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It doesn't just happen to "Other" people – An exploration of occupation and education level of women who die from intimate partner violence

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ABSTRACT

Introduction: While age, sex, and race/ethnicity of victims of intimate partner violence (IPV) have been described, little has been examined regarding other characteristics. We aim to characterize occupation and education levels of female victims of IPV homicide.

Methods: We retrospectively reviewed the National Violent Death Reporting System from 2003 to 2015 for victims of IPV homicide. Occupation, industry, and education fields were examined to categorize victims according to the 2010 Standard Occupation Classification.

Results: 4931 female victims of IPV were included. When clustering by job type, no single group dominated. Most victims had completed at least high school, with approximately 20% having at least some college.

Conclusion: Occupation and education level of women victims do not predict or protect against homicide in IPV, and these details are often omitted in data collection. This underscores the societal ubiquity of this public health crisis and argues for universal screening and better data collection, including in surgical populations.

Introduction

Multiple studies of universal screening in trauma populations have demonstrated that intimate partner violence (IPV) is prevalent; indeed, trauma patients appear to be at higher risk compared to the general population.[1,2] However, the vast majority of patients who are victims of IPV do not endorse presenting to the trauma service due to injuries that are the direct result of IPV.[3] This may be due in part to underreporting of IPV, but is also likely due to the fact that IPV is associated with other risk factors for trauma, including substance abuse and mental health issues.[1,3,4].

Homicide represents the most severe consequence of IPV, and it is estimated that approximately half of all female homicides are the result of IPV.[5,6] Most female victims of IPV experience physical abuse by the perpetrator prior to death.[6,7] Many victims of IPV homicide have had contact with the healthcare system prior to their deaths, with almost half of all female victims of IPV homicide seen in the Emergency Room within 2 years of their death.[7] Given the high prevalence of IPV in the trauma population, the trauma admission has been endorsed as a unique opportunity to screen for IPV and provide appropriate support and services;[7–9] however, this likely misses a significant proportion of women at risk.

Epidemiology of IPV homicide has been addressed with regard to the age, sex, race and ethnicity of victims. However, little published literature has examined occupational and education levels of women who are victims in the United States to better characterize those at risk. We examined patterns in educational achievement and occupation of female victims of IPV homicide in a multi-state database.

Material and methods

This study is a retrospective review of the National Violent Death Reporting System (NVDRS) data from years 2003–2015. This study falls into the category as exempt by the Colorado Multiple Institutional Review Board. The NVDRS is an active surveillance

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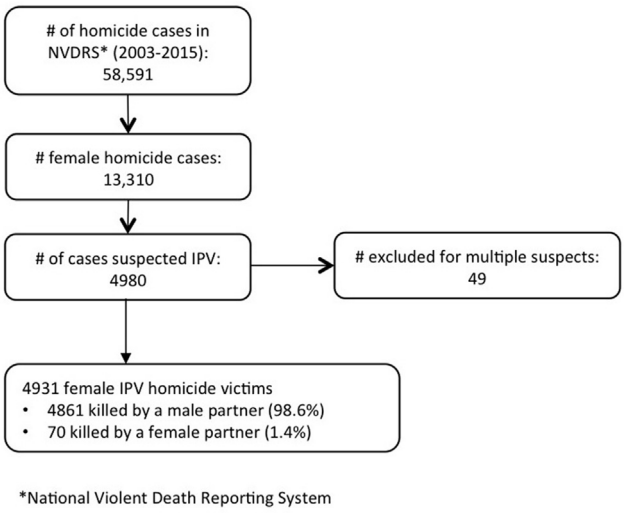

Fig. 1. Flow diagram of subject selection.

system funded by the Centers for Disease Control and Prevention (CDC). The system is currently active in 40 states, the District of Columbia, and Puerto Rico, providing a census of all violent deaths occurring in those regions.[10] The NVDRS collects information regarding all violent deaths occurring in participating states as well as deaths of residents of participating states (see Table 1). Violent deaths include homicides, suicides, accidental firearm deaths, and undetermined deaths that may be violent in nature. Although the NVDRS is not currently a nationwide data set, our prior work has highlighted that homicides in the database have a similar demographic distribution to all homicides in 2015 in the United States as reported by the Federal Bureau of Investigation's Uniform Crime Reporting Program in terms of sex and race/ethnicity of the victims, as well as a nearly identical breakdown of weapon type used in the incidents.[11] The information in the database is collected by trained data abstractors from multiple sources including death certificates, coroner and medical examiner records, and law enforcement reports. The database includes demographic information about the victims, any identified suspects, and circumstances of the death.

Victims in the NVDRS with a manner of death specified as "homicide" were identified. Deaths were determined by the abstractor to be homicides if a preponderance of evidence based on the death certificate, legal documentation, and coroner medical examiner documentation determined that someone used lethal force against the victim. For the purposes of this study, the relationship between the victim and the primary suspect was used to identify victims of intimate partner violence, and male victims were excluded. Deaths were categorized as being the result of intimate partner violence (IPV) if the primary relationship between the suspect and victim fell into one of the following categories: spouse, ex-spouse, boyfriend or girlfriend, ex-boyfriend or girlfriend, and boyfriend or girlfriend unspecified if current or ex. Cases with more than one suspect were excluded from the study, so as to only include cases where there was a high likelihood of IPV being the cause of death.

Occupation and occupational industry are entered as a free text field in the NVDRS by data abstractors. Therefore, an algorithm was used to categorize victims according to the 2010 Standard Occupation Classification (SOC).[12] Direct matching was initially attempted using the Direct Matching Text File (DMTF). In cases where there was no direct match, a keyword search was employed. Finally, in cases where a keyword approach also failed, the free text occupation field was manually classified. The R Project for Statistical Computing was used for all data analysis.

Results

A total of 58,591 homicide cases were included in the NVDRS for the years 2003–2015. Of these, the victim was female in 13,310 cases (22.7%). There were a total of 4980 potential female victims of IPV; 49 cases were excluded due to the presence of multiple suspects, leaving 4931 cases (37.0% of all female victims) where the single suspect was a current or former intimate partner. When cases with no known suspect (n = 3915) and victim age less than 10 years (n = 1317) were excluded from the total pool of female victims, 59.2% of female deaths were IPV-related. The vast majority of female IPV victims (n = 4861, 98.6%) were killed by a male intimate partner (see Fig. 1).

The majority of female IPV victims were non-Hispanic white (n = 2720, 55.2%), followed by black (n = 1403, 28.5%) and Hispanic (n = 473, 9.6%). Median age of victims was 38 years old (range 11–95). In most cases, the weapon used was a firearm (n = 2877, 58.3%), followed by sharp weapons (n = 913, 18.5%) and strangulation or drowning (n = 485, 9.8%).

Education level, although relatively easy to obtain, was not documented in 45% of cases. Most victims with known education level had completed at least high school, with about 20% documented as having at least some college (Table 2).

Of the 4931 victims, occupation could be classified by direct matching in 543 cases (11.8%). An additional 2709 (54.9%) could be classified according to keywords. This left n = 1679 cases (34.0%) where manual classification was performed according to the SOC

Table 1
States participating in NVDRS during years 2003–2015, by year joined.

NVRDS States by Year Joined		
2003		
Alaska	New Jersey	South Carolina
Maryland	Oregon	Virginia
Massachusetts		
2004		
Colorado	North Carolina	Rhode Island
Georgia	Oklahoma	Wisconsin
2005		
Kentucky	New Mexico	Utah
2011		
	Ohio	
2014		
	Michigan	
2015		
Arizona	Kansas	New Hampshire
Connecticut	Maine	New York
Hawaii	Minnesota	Vermont

Table 2
Education level of victims.

Education	N = 4931(%)
Some School	**557 (11.3)**
<8th Grade	119 (2.4)
9-12th	438 (8.9)
High School/GED	**1145 (23.2)**
College/University	**984 (20.2)**
Some college credit	425 (8.6)
Associate	239 (4.8)
Bachelor	245 (5.0)
Master	67 (1.4)
Doctorate	18 (0.4)
Unknown	**2235 (45.3)**

by a single coder. There were 336 cases (6.8%) where occupation was unknown or unable to be classified.

Occupations of victims were diverse and no single job classification predominated (Table 3). Although many victims were in service-related fields (n = 1064, 21.6%) or were unemployed/worked in the home (n = 913, 18.5%), there were also many victims who were businesswomen or professionals (n = 790, 16.0%).

As noted in our prior work, the predominant weapon in these incidents was a firearm (n = 2877, 58.3%). There were differences in the rate of firearm-related incidents based on occupation of the victim. In particular, women in military/security occupations were more likely to be fatally injured by a firearm compared to other occupations (67.6% vs. 58.1%, $p < 0.001$). Women who were unemployed or worked in the home were less likely to be fatally injured by a firearm compared to other occupations (53.6% vs. 59.4%, $p = 0.001$).

Discussion

Prior studies considering occupation and education level of domestic violence victims have been conducted primarily in the international setting – in the Middle East, Southern Asia, and Africa. Several studies have shown decreased rates of violence associated with education level and employment.[13,14] Other studies have shown no association with education level or occupation, or mixed effects depending on societal norms.[15,16] Few studies in the United States have focused on occupation or educational status of victims. To our knowledge no prior national studies have analyzed victims based on specific occupation class, instead focusing on women who work in the home versus women who work outside the home.[17]

Our results indicate that IPV homicide in the United States occurs across lines of education and occupation. Of those women with a known education level (n = 2696), the vast majority had completed high school (n = 2139, 79.3%), with many completing some college or beyond (n = 984, 36.5%). All occupation classifications had women affected by IPV homicide. A not insignificant number of women were in professional or management-level occupations (n = 790, 16.0%), and only 18.5% of victims were listed as unemployed or working in the home. These results highlight that IPV is a public health crisis that can affect all women, and argue for universal screening in healthcare settings.

Although feasibility of universal screening of trauma patients has been demonstrated, and is endorsed by multiple national trauma organizations, it is not universally practiced.[1,18–20] Numerous barriers to implementation exist, including lack of physician education, lack of resources, and concerns about the effectiveness of screening measures.[21] In one study, even when trauma residents underwent training on IPV detection, rates of screening in female trauma evaluations increased only minimally, from 39.9% to 46.1%.[22] Some concern still exists amongst physicians about whether screening negatively impacts patient perceptions of care, although studies have shown overwhelmingly positive responses of women to universal screening in the healthcare setting.[23] There is also the concern that screening might actually increase risk of violence to victims, but there is currently no evidence to support this assertion.[24] This being said, multiple studies have shown that screening tools are only effective at reducing further violence when combined with providing comprehensive support services for identified victims.[24]

While currently a significant missed opportunity, focusing only on screening in the trauma setting is likely insufficient as there are still many victims who never present to the ED prior to the homicide event. As previously noted, while it is true that the trauma population has a higher prevalence of IPV, the majority of patients who screen positive are presenting to the healthcare setting for reasons unrelated to their IPV.[3] However, these victims may present to other providers for specialized care such as gynecologic or elective surgical procedures. The American College of Surgeons initiated their “Statement on Intimate Partner Violence” in 2014 recognizing it as a “major public health problem” and calling on surgeons to “play a leadership role in their communities, hospitals, and medical schools in initiatives to prevent and treat domestic violence.”[19] Several healthcare providers have been highlighted in the media recently as the victims of intimate partner homicide/

Table 3
Occupation of victims.

Occupation	N = 4931(%)
Business/Management/Professional	**790 (16.0)**
Management	269 (5.6)
Medical Professions	247 (5.0)
Business/Finance	125 (2.5)
Professional – Other	149 (3.0)
Education	**418 (8.5)**
Teaching	322 (6.5)
Current Student	96 (1.9)
Administrative/Assistants	**790 (16.0)**
Secretarial/Clerical	467 (9.5)
Medical Assistants	323 (6.6)
Services	**1064 (21.6)**
Restaurant/Food Services	388 (7.9)
Sales/Retail	347 (7.0)
Personal and Other Services	218 (4.4)
House Cleaning/Home Services	111 (2.3)
Services – Other	54 (1.1)
Industry	**430 (8.7)**
Factory/Production	215 (4.4)
Industry - Other	215 (4.4)
Security/Military	**108 (2.2)**
Home	**913 (18.5)**
Homemaker/Retired	760 (15.4)
Unemployed/Disabled	153 (3.1)
Self-Employed/Other	82 (1.7)
Unknown	**336 (6.8)**

Table 4
Intimate partner violence national resources.

Hotlines:	
National Domestic Violence Hotline	800-799-SAFE (7233)
National Organization for Victim Assistance	800-879-6682
National Sexual Assault Hotline	800-656-HOPE (4673)
National Dating Abuse Hotline	866-331-9474/866-331-8453 (TDD)
National Association of Working Women	800-522-0925
National Center for Victims of Crime	800-FYI-CALL
National Suicide Prevention Lifeline	800-273-8255
Lesbian, Gay, Bisexual and Transgender National Hotline	888-843-4564
Web Sites:	
National Resource Center on Domestic Violence	ncadv.org
National Network to End Domestic Violence	nnedv.org
National Coalition Against Domestic Violence	ncadv.org
Futures Without Violence	futureswithoutviolence.org
Office on Violence Against Women	usdoj.gov/ovw
National and State Suicide Resources	suicidehotlines.com
Office on Women's Health	Womenshealth.gov/relationships-and-safety

suicide, including a prominent transplant surgeon, highlighting how this is not just an issue for people generally considered at risk for harm. While screening and intervention is often left to the domain of primary care or to the emergency room/trauma settings, many other providers, including non-trauma surgeons may see these patients first as many of them are young and access primary care at a low rate. As surgeons we are frequently the primary portal of entry into the healthcare system. While trauma surgeons are particularly well-positioned to recognize and screen for intimate partner violence, all surgeons have the potential to serve as the only contact within the healthcare system for those at risk for intimate partner violence (see Table 4).[18,25]

This study focused on female victims of IPV homicide. It should be noted that in our data set, approximately 20% of IPV victims were male. Although this study focused on female victims of IPV homicide, prior studies have demonstrated similar rates of intimate partner and/or sexual violence (IPSV) in both male and female trauma patients.[1] Therefore, we argue that universal screening of patients should include both men and women. We further argue that universal screening should apply to all healthcare settings, not just primary care or emergency settings. There are multiple validated screening tools, with a compiled list from the CDC of 35 instruments.[26] Two commonly used ones for surgical patients are HITS (Hurt, Insult, Threaten and Scream)[27] and PVS (Partner Violence Screen).[28] The American College of Surgeons Committee on Trauma is currently working on Best Practices Guidelines regarding this issue, and the Association of Women Surgeons has issued a statement on IPV, with a call for universal screening since "it is found in all ethnic groups, religions, socioeconomic strata, and both sexual minority and majority populations."[29]

There are several limitations to this study. This is a retrospective review of data from a large, prospectively collected database. Although data is collected from multiple states, it is not, as of the time of this study, a completely representative database for all of the United States. There are currently 40 states plus Puerto Rico and Washington, DC, participating, but the majority of these states were not added until 2016, which is the most recent data that we have. Despite this, data come from a diverse representation of states both in terms of size, demographics, and legislative policies. Classification of occupations may have been incorrect when performed manually; however, the diversity of information makes this likely fairly representative. Finally, we were unable to compare to national-level data on the distribution of occupations amongst women generally, so we are unable to provide estimations of true relative risk of IPV homicide based on occupation or educational status. Unfortunately, we are unable to identify any publicly available resource that documents percentage of the female labor force involved in different occupations at the state level, or documents changes in this distribution over time.

Conclusions

Our data indicate that all women, regardless of occupation or educational attainment, are at risk of homicide in intimate partner violence. This underscores the societal ubiquity of this public health crisis and argues for universal screening in all healthcare settings. Despite the comprehensive nature of the data sources in the NVDRS, these easily obtained details are often omitted in data collection. This argues for increased acknowledgement of the importance of these victims, understanding who they are, and collecting all relevant data to inform intervention strategies.

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