

Homicide or Suicide: How Nudity Factors into This Determination

Homicide Studies

1–16

© 2021 SAGE Publications

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/10887679211013071

journals.sagepub.com/home/hsx

Sarah W. Craun¹ , Leah Tanner¹, Victoria Clausen¹,
Melissa A. Merola², Leonard Opanashuk¹,
and Timothy G. Keel¹

Abstract

Anecdotal reports of deceased celebrities being found nude abound, yet research is lacking regarding the frequency of nudity at death. Moreover, it is unknown if nudity at the time of death is a useful investigative clue or a distracting non-factor in equivocal death cases. This study used data from 119,145 homicides and suicides reported to the Centers for Disease Control to explore victim nudity, prior life stressors, and demographics on the likelihood of a death being a homicide or a suicide. Logistic regression results indicate that a female victim being found nude is a strong indicator of homicide.

Keywords

equivocal deaths, investigation, policing, crime scene, policing, nudity, suicides

Determining whether a violent death is the result of homicide or suicide can be challenging for medico-legal death investigators.¹ The motivation to end a life, may be clear, but whether the death was self-inflicted or perpetrated by another may not be. Moreover, the existence of multiple motivations on the part of both the victim and possible offenders may obfuscate the true nature of the manner of death. This can be further confounded by characteristics of the death scene that defy expectations—such as when the victim is found nude and nudity does not seem congruent

¹Federal Bureau of Investigation, Quantico, VA, USA

²Bureau of Alcohol, Tobacco, Firearms and Explosives, Huntsville, AL, USA

Corresponding Author:

Leah Tanner, CIRG/IOSS/NCAVC, Federal Bureau of Investigation, Quantico I Range Road, VA 22135, USA.

Email: ltanner@fbi.gov

with the rest of the scene. A review of popular press found several instances of equivocal death cases involving a nude victim. For example, in one such case a woman was found nude, hands bound, and hanging from a balcony. The death was determined to be suicide, yet the family went on to win a wrongful death suit against the brother of the victim's boyfriend (Pelisek, 2019). In an article titled "Is It Common for Women to Commit Suicide in the Nude?" the woman's family argues she would have never committed suicide, let alone commit suicide naked (Hawkins, 2019). In another case, a woman was found deceased, nude, and with a clothesline around her neck. It was initially classified as a suicide, changed to undetermined, and then finally classified as a homicide years later (Saavedra, 2020). As seen by the aforementioned case anecdotes, the presence of nudity is often not congruent with other crime scene characteristics and is therefore worthy of empirical study. The current study aims to explore the possible relationship between decedent nudity and homicides to determine whether nudity can serve as a distinguishing factor for medico-legal death investigators in differentiating between the two manners of death, which may be helpful in equivocal death investigations.

Literature Review

Lacks et al. (2008) define an undetermined death, also known as an equivocal death, as "any death where there is uncertainty as to the circumstances of the death, creating the relatively equal probability of two or more possible manners of death" (p. 150). In an equivocal death, the cause of death may be known, but the manner (natural death, accident, suicide, homicide, or undetermined) is not (Davis & Ogloff, 2014). For example, a medical examiner may determine that the cause of death is from a drug overdose, but label the death as undetermined, as the manner of death could not be concluded to be an accident or suicide. This occurs more frequently than one may expect. The Centers for Disease Control and Prevention (CDC) reported that 9.5% were listed as undetermined, meaning that the evidence indicating that one manner of death was not more compelling than another (Jack et al., 2018).

Victim and Crime Scene Characteristics in Equivocal Death Analyses

In reviewing suicide and undetermined deaths in Sweden, Lindqvist and Gustafsson (2002) found that alcohol-related deaths were more commonly classified as undetermined deaths. Researchers, using samples from across the globe, have also found that those who completed suicides were more likely to have substance abuse issues than people in the general population (Cavanagh et al., 2003; Cheng et al., 2000).

Determining that a suicide occurred can be difficult because "it is rare for there to be clear objective evidence that the deceased took their own life" (Canter et al., 2004, p. 234). Cases are clearer when there is suicidal communication, either verbally or through a note, as researchers found that previous suicidal communication was highly predictive of a death being classified as a suicide (Lindqvist & Gustafsson, 2002).

In fact, previous research finds that only 34% of decedents who committed suicide left a note (Safe States Alliance, 2017). In the absence of such objective evidence investigators may turn to examination of the life events preceding the victim's death. However, some stressful life situations that are risk factors for suicide are also risk factors for victimization and homicide. For example, intimate partner problems leading to separating are risk factors for homicide, yet at the same time intimate partner problems were also in the lives of 43% of people who committed suicide (Brown & Seals, 2019; Johnson & Hotton, 2003).

Conducting an Equivocal Death Analysis

To start, medico-legal death investigators review the injury patterns observed on the deceased to help determine the manner of death. For instance, if the deceased was wounded with a knife, the directionality and axes of the wounds have been found to be a discerning factor in determining homicides versus suicides, and superficial stab wounds and clothing lacerations are also considered in suicide and homicide determinations (De-Giorgio et al., 2015; Terranova et al., 2020). Similarly, in the case of homicide by gunshot, the type of gun used, the location and number of the injuries to the body, the direction of the gunshot, and if it was a contact shot, are all utilized in the determination of suicide or homicide (Cave et al., 2014; Molina & DiMaio, 2008; Molina et al., 2007, 2013a, 2013b). Observable characteristics of both injury to the body and conditions present in the context in which the victim was found are inherently vital to determining cause of death.

The assessment of an attending doctor or coroner will have a role in the law enforcement investigation, "a vision of the event can be strongly influenced by the initial orientation of the medical examiner" with ambiguous death scenes (Visentin et al., 2019, p. 148). For example, in equivocal death scenarios, Crepeau-Hobson (2010) found that 31.5% of medical examiners stated that a lack of suicidal history was a specific piece of information that would direct them toward an accident determination as compared to a suicide determination for a deceased child.

In equivocal death analyzes, assessors consider the likelihood of various scenarios in determining the manner of death (Davis & Ogloff, 2014). To do this, medico-legal death investigators review the body discovery scene, the autopsy, and tests for substance use while also analyzing victimology—the behavioral and psychological history of the deceased (Lacks et al., 2008). This can be done through a psychological autopsy—a thorough review where death investigators and mental health professionals determine the psychological state of the deceased (Dattilio & Sadoff, 2011). Individuals surrounding the deceased are asked questions about the deceased's stress levels, coping abilities, personal problems, or crises, and behavioral and emotional changes (Gavin & Rogers, 2006; Lacks et al., 2008). In completing an equivocal death analysis Davis and Ogloff (2014) urge investigators, in the *Checklist of Equivocal Death Information*, to consider overarching categories such as personal experiences, health history, family, relationships, and the death scene. Within each of those categories the investigators then dive deeper to

examine topics such as financial issues, mental health diagnoses, previous writings, history of violence victimization or perpetration, among other topics that could influence suicidal actions. The death investigation is made even more challenging by the nature of suicide where “suicidal individuals may perform non-suicidal acts and non-suicidal individuals may end by performing suicidal acts” (Silverman & De Leo, 2016, p. 84). The information collected can be used to assist in the classification of the deceased’s manner of death (Davis & Ogloff, 2014).

Psychological autopsies have received a fair amount of criticism including the lack of standardization in how and when they should be conducted (Canter, 2000; Dattilio & Sadoff, 2011; Davis & Ogloff, 2014; Hjelmeland et al., 2012; Pouliot & De Leo, 2006). The challenge with psychological autopsies, however, is those most likely to be interviewed for a deceased’s psychological autopsy may be unable or unwilling to provide an accurate picture of the victim (Dattilio & Sadoff, 2011; Lacks et al., 2008). Interviewees may provide inaccurate information for organic reasons, such as genuine difficulty in the recollection of events due to the trauma of the death or the age of the person being interviewed (Pouliot & De Leo, 2006). However, from a malicious standpoint, those consulted may have reasons to conceal, distort, or suppress evidence about the manner of death (Canter, 2000). These reasons could include their own biases about suicide, financial/insurance incentives for a death not to be labeled a suicide, or covering their own involvement in the death (Canter, 2000; Hjelmeland et al., 2012; Pouliot & De Leo, 2006). Ferguson and Petherick (2016) found that in a sample of sixteen homicides staged as suicide cases, 50% of the offenders were friends or non-domestic family members, while the other 50% were cohabitating spouses or partners, in other words, those who would most likely be consulted for a psychological autopsy. Deception by family and friends of the deceased happens frequently with offenders in equivocal death cases that are actually homicides (Ferguson & Sutherland, 2018; Pettler, 2016). In a review of misclassified, unsolved homicide cases, the fact the manner of death was equivocal allowed some offenders to avoid detection (Ferguson & McKinley, 2019).

Moving beyond psychological autopsies, some argue equivocal death analyses in general lack empirical research to support their use (Canter, 2000). While there is limited empirical research, Lacks et al. (2008) notes that anecdotes are subsequently necessary to support the use of psychological autopsies. More recently, Visentin et al. (2019) developed a five item scale for use in equivocal death analyses: (a) statistical frequency of manner used to cause the death, (b) victim’s history of mental illness, (c) circumstantial data, (d) if multiple modes of causing death were used (i.e., cutting wrists and consuming pills), and (e) compatibility of the injury pattern with suicide. Testing of the newly developed scale revealed that a score of four or lower out of 10 successfully categorized 87% of the suicides as such, while excluding all homicides and 97% of accidental deaths (Visentin et al., 2019). Since psychological autopsies are somewhat criticized, and structured equivocal death analyses is in its infancy, systematic study of additional distinguishing factors of homicides and suicides, such as nudity at death, becomes even more important to consider.

Nudity at Time of Death

One topic that has appeared within several equivocal death cases but has not been empirically examined in the research literature is nudity at the time of death. As Hawkins (2019) clearly notes, the academic literature provides no insight into the frequency with which suicide is completed in the nude. Using three case examples, Simon (2008) theorized why a person may commit suicide nude, but the article provided little evidence for use in equivocal death investigations. The theoretical basis for suicidality does not provide much assistance either. Joiner's (2005) theory of suicidality contained three main factors which paved the way for a successful suicide attempt. He posited that perceived burdensomeness, a lack of belonging, and acquired capability allowed a person to follow through on their suicidal thoughts. Feeling as though one is a burden and lacks connections to others, as well as the capability to commit suicide, does not have a clear-cut connection with the level of undress at death, however. Additionally, while Chan and Heide (2009), as well as Smith et al. (2011), mention nudity within the context of sexual homicides, we were unable to find any research literature that explores how frequent nudity is in homicides and suicides, which could indicate if nudity might be a discerning factor in undetermined deaths.

Equivocal death analysis is made more challenging because the research has not empirically examined victim and situational factors that those close to the victim see as important in understanding whether a death is a homicide or a suicide, such as when the family of one victim stated she would never commit suicide naked (Hawkins, 2019). The current research examines victim nudity, victim life stressors, and victim demographics among suicide and homicide cases. These analyses fill the omission in the literature by incorporating nudity at time of death, relationship and family issues, personal crises, mental health issues, and a variety of other variables related to the deceased. This allows investigators to integrate empirical findings into their decision-making processes in equivocal death cases. Therefore, the present study will answer the following research questions:

Research question #1: Is there a relationship between the victim nudity at the time of death and the likelihood of the death being a homicide or a suicide?

Research question #2: Is there an interaction effect between victim gender and nudity on the likelihood of the death being a homicide or a suicide?

Research question #3: If there is a relationship between nudity and the likelihood of a death being a homicide as compared to a suicide, how does the strength of the relationship compare to other variables such as personal problems or crises experienced by the victim?

Method

Sample

The National Violent Death Registry System (NVDRS) is a state-based reporting system maintained by the CDC that houses over 600 variables pertaining to homicides,

suicides, and undetermined deaths from around the country.² For this analysis, the authors obtained the NVDRS' data from 2014 through 2017. While the NVDRS routinely captured stressors within the deceased's past, in 2014, the NVDRS began capturing crisis variables, which are those stressors that happened to the deceased within 2 weeks of their death. This is an important benefit as the longitudinal status of stressors and temporal changes of those stressors were a valued contribution of the work of Davis' Checklist of Equivocal Death Information (Davis & Ogloff, 2014). The total sample for the present study was 119,145 violent deaths from 37 states, with 74.7% of deaths classified as suicides and the remaining 25.3% classified as homicides.

Measures

The dependent binary variable was whether the violent death was classified by the local jurisdiction as a suicide (0) or a homicide (1). To assist in equivocal death investigations, the independent variables were situational variables that could be measured both with the suicides and homicides. The independent variables were all binary and coded as yes (1) or no/unknown/not marked (0). The NVDRS dataset did not contain a variable to measure if the victim was found nude, so we searched the included law enforcement and medical examiner narratives for the following words (and their variations): nude, naked, unclothed, unclad, and undress. If a case was flagged, the third author reviewed the narrative to ensure that the victim was found either completely nude or partially nude (with genitals or breasts revealed). In conjunction with nudity, we used the following binary variables contained within the NVDRS to measure victim stressors: (a) if a mental health diagnosis was noted, (b) if the deceased person experienced a mental health crisis, (c) if there was a family relationship problem noted (with someone other than the intimate partner), (d) if there was a family crisis noted (with someone other than an intimate partner), (e) if the deceased had been the victim of interpersonal violence within the last month, (f) if the deceased had an alcohol or drug problem, (g) if the deceased had a drug/alcohol crisis, and (h) if an argument led to the deceased's death. Crises were classified as such if they were a severe problem in the 2 weeks prior to death, while problems extending beyond two-weeks prior to death were considered more long term. Also, an argument that led to death could have been coded yes for multiple reasons. For example, the deceased person having a fight with his father and then committing suicide or the deceased having a fight with his father and then his father killing him could both be situations in which an argument led to death. The control variables of the victim's gender, age, and race were also included in the study.

Data Analyses

Initially, the authors ran univariate and bivariate frequencies. Following this initial descriptive analysis, the authors conducted a multivariate logistic regression. Due to the large sample size, all the independent variables, control variables, and the interaction term (female victim \times nudity) were included in the model without concern of

overfitting the model. The logistic regression model was tested for influential observations, specification errors, goodness of fit, and multicollinearity. Approximately 180 observations were noted to be influential with a Pregibon's δ beta of greater than two, which could indicate undue influence on the model (UCLA Institute for Digital Research and Education, 2020). We ran the model without the 180 observations and the significance and strength of association of the independent variables remained the same. Therefore, for parsimony, all the observations are included in the presented logistic regression.

Results

For the bivariate analyses, all the independent variables and control variables were significant with the dependent variable at $p < .001$, which is not unexpected due to the large sample size. Table 1 illustrates that across approximately 30,000 homicides, in 0.8% of the cases, the victim was found nude. This is twice as frequent as nudity in suicides, as only 0.4% of suicide victims were found nude at the time of death ($\chi^2[df=1, N=119,145]=72.3, p < .001$). Focusing on the victim stressor variables, an argument prior to the death ($\chi^2[df=1, N=119,145]=2600, p < .001$) and the deceased being a victim of interpersonal violence in the past month ($\chi^2[df=1, N=119,145]=417.3, p < .001$) were both associated with a higher likelihood of homicide.

The bivariate association between family relationship problems and manner of death ($\chi^2[df=1, N=119,145]=774.7, p < .001$), along with family relationship crises and manner of death ($\chi^2[df=1, N=119,145]=139.0, p < .001$), demonstrated that both were more common in suicides. The same held true for mental health problems ($\chi^2[df=1, N=119,145]=17,000, p < .001$) and mental health crises ($\chi^2[df=1, N=119,145]=310.9, p < .001$). Finally, at the bivariate level, substance abuse problems ($\chi^2[df=1, N=119,145]=2,600, p < .001$) and substance abuse crises ($\chi^2[df=1, N=119,145]=479.3, p < .001$) were more common in suicides.

Combining the independent variables into one multivariate logistic regression model (see Table 2), it becomes clear that victim race strongly influences the likelihood of a death being a homicide or a suicide. The odds of homicide victimization were 18 times higher among black individuals compared to white deceased persons. Deceased individuals with Hispanic, American Indian, and Asian backgrounds all had higher odds ratios indicating homicide as compared to white deceased individuals.

With regards to stressors experienced by the victim, being the victim of interpersonal violence increased the odds 5.5 times that the death was a homicide. Closely following was the interaction between victim gender and being found nude. Female victims who were found nude were 5.4 higher odds of the death being a homicide. The presence of mental health problems and crises, substance abuse problems and crises, and as well as family relationship problems were all related to an increased likelihood of death being a suicide. The only stressor variable unrelated to homicide and suicide determination was experiencing a family crisis within the 2 week period preceding death if the deceased had experienced a family crisis in the past 2 weeks.

Table 1. Victim and Situational Characteristics in Homicides and Suicides.

	Homicides (25.3%; n = 30,163)	Suicides (74.7%; n = 88,982)	p
Victim demographics			
Average victim age	33.7 years	46.5 years	<.001
Female victim	16.5%	23.0%	<.001
Victim race			
American Indian	1.7%	1.3%	<.001
Asian/Pacific Islander	1.2%	2.3%	
Black	55.7%	5.9%	
Hispanic	14.1%	6.1%	
Other/unknown	0.6%	0.4%	
Two or more races	1.0%	0.9%	
White	25.8%	83.0%	
Situational characteristics			
Argument led to death	27.2%	14.3%	<.001
Family relationship problem	3.8%	8.6%	<.001
Family relationship crisis	1.1%	2.2%	<.001
IPV victim within past month	1.6%	0.4%	<.001
Mental health problem	3.9%	45.5%	<.001
Mental health crisis	0.1%	1.1%	<.001
Substance abuse problem	12.0%	26.6%	<.001
Substance abuse crisis	0.2%	1.9%	<.001
Victim found nude	0.8%	0.4%	<.001

Using this data and based on the presented logistic regression model, the authors explored the predicted probabilities of a death being a homicide or a suicide. Only considering the gender of the victim, the likelihood that a female victim was a homicide victim was 27.0%. However, if it was a female victim who was found nude this probability more than doubled, jumping to 57.2%, with all other factors in the model held constant (See Figure 1 for the interaction effect between victim gender and nudity). In comparison, with male victims found clothed the probability of homicide was 25% and jumped to 32% with male, nude victims. If a nude female had an argument prior to death, the probability of homicide increased to 66.8%, and if she was also the victim of interpersonal violence in the past 30 days, the likelihood of homicide increased to 85.6%.

Discussion

In almost 10% of violent death, the manner of death was labeled as undetermined, which indicates providing empirical support to law enforcement in their equivocal death investigations is crucial (Jack et al., 2018). Therefore, researchers examined those cases where manner of death was determined and utilized factors recognized

Table 2. Victim and Situational Variables Likelihood of Death being a Homicide. (n = 119,104).

	b	95% CI		Odds ratio	p
		LL	UL		
Victim age	-0.02	-0.02	-0.02	0.98	<.001
Female victim	0.20	0.15	0.25	1.22	<.001
Victim race ^a					
American Indian	0.93	0.82	1.05	2.55	<.001
Asian/Pacific Islander	0.29	0.16	0.41	1.33	<.001
Black	2.93	2.89	2.98	18.74	<.001
Hispanic	1.64	1.59	1.69	5.16	<.001
Other/unknown	0.99	0.79	1.20	2.72	<.001
Two or more races	0.94	0.79	1.09	2.56	<.001
Argument led to death	0.87	0.83	0.92	2.39	<.001
Family relationship problem	-0.77	-0.86	-0.67	0.46	<.001
Family relationship crisis	-0.13	-0.30	0.04	0.88	.14
IPV victim within month	1.71	1.52	1.89	5.51	<.001
Mental health problem	-2.66	-2.73	-2.60	0.07	<.001
Mental health crisis	-0.71	-1.26	-0.17	0.49	.01
Substance abuse problem	-0.36	-0.41	-0.31	0.70	<.001
Substance abuse crisis	-1.74	-2.05	-1.44	0.17	<.001
Victim found nude	0.70	0.38	1.01	2.01	<.001
Female victim & found nude	1.69	1.21	2.18	5.44	<.001
Constant	-0.81	-0.87	-0.76	0.44	<.001

^aWhite—reference category.

within to apply the extrapolated analysis to better understand or evaluate more difficult death scenes. To our knowledge, this is the first empirical study to examine the relationship between nudity at the time of death and manner of death. We further expanded this work by integrating other stressors in the lives of the deceased with the goal of informing law enforcement’s equivocal death investigations.

In answering our first research question, we found that there was an increased chance that a death was a homicide if the victim was found nude. As questioned in the title of the Hawkins (2019) article “Is it common for women to commit suicide in the nude?” and our second research question exploring interaction effects between gender, nudity, and the likelihood of homicide, this study demonstrated it is relatively rare for women to commit suicide while nude, and female nudity at the time of death is strongly related to the death being a homicide. In relation to our third research question about the strength of association of nudity in relationship to homicides, life stressors and victim demographics are also significantly associated with homicide-related deaths. However, in this sample, only two were stronger predictors of homicide than a female victim found nude: being an African-American victim and having

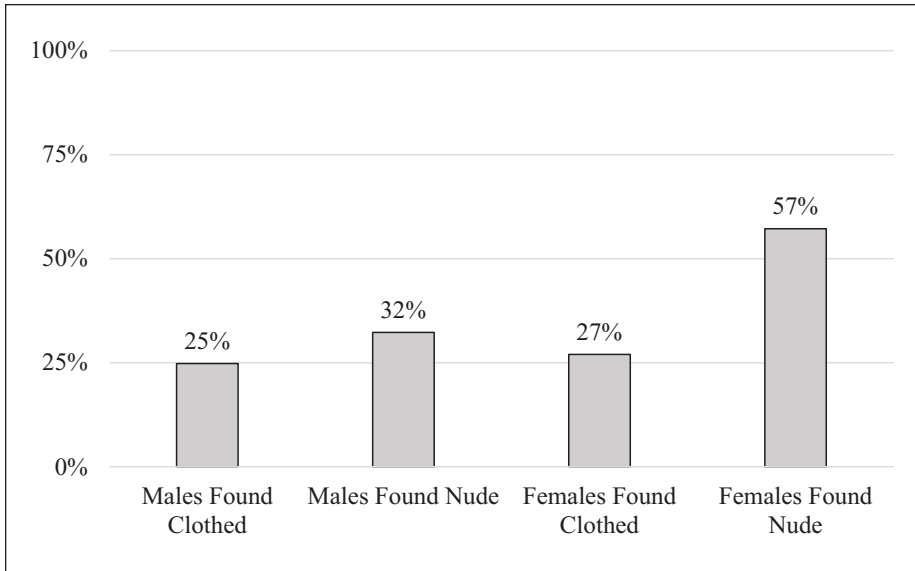


Figure 1. Gender and nudity interaction predicted probabilities of homicide ($n = 119,104$)*.

*Produced using the margins command; controlling for other independent variables in the logistic regression.

a previous experience of interpersonal violence (within 30 days of death). Previous mental health problems and crises, substance abuse problems and crises, and family relationship problems were all associated with higher risk of suicide. Family relationship crises were not related to either homicide or suicide. Crises were classified as a severe problem in the 2 weeks prior to death, while a corresponding problem was considered more long-term.

Operational Considerations

Our findings suggest that law enforcement should consider adopting an equivocal investigation perspective when the deceased is found nude and suicide is alleged by those surviving the decedent. There are several structured guides for psychological autopsies and equivocal death investigations, such as the previously mentioned *Checklist of Equivocal Death Information* (Davis & Ogloff, 2014). The validity of the checklists is outside the scope of this paper. We, therefore, do not recommend one specific tool over another, nor do we argue that structured tools will provide a definitive answer on the manner of death. Rather, we encourage the use of structured tools to ensure that all investigative avenues and perspectives are explored and to aid investigators in achieving a systematic and semi-standardized approach in such cases. This functions optimally when homicide investigators are called in from the beginning with a possible nude suicide. Doing so allows for the scene of the death to

be preserved for evidentiary purposes. For example, with nude equivocal deaths, law enforcement should pay attention to items that could be of evidentiary value, such as books, journals, phones, and laptops. Moreover, as with a psychological autopsy, law enforcement should interview witnesses and key relationships from various connections in the deceased's life while remaining mindful of who may have a stake in covering up relationship strains or misdeeds, and whether any acquaintances may hold biases for or against labeling a death a suicide (Canter, 2000; Hjelmeland et al., 2012; Pouliot & De Leo, 2006). This also involves understanding the deceased's psychological state and social relationships through investigative avenues such as a scrubbing (or exploitation) of all available social media applications. The deceased's social circle can possibly provide insight into medical or psychological care obtained by the decedent, which allows the investigator to understand the possibility of prior suicide attempts or ideations. Finally, as nudity is rare in violent deaths, it necessitates the examination of possible staging. Ferguson (2015) found 5% of staged homicides involved offenders setting up the crime scene to appear as if the motivation for the death was sexual when it was not.

While the current study demonstrated that nudity is strongly associated with violent death via homicide, it is not a perfect predictor, as there were over 300 deaths in the dataset that were nude suicides. For possible suicides that involve nudity, we suggest law enforcement incorporate Joiner's (2005) concept of suicidality factors—perceived burdensomeness, lack of belonging, and acquired capability—into their interviewing. Law enforcement should investigate if the deceased suffered from the perception that they were a burden to others and that they would always be a burden (Joiner, 2005). In addition, Joiner stressed a key suicidality factor is lack of connection to others, or the perception that an individual did not belong in some way. Finally, law enforcement should look for evidence in the deceased's life that increased the capability for suicide. In other words, law enforcement should examine if the deceased was actively working against the natural tendency toward self-preservation by mental practice or previously aborted suicide attempts (Joiner, 2005).

Limitations and Future Directions

While the NVDRS dataset is quite extensive, it did not cover the entire nation with the 2017 data, and we were limited to case descriptions within law enforcement and medical examiner narratives. Therefore, we relied on the assumption that the deceased being found nude was unique enough that it would have been noted in the narratives. However, we cannot discount that there are cases where the deceased was found nude, but it was not noted in the narratives. Additionally, we did not search the narratives to determine if there were indications of staging that the medico-legal death investigators noted, which is something particularly important to consider for potentially staged homicides (Ferguson & Petherick, 2016; Miller et al., 2020). Also, due to the nature of the data, NVDRS collapses no/unknown/not available into a single category which limits our ability to distinguish between “no” responses and true missing data.

Moreover, there was no way for us to determine if the deaths that were labeled as a homicide or a suicide were at one time considered an equivocal death case, so it is possible that they may be different in unknown ways from equivocal death cases that were eventually labeled as homicides or suicides. Finally, due to the NVDRS' coding rules autoerotic fatalities are excluded, so in-depth examination into this specific type of nude death was not possible.

The present study is the first to demonstrate the existence of the relationship between nudity and the likelihood of homicide. Future work should aim to see if these findings can be replicated within additional datasets and populations. Additionally, while this was the first study to examine the interaction between gender and nudity in violent death, future research should explore potential interaction effects between victim nudity and other relevant variables such as age, sexual orientation, drug/alcohol use, victim's body image and religious practices. Finally, case characteristics, such as the location of the body and expectations of nudity within that location (such as in the shower vs. in the backyard), should also be explored in order to fully examine the diagnostic value of the nudity variable in the context of violent deaths and law enforcement investigations.

Equivocal death investigations are difficult from the outset as there may be multiple ways investigators could interpret the scene upon arrival. Depending upon the situational factors, context and evidence at the scene, the death may appear to be a suicide when in fact what is observed is has been staged by the offender. One variable of importance which had not been previously examined was that of nudity. With some acknowledged limitations, the results of this study suggest that there is a higher probability a homicidal act has occurred when a female victim is discovered nude. Assessment of the level of dress or undress of a possible suicide victim should serve as one aspect of a holistic approach that includes not just a scene assessment, forensics and pathological exam, but also a psychological assessment of the victim in determining manner of death.

Acknowledgments

We want to acknowledge Sarah A. Shaffer with her assistance reviewing and editing this manuscript.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Sarah W. Craun  <https://orcid.org/0000-0002-3736-636X>

Notes

1. Although death investigations may be conducted by both law enforcement and medical examiners or coroners, for the purpose of this literature review, we do not differentiate these professions. Rather, we use the term medico-legal death investigators to include any profession which may be involved in such investigations.
2. We chose not to include accidental deaths in our analysis as the dataset only includes a restricted range of accidental violent deaths and is therefore not a representative sample of all accidental deaths that occur.

References

Brown, S., & Seals, J. (2019). Intimate partner problems and suicide: Are we missing the violence? *Journal of Injury and Violence Research, 11*(1), 53–64. <https://doi.org/10.5249/jivr.v11i1.997>

Canter, D. V. (2000). Psychological autopsies. In J. Siegel & P. Saukko (Eds.), *Encyclopedia of forensic sciences*. Elsevier. <http://eprints.hud.ac.uk/id/eprint/8669/1/canterpsychological.pdf>

Canter, D. V., Giles, S., & Nicol, C. (2004). Suicide without explicit precursors: A state of secret despair? *Journal of Investigative Psychology and Offender Profiling, 1*(3), 227–248. <https://doi.org/10.1002/jip.4>

Cavanagh, J. T. O., Carson, A. J., Sharpe, M., & Lawrie, S. M. (2003). Psychological autopsy studies of suicide: A systematic review. *Psychological Medicine, 33*(3), 395–405. <https://doi.org/10.1017/s0033291702006943>

Cave, R, DiMaio, V.J. & Molina, D.K. (2014). Homicide or suicide? Gunshot wound interpretation: A Bayesian approach. *American Journal of Forensic Medicine and Pathology, 35*(2), 118–123.

Chan, H.-C., & Heide, K. M. (2009). Sexual homicide: A synthesis of the literature. *Trauma Violence & Abuse, 10*(1), 31–54. <https://doi.org/10.1177/1524838008326478>

Cheng, A. T. A., Chen, T. H. H., Chen, C.-C., & Jenkins, R. (2000). Psychosocial and psychiatric risk factors for suicide: Case-control psychological autopsy study. *The British Journal of Psychiatry, 177*(4), 360–365. <https://doi.org/10.1192/bjp.177.4.360>

Crepeau-Hobson, F. (2010). The psychological autopsy and determination of child suicides: A survey of medical examiners. *Archives of Suicide Research, 14*(1), 24–34. <https://doi.org/10.1080/13811110903479011>

Dattilio, F. M., & Sadoff, R. L. (2011). Psychological autopsy. In E. Y. Drogin, F. M. Dattilio, R. L. Sadoff, & T. G. Gutheil (Eds.), *Handbook of forensic assessment: Psychological and psychiatric perspectives* (pp. 593–611). John Wiley & Sons.

Davis, M. R., & Ogloff, J. R. P. (2014). Psychological autopsy of equivocal deaths. In G. J. N. Bruinsma & D. L. Weisburd (Eds.), *Encyclopedia of criminology and criminal justice* (pp. 4098–4107). Springer.

De-Giorgio, F., Lodise, M., Quaranta, G., Spagnolo, A. G., D’Aloja, E., Pascali, V. L., & Grassi, V. M. (2015). Suicidal or homicidal sharp force injuries? A review and critical analysis of the heterogeneity in the forensic literature. *Journal of Forensic Sciences, 60*(s1), S97–S107. <https://doi.org/10.1111/1556-4029.12673>

Ferguson, C. (2015). Staged homicides: An examination of common features of faked burglaries, suicides, accidents, and car accidents. *Journal of Police and Criminal Psychology, 30*(3), 139–157. <https://doi.org/10.1007/s11896-014-9154-1>

- Ferguson, C., & McKinley, A. (2019). Detection avoidance and mis/unclassified, unsolved homicides in Australia. *Journal of Criminal Psychology, 10*(2), 113–122. <https://doi.org/10.1108/jcp-09-2019-0030>
- Ferguson, C., & Petherick, W. (2016). Getting away with murder: An examination of detected homicides staged as suicides. *Homicide Studies, 20*(1), 3–24. <https://doi.org/10.1177/1088767914553099>
- Ferguson, C., & Sutherland, T. (2018). Murder by pushing: An exploratory analysis of homicidal falls from a height. *American Journal of Forensic Medicine & Pathology, 39*(3), 192–200. <https://doi.org/10.1097/paf.0000000000000386>
- Gavin, M., & Rogers, A. (2006). Narratives of suicide in psychological autopsy: Bringing lay knowledge back in. *Journal of Mental Health, 15*(2), 135–144. <https://doi.org/10.1080/09638230600608735>
- Hawkins, E. (2019, June 14). Is it common for women to commit suicide in the nude? *Oxygen*. <https://www.oxygen.com/death-at-the-mansion-rebecca-zahau/crime-time/nude-female-suicide-cleopatra-marilyn-monroe-rebecca-zahau>
- Hjelmeland, H., Dieserud, G., Dyregrov, K., Knizek, B. L., & Leenaars, A. A. (2012). Psychological autopsy studies as diagnostic tools: Are they methodologically flawed? *Death Studies, 36*(7), 605–626. <https://doi.org/10.1080/07481187.2011.584015>
- Jack, S. P. D., Petrosky, E., Lyons, B. H., Blair, J. M., Ertl, A. M., Sheats, K. J., & Betz, C. J. (2018). Surveillance for violent deaths—National Violent Death Reporting System, 27 states, 2015. *MMWR Surveillance Summaries, 67*(11), 1–32. <https://doi.org/10.15585/mmwr.ss6711a1>
- Johnson, H., & Hotton, T. (2003). Losing control: Homicide risk in estranged and intact intimate relationships. *Homicide Studies, 7*(1), 58–84. <https://doi.org/10.1177/1088767902239243>
- Joiner, T. (2005). *Why people die by suicide*. Harvard University Press.
- Lacks, R. D., Westveer, A. E., Dibble, A., & Clemente, J. (2008). Equivocal death investigation: Case study analyses. *Victims & Offenders, 3*(2-3), 150–164. <https://doi.org/10.1080/15564880801938292>
- Lindqvist, P., & Gustafsson, L. (2002). Suicide classification—clues and their use: A study of 122 cases of suicide and undetermined manner of death. *Forensic Science International, 128*(3), 136–140. [https://doi.org/10.1016/s0379-0738\(02\)00188-3](https://doi.org/10.1016/s0379-0738(02)00188-3)
- Miller, M. L., Merola, M. A., Opanashuk, L., Robins, C. J., Chancellor, A. S., & Craun, S. W. (2020). “911 What’s your emergency?”: Deception in 911 homicide and suicide staged as homicide calls. *Homicide Studies*. Advance online publication. <https://doi.org/10.1177/1088767920948242>
- Molina, D. K., & DiMaio, V. J. M. (2008). Rifle wounds: A review of range and location as pertaining to manner of death. *American Journal of Forensic Medicine & Pathology, 29*(3), 201–205. <https://doi.org/10.1097/paf.0b013e31818345a5>
- Molina, D. K., DiMaio, V. J. M., & Cave, R. (2013a). Gunshot wounds: A review of firearm type, range, and location as pertaining to manner of death. *American Journal of Forensic Medicine & Pathology, 34*(4), 366–371. <https://doi.org/10.1097/paf.0000000000000065>
- Molina, D. K., DiMaio, V. J. M., & Cave, R. (2013b). Handgun wounds: A review of range and location as pertaining to manner of death. *American Journal of Forensic Medicine & Pathology, 34*(4), 342–347. <https://doi.org/10.1097/paf.0000000000000048>
- Molina, D. K., Wood, L. E., & DiMaio, V. J. M. (2007). Shotgun wounds: A review of range and location as pertaining to manner of death. *American Journal of Forensic Medicine & Pathology, 28*(2), 99–102. <https://doi.org/10.1097/01.paf.0000257415.82728.d7>

- Pelisek, C. (2019, May 20). Calif. woman's mansion death was ruled a suicide 8 years ago— but family believes it was murder. *People*. <https://people.com/crime/rebecca-zahau-family-suspects-murder-police-say-death-by-suicide/>
- Pettler, L. G. (2016). *Crime scene staging dynamics in homicide cases*. CRC Press.
- Pouliot, L., & De Leo, D. (2006). Critical issues in psychological autopsy studies. *Suicide and Life-Threatening Behavior*, 36(5), 491–510. <https://doi.org/10.1521/suli.2006.36.5.491>
- Saavedra, T. (2020). Justice delayed: O.C. woman's 1974 death reclassified from suicide to homicide. *The Orange County Register*. <https://www.ocregister.com/justice-delayed-o-c-womans-1974-death-reclassified-from-suicide-to-homicide>
- Safe States Alliance. (2017). *Deaths from suicide: A look at 18 states. A special report with data from the national violent death reporting system, 2013–2014*. https://cdn.ymaws.com/www.safestates.org/resource/resmgr/nvdrs/Suicide_Report_2017/NVDRS_Special_Report_Final_2.pdf
- Silverman, M. M., & De Leo, D. (2016). Why there is a need for an international nomenclature and classification system for suicide. *Crisis*, 37(2), 83–87. <https://doi.org/10.1027/0227-5910/a000419>
- Simon, R. I. (2008). Naked suicide. *Journal of the American Academy of Psychiatry and the Law Online*, 36(2), 240–245.
- Smith, S. G., Basile, K. C., & Karch, D. (2011). Sexual homicide and sexual violence-associated homicide: Findings from the National Violent Death Reporting System. *Homicide Studies*, 15(2), 132–153. <https://doi.org/10.1177/1088767911406236>
- Terranova, C., Doro, L., Zancaner, S., Zampini, T., Mazarolo, C., Bonvicini, B., Viero, A., & Montisci, M. (2020). Criminological and medico-legal aspects in homicidal and suicidal sharp force fatalities. *Journal of Forensic Sciences*, 65(4), 1184–1190. <https://doi.org/10.1111/1556-4029.14285>
- UCLA Institute for Digital Research and Education. (2020). *Logistic regression diagnostics*. <https://stats.idre.ucla.edu/stata/webbooks/logistic/chapter3/lesson-3-logistic-regression-diagnostics/>
- Visentin, S., Massaro, L., Viel, G., Cecchetto, G., & Montisci, M. (2019). Suicide identification during on-site inspection. Proposal and application of an interpretative method for death scene investigation. *Forensic Science International*, 297, 148–155. <https://doi.org/10.1016/j.forsciint.2019.01.029>

Author Biographies

Sarah W. Craun, PhD is a senior research associate at the United States Sentencing Commission. Prior she was a research coordinator for the Behavioral Analysis Unit at the Federal Bureau of Investigation.

Leah Tanner is a supervisory special agent in the FBI's Behavioral Analysis Unit focusing on crimes against adults. Prior to joining the Behavioral Analysis Unit she was an agent with the FBI's Los Angeles field office.

Victoria Clausen is a crime analyst assigned to the Violent Criminal Apprehension Program (ViCAP) at the FBI. Previously she worked as a crime analyst for the FBI's Behavioral Analysis Unit focusing on research and program management.

Melissa A. Merola, MA, MEd, is a supervisory special agent with ATF assigned to the FBI's Behavioral Analysis Unit focusing on crimes against adult victims. Her focus is on cases with a nexus to fire fatalities.

Leonard Opanashuk, JD is a supervisory special agent in the FBI's Behavioral Analysis Unit focusing on research and program management. Prior he worked in the crimes against adults Behavioral Analysis Unit.

Timothy G. Keel is a major case specialist with the FBI's Behavioral Analysis Unit. Prior to joining the FBI, he was a homicide detective with the Baltimore, MD police department.