

# **Risk Factors for Femicide-Suicide in Abusive Relationships: Results From a Multisite Case Control Study**

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The killing of women by men who then take their own lives (femicide-suicide) is the most common form of homicide-suicide. This study identified femicide-suicide risk factors in an 11-city case-control study of femicide in the United States. Perpetrator, victim, relationship, and incident characteristics were analyzed for femicide-suicide cases ( $n = 67$ ) and controls ( $n = 356$ , women living in the community with nonfatal physical abuse) using logistic regression modeling. Two risk factors emerged that were unique to femicide-suicides cases compared to overall femicide risk analyses: prior perpetrator suicide threats and victims having ever been married to the perpetrator.

**Keywords:** murder-suicide; homicide-suicide; partner violence; domestic violence

It is estimated that 1,000 to 1,500 homicide-suicide deaths occur annually in the United States (Brock, 2002; Marzuk, Tardiff, & Hirsch, 1992). Our understanding of the epidemiology of homicide followed by suicide, however, is hampered by the lack of a national surveillance system (Hannah, Turf, & Fierro, 1998; Malphurs & Cohen, 2002; Paulozzi, Mercy, Frazier, & Annett, 2004). Databases relied on for homicide and suicide rates, such as the Supplemental Homicide Report and National Vital Statistics System, are unable to link homicide to suicide events. The CDC National Violent Death Reporting System (NVDRS) is purported to correct this surveillance inadequacy (Paulozzi et al., 2004), but the first report from the NVDRS did not include homicide-suicide data (National Center for Injury Prevention and Control CDC, 2005). Until linked data is available, researchers have had to rely on police and medical examiner record review and follow-up interviews (a reasonable task only for small studies) or search newspaper clippings for case identification (Brock, 2002; Cohen, Llorente, & Eisdorfer, 1998; Lund & Smorodinsky, 2001; Malphurs & Cohen, 2002). Despite these methodologic limitations, a growing body of international literature confirms that homicide-suicide is patterned. Homicide is more likely to be followed by suicide when there is a close bond between the victim and perpetrator, with intimate partners—followed by children—most commonly killed; and following male perpetrators killing female partners (Aderibigbe, 1997; Allen, 1983; Barraclough & Harris, 2002; Brock, 2002; Buteau, Lesage, & Kiely, 1993; Campanelli & Gilson, 2002; Chan, Beh, & Broadhurst, 2004; Currens et al., 1991; Gillespie, Hearn, & Silverman, 1998; Hannah et al., 1998; Lecomte & Fornes, 1998; Malphurs & Cohen, 2002; Milroy, Dratsas, & Ranson, 1997; Palermo et al., 1997; Polk, 1994; Rosenbaum, 1990; Stack, 1997; Websdale, 1999; Wolfgang, 1958). For example, a review of firearm homicides in Kentucky (1998–2000) found that when an intimate partner was killed (46), 70% involved a male killing his partner followed by killing himself (Walsh & Hemenway, 2005), confirming an earlier Kentucky homicide review (Currens et al., 1991). Across studies, approximately 25% of intimate partner femicides (homicide of women) in the US, Australia, Canada, and Sweden are followed by suicide, compared to less than 5% of nonintimate killings (Belfrage & Rying, 2004; Cooper & Eaves, 1996; Dawson & Gartner, 1998; P. Easteal, 1994; P. W. Easteal, 1993; Johnson & Hotton, 2003; Lund & Smorodinsky, 2001; Morton, Runyan, Moracco, & Butts, 1998; Rosenbaum, 1990).

One theoretical explanation for femicide-suicide is that the perpetrator becomes remorseful after killing his source of nurturance and commits suicide (Stack, 1997; Wolfgang, 1958). This explanation, however, is challenged by the premeditated nature of the majority of femicide-suicides (Cooper & Eaves, 1996; Dawson, 2005; Dawson & Gartner, 1998; Marzuk et al., 1992) and the immediacy between the two acts (Cooper & Eaves, 1996). Several homicide-suicide researchers have developed and used homicide-suicide typologies (Belfrage & Rying, 2004; Campanelli & Gilson, 2002; Dawson, 2005; Felthous & Hempel, 1995; Hannah et al., 1998; Lecomte & Fornes, 1998; Malphurs & Cohen, 2002; Marzuk et al., 1992; Morton et al., 1998), though many of these fail to take into account the gendered nature of homicide-suicides and the history of abuse within relationships. Several authors include mercy killing, when failing health prevents care-giving, as a homicide-suicide trigger among older adults (Allen, 1983; Easteal, 1993; Malphurs & Cohen, 2002; Marzuk et al., 1992). However, Malphurs and Cohen (2005) recently found perpetrator care-giving strain and domestic violence differentiated older adult homicide-suicide from older adult homicide; and Dawson and Gartner (1998), examining homicide-suicides in Ontario, reported that in 12 of 14 cases attributed to mercy killing there was no indication that the victim had been involved in the decision that ended her life. Mental illness, most notably

depression, is another contributory factor cited in the literature. However, the proportion of perpetrators reported to have been depressed varies widely across studies, from between 15% to 86% (Bourget, Gagne, & Moamai, 2000; Buteau et al., 1993; Campanelli & Gilson, 2002; Cohen et al., 1998; Cooper & Eaves, 1996; Lecomte & Fornes, 1998; Malphurs, Eisdorfer, & Cohen, 2001; Morton et al., 1998; Rosenbaum, 1990). The majority of these studies did not standardize data concerning perpetrator depression or suicidality, and psychological reports were rarely available (Rosenbaum, 1990).

A more recent theoretical explanation for femicide-suicide relates to male proprietariness, a pathological possessiveness that deals with power and control (Campanelli & Gilson, 2002; Cooper & Eaves, 1996; Lecomte & Fornes, 1998; Polk, 1994; Rosenbaum, 1990; Wilson & Daly, 1993a). That femicide-suicides typically occur following estrangement and are planned acts support this explanation. Yet this explanation is incomplete, combining proprietariness and perpetrator personality disorder(s) may account for his placing such high stakes on his relationship (and possessiveness) with his partner (Rosenbaum, 1990). Interestingly, the constant across the literature is the perpetrator statement, "If I can't have you nobody can"; this statement, however, is also noted in femicide without suicide. Most authors acknowledge the explanations for femicide-suicide, where no witnesses survive, is difficult to prove and most likely involves, as Easteal (Hillbrand, 2002) says, "a mosaic" of causes.

Despite the various explanations for femicide-suicide, it commonly occurs following an estrangement (Bourget et al., 2000; Buteau et al., 1993; Cooper & Eaves, 1996; R. Dawson & Gartner, 1998; Johnson & Hotton, 2003; Lecomte & Fornes, 1998; Morton et al., 1998; Palermo et al., 1997; Rosenbaum, 1990; Wilson & Daly, 1993b); in relationships where the male perpetrator has physically battered his partner over time (Campanelli & Gilson, 2002; Lecomte & Fornes, 1998; Morton et al., 1998; Rosenbaum, 1990); and in the United States, Australia, Canada and France, if a firearm was used (Aderibigbe, 1997; Allen, 1983; Bourget et al., 2000; Campbell et al., 2003; Cooper & Eaves, 1996b; R. Dawson & Gartner, 1998; Easteal, 1994; Gillespie et al., 1998; Hannah et al., 1998; Lund & Smorodinsky, 2001; Malphurs & Cohen, 2002; Milroy et al., 1997; Morton et al., 1998; Palermo et al., 1997). However, these three characteristics are common among all intimate partner femicides. In reviewing the literature, all previous studies examined femicide-suicide cases alone, or compared femicide-suicide cases to femicide (without suicide) cases. Yet in both femicide and femicide-suicide cases, the outcome is death. Assessments regarding suicide and homicide risk are generally known, yet little is known about the dynamic relationship between suicide and homicide risk (Hillbrand, 2002).

In this study we wanted to learn whether there are unique femicide-suicide risk factors that should be assessed at a point of contact with either partner violence victims or perpetrators in order to intervene and prevent this lethal tragedy. Therefore, we conducted an analysis examining the relative risk of factors for intimate partner femicide-suicide among women in violent relationships with the aim to inform prevention and intervention efforts. The analysis comes from a multisite study of risk factors for intimate partner femicide (Campbell et al., 2003).

## METHOD

Femicide risk was studied in a case control study across 11 U.S. cities: New York, NY; Baltimore, MD; Tampa, FL; Chicago, IL; Kansas City, MO; Kansas City, KS; Wichita, KS;

Houston, TX; Los Angeles, CA; Portland, OR; and Seattle, WA (Campbell et al., 2003). Consecutive femicide cases 1994 through 2000 were identified through police and medical examiner records and subsequently reviewed to determine whether the perpetrator was a current or former intimate partner of the victim. Of 545 identified femicide cases, risk data were available (successful interview of victim proxy) for 310. Controls ( $n = 356$ ) were identified via a phone survey using random digit dialing within the same cities in which cases were identified and were eligible if they were female, 18 to 50 years of age, and had been physically abused by a current or former intimate partner within the past 2 years. Among 4,746 women who met age and relationship criteria, 3,637 (77%) agreed to participate and 356 (9.8%) met physical abuse criteria.

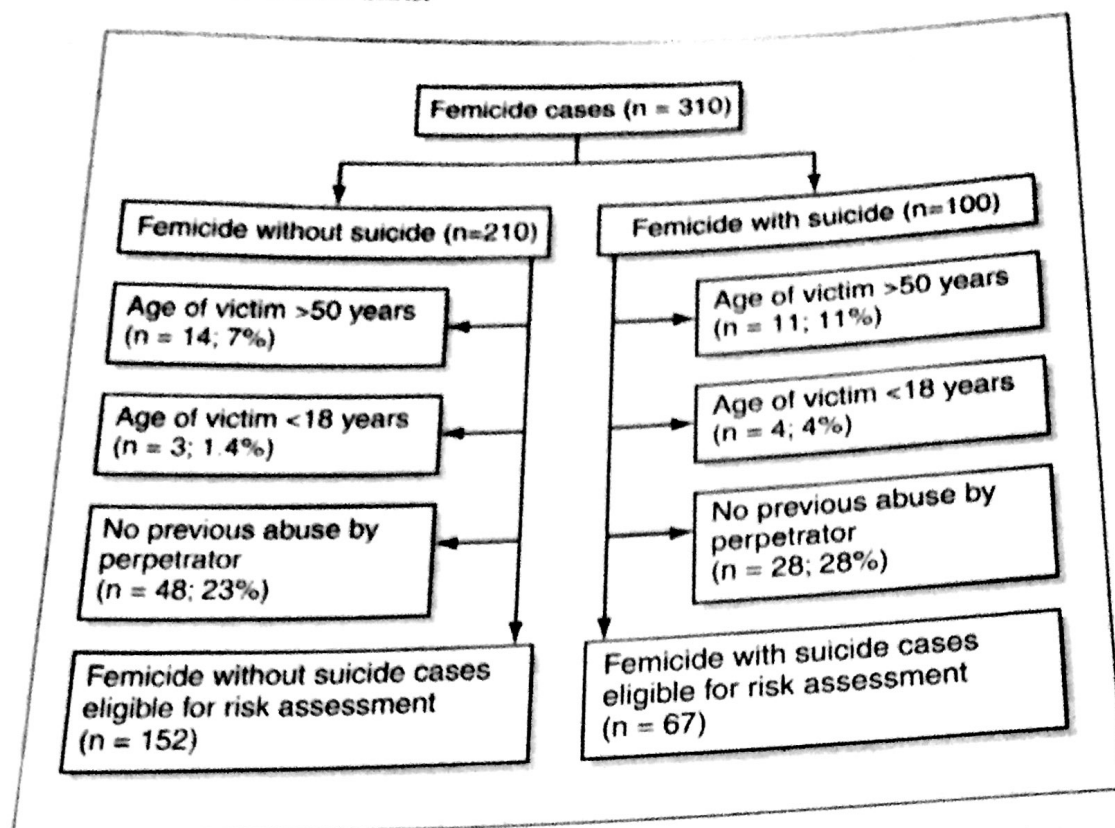
A detailed questionnaire was developed that examined demographics of the victim and perpetrator (intimate or ex-intimate partner), characteristics of the relationship and intimate partner violence, and characteristics of the "worse incident" for controls and the femicide event for the cases. While some questions were developed by the research team, the majority were from established instruments such as the Danger Assessment (Campbell, 1995). The questionnaire was administered in either English or Spanish (following translation and back-translation). For controls, women themselves answered the questionnaire. For women who were killed, proxy informants were interviewed. Proxy informants were most often sisters, mothers, or girlfriends of the killed women. The study protocol received ethical approval by Institutional Review Boards in each of the participating cities; consent was obtained from all participants (controls and proxy informants) following full disclosure of study benefits and risks. Police files and medical examiner reports were also examined for femicide cases. Variables are more thoroughly described in a previous publication (Campbell et al., 2003; National Center for Injury Prevention and Control CDC, 2005). In this analysis we examined the femicide cases that were followed by suicide and compared risk factors among femicide-suicide cases and controls.

### **Femicide-Suicide Cases**

Femicide-suicide cases were selected for analysis from among all femicide cases based on control criteria, that is, 18 to 50 years of age and prior partner abuse. Among the 310 femicide cases, 100 (32%) were followed by suicide (Figure 1). In 72% of femicide-suicide cases there was evidence of a history of physical abuse by the perpetrator in the year prior to the killing, this compares to 77% among femicide without suicide cases and 9.8% among the population-based sample of women who agreed to be interviewed for the control group. Excluding cases outside the age range and without a history of abuse, 67 femicide-suicide cases were selected for case-control analysis of femicide-suicide risk factors.

### **Data Analysis**

First, bivariate analyses were done comparing femicide-suicide characteristics to controls. Characteristics of femicide without suicide are also presented and will be referred to in the discussion to elucidate factors that are unique to femicide-suicide. Then, logistic regression was used to estimate the independent association between the hypothesized risk factors and the risk of femicide-suicide. Sequentially added blocks of explanatory variables ordered along a continuum moving closer to the violent event were entered into the regression models. This conceptualization was helpful in organizing the many variables and allowed



**Figure 1.** Femicide case selection with and without suicide. *Note.* Age of victim and previous partner abuse are not mutually exclusive, therefore numbers do not sum.

us to examine whether some risk factors (e.g., patterns of preincident physical abuse, incident-level weapon use) mediate the effects of more distal risk factors (e.g., gun ownership) in the progression from earlier in the intimate relationship to the femicide-suicide event. Dichotomous threatening and abusive behavior variables that were unknown by victims' proxies were conservatively set to "no" for the regression analysis. Variables not significantly associated with femicide-suicide risk ( $p > .05$ ) were dropped from subsequent models. Annual household income was missing for 28% of the abused women, and therefore not entered into the model.

Logistic regression was used to estimate adjusted odds ratios (aOR). It is important to note that substantial changes in coefficients from one model to the next may indicate mediation, particularly when mediation is theoretically plausible. The small sample size, however, prohibited examination of interactions. The Hosmer and Lemeshow goodness-of-fit test probabilities were nonsignificant across all the models. While there are differences in calculating logistic regression model variance compared to OLS multiple regression, the Nagelkerke pseudo  $R^2$  measure is reported to facilitate examination of explained variance across the models (SPSS, 2001).

## RESULTS

### Sociodemographics

Femicide-suicide partners (the perpetrators), compared to abused control male partners, were slightly older (mean age 35 vs. 31 years), had left school earlier (8% vs. 26% having graduated college) and were more often unemployed not seeking a job (28% vs. 13%; Table 1). Femicide-suicide abused women (the victims), compared to abused control women, had left school earlier (14% vs. 28% college graduate); and, were less likely to have an annual household income below \$10,000 (8% vs. 22%), though income information was often missing. There were no differences in victim's employment or in victim or perpetrator race and ethnicity.

### General Violence

Femicide-suicide partners, compared to abused control partners, were more likely to have made suicide threats (51% vs. 20%); have an alcohol problem (52% vs. 32%) and used illicit drugs (50% vs. 31%; Table 1). Femicide-suicide abused women, compared to abused control women, were more likely to have poor mental health (21% vs. 11%), yet fewer suicide threats (0% vs. 10%). The difference in proportions for access to guns was striking, 81% of femicide-suicide cases reported gun access versus 25% among controls. There were trivial differences in women's alcohol and drug use between the two groups.

### Relationship

Femicide-suicide cases were more likely to involve husbands (52% vs. 29%) and to occur following an estrangement (Table 2). Fifty-two percent (52%) of the femicide-suicide cases involved a couple that was estranged (vs. 36%), although their marital status may still be "married." Consistent with estrangement, more femicide-suicide cases lived together within the past year but not at the time of the worst incident (39% vs. 12%). In addition, the age difference between victims and perpetrators was greater for femicide-suicides than for the controls (3.1 vs. 1.1 years, male partners being older). Having one or more child living in the household who was not fathered by the perpetrator was more common in femicide-suicide households (45% vs. 17%).

### Abuse Dynamics

Both high control (69% vs. 26%) and name calling (75% vs. 48%) were more common among femicide-suicide cases than among controls.

### Threatening Behaviors

All measures of threatening behaviors differentiated femicide-suicide from controls (Table 2). These included threat(s) to kill the woman (78% vs. 16%), threat(s) to kill the family (33% vs. 8%), threat(s) with a weapon (56% vs. 5%), threat(s) to take the children (20% vs. 11%) and stalking behavior (24% vs. 6%).

### Characteristics of Physical Violence

Physical violence was reported to have increased in frequency and severity among femicide-suicide cases more often than among controls (59% vs. 26% for frequency and

**TABLE 1. Sociodemographic and General Violence Characteristics of Abused Women and Their Abusive Partners by Group<sup>a</sup>**

|                               | Abused                                        |                                                           |                                                             | Abusive Partners                              |                                                           |                                                             |
|-------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
|                               | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) |
| <i>Sociodemographics</i>      |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| Age (mean age years $\pm$ SD) | 30.0 $\pm$ 8.5                                | 31.5 $\pm$ 8.2                                            | 31.2 $\pm$ 7.5                                              | 31.1 $\pm$ 9.1                                | 34.6 $\pm$ 8.4                                            | 34.0 $\pm$ 8.9                                              |
| Don't know/refused/missing    | 0                                             | 0                                                         | 0                                                           | 4                                             | 8                                                         | 13                                                          |
|                               |                                               | <i>p</i> = .17                                            | <i>p</i> = .113                                             |                                               | <i>p</i> = .005                                           | <i>p</i> < .01                                              |
| <i>Race/ethnicity</i>         |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| Black/African American        | 78 (22.2)                                     | 22 (32.8)                                                 | 81 (53.3)                                                   | 90 (25.4)                                     | 24 (35.8)                                                 | 82 (54.3)                                                   |
| White                         | 160 (45.5)                                    | 21 (31.3)                                                 | 32 (21.1)                                                   | 156 (43.9)                                    | 19 (28.4)                                                 | 30 (19.9)                                                   |
| Latino/Hispanic               | 84 (23.9)                                     | 20 (29.9)                                                 | 33 (21.7)                                                   | 83 (23.4)                                     | 20 (29.9)                                                 | 38 (25.2)                                                   |
| Other                         | 30 (8.5)                                      | 4 (6.0)                                                   | 6 (3.9)                                                     | 26 (7.3)                                      | 4 (6.0)                                                   | 1 (0.7)                                                     |
| Don't know/refused/missing    | 4                                             | 0                                                         | 0                                                           | 1                                             | 0                                                         | 0                                                           |
|                               |                                               | <i>p</i> = .09                                            | <i>p</i> < .01                                              |                                               | <i>p</i> = .09                                            | <i>p</i> < .01                                              |
| <i>Education</i>              |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| < high school                 | 63 (17.8)                                     | 19 (29.2)                                                 | 51 (34.5)                                                   | 96 (28.3)                                     | 19 (37.3)                                                 | 51 (55.4)                                                   |
| High school diploma/GED       | 80 (22.7)                                     | 12 (18.5)                                                 | 47 (31.8)                                                   | 97 (28.6)                                     | 18 (35.3)                                                 | 29 (31.5)                                                   |
| Some college/trade school     | 112 (31.7)                                    | 25 (38.5)                                                 | 43 (29.1)                                                   | 59 (17.4)                                     | 10 (19.6)                                                 | 7 (7.6)                                                     |
| College/trade school graduate | 98 (27.8)                                     | 9 (13.8)                                                  | 7 (4.7)                                                     | 87 (25.7)                                     | 4 (7.8)                                                   | 5 (5.4)                                                     |
| Don't know/refused/missing    | 3                                             | 2                                                         | 4                                                           | 17                                            | 16                                                        | 60                                                          |
|                               |                                               | <i>p</i> = .03                                            | <i>p</i> < .01                                              |                                               | <i>p</i> = .045                                           | <i>p</i> < .01                                              |
| <i>Employment</i>             |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| Full-time                     | 185 (52.0)                                    | 44 (65.7)                                                 | 70 (46.1)                                                   | 236 (67.6)                                    | 37 (57.8)                                                 | 47 (32.0)                                                   |
| Part-time                     | 74 (20.8)                                     | 10 (14.9)                                                 | 21 (13.8)                                                   | 42 (12.0)                                     | 6 (9.4)                                                   | 14 (9.5)                                                    |
| Unemployed, seeking job       | 43 (12.1)                                     | 2 (3.0)                                                   | 10 (6.6)                                                    | 25 (7.2)                                      | 3 (4.7)                                                   | 10 (6.8)                                                    |
| Unemployed, not seeking job   | 54 (15.2)                                     | 11 (16.4)                                                 | 51 (33.6)                                                   | 46 (13.2)                                     | 18 (28.1)                                                 | 76 (51.7)                                                   |
| Don't know/refused/missing    | 0                                             | 0                                                         | 0                                                           | 7                                             | 3                                                         | 5                                                           |
|                               |                                               | <i>p</i> = .06                                            | <i>p</i> < .01                                              |                                               | <i>p</i> = .02                                            | <i>p</i> < .01                                              |

(continue)

TABLE 1. Continued

|                                    | Abused                                        |                                                           |                                                             | Abusive Partners                              |                                                           |                                                             |
|------------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
|                                    | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) |
| <i>Income (annual household)</i>   |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| < \$10,000                         | 71 (22.1)                                     | 4 (8.3)                                                   | 21 (24.7)                                                   |                                               |                                                           |                                                             |
| \$10,000–\$19,999                  | 51 (15.9)                                     | 7 (14.6)                                                  | 25 (29.4)                                                   |                                               |                                                           |                                                             |
| \$20,000–\$29,999                  | 48 (14.9)                                     | 7 (14.6)                                                  | 13 (15.3)                                                   |                                               |                                                           |                                                             |
| \$30,000–\$39,000                  | 41 (12.8)                                     | 13 (27.1)                                                 | 16 (18.8)                                                   |                                               |                                                           |                                                             |
| > = \$40,000                       | 110 (34.3)                                    | 17 (35.4)                                                 | 10 (11.8)                                                   |                                               |                                                           |                                                             |
| Don't know/refused/missing         | 35                                            | 19                                                        | 67                                                          |                                               |                                                           |                                                             |
|                                    |                                               | <i>p</i> = .044                                           | <i>p</i> < .01                                              |                                               |                                                           |                                                             |
| <i>General violence indicators</i> |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| <i>Physical health</i>             |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| Excellent/good                     | 286 (81.9)                                    | 60 (89.6)                                                 | 111 (73.0)                                                  | 275 (79.0)                                    | 49 (79.0)                                                 | 112 (81.2)                                                  |
| Fair                               | 48 (13.8)                                     | 3 (4.5)                                                   | 27 (17.8)                                                   | 53 (15.2)                                     | 10 (16.1)                                                 | 19 (13.8)                                                   |
| Poor                               | 15 (4.3)                                      | 4 (6.0)                                                   | 14 (9.2)                                                    | 20 (5.7)                                      | 3 (4.8)                                                   | 7 (5.1)                                                     |
| Don't know/refused/missing         |                                               | 0                                                         | 0                                                           |                                               | 5                                                         | 15                                                          |
|                                    |                                               | <i>p</i> = .09                                            | <i>p</i> = .04                                              |                                               | <i>p</i> = .95                                            | <i>p</i> = .87                                              |
| <i>Mental health</i>               |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| Excellent/good                     | 238 (67.6)                                    | 47 (70.1)                                                 | 103 (68.2)                                                  | 171 (48.7)                                    | 21 (34.4)                                                 | 63 (49.6)                                                   |
| Fair                               | 75 (21.3)                                     | 6 (9.0)                                                   | 26 (17.2)                                                   | 93 (26.5)                                     | 17 (27.9)                                                 | 28 (22.0)                                                   |
| Poor                               | 39 (11.1)                                     | 14 (20.9)                                                 | 22 (14.6)                                                   | 87 (24.8)                                     | 23 (37.7)                                                 | 36 (28.3)                                                   |
| Don't know/refused/missing         |                                               | 0                                                         | 1                                                           |                                               | 6                                                         | 25                                                          |
|                                    |                                               | <i>p</i> = .01                                            | <i>p</i> = .38                                              |                                               | <i>p</i> = .06                                            | <i>p</i> = .55                                              |
| <i>Suicide threats</i>             |                                               |                                                           |                                                             |                                               |                                                           |                                                             |
| Yes                                | 37 (10.4)                                     | 0                                                         | 12 (8.1)                                                    | 70 (19.9)                                     | 28 (50.9)                                                 | 17 (13.6)                                                   |
| No                                 | 319 (89.6)                                    | 65 (100)                                                  | 136 (91.9)                                                  | 282 (80.1)                                    | 27 (49.1)                                                 | 108 (86.4)                                                  |
| Don't know/refused/missing         |                                               | 2                                                         | 5                                                           |                                               | 12                                                        | 27                                                          |
|                                    |                                               | <i>p</i> < .01                                            | <i>p</i> = .43                                              |                                               | <i>p</i> < .01                                            | <i>p</i> = .12                                              |

|                             |            |           |            |            |           |            |
|-----------------------------|------------|-----------|------------|------------|-----------|------------|
| Alcohol problem             |            |           |            |            |           |            |
| Yes                         | 28 (7.9)   | 3 (5.4)   | 32 (24.4)  | 112 (31.5) | 32 (51.6) | 72 (51.8)  |
| No                          | 328 (92.1) | 53 (94.6) | 99 (75.6)  | 244 (68.5) | 30 (48.4) | 67 (48.2)  |
| Don't know/refused/missing  |            | 11        | 21         |            | 5         | 13         |
|                             |            | $p = .51$ | $p < .01$  |            | $p < .01$ | $p < .01$  |
| General violence indicators |            |           |            |            |           |            |
| Illicit drug use            |            |           |            |            |           |            |
| Yes                         | 51 (14.4)  | 6 (10.0)  | 41 (31.8)  | 108 (31.3) | 29 (50.0) | 93 (72.1)  |
| No                          | 304 (85.6) | 54 (90.0) | 88 (68.2)  | 237 (68.7) | 29 (50.0) | 36 (27.9)  |
| Don't know/refused/missing  | 1          | 7         | 23         | 11         | 9         | 23         |
|                             |            | $p = .36$ | $p < .01$  |            | $p < .01$ | $p < .01$  |
| Access to guns <sup>b</sup> |            |           |            |            |           |            |
| Yes                         | 18 (5.1)   | 1 (1.6)   | 9 (6.5)    | 90 (25.3)  | 54 (80.6) | 89 (58.6)  |
| No                          | 336 (94.9) | 60 (98.4) | 130 (93.5) | 266 (74.7) | 13 (19.4) | 63 (41.4)  |
| Don't know/refused/missing  | 2          | 6         | 13         | 0          | 0         | 0          |
|                             |            | $p = .23$ | $p = .54$  |            | $p < .01$ | $p < .01$  |
| Arrest for violent crime    |            |           |            |            |           |            |
| Yes                         |            |           |            | 42 (12.2)  | 11 (18.3) | 32 (23.4)  |
| No                          |            |           |            | 302 (87.8) | 49 (81.7) | 105 (76.6) |
| Don't know/refused/missing  |            |           |            | 12         | 7         | 15         |
|                             |            |           |            |            | $p = .19$ | $p < .01$  |

<sup>a</sup> $p$  values are for comparisons between femicide group (with or without suicide) and controls based on chi-square tests for categorical variables and independent  $t$  tests for continuous variables;  $p$  values less than .05 are in boldface. <sup>b</sup>Gun access for abused women based on living separately from their partner and reporting a gun in the home; gun access for partner based on living together and reporting a gun in the home.

TABLE 2. Relationship Dynamics, Threatening Behavior, and Abuse Characteristics

|                                                                                   | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) |
|-----------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| <i>Relationship characteristics</i>                                               |                                               |                                                           |                                                             |
| Age difference<br>(partner minus abused woman;<br>mean $\pm$ SD)                  | 1.1 $\pm$ 5.7                                 | 3.1 $\pm$ 5.8<br>8<br><i>p</i> = .01                      | 2.8 $\pm$ 6.6<br>13<br><i>p</i> = .01                       |
| Relationship                                                                      |                                               |                                                           |                                                             |
| Husband                                                                           | 103 (29.2)                                    | 34 (51.5)                                                 | 50 (33.1)                                                   |
| Boyfriend                                                                         | 88 (24.9)                                     | 12 (18.2)                                                 | 53 (35.1)                                                   |
| Ex-husband                                                                        | 39 (11.0)                                     | 8 (12.1)                                                  | 12 (7.9)                                                    |
| Ex-boyfriend                                                                      | 123 (34.8)                                    | 12 (18.2)                                                 | 36 (23.8)                                                   |
| Don't know/refused/missing                                                        | 3                                             | 1<br><i>p</i> = .002                                      | 1<br><i>p</i> = .023                                        |
| Separated                                                                         |                                               |                                                           |                                                             |
| Yes                                                                               | 126 (36.2)                                    | 31 (52.5)                                                 | 70 (56.9)                                                   |
| No                                                                                | 222 (63.8)                                    | 28 (47.5)                                                 | 53 (43.1)                                                   |
| Don't know/refused/missing                                                        | 8                                             | 8<br><i>p</i> = .02                                       | 29<br><i>p</i> < .01                                        |
| Cohabitation (living together)                                                    |                                               |                                                           |                                                             |
| Yes                                                                               | 178 (50.0)                                    | 28 (49.1)                                                 | 52 (42.6)                                                   |
| In the past year, but not currently                                               | 44 (12.4)                                     | 22 (38.6)                                                 | 46 (37.7)                                                   |
| Not in the past year                                                              | 12 (3.4)                                      | 1 (1.8)                                                   | 10 (8.2)                                                    |
| Never                                                                             | 122 (34.3)                                    | 6 (10.5)                                                  | 14 (11.5)                                                   |
| Don't know/refused/missing                                                        | 0                                             | 10<br><i>p</i> < .01                                      | 30<br><i>p</i> < .01                                        |
| Biological child(ren) of abused and<br>partner living in the household            |                                               |                                                           |                                                             |
| Yes                                                                               | 102 (28.7)                                    | 20 (33.9)                                                 | 52 (38.5)                                                   |
| No                                                                                | 254 (71.3)                                    | 39 (66.1)                                                 | 83 (61.5)                                                   |
| Don't know/refused/missing                                                        | 0                                             | 8<br><i>p</i> = .41                                       | 17<br><i>p</i> = .038                                       |
| Biological child(ren) of abused,<br>and not of partner living in<br>the household |                                               |                                                           |                                                             |
| Yes                                                                               | 61 (17.1)                                     | 29 (44.6)                                                 | 52 (35.6)                                                   |
| No                                                                                | 295 (82.9)                                    | 36 (55.4)                                                 | 94 (64.4)                                                   |
| Don't know/refused/missing                                                        | 0                                             | 2<br><i>p</i> < .01                                       | 6<br><i>p</i> < .01                                         |
| <i>Relationship abuse dynamics</i>                                                |                                               |                                                           |                                                             |
| Partner controlling behaviors<br>(score > 3)                                      |                                               |                                                           |                                                             |
| Yes                                                                               | 91 (25.6)                                     | 46 (68.7)                                                 | 98 (64.5)                                                   |
| No                                                                                | 265 (74.4)                                    | 21 (31.3)                                                 | 54 (35.5)                                                   |
| Don't know/refused/missing                                                        | 0                                             | 0<br><i>p</i> < .01                                       | 0<br><i>p</i> < .01                                         |

(continues)

TABLE 2. Continued

|                                             | Controls<br>(n = 356)<br>n (%) | Femicide<br>W/Suicide<br>(n = 67)<br>n (%) | Femicide<br>WO/Suicide<br>(n = 152)<br>n (%) |
|---------------------------------------------|--------------------------------|--------------------------------------------|----------------------------------------------|
| Partner called her names to<br>put her down |                                |                                            |                                              |
| Yes                                         | 171 (48.0)                     | 47 (74.6)                                  | 103 (79.2)                                   |
| No                                          | 185 (52.0)                     | 16 (25.4)                                  | 27 (20.8)                                    |
| Don't know/refused/missing                  | 0                              | 4                                          | 22                                           |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |
| <i>Threatening behaviors<sup>a</sup></i>    |                                |                                            |                                              |
| Partner violent outside home                |                                |                                            |                                              |
| Yes                                         | 124 (36.5)                     | 29 (51.8)                                  | 73 (57.9)                                    |
| No                                          | 216 (63.5)                     | 27 (48.2)                                  | 53 (42.1)                                    |
| Don't know/refused/missing                  | 16                             | 11                                         | 26                                           |
|                                             |                                | $p = .03$                                  | $p < .01$                                    |
| Partner threatened to kill woman            |                                |                                            |                                              |
| Yes                                         | 56 (15.8)                      | 47 (78.3)                                  | 94 (71.2)                                    |
| No                                          | 299 (84.2)                     | 13 (21.7)                                  | 38 (28.8)                                    |
| Don't know/refused/missing                  | 1                              | 7                                          | 20                                           |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |
| Partner threatened to kill family           |                                |                                            |                                              |
| Yes                                         | 28 (7.9)                       | 22 (33.3)                                  | 50 (34.2)                                    |
| No                                          | 328 (92.1)                     | 44 (66.7)                                  | 96 (65.8)                                    |
| Don't know/refused/missing                  | 0                              | 1                                          | 6                                            |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |
| Partner threatened woman with<br>a weapon   |                                |                                            |                                              |
| Yes                                         | 18 (5.1)                       | 35 (55.6)                                  | 75 (55.6)                                    |
| No                                          | 338 (94.9)                     | 28 (44.4)                                  | 60 (44.4)                                    |
| Don't know/refused/missing                  | 0                              | 4                                          | 17                                           |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |
| Partner threatened to take children         |                                |                                            |                                              |
| Yes                                         | 39 (11.3)                      | 13 (19.7)                                  | 24 (17.5)                                    |
| No                                          | 307 (88.7)                     | 53 (80.3)                                  | 113 (82.5)                                   |
| Don't know/refused/missing                  | 10                             | 1                                          | 15                                           |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |
| Stalking behavior (score > 3)               |                                |                                            |                                              |
| Yes                                         | 23 (6.5)                       | 16 (23.9)                                  | 31 (20.4)                                    |
| No                                          | 333 (93.5)                     | 51 (76.1)                                  | 121 (79.6)                                   |
| Don't know/refused/missing                  | 0                              | 0                                          | 0                                            |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |
| <i>Characteristics of physical violence</i> |                                |                                            |                                              |
| Increase in frequency                       |                                |                                            |                                              |
| Yes                                         | 91 (25.9)                      | 32 (59.3)                                  | 76 (59.8)                                    |
| No                                          | 260 (74.1)                     | 22 (40.7)                                  | 51 (40.2)                                    |
| Don't know/refused/missing                  | 5                              | 13                                         | 25                                           |
|                                             |                                | $p < .01$                                  | $p < .01$                                    |

(continues)

TABLE 2. Continued

|                                               | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) |
|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| Increase in severity                          |                                               |                                                           |                                                             |
| Yes                                           | 72 (20.5)                                     | 31 (56.4)                                                 | 74 (57.4)                                                   |
| No                                            | 279 (79.5)                                    | 24 (43.6)                                                 | 55 (42.6)                                                   |
| Don't know/refused/missing                    | 5                                             | 12                                                        | 23                                                          |
|                                               |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Partner tried to choke (strangle)<br>woman    |                                               |                                                           |                                                             |
| Yes                                           | 41 (11.5)                                     | 26 (52.0)                                                 | 57 (58.2)                                                   |
| No                                            | 314 (88.5)                                    | 24 (48.0)                                                 | 41 (41.8)                                                   |
| Don't know/refused/missing                    | 1                                             | 17                                                        | 54                                                          |
|                                               |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Forced sex                                    |                                               |                                                           |                                                             |
| Yes                                           | 53 (14.9)                                     | 29 (56.9)                                                 | 55 (57.3)                                                   |
| No                                            | 302 (85.1)                                    | 22 (43.1)                                                 | 41 (42.7)                                                   |
| Don't know/refused/missing                    | 1                                             | 16                                                        | 56                                                          |
|                                               |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Abused during pregnancy (ever)                |                                               |                                                           |                                                             |
| Yes                                           | 30 (8.4)                                      | 8 (13.8)                                                  | 40 (30.5)                                                   |
| No or never been pregnant                     | 326 (91.6)                                    | 50 (86.2)                                                 | 91 (69.5)                                                   |
| Don't know/refused/missing                    | 0                                             | 9                                                         | 21                                                          |
|                                               |                                               | <i>p</i> = .19                                            | <i>p</i> < .01                                              |
| Partner prior arrest for domestic<br>violence |                                               |                                                           |                                                             |
| Yes                                           | 52 (15.1%)                                    | 14 (23.7)                                                 | 36 (26.5)                                                   |
| No                                            | 292 (84.9%)                                   | 45 (76.3)                                                 | 100 (73.5)                                                  |
| Don't know/refused/missing                    | 12                                            | 8                                                         | 16                                                          |
|                                               |                                               | <i>p</i> = .09                                            | <i>p</i> < .01                                              |
| <i>Incident level variables</i>               |                                               |                                                           |                                                             |
| Gun used                                      |                                               |                                                           |                                                             |
| Yes                                           | 4 (1.1)                                       | 41 (61.2)                                                 | 43 (28.3)                                                   |
| No                                            | 352 (98.9)                                    | 26 (38.8)                                                 | 109 (71.7)                                                  |
|                                               |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Partner used alcohol or drugs                 |                                               |                                                           |                                                             |
| Yes                                           | 123 (34.6)                                    | 42 (62.7)                                                 | 90 (59.2)                                                   |
| No                                            | 233 (65.4)                                    | 25 (37.3)                                                 | 62 (40.8)                                                   |
|                                               |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Victim used alcohol or drugs                  |                                               |                                                           |                                                             |
| Yes                                           | 44 (12.4)                                     | 11 (16.4)                                                 | 41 (27.0)                                                   |
| No                                            | 312 (87.6)                                    | 56 (83.6)                                                 | 111 (73.0)                                                  |
|                                               |                                               | <i>p</i> = .37                                            | <i>p</i> < .01                                              |
| Order of protection                           |                                               |                                                           |                                                             |
| Yes                                           | 19 (5.3)                                      | 15 (22.4)                                                 | 39 (25.7)                                                   |
| No                                            | 337 (94.7)                                    | 52 (77.6)                                                 | 113 (74.3)                                                  |
|                                               |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |

(continues)

TABLE 2. Continued

|                                       | Controls<br>( <i>n</i> = 356)<br><i>n</i> (%) | Femicide<br>W/Suicide<br>( <i>n</i> = 67)<br><i>n</i> (%) | Femicide<br>WO/Suicide<br>( <i>n</i> = 152)<br><i>n</i> (%) |
|---------------------------------------|-----------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| Trigger—jealousy                      |                                               |                                                           |                                                             |
| Yes                                   | 56 (15.7)                                     | 34 (50.7)                                                 | 51 (33.6)                                                   |
| No                                    | 300 (84.3)                                    | 33 (49.3)                                                 | 101 (66.4)                                                  |
|                                       |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Trigger—woman leaving                 |                                               |                                                           |                                                             |
| Yes                                   | 34 (9.6)                                      | 21 (31.3)                                                 | 51 (33.6)                                                   |
| No                                    | 322 (90.4)                                    | 46 (68.7)                                                 | 101 (66.4)                                                  |
|                                       |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |
| Trigger—woman has new<br>relationship |                                               |                                                           |                                                             |
| Yes                                   | 8 (2.2)                                       | 12 (17.9)                                                 | 14 (9.2)                                                    |
| No                                    | 348 (97.8)                                    | 55 (82.1)                                                 | 138 (90.8)                                                  |
|                                       |                                               | <i>p</i> < .01                                            | <i>p</i> < .01                                              |

Note. Unless otherwise noted, the referent time period for risk variables was the year prior to the most abusive event for controls and the year prior to the femicide for the femicide cases. *p* values are for comparisons between femicide group (with or without suicide) and controls based on chi-square tests for categorical variables and independent *t* tests for continuous variables; *p* values less than .05 are in boldface.

56% vs. 20% for severity; Table 2). Choking/strangulation (52% vs. 12%) and forced sex (57% vs. 15%) were also more common among femicide-suicide cases.

### Incident

Circumstances and triggers of the "worst battering episode" for controls and the killing event for femicide-suicide differed significantly (Table 2). Partner use of alcohol or drugs at the time of the incident was more common among femicide-suicide cases (63% vs. 35%) as was the use of a gun (61% vs. 1%). An order of protection was reported in 22% of the femicide-suicide cases versus in 5% of the controls. The triggers of jealousy (51% vs. 16%), the woman leaving (31% vs. 10%) and the woman having a new relationship (18% vs. 2%) were all more common in the femicide-suicide incidents.

### Regression Analyses

Regression analyses results are listed in Table 3. In the first logistic regression model examining sociodemographics (model 1), a victim with less than high school (aOR = 4.0) or some college/trade school (aOR = 3.3), abuser with less than high school education (aOR = 3.8), abuser unemployed and not looking for a job (aOR = 2.7), and older abuser age (aOR = 1.1) were all independently associated with femicide-suicide risk. However, model 1 had little explanatory power with an  $R^2 = 0.16$ . Victim age and employment were not significant predictors of femicide-suicide, nor were race or ethnicity of the victim or abuser.

In the second logistic regression in which hypothesized risk factors for general violence were entered (Model 2), victim without a high school diploma (aOR = 3.1) and abuser

TABLE 3. Adjusted Odds Ratios ( $e^B$ ) for IP Femicide-Suicide Risk Factors Among Women in a Physically Abusive Intimate Relationship

|                                       | Model 1 | Model 2 | Model 3 | Model 4 | Model 5/6 | Model 7 |
|---------------------------------------|---------|---------|---------|---------|-----------|---------|
| <i>Sociodemographic variables</i>     |         |         |         |         |           |         |
| Abuser age (years)                    | 1.1     | ns      |         |         |           |         |
| Abuser education:                     |         |         |         |         |           |         |
| < High school graduate                | 3.8     | ns      |         |         |           |         |
| Abuser job status:                    |         |         |         |         |           |         |
| Unemployed not seeking a job          | 2.7     | 2.9     | 3.3     | ns      |           |         |
| Victim education:                     |         |         |         |         |           |         |
| < High school graduate                | 4.0     | 3.1     | ns      |         |           |         |
| Victim education:                     |         |         |         |         |           |         |
| Some college                          | 3.3     | ns      |         |         |           |         |
| <i>General violence variables</i>     |         |         |         |         |           |         |
| Abuser threatened suicide             |         | 3.0     | 2.6     | ns      | 13.0      | ns      |
| Abuser access to gun                  |         | 17.3    | 24.8    | 14.5    |           |         |
| <i>Relationship variables</i>         |         |         |         |         |           |         |
| Married                               |         |         | 3.0     | 3.6     | 2.9       | ns      |
| Cohabitation (reference:              |         |         |         |         |           |         |
| living together during                |         |         |         |         |           |         |
| entire past year)                     |         |         |         |         |           |         |
| Previously lived together,            |         |         |         |         |           |         |
| separated prior to worst              |         |         | 2.8     | 3.9     | 4.3       | ns      |
| incident                              |         |         |         |         |           |         |
| Victim had stepchild by               |         |         | 2.8     | 2.2     | 3.1       | 8.1     |
| another man                           |         |         |         |         |           |         |
| <i>Abuse dynamics variables</i>       |         |         |         |         |           |         |
| Hi control                            |         |         |         | 5.0     | ns        |         |
| <i>Threatening behavior variables</i> |         |         |         |         |           |         |
| Threaten victim w/weapon              |         |         |         |         | 9.3       | 17.6    |
| Threaten to kill victim               |         |         |         |         | 5.4       | ns      |
| <i>Incident level variables</i>       |         |         |         |         |           |         |
| Abuser used gun                       |         |         |         |         |           | 161.1   |
| Trigger—partner jealousy              |         |         |         |         |           | 3.8     |
| Trigger—victim in a new               |         |         |         |         |           | 15.8    |
| relationship                          |         |         |         |         |           |         |

Note. ns = not statistically significant; education reference group is college graduate; job status reference group is employed full time.

unemployed not looking for a job (aOR = 2.9) from model 1 remained significant predictors. Abuser gun access (aOR = 17.3) and abuser prior suicide threat(s) (aOR = 3.0) were added. Model 2 explanatory power increased to  $R^2 = 0.40$ . Victim mental health and prior suicide threat(s) and the abuser's problem alcohol drinking, illicit drug use and prior arrest for a violence crime were not significant predictors.

The next group of variables examined characteristics of the intimate relationship (Model 3). In model 3, six variables were significant, three from the prior model and three new variables: abuser unemployed not looking for a job (aOR = 3.3), abuser prior suicide threat(s)

(aOR = 2.6), abuser gun access (aOR = 24.8), marital status of married (although not necessarily "together" at the time; aOR = 3.0), having a child of another man living in the home (aOR = 2.8), and having lived together in the past year but not prior to the worst incident (aOR = 2.8). The model  $R^2$  increased to 0.51. The age difference between each woman and her abuser was not a significant predictor.

Relationship abuse dynamics were examined next (Model 4). Although a highly controlling abuser was a significant predictor (aOR = 5.0), the variance explained by the model was unchanged.

Threatening behaviors were examined next (Model 5). Six variables were significant in model 5 including two threat variables: abuser gun access (aOR = 13.0), marriage (aOR = 2.9), having lived together in the past year but subsequently separated (aOR = 4.3), having a child of another man living in the home (aOR = 3.1), prior abuser threat(s) to kill the woman (aOR = 5.4) and prior abuser threat(s) with a weapon (aOR = 9.3). The model  $R^2$  increased to 0.64. Despite highly significant bivariate relationships between physical violence variables and groups (femicide-suicide and controls), none remained significant when entered into the regression model (Model 6).

The final group of variables (Model 7) concerned the femicide-suicide event or the "worst battering episode" for the controls. In the final model, five variables were significant and explained 71% of the variance: child of another man living in the home (aOR = 8.1), prior abuser threats with a weapon (aOR = 17.6), the use of a gun in the event (aOR = 16.1) and abusive incident triggers of the woman having a new relationship (aOR = 15.8) and abuser jealousy (aOR = 3.8).

## DISCUSSION

The most important risk factor for intimate partner femicide-suicide is prior domestic violence against the victim. We found a higher proportion (72%) of prior domestic violence among femicide-suicide cases than has been reported by others (Bourget et al., 2000; Campanelli & Gilson, 2002; Morton et al., 1998), perhaps because we interviewed proxy informants rather than having to rely on criminal justice records only. The patterns of prior domestic violence were similar between the femicide-suicide and femicide without suicide relationships, with similar proportions of increase in severity and frequency, prior forced sex, strangulation/choking, and stalking. The only difference in prior domestic violence among our femicide-suicide cases was a smaller proportion of cases abused during pregnancy.

Significant explanatory power was achieved in identifying risk factors over and above domestic violence prior to the event for femicide-suicide and for event-level characteristics. Most notable among the risk factors that could be identifiable in encounters prior to the event (Model 5/6), based on magnitude of the odds ratio, were partner access to a gun, prior threats with a weapon, prior threats to kill her, estrangement from the perpetrator, a stepchild in the household, and a marital relationship. In the final incident level model (Model 7), even more explanatory power was achieved, with the use of a gun strongly predicting the femicide-suicide over the worst incident in an abusive relationship.

The use of a gun among the femicide-suicide cases (61%) is also striking in that it is differentiated not only from the controls (1%) but from the femicide without suicide cases as well (28%). Bourget et al. 2000 reported similar findings in a sample of conjugal homicide-suicides in Quebec, where a gun was used in 61% of homicide-suicides versus 27% of

homicides without suicides. Lund and Smorodinsky (2001) reporting from California and Easta (1994) from Australia also found gun use significantly higher among homicide-suicides compared to homicides without suicide.

Two risk factors emerged in these models that were unique to femicide-suicide cases compared to overall femicide risk analyses and include: prior perpetrator suicide threats and victims having ever been married to the perpetrator. The importance of relationship variables and perpetrator characteristics in the study of the patterns of femicide-suicide is suggested by similar findings in older couples. In a study of older married male perpetrators of femicide followed by suicide, investigators found that the men, most of whom had a medical condition, failed to receive treatment for depression or received inappropriate anti-anxiety medications (Cohen, 2004). The availability, accessibility, and effectiveness of mental health services for men are an important issue for reducing the risk of femicide-suicide in the context of an abusive partner with depressive symptoms. An important risk factor in the overall femicide analyses that did not emerge as a significant independent predictor of femicide-suicide was perpetrator illicit drug use. However, still 50% of femicide-suicide perpetrators were reported to use illicit drugs.

It is also important to note that these cases of femicide-suicide differ in important ways from the more usual picture of intimate partner femicides of women as well as from less lethal intimate partner violence cases, as demonstrated in Tables 1 and 2. The femicide-suicide cases have higher proportions of White, Hispanic, and Asian victims and perpetrators, while African Americans had higher proportions in the femicide without suicide group. Even so, there were more African American perpetrators among the femicide-suicide cases with prior domestic violence than among the controls. The femicide-suicide cases were more likely to be married, employed and report less illicit drug use and abuse during pregnancy. These differences suggest that practitioners working with domestic violence victims need to be aware that men who end up killing their wives (or girlfriends or estranged partners) and then themselves may have a larger "stake in conformity" than those who more usually kill their female intimate partners. In other words, they may appear to be a somewhat less dangerous domestic violence perpetrator than others who are seen in the domestic violence systems. Even so, the femicide-suicide perpetrators and femicide-only perpetrators had a similar background in terms of prior arrest for violent crimes (18% and 23% respectively) and they engendered a similar amount of fear in their partners (thinking their partner was capable of killing her, 53% and 49% respectively).

This study had some important limitations. In some cases proxy informants may not have been confidants. Even among confidants, behaviors may be over- or underreported (Koziol-McLain, Webster, & Campbell, 2001). Setting "don't know" to "no" responses for our regression analysis is likely to have muted our odds ratios. The sample size, though large considering femicide-suicide is relatively rare, was small for multivariate analysis—especially considering the large pool of variables—and did not allow for the examination of interactions. In some cases regression models were explored entering one variable at a time to avoid overfitting. We focused on *p* values in this report; confidence intervals and prediction rules would also be useful. For example, the 95% confidence interval for the prior perpetrator suicide threat estimated odds ratio (*adjOR* = 2.6) in model 3 (prior to entering abuse dynamics) was 1.2 to 5.9. That model (model 3) correctly predicted 58% of the femicide-suicides in the sample. Future research is needed exploring the killing of other family members such as children, which occurred in 40 of our 310 study cases.

These study findings have important implications. First, for policy makers, access and use of guns significantly increases the risk of death for both victims and abusive partners.

It is therefore particularly important that those perpetrators with a prior domestic violence or other violent crime conviction are prevented from gun ownership and any guns they own are removed at the time of adjudication of the crime as is mandated by federal law. Second, many of the significant risk factors for femicide-suicide involve characteristics of the abusive partner. Health professionals, especially in mental health and alcohol and drug treatment programs, should assess for dangerousness, asking men about past abusive behaviors toward their intimate partner, suicidal ideation and depression—especially in the context of separating from their partner. Verbalization of extreme jealousy, accusations that their partner is having a sexual relationship with a different partner, making statements like, "If I can't have her nobody can" or "Can't live with her; can't live without her" should all be taken extremely seriously if there is any evidence of prior violence. Third, women who discontinue violence in their relationship and are considering separating from their partner should receive individualized interventions including assessment of dangerousness with a knowledgeable practitioner, referral to domestic violence advocacy services, offer to call the criminal justice authorities, and safety planning. The femicide-suicide risk factors identified in this analysis (with the exception of marital status) are included in the revised Danger Assessment instrument (Campbell, 2005a, 2000b). While there is significant overlap in femicide and femicide followed by suicide risk factors—especially for the strongest predictors—important differences were detected, thus signaling a need for continued theoretical development and empirical investigation.

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