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PAPER**PSYCHIATRY & BEHAVIORAL SCIENCE**

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Female Sexual Homicide Offenders: A Descriptive and Comparative Study

ABSTRACT: Research on female sexual homicide has been very scarce. In Europe, it has rarely been examined, and in Scotland, it has never previously been studied. This exploratory study aims to examine the characteristics of sexual homicides involving female offenders between 1990 and 2015 in Scotland. Using data from the Scottish Homicide Database between 1990 and 2015, female sexual homicides ($n = 7$) were compared to nonsexual homicides committed by females ($n = 106$) and to sexual homicides committed by men ($n = 89$) using Fisher's exact tests. The findings show that although female sexual homicide offenders are similar to both female nonsexual homicide offenders and male sexual homicide offenders in certain aspects, there are important differences that distinguish sexual homicides involving female offenders from both groups. Female sexual homicide offenders can arguably be seen as a distinct group of offenders, with specific characteristics and specific needs.

KEYWORDS: forensic science, criminology, sexual homicide, female offending, homicide, sexual offending

Sexual homicide is rare, constituting between approximately 1% and 4% of all homicides (1,2). Despite this, there have been an increasing number of studies of sexual homicides in various countries recently (see Chan and Heide (3) for a review). The vast majority of these studies have examined sexual homicide committed by male offenders. With the exception of a few studies (4–8), sexual homicides committed by female offenders have been scarce in previous research.

This might be related to the low frequency of this crime. In their study on juvenile sexual homicide, Myers and Chan (9) found that female sexual homicide offenders constituted only 5% of all sexual homicides committed. It has also been argued that many sexual offenses by female offenders may go undetected due to the conflict of traditional, constructed gender roles such crimes entail (10–12). Women as capable of sexual aggression contradict traditional constructs of gender, which might lead to underreporting of sexual aggression among women (10,13,14). Despite this, some research has emerged recently on female-perpetrated sexual offending (see Ganon and Cortoni [15] for a review and below). Yet, due to the scarcity of research regarding sexual homicide involving women, very little is known about these crimes. This study contributes to the current knowledge about sexual aggression among female offenders by examining the characteristics of female-perpetrated sexual homicide.

Female Nonsexual Homicides

There have been relatively few studies of female-perpetrated homicide of any type. Most studies of homicide have focused on male perpetrators, because most perpetrators of homicide are male (3). Studies have found differences between male-perpetrated homicide and female-perpetrated homicide. Homicides committed by female offenders, on the one hand, are often committed against an intimate partner (16–18), or a child (19), often include stabbing or shooting as a cause of death (18–21), and more often involve nonwhite offenders (16,22). Homicides committed by men, on the other hand, tend to be directed toward other men and are often committed against friends or acquaintances (23).

Studies have also found that female homicide offenders sometimes kill alongside a male offender. As Sommers and Baskin (24) note, much of the literature has previously argued that women tend to take a secondary role in the criminal act, sometimes in support of their intimate partner who is the primary perpetrator. Although the findings by Sommers and Baskin (24) actually contradicted this by showing that many women commit violence alone or with other women, other studies have found that women are more likely to commit homicide if they are working together with a man than if they are working alone (25,26).

Another factor distinguishing male and female homicides is the offender–victim differential in physical strength, as proposed in Chan and Heide's (1) physical strength hypothesis of sexual homicides. Originally suggested by Heide (27) to explain differences in the weapons used by juveniles and adults to kill their parents (i.e., parricide), the hypothesis states that adults and males are often physically stronger than juveniles and females. Based on this assumption, on the one hand, offenders who are physically stronger and more capable of overcoming their victims' resistance are likely to use weapons or means that require

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more physical strength to complete their homicidal acts (e.g., strangulation, contact weapons). On the other hand, offenders whose physique is weaker than their victims may need to use weapons that require less physical strength (e.g., knife and firearms). Support for the physical strength hypothesis was found in the study by Chan et al. (6), where female sexual homicide offenders were significantly more likely to use weapons that were physically less demanding (such as firearms or sharp instruments) compared to male sexual homicide offenders. Other hypotheses have shown that strangulation is more common as a method of killing among sexual sadists compared to sexual homicide offenders who are not sexual sadists (28). Sexual homicide with sadistic offenders has also been known to be more premeditated, to more commonly be committed against strangers and include body mutilation (29).

Due to the low number of studies examining female homicide, there are some contrasting findings. For instance, while Goetting (16) found that female homicide offenders are commonly unemployed, undereducated, and on benefits, Stout (30) found the opposite to be true. There is also evidence for different patterns of behavior across different types of homicides. Silverman and Kennedy (19) for instance found female homicide offenders who killed children to be younger than other female homicide offenders. These offenders additionally used physical force when killing the victim instead of using a weapon (19). Although these studies are few, this would suggest that different types of homicides involving females, such as sexual homicide, may involve specific patterns in terms of characteristics and behavior and should therefore be studied in their own right.

Sexual Homicide

Sexual homicide is homicide committed where there has been sexual behavior and/or arousal before, during, or after killing the victim. It has invariably been defined in relation to male perpetrators, but even then there has been some debate about defining criteria, and there are inconsistencies in how sexual homicides are defined (31). Recently, researchers in a number of North American and European jurisdictions have used the FBI criteria of Ressler et al. (15), based on specific crime scene features and behaviors, allowing objectivity rather than relying on inferences about the motivation or internal world of an offender. There are no specific legal definitions of sexual homicide; most sexual homicide offenders are convicted of murder (or another category of homicide such as manslaughter or culpable homicide) without a concomitant sexual conviction. In a number of jurisdictions, police may label a homicide as sexual for statistical reporting purposes or to maintain homicide databases, but no specific criteria may be used and coding can rely on the judgment of the particular police officer involved. The few studies of female sexual homicide offenders so far have relied on police ascertainment of cases. So far, researchers have used criteria developed for predominantly male-perpetrated sexual homicide to identify cases. This leaves questions as to whether such criteria should be applied to cases with a female perpetrator, whether female offenders captured by such criteria have different motivations and characteristics compared to males, and whether homicide associated with sexual behavior and/or arousal in females is of a different nature to cases perpetrated by males. In this study, we used the FBI criteria as a starting point to explore the second of these issues.

Recent research on male-perpetrated sexual homicide has found that they differ from nonsexual homicides committed by

men in several ways. Sexual homicide offenders have been found to be more likely to strangle their victims (8,32), to attack strangers (15), to have an accomplice, and to move the body after the homicide (33).

Only five studies have examined female sexual homicides. Two studies (7,8) included female offenders, but neither reported specific findings for female sexual homicide offenders. Two studies by Chan and Frei (4), and Chan, Frei & Myers (5), examined a sample of 204 female sexual homicide offenders in the United States between 1976 and 2007. Their findings showed female sexual homicide offenders were almost as likely to be nonwhite as to be white, which differed from female non-sexual homicide offenders (who were more often nonwhite) (16,22). Female sexual homicide offenders tended to kill intraracially. The mean age of the female sexual homicide offenders was about 27 years, and most victims were known to the offender, like a friend or an acquaintance, who were not intimate partners (4,5).

Chan and Frei (4) also found that, similar to sexual homicide more generally, female sexual homicide offenders tended to target the opposite sex. Most of the victims (more than 70%) in their study were male. Most of the female sexual homicide cases involved one offender with one victim, but about 28% ($n = 56$) involved multiple victims or multiple offenders. In line with Heide's physical strength hypothesis (27), most of the female offenders used a firearm to kill their victims (4). When the victim was female, it was more likely that the offender used physical force to kill the victim, including strangulation, asphyxiation, or drowning. None of the offenders who killed an intimate partner used this method of killing (4). When divided by ethnicity, Chan et al. (5) found that black offenders tended to use sharp instruments, whereas white offenders tended to use physical force to kill their victims (including strangulation, asphyxiation, and drowning). Ethnicity could therefore be an important variable in female sexual homicide (5).

Another study by Chan, Heide, and Beauregard (6) examining single-victim sexual homicide compared 151 female sexual homicide offenders and 3009 male sexual homicide offenders in the United States between 1976 and 2012, overlapping with their previous sample. Consistent with the physical strength hypothesis (27), it was significantly more common for males to use personal methods, such as hands, feet, or strangulation, while females more often used less physically demanding weapons, such as firearms or sharp instruments. Chan et al. (6) also found victims killed by female offenders were older than those killed by males. The majority (more than 90%) of victims were over 18 years old, with females having a lower proportion of child victims compared to males. Nonwhite victims were more often murdered by female sexual homicide offenders. The choice of weapon also appeared to be influenced by the characteristics of victims (6).

Overall, these three studies of this U.S. sample (4–6) concluded that female sexual homicide offenders are different from male sexual homicide offenders in several aspects. But although these are the most comprehensive studies to date on female sexual homicide, to the authors' knowledge, they are also the only ones. No similar study has been conducted in a European setting, such as the U.K. More studies are therefore needed on female sexual homicide offenders.

Female Sexual Offenders

When considering sexual homicide committed by females, it is important to bear in mind what is known about less extreme

sexual offending committed by females (34). There has been relatively little research on female sexual offenders compared to that on male sexual offenders, but some findings have emerged recently. Many samples have been quite small. Although females perpetrate less sexual abuse than males, underreporting of female-perpetrated abuse appears to be greater than that for male-perpetrated abuse (35). There is a general disbelief that women, who are stereotypically perceived as caring and nurturing, can commit sexual abuse. For that reason, there is sometimes greater shock and outrage when women do commit sexual violence. In a recent meta-analysis, females were found to have committed 2% of sexual offenses reported to the police, but 11.6% of sexual offenses reported in victim surveys (35). Victims are more often children and adolescents than adults (35).

There have been a number of typologies proposed, but there seem to be four main groups (36): those who offend with another person, usually a male; those who offend against adolescents, usually males; those who sexually abuse younger children, usually their own; and a small group who offend on their own against adults. Co-offending is important in female sexual offenders, with those who make up this group being the largest in most studies. Some women are coerced by a male who is motivated to sexually offend and who is in a dominant position in their relationship; other women who co-offend play a more active role. The dynamics of the relationship are important in understanding sexual offending behavior in these cases.

The rate of sexual re-offending over about 5 years in female sexual offenders is very low at 1–2% (37), compared to 13–14% in male sex offenders (38). Re-offending is much more often nonsexual in nature (rates of 22–24% for any re-offense, compared to 36–37% for males). Female sexual offenders are similar to other female offenders in terms of factors including development, histories of abuse and trauma, mental health, social disadvantage, and substance misuse. Knowledge gained from research and practice with male sexual offenders cannot therefore be applied to female sexual offenders (39). Male risk assessment approaches, risk factors, treatment programs, and management strategies should not be applied to female sexual offenders. Although some factors in female sexual offenders appear superficially similar to those identified in males, the development of these factors, their function, and criteria for their identification are not the same as in males. For example, the development of sexual interests and preference, sexual arousal, and deviant sexual interest appears to be very different in males and females at biological, psychological, and social levels (40,41). Although male sexual homicide offenders are more similar to than different from male sexual offenders (42), we do not know whether this applies to female sexual homicide offenders compared to female sexual offenders, as there have been no comparative studies.

Aim and Rationale for the Current Study

The aim this exploratory study was to examine the characteristics of sexual homicides involving female offenders in Scotland. This will be done by examining the characteristics of the offenders, the victims, and the incidents of sexual homicides committed between 1990 and 2015. Similar to Chan and Frei (4), this study will compare sexual homicides to nonsexual homicides committed by female offenders and compare sexual homicides by female offenders to those committed by male offenders. So this study will compare sexual homicide by female offenders to two comparison groups: female nonsexual homicides and male sexual homicides.

Method

Sample and Procedure

The sample consists of female sexual homicide offenders, gathered from the Scottish Homicide Database (SHD) held and coded by Police Scotland. The SHD contains all homicide cases, which come to the attention of the police, including cases that have yet to be tried in court, making it a population dataset of homicide in Scotland. A homicide in this study is defined as an incident where at least one dead body (or parts of a dead body) was found within the context of the same crime scene. The homicide case may involve multiple offenders and/or multiple victims, but if another victim was found outside the borders of the first crime scene, this would be regarded as another homicide case. Due to practical differences in the coding of the database leading to significant levels of missing data, the sample only includes cases from 1990 to 2015. Culpable homicides, which are homicides when the offender has caused the loss of life through wrongful conduct without the intention to kill or “wicked recklessness” (43), and/or where diminished responsibility can be found, were excluded from the sample as some of these cases were nonviolent acts (such as the self-administration of drugs). All cases of homicide involved in this study were cases, which Police Scotland had coded as “murders.”

Overall, there were a total of seven female sexual homicide offenders involved in the deaths of seven cases (Table 1). The two comparison groups were as follows: (i) a random sample of 106 female nonsexual homicide offenders over 102 cases (which constituted 35% of all 303 female nonsexual offenders), and (ii) 89 male sexual homicide offenders over 78 cases during the relevant time period (which constituted 100% of all male sexual homicide offenders over that period). The sample of female nonsexual homicide offenders was randomly drawn using SPSS version 19 random sampling feature. A third of the sample was chosen to roughly match the number of male sexual homicide offenders making both comparison groups approximately equal in size.

Measures

Dependent Variables—The dependent variables differed depending on comparison group. When the female sexual homicide offenders were compared to female nonsexual homicide offenders, the dependent variable measured whether the homicide was considered sexual or not. Cases were identified as sexual if the motive was coded as sexual by Police Scotland or if the case met the definition of sexual homicide provided by the FBI; that is, the case had to include at least one of the following: (i) victim's attire or lack of attire, (ii) exposure of the sexual parts of the victim's body, (iii) sexual positioning of the victim's body, (iv) insertion of foreign objects into the victim's body cavities, (v) evidence of sexual intercourse, or (vi) evidence of substitute sexual activity, interest, or sadistic fantasy (15). The decision as to whether a homicide was sexual was made by one of the authors who examined case files in more detail. A homicide was not considered sexual in this study simply because the victim and offenders were intimate partners (i.e., engaged in a romantic or sexual relationship). Other sexual elements, as the ones described above, had to be present.

When the female sexual homicide offenders were compared to the male sexual homicide offenders, the dependent variables were gender of offender (1 = male, 0 = female).

TABLE 1—Descriptive information about female sexual homicide offenders (n = 6).

Variables	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7
Offender variables							
Ethnicity	White	White	White	White	White	White	White
Employment status	Not employed	Not employed	Not employed	Not employed	Not employed	Not employed	Not employed
Residential status	Not homeless	Not homeless	Homeless	Not homeless	Not homeless	Not homeless	Not homeless
Suicide	No	No	No	No	No	No	No
Accomplice	Yes	No	No	Yes	Yes	Yes	Yes
Age	Under 16 years	46 years or older	16–30 years	46 years or older	31–45 years	31–45 years	31–45 years
Victim variables							
Gender	Female	Male	Male	Female	Female	Male	Male
Ethnicity	White	White	White	White	White	White	White
Employment status	Not Employed	Not Employed	Not Employed	Not Employed	Not Employed	Not Employed	Not Employed
Residential status	Not homeless	Not homeless	Not homeless	Not homeless	Not homeless	Not homeless	Not homeless
Victim engaged in prostitution	No	No	No	No	No	No	No
Age	Under 16	46 or older	31–45	46 or older	16–30	31–45	46 or older
Incident variables							
Method of killing	No weapon/physical assault	Blunt instrument/physical assault/other	Sharp instrument	Blunt instrument/physical assault	No weapon/physical assault/other	Sharp/blunt instrument	Sharp instrument/Strangulation
Relationship	Family member	Known/Acquaintance	Known/Acquaintance	Unknown	Unknown	Unknown	Known/Acquaintance
Motive	Sexual/fight	Sexual	Sexual/fight	Sexual	Sexual	Sexual	Sexual
Location	Private/Inside/Urban	Private/Inside/Rural	Public/Outside/Urban	Private/Inside/Urban	Private/Inside/Urban	Inside	Inside
Evidence destruction	Yes	No	No	No	No	No	Yes
Selection of Weapon	No weapon	Brought to scene	Improvised	Unknown	No Weapon	Unknown	Improvised
Multiple location	No	No	No	No	No	No	Yes

Independent Variables—The same independent variables were used in both comparison groups. There were three groups of independent variables relating to the offender, the victim, and the incident of homicide (Table 1). All independent variables were dichotomous, coded 1 = yes and 0 = no. These variables were chosen based on availability and what previous research has shown to be important when examining sexual homicide (3,44,45).

There were nine *Offender variables*: (i) White ethnicity; (ii) Employed (which also included students, people at school, and people who are retired); (iii) If the offender was homeless; (iv) Suicide of the offender; (v) If the offender had an accomplice; (vi) If the offender was under 16 years old; (vii) If the offender was between 16 and 30 years old; (viii) If the offender was between 31 and 60 years old; and (ix) If the offender was older than 61 years old.

The nine *Victim variables* were as follows: (i) Gender; (ii) White ethnicity; (iii) Employed (which also included students, people at school, and people who are retired); (iv) If the victim was homeless; (v) If the victim was engaged in prostitution; (vi) If the victim was under 16 years old; (vii) If the victim was between 16 and 30 years old; (viii) If the victim was between 31 and 60 years old; and (ix) If the victim was older than 61 years old.

There were 23 *Incident variables*: (i) Whether the victim was stabbed to; (ii) Whether the victim was bludgeoned; (iii) Whether the victim was shot to death with a firearm; (iv) Whether the victim was killed without the use of any weapons; (v) Whether the victim was strangled or asphyxiated to death with or without the use of a ligature; (vi) Whether the victim

was killed by physical assault; (vi) Whether the victim was killed by other methods (which included drowning, poisoning, drugs and cause of death cannot be established, or cases where the it was uncertain what weapon was used); (viii) Whether the victim and offender were acquaintances or known to each other; (ix) Whether the victim and offender were nonintimate family members; (x) Whether the victim and offender were intimate partners; (xi) Whether the victim and offender were strangers; (xii) Whether the motive was fight, rage, or quarrel; (xiii) Whether the homicide was financially motivated; (xiv) Whether the motive was insanity of the offender; (xv) Whether the motive was jealousy or revenge; (xvi) Whether the homicide was motivated by a domestic dispute; (xvii) Whether the homicide took place in a rural location; (xviii) Whether the homicide took place in a private location; (xix) Whether the homicide took place in an indoors location; (xx) Whether any evidence had been attempted to be destroyed (which included any of the following: the body had been moved more than walking distance from the place of the murder, the body was covered but not buried, the body had been buried, the body had been burned, and/or whether the body had been dismembered); (xxi) Whether the choice of weapon was improvised; (xxii) Whether the weapon was brought to the scene; and (xxiii) Whether the homicide involved multiple locations.

Statistical Analysis

Due to the small sample size of female sexual homicide offenders, independent variables were compared between dependent variable groups using Fisher's exact test for bivariate

analysis without conducting multivariate analyses. Effect sizes, using Cohen's *d* (46), were also determined, with 0.20 = small effect, 0.50 = medium effect, and 0.80 = large effect (46). The female sexual homicide offenders were compared to female nonsexual homicide offenders and to male sexual homicide offenders, respectively. All statistical analyses were conducted using SPSS version 19, IBM, Armonk, New York, United States.

Results

Offender Characteristics

The female perpetrators of sexual homicide were all white (Tables 1 and 2). None of the female sexual homicide offenders were employed, and only one case (14.3%) was homeless. The most common age among female sexual homicide offenders was 31–45 years in three cases (42.9%) with two cases between 16 and 30 (28.6%) and two older than 41 years (28.6%). None of the female sexual homicide offenders were under 16 years old. None of the female sexual homicide offenders committed suicide. The majority of the female sexual homicide offenders had an accomplice to the crime (71.4%, *n* = 5), all of them male. The male accomplices of the female sexual homicide offenders (*n* = 5) were included in the male sexual homicide group (*n* = 89).

Female sexual homicide offenders appeared very similar to female nonsexual homicide offenders on offender characteristics (Table 2). Female sexual homicide offenders were more often white compared to nonsexual female homicide offender, but this fell short of statistical significance.

The female sexual homicide offenders were also very similar to the male sexual homicide offenders regarding the offender characteristics. However, female sexual homicide offenders were significantly more likely to have an accomplice with a medium effect size.

Victim Characteristics

The majority of victims of female sexual homicide offenders were male (57.1%, *n* = 4; Table 3). All of the victims were white and in none of the cases was the victim employed. Most of the victims were older than the offenders, with older than 46 years old being the most common age group for the victims (42.9%, *n* = 3). In one case (14.3%), the victim was under 16 years old. None of the victims were homeless, and none of the victims were engaged in prostitution.

Female sexual homicides were quite similar to female nonsexual homicides, with the exception of victim ethnicity (Table 3).

It would seem that the victims of female sexual homicide were more likely to be white compared to victims of nonsexual female homicide. This result only approached significance, however (i.e., *p* < 0.10).

Victims of female sexual homicide offenders were very similar to those of male sexual homicide offenders with no significant differences found.

Homicide Incidents

The most common method of killing by female sexual homicide offenders was by physical force (57.1%, *n* = 4), followed by blunt instrument (42.9%, *n* = 3) and sharp instrument (42.9%, *n* = 3). One case (14.3%) involved strangulation or asphyxiation, and none of the cases included the use of a firearm. When a weapon was used, it was more common that it was improvised at the scene than brought to the scene (28.6%, *n* = 2).

The most common relationship between offender and victim was someone known, such as a friend or acquaintance (42.9%, *n* = 3), followed by a family member (14.3%, *n* = 1). No female sexual homicides involved strangers or intimate partners. In two of the cases (28.6%), the homicide was motivated by a fight or a dispute. It should be noted that a secondary motive was usually not coded where the primary motive had already been identified as sexual in the database (which included all sexual homicides in the sample, both female and male).

Most homicides were committed in private indoor settings, and only one case was committed in a rural area. One case (14.3%) included multiple locations, and in two cases, (28.6%) the offender attempted to destroy evidence.

It was significantly more likely for female sexual homicides to include the use of physical assault (*p* = 0.036, medium effect size) compared to female nonsexual homicides (Table 4). The use of a blunt instrument was also more common among female sexual homicide offenders compared to nonsexual female homicide offenders, although this finding only approached significance. Female sexual homicide offenders also proved more likely to use physical assault compared to male sexual homicide offenders, although this only approached significance too. Sexual homicides with female offenders were more likely to involve family members compared to those of male sexual homicide offenders, although only approaching significance.

There were no significant differences between female sexual homicide offenders, female nonsexual homicide offenders, and male sexual homicide offenders regarding motive or regarding rurality. Sexual homicide involving females was significantly more likely to be committed inside than both nonsexual

TABLE 2—Fisher's exact tests between offender characteristics and type of homicide.

Offender Variables		Female Sexual Homicide	Female Nonsexual Homicide	Cohen's <i>d</i>	Male sexual Homicide	Cohen's <i>d</i>
Ethnicity	White	7 (100.0%)	75 (70.8%)	0.32 [†]	67 (75.3%)	0.31
Employment status	Employed	0 (100.0%)	9 (8.5%)	0.15	15 (16.9%)	0.24
Residential status	Homeless	1 (14.3%)	1 (0.9%)	0.50	3 (3.4%)	0.29
Suicide	Yes	0 (0.0%)	0 (0.0%)	—	1 (1.1%)	0.06
Accomplice	Yes	5 (71.4%)	49 (46.2%)	0.25	20 (22.5%)	0.61*
Age	Under 16 years	0 (0.0%)	1 (0.9%)	0.05	4 (4.5%)	0.12
	16–30 years	2 (28.6%)	53 (50.0%)	0.21	43 (48.3%)	0.21
	31–45 years	3 (42.9%)	34 (32.1%)	0.11	30 (33.6%)	0.10
	46 years or older	2 (28.6%)	18 (17.0%)	0.15	12 (13.5%)	0.22

p* < 0.05; *p* < 0.01; ****p* < 0.001; [†]*p* < 0.1.

TABLE 3—Fisher's exact tests between victim characteristics and type of homicide

Victim Variables		Female Sexual Homicide	Female Nonsexual Homicide	Cohen's <i>d</i>	Male Sexual Homicide	Cohen's <i>d</i>
Gender	Male	4 (57.1%)	79 (74.5%)	0.19	26 (29.2%)	0.32
Ethnicity	White	7 (100.0%)	70 (66.0%)	0.36 [†]	236 (77.1%)	0.32
Employment status	Employed	0 (0.0%)	9 (8.5%)	0.15	16 (5.2%)	0.17
Residential status	Homeless	0 (0.0%)	0 (0.0%)	—	5 (5.6%)	0.13
Victim engaged in prostitution	Yes	0 (0.0%)	0 (0.0%)	—	4 (1.3%)	0.13
Age	Under 16 years	1 (14.3%)	19 (17.9%)	0.05	33 (10.8%)	0.15
	16–30 years	1 (14.3%)	19 (17.9%)	0.05	80 (26.1%)	0.33
	31–45 years	2 (28.6%)	32 (30.2%)	0.05	91 (29.7%)	0.08
	46 years or older	3 (42.9%)	36 (34.0%)	0.09	110 (35.9%)	0.17

The percentages in this table do not add up to 100% due to the possibility of multiple responses.

p* < 0.05; *p* < 0.01; ****p* < 0.001; [†]*p* < 0.1

TABLE 4—Fisher's exact tests between incident characteristics and the type of homicide.

Incident Variables		Female Sexual Homicide	Female Nonsexual Homicide	Cohen's <i>d</i>	Male Sexual Homicide	Cohen's <i>d</i>
Method of killing	Sharp instrument	3 (42.9%)	55 (51.9%)	0.09	25 (28.1%)	0.17
	Blunt instrument	3 (42.9%)	14 (13.2%)	0.41 [†]	26 (29.3%)	0.16
	Shooting or firearm	0 (0.0%)	0 (0.0%)	—	0 (0.0%)	—
	No weapon used	2 (28.6%)	19 (17.9%)	0.13	25 (28.1%)	0.01
	Strangulation or ligature	1 (14.3%)	10 (9.4%)	0.08	36 (40.4%)	0.28
	Physical assault	4 (57.1%)	20 (18.9%)	0.46*	23 (25.8%)	0.37 [†]
	Other	2 (28.6%)	13 (12.3%)	0.23	29 (32.6%)	0.04
	Known or acquaintance	3 (42.9%)	19 (17.9%)	0.31	18 (20.2%)	0.29
Relationship between offender and victim	Family member	1 (14.3%)	20 (18.9%)	0.06	0 (0.0%)	0.79 [†]
	Intimate partner	0 (0.0%)	15 (14.2%)	0.20	4 (4.5%)	0.12
	Stranger	0 (0.0%)	1 (0.9%)	0.05	13 (14.6%)	0.22
	Other	2 (28.6%)	56 (52.8%)	0.24	13 (14.6%)	0.20
Motive	Fight, rage, or quarrel	0 (0.0%)	7 (6.6%)	0.13	3 (3.4%)	0.10
	Financial (including theft)	0 (0.0%)	2 (1.9%)	0.07	1 (1.1%)	0.06
	Domestic	0 (0.0%)	11 (10.4%)	0.17	3 (3.4%)	0.10
	Rural	1 (14.3%)	3 (2.8%)	0.30	5 (5.6%)	0.19
Public or private location	Private	5 (71.4%)	41 (38.4%)	0.33 [†]	38 (42.7%)	0.30
Inside or outside location	Inside	6 (85.7%)	46 (43.4%)	0.42*	40 (44.9%)	0.43*
Evidence destruction	Evidence destroyed	2 (28.6%)	1 (0.9%)	0.91**	15 (14.7%)	0.18
Selection of weapon	Improvised	1 (14.3%)	17 (16.0%)	0.16	15 (16.9%)	0.16
	Brought to scene	2 (28.6%)	13 (12.3%)	0.03	7 (7.9%)	0.12
Multiple location	Yes	1 (14.3%)	6 (5.7%)	0.17	6 (6.7%)	0.15

p* < 0.05; *p* < 0.01; ****p* < 0.001; [†]*p* < 0.1

homicide by females (*p* = 0.036, medium effect size) and sexual homicide by men (*p* = 0.044, medium effect size). Sexual homicides committed by female offenders were also more likely to be committed in private locations compared to nonsexual homicides committed by females (approaching significance). Lastly, female sexual homicide offender cases were significantly more likely to show evidence destruction than nonsexual female homicide offenders (*p* = 0.010) with a large effect size (Table 4).

Discussion

The current study used data from the SHD over a 26-year period (1990–2015) to examine sexual homicides involving female offenders (*n* = 7) and to compare them to those of female nonsexual homicide offenders (*n* = 106) and male sexual homicide offenders (*n* = 89). This is the first study we are aware of to examine female sexual homicide cases in Europe. This study has yielded several findings that expand on the current small literature on sexual homicides committed by females.

Overall, female sexual homicide offenders were most likely white, were proportionally often unemployed, and were unlikely to be homeless. Although generally similar to both nonsexual

female and male offenders of sexual homicide, female sexual homicide offenders were more likely to be white compared to nonsexual female homicide offenders. Similarly, all of the victims of the female sexual homicides were white. This means that, similar to the findings by Chan and Frei (4) and Chan et al., (5) female sexual homicide offenders in Scotland are likely to kill intraracially. Unlike the findings of these two studies, the vast majority of both the offenders and victims in Scotland were white. While Chan and Frei (4) and Chan et al. (5) found an equal mix of white and nonwhite offenders, previous studies have identified ethnicity as an important variable when examining female nonsexual homicides as well (7,16,22). Although an important variable when examining female sexual 11 homicides in the United States, ethnicity appears less important when examining sexual homicide by females in Scotland. The importance of offender ethnicity in sexual homicide committed by female offenders is probably geographically dependent in this study reflecting the demographics of Scotland with a higher proportion of white people than in the United States.

Female sexual homicide offenders were younger than the victims in the current study. While the most common age of the victims was older than 46 years, the most common age group of

the offenders was 31–45 years when the crime was committed. This is in line with what Chan and Frei (4) found in their sample of U.S. female sexual homicide offenders. The mean age in Chan and Frei's sample was 28 years for the offenders and about 35 years for victims.

A majority (71.4%) of the female sexual homicide offenders committed the crime with an accomplice. Although this was somewhat similar to female nonsexual homicides (where little less than half of the cases included an accomplice) albeit higher, this was significantly different from the male sexual homicides, where most acted alone. This appears to be a key variable when analyzing sexual homicides involving female offenders. Chan and Frei (4) found that little more than a quarter of the U.S. cases involved either multiple offenders or victims, meaning that the figures found in the current study are considerably higher. The figures found by Chan and Frei (4) were also very similar for male sexual homicide offenders in the study by Häkkanen-Nyholm et al. (33), who found that about 28% of the male sexual homicides included an accomplice. The fact that accomplices appear so much more common in sexual homicides involving females in the current sample might suggest that female sexual homicide offenders differ from male offenders in this regard. As previous research also has shown that women are more likely to commit nonsexual homicides when they have a male accomplice compared to when they are acting alone (25,26), the inclusion of accomplices might be related to gender, rather than whether the homicide was sexual or not. In addition however, nonhomicidal sexual offenders often have accomplices, usually males, and male-accompanied female sexual offenders make up the largest proportion of female sexual offenders in most classificatory systems (36). As pointed out in previous studies, female offenders usually have a secondary role in these offenses, committing the crime alongside their male intimate partner (24). As all the accomplices were male in the current study, this supports this hypothesis. This means that when it comes to accomplices, sexual and nonsexual homicides by females appear similar, as do nonhomicidal and homicidal sexual offenses committed by females, so perhaps there is an interaction between gender and sexual violence in determining the presence of an accomplice.

Female sexual homicides were in between male sexual homicides and female nonsexual homicides with regard to victim gender, with males more likely to target females and female nonsexual offenders most likely to target males. Similar to the findings of Chan and Frei (4), most of the female sexual homicide offenders targeted the opposite sex, although Chan and Frei found a higher proportion of male victims in their sample. However, this might also be related to the presence of accomplices. In three of the five cases which included an accomplice, the victims were female. Additionally, the accomplice was a male offender in all cases. Although much investigation is needed of the co-offending dynamic involving female sexual homicide offenders, it would seem that female sexual homicide offenders more commonly have male victims, but the victim is more commonly female when a male accomplice is present, perhaps as where there is an accomplice, the male drives the offense. Similar to the female nonsexual homicide offenders, none of the victims were engaged in prostitution. Although this is usually considered an important variable when examining male sexual homicide (3), this does not appear to be an important variable when examining female sexual homicide.

Female sexual homicide offenders were more likely to use physical assault when killing their victims compared to female nonsexual homicide offenders. Although only approaching

significance, female sexual homicide offenders were also more likely to use physical assault compared to male sexual homicide offenders. This is in contrast with the findings by Chan et al. (6), who found that female sexual homicide offenders predominantly used weapons, which were less physically demanding. Contrastingly, the current study found that it was more common for female sexual homicide to involve blunt instruments (approaching significance) and to kill the victim using only physical force compared to nonsexual homicide by female offenders as well as male sexual homicide offenders. This suggests that the method of killing used in female sexual homicide is different from both female nonsexual homicide and male sexual homicide. As blunt instruments appeared to be more common among the female sexual homicide offenders, there is some support of the physical strength hypothesis by Heide (27). However, most of the female sexual homicides involved a male accomplice, and the majority of victims were male. This raises questions about the roles each offender played within the context of the crimes and complicates this issue further. If the male accomplices of the female sexual homicide offenders were the instigators in these crimes, which were most commonly directed against other men, the physical strength hypothesis is not supported as these crimes could be considered male sexual homicides against another male (who might be assumed to be of equal or matching physical strength) with a female co-offender. This highlights the need for further research in regard to female sexual homicide and the role of accomplices in these cases.

It was also more common for female sexual homicide offenders to attack a family member compared to male sexual homicide offenders. This was in contrast to previous research, which found that friends or acquaintances were the most common relationship in sexual homicide by females (4,5). Instead, female sexual homicide offenders seem more similar to female nonsexual homicide offenders in this regard. Additionally, sexual homicides committed by females were significantly more likely to involve evidence destruction, such as dismembering or moving the body, compared to female nonsexual homicide offenders, suggesting a stronger similarity to male sexual homicide offenders. Sexual homicides committed by females therefore seem to differ from both comparison groups, albeit on different variables.

Female sexual homicides were significantly more likely to occur indoors compared to both of the other types of homicide. It was also more common for female sexual homicides to occur in private settings compared to nonsexual homicides by female offenders (approaching significance). The indoor, private location of the female sexual homicides might be related to the overall context surrounding this crime. As the most common relationship in the female sexual homicide cases was someone known, or a family member, and about a quarter of the female sexual homicides were committed in the context of a fight, it is likely that they would have been committed in indoors, often private settings.

Overall, although female sexual homicide offenders are similar to both female nonsexual homicide offenders and male sexual homicide offenders in some respects, there are important differences that distinguish sexual homicides committed by female offenders from both groups. Sexual homicides involving female offenders can arguably be seen as a distinct group of offenses, with females having specific characteristics as well as specific needs. It is important that future studies examine this subgroup of homicide offenders further, so that proper intervention and prevention strategies of this type of crime can be identified and recognized. Further elucidation of the interaction with a male co-

accused and the actual role of the female accused is a key area. There should also be more in-depth research on psychopathology and sexual aspects in female sexual homicide offenders, as well as more detailed investigation of crime scene behavior and the motivation behind the homicides to increase understanding of this offender subgroup.

Although this study constitutes the first of its kind in Europe, it was similar to the studies by Chan and Frei (4), Chan et al. (5), and Chan et al. (6), based on police data, limited to basic offender, victim, and incident characteristics. It was therefore not possible to conduct any in-depth analysis of motivations, paraphilias, or contextual circumstances surrounding these cases, which would have helped to gain a deeper understanding of this small and relatively rare group of offenders. The number of female sexual homicide offenders was very small in the current study ($n = 7$), and any conclusions drawn from this study must be interpreted cautiously. Despite the small number, the findings are strengthened somewhat by the fact that these seven cases represent a *de facto* population of female sexual homicide offenders in Scotland over the relevant time period (1990–2015). Although it is possible that some cases have not been characterized as sexual due to bias toward female perpetrators of sexual violence (10,13,14), the dark figure of crime is generally considered very low for homicides (47). The current study is arguably a representative sample of female sexual homicide offenders in Scotland.

Although this study found some similarities to the U.S. sample described in the study by Chan and Frei (4), there were also some differences, such as the use of firearms and the importance of offender ethnicity. Future studies should examine female sexual homicide offenders in various contexts to uncover geographical differences. Another important subject for future research is the role of accomplices in female sexual homicide offending. This study found a very high proportion of accomplices, and understanding the dynamic of co-offending in sexual homicides committed by female offenders would be important to understand this group of offenders better.

A crucial issue requiring further exploration is how a homicide is ascertained as sexual with female-perpetrated cases. Are the FBI criteria appropriate for female-perpetrated cases? In the only other systematic studies of female sexual homicide offenders, Chan et al. (4–6) used cases identified as “sexual” by investigating police officers, although no specific criteria were used and no definition used by the police was given. In Scotland, a similar category is used by the police but with no further definition or criteria. The use of such criteria may be problematic in terms of reliability and consistency, meaning that what constitutes sexual homicide may include various types of cases. We have come across reports of cases labeled “sexual” because the victim and perpetrator were in a sexual relationship, although there was no sexual activity proximal to the killing; and also because the victim was a sex offender killed by vigilantes, although there was no sexual assault on the victim. If the former types of cases were included, then many more homicides committed by females would be sexual, as a significant proportion of such homicides are against intimate partners. It is notable that many of Chan et al.’s cases had victims who were intimate partners, whereas in our sample, the comparison group of female-perpetrated nonsexual homicides had a high proportion of intimate partner victims. These differences may account for disparities between Chan et al.’s findings and ours, such as the high rates of accomplices and female victims in our cases. It also raises a question as to whether the killing of an intimate partner

by a female during or after sexual activity should be classified as a sexual homicide, and if so, is this a unique subtype of female-perpetrated sexual homicide?

A fundamental question is whether female-perpetrated sexual homicide is different from male-perpetrated sexual homicide. A complicating factor when considering this in our study was that most cases involved a male co-offender. Perhaps the most important question is what role the female offender plays in the homicide, and whether these crimes should be considered female sexual homicides or male sexual homicides with a female co-offender. The literature is at too early a stage to offer an evidence-based typology of female sexual homicide offenders, but a crucial differentiating factor, as described with female sexual offenders more generally (36), is whether they act alone or with another (usually male) offender. Such cases made up over half of our sample and a quarter of Chan et al.’s sample. In cases with a co-offender, what role does the female play, and what is the relationship and dynamics with the co-offender? In terms of females who commit sexual homicides on their own, do they resemble solo female nonhomicidal sexual offenders, or are there other distinct motivations? In practice, one of the authors has come across cases motivated by vengeance/retaliation against males (either generally or a specific man who has allegedly sexually abused the female killer), against intimate partners (who have allegedly been abusive within the relationship), and committed against children as part of a wider pattern of abuse of the child victim. Given the questions raised about the motivation, role, and types of female sexual homicide perpetrators, we are undertaking a more detailed qualitative study of female-perpetrated sexual homicide, as these issues have not been addressed in the literature so far.

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