiner (OCME)</td>
<td>Evidence of mental illness, substance abuse</td>
<td>15</td>
<td>18</td>
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<td>Lecomte and Fomes\textsuperscript{15}</td>
<td>1991–1996</td>
<td>Paris and suburbs</td>
<td>56</td>
<td></td>
<td>Police and judicial files</td>
<td>Severe depression, evidence of psychosis, chronic alcoholism</td>
<td>75</td>
<td>38</td>
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<tr>
<td>Malphurs and Cohen\textsuperscript{14}</td>
<td>1997–1999</td>
<td>United States</td>
<td>673</td>
<td></td>
<td>Newspaper surveillance</td>
<td>History of psychiatric illness</td>
<td>29</td>
<td>3.8</td>
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<tr>
<td>Bourget and Gagne\textsuperscript{15}</td>
<td>1998</td>
<td>Quebec</td>
<td>11</td>
<td>Only cases of maternal filicide-suicide</td>
<td>Coroners’ files</td>
<td>Depression, psychosis</td>
<td>82</td>
<td>9</td>
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<tr>
<td>Campagnoli and Gilson\textsuperscript{16}</td>
<td>1995–2000</td>
<td>New Hampshire</td>
<td>16</td>
<td></td>
<td>Office of Chief Medical Examiner</td>
<td>Depression, chronic alcoholism, schizophrenia</td>
<td>38</td>
<td>25</td>
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<tr>
<td>Chan et al.\textsuperscript{27}</td>
<td>1989–1998</td>
<td>Hong Kong</td>
<td>56</td>
<td></td>
<td>Coroners’ Court</td>
<td>Depression, schizophrenia</td>
<td>19.6</td>
<td>7.1</td>
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<tr>
<td>Hutches Friedman et al.\textsuperscript{17}</td>
<td>1958–2002</td>
<td>Cleveland</td>
<td>30</td>
<td>Only filicide-suicides</td>
<td>Coroners’ files</td>
<td>Depression, psychosis, alcohol/drug abuse</td>
<td>57</td>
<td>27</td>
</tr>
<tr>
<td>Malphurs and Cohen\textsuperscript{9}</td>
<td>1998–1999</td>
<td>Florida</td>
<td>20</td>
<td>Only spousal/consortial H-S involving perpetrators aged 55 years old and older</td>
<td>Medical examiner files and law enforcement investigative reports</td>
<td>Depressed mood, suicidal ideation, suicide threat</td>
<td>65</td>
<td>20</td>
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<tr>
<td>Koziol-McLain et al.\textsuperscript{16}</td>
<td>1994–2000</td>
<td>United States (11 cities)</td>
<td>67</td>
<td>Only selected femicide-suicide cases</td>
<td>Police and medical examiner records</td>
<td>Alcohol problem, substance abuse, suicide threats</td>
<td>52</td>
<td>50</td>
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<tr>
<td>Bossarte et al.\textsuperscript{14}</td>
<td>2003–2004</td>
<td>Several of the United States</td>
<td>209</td>
<td></td>
<td>National Violent Death Reporting System (NVDRS)</td>
<td>Current mental illness, history of mental illness, current depression, alcohol/drug abuse, previous suicide attempts</td>
<td>11</td>
<td>2.6</td>
</tr>
<tr>
<td>Authors</td>
<td>Period</td>
<td>Nation/City</td>
<td>n</td>
<td>Notes</td>
<td>Data Sources</td>
<td>Kind of Mental Illness (MI)</td>
<td>% of MI in Treatment Before the H-S</td>
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<td>Moskowitz et al.</td>
<td>1991–2000</td>
<td>New Zealand</td>
<td>33</td>
<td></td>
<td>Police files and coroners' reports</td>
<td>Mood disorder, schizophrenia or nonaffective psychosis, anorexia nervosa</td>
<td>27.3 12.1 24.2</td>
<td></td>
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<tr>
<td>Saleva et al.</td>
<td>April 1987-March 1988</td>
<td>Finland</td>
<td>10</td>
<td></td>
<td>Interviews with family, official policy, medical records</td>
<td>Major depression, possible depressive disorder, alcohol/drug abuse</td>
<td>40 30 20 20</td>
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<td>Gupta and Gambhir Singh</td>
<td>2000–2004</td>
<td>Jamnagar region of Gujarat, India</td>
<td>8</td>
<td></td>
<td>Police request, interviews with family, hospital indoor case papers</td>
<td>Mental illness</td>
<td>12.5</td>
<td></td>
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<tr>
<td>Barber et al.</td>
<td>2001–2002</td>
<td>United States</td>
<td>74</td>
<td></td>
<td>Coroner or medical examiner reports, police records</td>
<td>Use of antidepressants</td>
<td>15</td>
<td></td>
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<tr>
<td>Logan et al.</td>
<td>2003–2005</td>
<td>17 U.S. states</td>
<td>408</td>
<td></td>
<td>National Violent Death Reporting System (NVDRS)</td>
<td>Current depressed mood, current mental health problem, alcohol dependence, other substance abuse problem, history of suicide attempts, suspected intoxication, mental distress resulting in mercy killing</td>
<td>12.5 13.7 6.1 5.6 3.4 22.3 4.9 4.9</td>
<td></td>
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<tr>
<td>Yip et al.</td>
<td>1989–2005</td>
<td>Hong Kong</td>
<td>99</td>
<td></td>
<td>Death reports, investigation reports, autopsy reports, psychological reports</td>
<td>Any mental disorder</td>
<td>17.4</td>
<td></td>
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<td>Gregory</td>
<td>1993–2007</td>
<td>Yorkshire and the Humber, UK</td>
<td>30</td>
<td></td>
<td>Coroners' records</td>
<td>Mental health issues</td>
<td>7</td>
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<tr>
<td>Haines et al.</td>
<td>20 years</td>
<td>Tasmania</td>
<td>22</td>
<td></td>
<td>Coroners' records</td>
<td>Depression, psychotic symptoms, alcohol abuse, psychiatric disturbance, psychiatric hospitalization</td>
<td>9 9 14 25 32 25 47 6 6 6</td>
<td></td>
</tr>
<tr>
<td>Bourget et al.</td>
<td>1992–2007</td>
<td>Quebec</td>
<td>15</td>
<td>Only H-Ss perpetrated by individuals aged 65 or older</td>
<td>Coroners' files</td>
<td>Major depression, other psychiatric disorder, other psychosis</td>
<td>47 6 6 6 6 6 6 6 6 6</td>
<td></td>
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<tr>
<td>Dogan et al.</td>
<td>2000–2007</td>
<td>Konya, Turkey</td>
<td>10</td>
<td></td>
<td>The Konya Branch of the Forensic Medicine Council</td>
<td>Major depression, anti-social personality disorder, reactive depression in a pedophile</td>
<td>20 10 10 10 10 10 10 10 10 10 10 10 10</td>
<td></td>
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</tbody>
</table>

*We have included this study considering the use of antidepressants as a measure of mental illness, despite the diagnostic category.
percent of the 104 perpetrators had a depressive syndrome. Rosenbaum, in a study performed in the city of Albuquerque, New Mexico, reported that depression was present in 75 percent of the perpetrators of spousal H-S in the period 1978 to 1987. In 48 spousal H-Ss by elderly perpetrators in Florida from 1988 to 1994, Cohen et al. found that 41 percent of the perpetrators had a mental disorder, most often depression. In the same region for the period 1998 to 1999, Malphurs and Cohen found that 65 percent of 20 perpetrators had a depressed mood before the crime.

Studies of the United States as a whole often obtained divergent results. For example, Malphurs and Cohen found a low prevalence of psychiatric illness (3.8%) in 673 cases collected through newspaper reports for the period 1997 to 1999. Koziol-McLane et al. found that 50 percent of 67 cases of filicide-suicide (men killing women and then taking their own lives) during the period 1994 to 2000 had a psychiatric disorder. Bossarte et al. found a prevalence of 11 percent for current mental illness and 7.2 percent for a history of mental illness in 209 cases of H-S, of which 31 percent were receiving psychopharmacological treatment. Logan et al. found that 15 percent of 74 perpetrators of H-S in the period 2001 through 2002 had been using antidepressants. Logan et al. found a prevalence of 13.7 percent for mental illness in 408 perpetrators for the period 2003 through 2005.

In a study in New Hampshire, Campanelli and Gilson found 16 cases of H-S over six years (1995–2000) with a prevalence of mental illness of 69 percent. In Cleveland from 1958 through 2002, Hatters Friedman et al. found that 84 percent of 30 perpetrators of filicide-homicide had a history of mental illness. In North Carolina from 1988 through 1992, Morton et al. found the presence of a history of mental illness in 15 percent of the perpetrators, some of whom were also substance abusers.

In Quebec, Canada, from 1988 through 1990, Buteau et al. reported the presence of mental disorders in 67 percent of 39 cases of H-S, of which 31 percent were receiving psychopharmacological treatment. Bourget and Gagné reported a prevalence of 91 percent for mental disorders in 11 cases of maternal filicide-suicide in Quebec from 1991 through 1998. Léveillé et al. studied 38 cases of filicide-suicide in Quebec from 1986 through 1994 and found that 37 percent of the perpetrators had psychiatric disorders, primarily depression and substance abuse. Bourget et al. focused on 15 cases in older offenders in the period from 1992 through 2007 and found that 100 percent were mentally disturbed, with a high prevalence of depression.

In Australia, Milroy et al. found that 18 percent of 39 cases in the state of Victoria for the period 1985 through 1989 had psychiatric illness. Haines et al. found that 64% of 22 cases of H-S in Tasmania over a 20-year period had a psychiatric disorder. In New Zealand, Moskowitz et al. reported that 42 percent of 33 perpetrators of H-S between 1991 and 2000 had mental illness.

Chan et al. studied 56 cases of H-S in Hong Kong from 1989 through 1998 and found that 27 percent had mental illness, whereas Yip et al. found a prevalence of 17 percent in 99 cases in the same city between 1989 and 2005. In the Jamnagar region of Gujarat (India) between 2000 and 2004, Gupta and Gambhir Singh found that 12.5 percent of eight perpetrators were mentally ill.

Discussion

The 30 studies reviewed herein include 2,431 cases of H-S. Data collected are difficult to interpret for three reasons. The first concerns the definition of H-S. Whereas most murderers who kill themselves do so immediately after the homicide, there are some who commit suicide some time after the homicide. The definition of the time range between the homicide and the suicide is not uniform over the different studies. For example, Felthous and Hempel considered a few days as the criterion; Marzuk et al., one week; and Allen, three months. However, the time range was not specified in most of the studies. It is obvious that the accurate definition of a time range could help researchers understand better the characteristics of the crimes and the psychopathology of the perpetrators. Also socioeconomic information about perpetrators and victims is missing in many of the articles.

The second reason is the definition of mental illness and its assessment. In the studies reviewed, there was a widespread range in the percentage of mental illness (4%–100%) and a great variability in the types of H-S considered. The lowest percentage of mental illness came from the study by Malphurs and Cohen in the United States which, although having the largest sample size, was based on press reports, which rarely investigate psychiatric factors. In five studies, there were no distinctions between different
In other studies, the degree of overlap between disorders was unclear, and the studies differed in their definition of mental illness. However, depression was the most frequent psychiatric disorder reported (in about 39% of the offenders in the 20 studies that assessed depressive disorders), followed by substance abuse (about 20% of the offenders in 10 studies) and psychosis (about 17% of the offenders in 11 studies).

In the three studies of elderly subjects, mental illness was found in a greater percentage of the offenders (68%), with a high prevalence of depression (in 60% of the offenders). Excluding the newspaper study by Malphurs and Cohen, the data from the others studies indicate that almost one-third of H-S perpetrators had mental disorders.

In the present review, we included studies in which newspaper surveillance was used, but this way of obtaining data, even if it permits the examination of a large number of cases, is inaccurate. Only studies that employed valid psychological and psychiatric evaluations are useful for understanding the prevalence of mental illness in H-S. Consequently, future research into the prevalence of psychiatric disorder in perpetrators of H-S should involve methodologically sound psychological autopsies with clearly defined criteria for the presence of psychiatric disorder.

The third reason is that the great variability among studies about the different types of H-S prevents a clear conclusion about the phenomenon of H-S. Some studies considered only filicide-suicides, others only cases involving intimate partners, and still others only homicide-suicides committed by old people (with a variable of old). This indicates the need for systematic studies that assess in which subtypes of homicide-suicide mental illness is more common.

Despite all these problems, it is clear that data about prevalence of mental illness in H-S suggest that there is a need to increase awareness of and training in suicide risk assessment in all health service personnel, especially those dealing with vulnerable and high-risk groups in primary care. This training should focus particularly on how, where, and when to alert specialist psychiatric services. Psychiatric assessment could have an important role in the prevention of these crimes. For example, considering that most of H-Ss are carried out with firearms, prevention should involve protocols to include psychiatric factors in decisions to permit possession of firearms.

The application of this protocol should be provided through a change in the regulations on the possession and purchase of weapons, even in countries in which the rules are currently liberal.

To better understand this phenomenon and to improve prevention, it is important to have socioeconomic data, psychiatric evaluations, information about cultural and religious factors, information about the possession of firearms, and data on previous episodes of violence in the perpetrators. It is imperative that a nationwide system be established in countries for collecting and collating data on murder-suicide, along with a special register of such cases.

References


Mental Illness in Homicide-Suicide

The Journal of the American Academy of Psychiatry and the Law