

Sex Differences in Violent Death During Incarceration and Legal Intervention using the NVDRS Database

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Abstract

INTRODUCTION: The pervasiveness of physical violence in the United States justice system often leads to injury and even violent death for those who are incarcerated. The purpose of this project is to better clarify the differences in death during incarceration between males and females, delineating the differences in demographic features and the circumstances of the violent death including location, injury pattern, and perpetrator. This analysis included legal intervention deaths (victim in custody or in process of custody) including homicide and suicide deaths.

METHODS: This is a report utilizing the multi-state National Violent Death Reporting System (NVDRS) data from the years 2003-2019. The NVDRS collects data on all deaths of violent nature. This includes homicides which include legal intervention deaths which apply to any violent death from a police officer, sheriff, guard, or other law enforcement officer. Data are abstracted from both coroner/medical examiner reports as well as legal proceedings on the demographics of both victims and perpetrators, type of weapon used, and other circumstances of fatal injury. Deaths occurring during incarceration or in process of legal intervention were compared for males and females including demographic characteristics of victims and features surrounding the violent death incident.

RESULTS: Overall, there were 4386 victims of violent death in our analysis with 371 female victims and 4015 male victims. There were 3440 victims of suicide, with 333 female victims and 3107 male victims; suicide was the most common cause of death during incarceration for both females and males (89.756% vs 77.38%;p<0.001). Homicide was less common in females (1.62% vs 14.79%; p<0.001) and legal intervention only occurred in males (2.17%; p<0.001). Male victims were more likely to be nonwhite race/ethnicity compared to females, while females were more likely to be experiencing homelessness, have documented mental illness, and comorbid substance abuse.

Background

Almost all United States departments of corrections have reported an increase in prisoner numbers in recent years, with poor outcomes such as overcrowding and short-staffed prisons (Daniel, 2006).

- More inmates may engage in increased conflict and interaction with prison staff and fellow inmates because of less space. There is potential for violent behavior among a large population of inmates living in proximity is a concern for prison officials and staff.
- Bullying and violent inmate conflict have been associated with suicide completion (Stoliker, 2018). Inmates are often subjected to high rates of victimization (physical, sexual, etc.)
- Because overcrowding of prisons can lead to decreased resources for the prison, lack of access to medical care, increase in assaults, lack of opportunity for inmates, and dynamic social structures, this can influence both homicidal and suicidal behaviors (Daniel, 2006).

Suicide in prison ranks as the second leading cause of death in prison behind death due to natural causes (Dye, 2011).

- The US prison system is disproportionately male and thus most suicides in prison involve male inmates.
- As the population of female inmates has increased dramatically overtime, there is increased attention exploring the relationship of gender and suicide in prison.

Female inmates have unique challenges and complex prison experiences, impacting possible violent or self-injurious behavior.

- Female inmates have reported suffering higher levels of emotional distress compared to male inmates (Macdonald, 2013) and enter prison impoverished, prior victims of trauma, addicted to substances and alcohol, and poor physical health (Binswanger et al., 2010; Harner & Riley, 2013; McDaniels-Wilson & Belknap, 2008).

Study Purpose: further investigate specific factors to target with each population to prevent violence, injury, and deaths during incarceration.

Methods

National Violent Death Reporting System (NVDRS) database from the Centers for Disease Control and Prevention (CDC)

- The NVDRS is a population-based surveillance system that collects data on violent deaths within the United States, the District of Columbia, and Puerto Rico using data from both residents and non-residents.
- The NVDRS uses incidents to link all victim deaths and alleged perpetrators/suspects to one event.
- Data on violent deaths is collected from death certificates, coroner/medical examiner reports, toxicology reports, law enforcement reports, and more. The NVDRS also captures circumstances for incidents, such as manner of death and associated factors such as mental health, criminal activity, substance usage, and mechanism of death.

Analyzed demographic characteristics of victim deaths occurring during incarceration or in the process of legal intervention by sex to assess if there exists a significant difference in the circumstances of mortality for each group.

- Sex was defined as binary and coded as either male or female.
- Victims were either in custody, in the process of custody, or in prison.
- Circumstances of mortality included manner of death, such as suicide or self-harm, homicide, legal intervention by police or other authority, or undetermined intent.
- Analyzed aspects of mental health, current or historical mental health treatment, previous suicide attempts, and substance use or alcohol use disorders.
- Analyzed inmates who had pre-existing mental health conditions were receiving current treatment.
- Tested for significance using SAS 9.4 using chi-square tests with an a of 0.05.

Results

Table 1: Demographic characteristics of deaths (n = 4386) occurring during incarceration and legal intervention by gender, NVDRS database, 2003 to 2019

Demographics		Female (n=371, %)	Male (n=4015, %)	p-value
Age		36.0 (±11.4)	38.0 (±12.1)	
Race				
	White, non-Hispanic	283 (76.3)	2461 (61.3)	<.0001
	Black/African American	39 (10.5)	852 (21.1)	
	Hispanic	25 (6.7)	473 (11.8)	
	American Indian/Alaska	12 (3.2)	110 (2.7)	
	Native	3 (0.8)	38 (1.0)	
	Asian/Pacific Islander	7 (1.9)	64 (1.6)	
	Two or more races	2 (0.5)	15 (0.4)	
	Other/Unspecified			
Education Level				<.0001
	8 th Grade or Less	8 (2.2)	220 (5.6)	
	9 th to 12 th grade, no diploma	67 (18.6)	713 (18.2)	
	High School Graduate, GED	146 (40.6)	1524 (38.9)	
	Some College Credit	37 (10.3)	309 (7.9)	
	Associate Degree	14 (3.9)	80 (2.0)	
	Bachelor's Degree	10 (2.8)	80 (2.0)	
	Doctorate or Professional Degree	1 (0.3)	15 (0.4)	
	Unknown	73 (20.3)	965 (24.6)	
Marital Status				.0057
	Married/Civil Union	86 (23.2)	679 (16.9)	
	Separated	5 (1.4)	45 (1.1)	
	Never Married	163 (44.0)	2120 (52.9)	
	Divorced	87 (23.5)	816 (20.4)	
	Single	13 (3.5)	121 (3.0)	
	Widowed	9 (2.4)	81 (2.0)	
	Unknown	7 (1.9)	148 (3.7)	
Housing Status				<.0001
	Homeless	20 (5.4)	49 (1.2)	
	Not Homeless	332 (90.0)	3734 (94.0)	
	Unknown	17 (4.6)	191 (4.8)	
Military Status				<.0001
	Yes	7 (1.9)	349 (8.8)	
	No	342 (92.4)	3380 (84.7)	
	Unknown	21 (5.7)	261 (6.5)	

Conclusion

Risk factors may have sex-based differences so risk reduction may require targeted strategies

Female inmates

- More likely to commit suicide/intentional self-harm
- Suffered from mental health condition and substance use disorder

Male inmates

- Represent the majority of homicide victims
- Black males died twice as often as black females

Next steps

- Analyze trends with rates using additional national database

Diagram 1: NVDRS data collection process (CDC)



Table 2: Characteristics of death circumstances during incarceration or legal intervention by gender, NVDRS database, 2003 to 2019

	Demographics	Female (n=371, %)	Male (n=4015, %)	p-value
Manner of Death	Homicide	6 (1.6)	594 (14.8)	<.0001
	Suicide/Intentional Self-Harm	333 (89.8)	3107 (77.4)	
	Legal Intervention	0 (0.0)	87 (2.2)	
	Undetermined Intent	32 (8.6)	227 (5.7)	
Primary Weapon Type	Hanging, Strangling, Suffocation	298 (80.3)	2959 (73.7)	<.0001
	Poisoning	41 (11.1)	224 (5.6)	
	Firearm	9 (2.4)	132 (3.3)	
	Blunt Instrument	2 (0.5)	96 (2.4)	
	Sharp Instrument	2 (0.5)	235 (5.9)	
	Personal Weapons	0 (0.0)	189 (4.7)	
	Fall	4 (1.1)	82 (2.0)	
	Unknown	9 (2.4)	57 (1.4)	
Mental Health Problem	Yes	163 (43.9)	1056 (26.3)	<.0001
	No/Unknown	208 (56.1)	2959 (73.7)	
Current Mental Health Treatment	Yes	107 (28.8)	648 (16.1)	<.0001
	No/Unknown	264 (71.2)	3367 (83.9)	
History of Mental Health Treatment	Yes	142 (38.3)	846 (21.0)	<.0001
	No/Unknown	229 (61.7)	3169 (78.9)	
Substance Use Problem	Yes	151 (40.7)	798 (19.9)	<.0001
	No/Unknown	220 (59.3)	3217 (80.1)	
Alcohol Use Problem	Yes	48 (12.9)	339 (8.4)	.0035
	No/Unknown	323 (87.1)	3676 (91.6)	

Table 3: Individuals who have pre-existing mental health conditions and mental health treatment status (n=1219)

	Demographics	Female (n=163, %)	Male (n=1056, %)	p-value
Current Mental Health Treatment	Yes	103 (63.2)	625 (59.2)	0.33
	No/Unknown	60 (36.8)	431 (40.8)	
History of Mental Health Treatment	Yes	129 (79.1)	771 (73.0)	0.10
	No/Unknown	34 (20.9)	285 (27.0)	

Implications

The prevalence of female inmate mental health treatment could either be the result of increased efforts to prevent suicide or interventions to prevent suicide with their current treatment are ineffective.

Understanding psychiatric and substance use disorders is necessary for appropriate intervention for those vulnerable populations, especially female inmates.