RESEARCH ARTICLE

Homicide and Suicide in Select Healthcare Industries and Occupations in the United States, National Violent Death Reporting System, 2017 to 2022

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Abstract: *Background:* Violent deaths represent a serious occupational health and safety concern in healthcare. This study examines the occupations, sociodemographic factors, and circumstances reported for homicides and suicides occurring at work and outside work among decedents in select healthcare industries and occupations. *Methods:* Decedents in healthcare sub-industries were identified in CDC's National Violent Death Reporting System, years 2017 to 2022. Workplace and non-workplace deaths were included. Frequencies and proportions of decedent demographics, occupation categories, location of injury, and precipitating circumstances including perpetrator-victim relationship (among homicides), and social, mental health, and substance use factors contributing to death (among suicides) were reported. *Findings:* During 2017 to 2022, 91 workplace homicides, 3,889 non-workplace homicides, 97 workplace suicides, and 12,450 non-workplace suicides were reported among healthcare industry workers. Suicides and homicides occurred more frequently among females compared with males. Homicides occurred most frequently among healthcare practitioners and technical occupations and healthcare support occupations, while suicides occurred most frequently among healthcare practitioners and technical occupations. Homicide decedents often knew the suspect through current or previous personal or work relationships. Most suicide decedents had a current mental health problem or symptoms. *Conclusions/Application to Practice:* This analysis supports existing recommendations and national priorities for preventing workplace violence and suicide in healthcare. Findings reinforce previous research and add more context to these violent deaths by presenting circumstances of non-workplace deaths. Contributors to these violent deaths are multifactorial. Further research can investigate underlying mechanisms for homicide and suicide in this healthcare worker population, particularly among certain work settings and less-studied occupation groups.

Keywords: suicide, healthcare worker/homecare worker, workplace violence/bullying, injury/occupational injury/traumatic injury, behavioral/mental health/stress/anxiety/depression

Background

While healthcare workers (HCWs) provide critical care and support to patients and their families, their work environments can place them at risk for violence (Rossi et al., 2023). Although 10% of the U.S. workforce is employed in the healthcare industry, these workers experienced 73% of nonfatal injuries due to workplace violence requiring days away from work, job restriction, or transfer from 2021 to 2022 (U.S. Bureau of Labor Statistics [BLS], 2024a, 2024b, 2024c). While homicides in the healthcare industry occur less frequently than other public-facing industries, violent acts are a top cause of industry fatalities (BLS, 2022, 2023a, 2023b), and few studies have examined circumstances and trends surrounding these incidents (Braun et al., 2021; Robiner et al., 2023).

Workplace violence is classified into four types; the most frequent type reported among HCWs is Type II, violence involving patients or visitors (National Institute for Occupational

DOI: 10.1177/21650799251413625. From [1]Epidemic Intelligence Service, Centers for Disease Control and Prevention [2]Division of Safety Research, National Institute for Occupational Safety and Health [3]Health Effects Laboratory Division, National Institute for Occupational Safety and Health, and [4]Johns Hopkins Bloomberg School of Public Health. Address correspondence to: Nadia T. Saif, MD, MPH, National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention, 1095 Willowdale Road, Morgantown, WV 26505, USA; email: ura5@cdc.gov.

Applying Research to Occupational Health Practice

Suicides among healthcare workers (n=12,551) far outnumbered homicides (n=3,992) from 2017 to 2022. Both suicides and homicides occurred more frequently among females compared with males. Homicides occurred most frequently among healthcare practitioners and technical occupations and healthcare support occupations. Decedents often knew the suspect through a current or previous personal or work relationship. Suicides occurred most frequently among healthcare practitioners and technical occupations and compared to other occupations, and most decedents had a current mental health problem or symptoms. Homicide deaths and suicide deaths differed by demographics and precipitating circumstances. Differences were more pronounced when further comparing workplace versus non-workplace deaths. Comprehensive workplace violence and suicide prevention programs and mental health initiatives can be implemented to address the multifactorial nature of these deaths. Moving forward, understanding the availability of workplace programs and initiatives across healthcare settings and the barriers and facilitators to full participation may be helpful.

Safety and Health [NIOSH], 2013). Violence from someone without a valid role in the workplace (i.e., criminal intent; Type I), worker-on-worker violence (Type III), or violence affecting workers from persons they know outside of work (Type IV) combined account for fewer violent incidents compared to Type II (International Association for Healthcare Security and Safety Foundation, 2023). Previous analyses of the Centers for Disease Control and Prevention's (CDC) National Violent Death Reporting System (NVDRS) have found that among homicides of select health professionals, most affect women, they do not always relate to work roles, and a plurality of suspects are current or former intimate partners (Funk et al., 2025; Robiner et al., 2023). Due to the impact of violence on the healthcare industry workforce, the National Action Alliance for Patient and Workforce Safety includes aims focused on healthcare workforce safety (Agency for Healthcare Research and Quality [AHRQ], 2024). These include making healthcare safer by design via safety engineering needs and strengthening healthcare safety competencies via training. Additionally, The Joint Commission (TJC, 2021, 2023) sets workplace violence prevention standards in healthcare settings, an area of concern.

Suicides occur more frequently than homicides among HCWs. From 2003 to 2016, 50% more suicides compared to homicides occurred in the healthcare industry (Braun et al., 2021). Females in healthcare industries accounted for almost 16% of all-industry suicides in the U.S. from 1986 to 2015 (Arif et al., 2024). Among occupation groups, female healthcare support workers experience a rate of suicide higher than the total population (Peterson et al., 2020). During the COVID-19 pandemic, HCWs' reports of harassment at work, burnout, and the intention to look for a new job increased (Health Resources and Services Administration (HRSA), 2024). As a testament to the burden of suicide, the U.S. Surgeon General's office issued a Call to Action to fully implement the National Strategy for Suicide Prevention (NSSP) in 2021 (U.S. Department of Health and Human Services (HHS), 2021). Updated in 2024, the NSSP involves a "whole-of-society" approach which recognizes the workplace as an important component in suicide prevention (HHS, 2024). Implementing the NSSP requires greater understanding of factors associated with suicides that can be actionable in workplace suicide prevention efforts.

The purpose of this analysis was to provide the most recent data on healthcare industry violent deaths. Specifically, this updates a previous study which presented data from 2003 to 2016 (Braun et al., 2021) using the NVDRS. This study further examines occupations, sociodemographic factors and circumstances reported for homicides and suicides among decedents in select healthcare industries and occupations. In contrast to the previous study, the current study includes deaths occurring both while at work and outside of work; an additional objective was to compare characteristics of these deaths.

Methods

Data from the NVDRS, 2017 to 2022, were obtained for this study. The NVDRS is a state-based surveillance system administered by the CDC. In 2017, 37 states reported data to NVDRS; in 2019, NVDRS expanded to all states, the District of Columbia, and Puerto Rico (Petrosky et al., 2020). In 2022, 47 states had statewide data, while California, Florida, and Texas reported data representing a subset of their populations. Records are linked from vital statistics, coroner/medical examiners (CME), and law enforcement (LE) agencies to provide standardized data on all violent deaths—including homicides, suicides, unintentional firearm deaths, deaths from legal intervention, and deaths of undetermined intent that might have occurred due to violence. Data elements include demographic characteristics (for suspects and victims), victim-suspect relationships, injury details (e.g., location, date, cause of death, whether the injury occurred at work), circumstances that preceded death, weapon type, wound location(s), and toxicology findings. Additionally, trained NVDRS data abstractors write narratives describing the events leading up to the death based on information from CME and LE reports.

Data for decedents' usual industry and occupation in the NVDRS are abstracted from death certificates. Usual industry and occupation are respectively defined as the business and job/role that the person had the longest, which may not necessarily be their job/role at the time of death (CDC, 2022a; NIOSH, 2024a). Trained CDC National Institute for Occupational Safety and Health (NIOSH) staff assign standardized industry and occupation codes for NVDRS based on the U.S. Census

industry and occupation codes using the NIOSH Industry and Occupation Computerized Coding System (NIOCCS; NIOSH, 2024b). Industry and occupation were coded based on U.S. Census industry and occupation codes, respectively (U.S. Census Bureau, 2024). We included cases with U.S. Census industry codes for healthcare sub-industries (sub-industries within the broader Healthcare and Social Assistance U.S. Census sector, excluding social assistance; codes 7970 through 8290). Veterinary services (7480) was included, for comparability with previously published analyses (Braun et al., 2021) and consistent with the National Occupational Research Agenda which includes veterinary medicine/animal care in the healthcare and social assistance sector (CDC, 2025a). To include all veterinary occupations, decedents in the veterinary services industry, as well as those with the following U.S. Census occupation codes were included: veterinarians (3250), veterinary technologists and technicians (3424), veterinary assistants and laboratory animal caretakers (3648). In this analysis, HCW refers to anyone working in the included healthcare industries including non-clinical occupations, such as housekeeping, food service, administrative, etc.

Cases with missing data for usual industry and occupation, manner of death, or injured at work status were excluded. Hereafter, "workplace" deaths refer to those classified as injured at work, and "non-workplace" deaths refer to all others. We calculated frequencies and proportions of suicides and homicides for the study sample overall and stratified by workplace status. We also calculated frequencies and proportions of deaths by location of injury, perpetrator-victim relationship (among homicide decedents), and social, mental health, and substance use factors contributing to death (among suicide decedents).

For additional context on personal or workplace-related factors among workplace deaths, we reviewed CME and LE narratives where these were available and circumstances associated with the death were known. We then created additional variables: specific location of injury within healthcare settings (coded if location of injury was hospital or medical facility, office building, or supervised residential facility) and additional factors that contributed to homicides or suicides (e.g., specific job-related stressors like financial stress, unhappy with job, reprimand or firing; workplace environmental factors like access to suicide means or easy entry into facility; suspect relationship to patient/client/customer). Narratives for decedents injured at work were also reviewed to confirm that these incidents occurred while working in a healthcare sub-industry; the case was excluded if not. Independent coding and reconciliation of differences were completed by two authors (NTS and SMM). Significance testing compared differences in sociodemographic characteristics and precipitating circumstances for homicides and suicides by workplace status: chi-square tests for homogeneity, and Fisher's exact tests for comparisons where expected cell counts were less than five. All analyses were conducted using SAS software, version 9.4 (SAS Institute Inc., Cary, NC, USA).

This activity was reviewed by CDC, deemed not research, and was conducted consistent with applicable federal law and CDC policy.[1]

Results

During 2017 to 2022, 18,594 violent deaths among decedents whose usual industry was classified as healthcare were reported to NVDRS. Of these, 3,992 were homicides and 12,551 were suicides. For the deaths included in analyses (Table 1), circumstances were known for 78.0% of workplace and 76.9% of non-workplace homicides, and 93.1% of workplace and 88.7% of non-workplace suicides. Upon review of narratives for workplace deaths (103 homicides and 101 suicides), we identified 12 reported homicides and 4 reported suicides that clearly did not occur at work or on duty in a healthcare-related workplace setting (based on 79.2% agreement, prior to reconciliation, among the two reviewing authors). Excluding these cases from the workplace counts resulted in 91 workplace homicides, 3,889 non-workplace homicides, 97 workplace suicides, and 12,450 non-workplace suicides (Table 1).

Homicides

Demographics

Most homicides involved females (66.0%; Table 1). Nearly half (49.5%) of workplace homicides were among White persons, while Black or African American decedents made up the highest proportion of non-workplace homicides (50.8%). Workplace homicide decedents were older than non-workplace homicide decedents, with 45 to 54 years being the most prevalent age group (28.6%) compared with 25 to 34 years (28.1%; $p < .001$). For most non-workplace homicide decedents, high school was the highest education level attained (59.5%, compared with 40.7% of workplace homicide decedents, $p < .001$).

Occupation

Homicides occurred most frequently to healthcare practitioners and those in technical occupations, as well as those working in healthcare support (Table 2). Healthcare practitioner and technical occupations comprised a larger proportion of those who died by homicide at work (n=33, 36.3%) compared to non-workplace deaths (n=941, 24.2%; p=.008). Homicide deaths outside of the workplace occurred more frequently among those in healthcare support occupations (n=1,847, 47.5%) compared with at the workplace (n=33, 36.3%; p=.034).

Precipitating Circumstances

Among workplace homicides where circumstances were known, (n=71, 78.0%) the suspect was most commonly a current or ex-boyfriend, girlfriend, or spouse of the victim (n=16, 22.5%) or other person known to the victim (n=13, 18.3%; Table 3). Over one-third (n=1,049, 35%) of non-workplace homicide suspects were a current or ex-boyfriend, girlfriend, or spouse of the victim. Victim relationship to suspect was unknown for 989 decedents (33.1%).

Table 1. Violent Deaths Among Decedents With Usual Industry in Select Healthcare Industries and Occupations, National Violent Death Reporting System, 2017 to 2022

Characteristic	Homicides			Suicides		
	Workplace *n* (%)	Non-workplace, *n* (%)	*p*-Value	Workplace, *n* (%)	Non-workplace, *n* (%)	*p*-Value
Total (*n*)	91	3,889	—	97	12,450	—
Circumstances known	71 (78.0)	2,989 (76.9)	—	81 (93.1)	11,043 (88.7)	—
Characteristic						
Sex			.043			<.001
Male	40 (44.0)	1,294 (33.3)		76 (78.4)	5,429 (43.6)	
Female	51 (56.0)	2,595 (66.7)		21 (21.7)	7,021 (56.4)	
Age group (years)			<.001			<.001
14–24	<10	547 (14.1)		<10	643 (5.2)	
25–34	<10	1,094 (28.1)		10 (10.4)	1,892 (15.2)	
35–44	18 (19.8)	841 (21.6)		24 (25.0)	2,269 (18.2)	
45–54	26 (28.6)	571 (14.7)		23 (24.0)	2,689 (21.6)	
55–64	20 (21.9)	431 (11.1)		23 (24.0)	2,594 (20.8)	
65+	10 (11.0)	404 (10.4)		12 (12.5)	2,363 (19.0)	
Race/Ethnicity			<.001			.004
White, non-Hispanic	45 (49.5)	1,318 (34.0)		79 (82.3)	10,223 (82.2)	
Black or African American, non-Hispanic	28 (30.8)	1,972 (50.8)		<10 (8.3)	802 (6.5)	
Other, non-Hispanic	< 10	177 (4.6)		<10	657 (5.3)	
Hispanic	11 (12.1)	418 (10.8)		<10	748 (6.0)	
Marital status			<.001			<.001
Married/Civil union/ Domestic partnership	30 (33.0)	900 (23.1)		57 (60.0)	4,372 (35.3)	
Single, Never married, or Widowed	39 (42.9)	2,254 (58.0)		22 (23.2)	4,358 (35.2)	
Divorced, or Married/ Civil union/Domestic partnership but separated	21 (23.1)	713 (18.3)		16 (16.8)	3,662 (29.6)	

(continued)

Table 1. (continued)

Characteristic	Homicides			Suicides		
	Workplace *n* (%)	Non-workplace, *n* (%)	*p*-Value	Workplace, *n* (%)	Non-workplace, *n* (%)	*p*-Value
Education level			<.001			<.001
Less than high school	<10	455 (11.8)		<10	407 (3.3)	
High school, GED, or some college	37 (40.7)	2,298 (59.5)		30 (31.3)	4,628 (37.5)	
Associate's or Bachelor's	29 (31.9)	888 (23.0)		16 (16.7)	4,848 (39.2)	
Master's or higher	19 (20.9)	220 (5.6)		48 (50.0)	2,471 (20.0)	
Military status			.037			.836
Ever Served in US Military	<10	161 (4.1)		11 (11.3)	1,448 (11.6)	

Note. <10 indicates suppressed data to comply with NVDRS reporting requirements for small numbers. Excludes cases with missing/unknown manner of death or workplace status (<5% in all categories). Reported *p*-values are for chi-square test; Fisher's exact test was used for all comparisons with significant % of expected cell counts <5.

Review of narratives for homicides (Table 3) found that the suspect was the patient/client/customer or known to patient/client/customer for over one-third of workplace homicides (n=27, 38.0%). The decedent was a bystander or tried to intervene for n=12 (16.9%). Also notably, a workplace dispute or revenge for termination, and easy entry into the facility or forced entry were identified in some workplace homicides (n<10 for each).

Nearly one-third of workplace homicides occurred in a hospital or medical facility (n=29, 31.9%) followed by house or apartment (n=15, 16.5%; Table 5). Review of narratives found that within healthcare settings (hospital or medical facility, office building, or supervised residential facility), the most common locations were other location inside facility (n=15, 16.5%), or clinic, office, or administrative area (n<10). Among non-workplace homicides, most deaths occurred in a house or apartment (n=2,271, 58.4%).

Suicides

Demographics

The sex of suicide decedents differed significantly by workplace status (p<.001): most workplace decedents were male (78.4%) while 56.4% of non-workplace decedents were female. Nearly 50% of workplace suicide decedents were aged 35 to 54 years. Regardless of workplace status, most suicide decedents were White persons. The most prevalent marital status among suicide decedents occurring in the workplace was married, in a civil union, or domestic partnership (60.0%) compared with 35.3% of non-workplace suicide decedents (p<.001). Workplace suicide decedents had overall higher levels of education, with half having a master's degree or higher, compared with 20.0% of non-workplace deaths by suicide (p<.001). The proportion of workplace and non-workplace deaths by suicide did not significantly differ for current or former military personnel.

Occupation

Suicide occurred most frequently in healthcare practitioner and technical occupations for both workplace and non-workplace deaths (n=53, 54.6% and n=6,065, 48.7% respectively). Healthcare support occupations made up a significantly larger proportion of non-workplace suicides (n=2,929, 23.5%) compared with those occurring in the workplace (n<10; p<.001). Building and grounds cleaning and maintenance, protective service, and food preparation occupations made up a significantly larger proportion of workplace suicides compared with those not occurring in the workplace (n=10, 10.3% vs. n=446, 3.6% respectively, p=.003).

Precipitating Circumstances

Among deaths by suicide where circumstances were known (n=11,124, 88.7%), having a known mental health problem was more common among non-workplace deaths (n=6,669, 60.4%) versus workplace deaths (n=40, 49.3%; p=.044; Table 4). Reported job problems or financial problems were more frequent among workplace suicide decedents (n=17, 21.0% and n=16, 19.8% respectively) than non-workplace decedents (n=1,156, 10.5% and n=804, 7.3% respectively; p<.01). This was also observed for job or financial problems being a crisis (defined as occurring within the past 2 weeks or impending within the upcoming 2 weeks). Physical health problems and prior history of suicide attempt were significantly more common among non-workplace vs. workplace suicide decedents (p=.034). The percentage of other analyzed circumstances did

Table 2. Occupation Categories of Decedents with Usual Industry in Select Healthcare Industries, National Violent Death Reporting System, 2017 to 2022

Occupation category, *n* (%)	Examples of occupations included in category	Homicides			Suicides		
		Workplace (*n* = 91)	Non-Workplace (*n* = 3,889)	*p*-Value	Workplace (*n* = 97)	Non-Workplace (*n* = 12,450)	*p*-Value
Healthcare practitioners and technical occupations	Nurses, Physicians, Dentists, Therapists, Pharmacists, Veterinarians, Veterinary technologists and technicians, Surgical technicians, Clinical laboratory technologists and technicians	33 (36.3%)	941 (24.2%)	.008	53 (54.6%)	6,065 (48.7%)	.245
Healthcare support	Nursing assistants, Medical assistants, Home health aides, Veterinary assistants	33 (36.3%)	1,847 (47.5%)	.034	< 10	2,929 (23.5%)	.001
Social services occupations	Social workers, Counselors	<10	72 (1.9%)	<.001	<10	348 (2.8%)	.352
Building and grounds cleaning and maintenance, Protective service, Food preparation	Janitors and building cleaners, Landscaping and groundskeeping workers, Security guards, Cooks, Food preparation and serving workers	<10	308 (7.9%)	.104	10 (10.3%)	446 (3.6%)	.003
Office and Administrative Support, Business and financial operations, Managers, Legal	Receptionists and information clerks, Billing and posting clerks, Business operations specialists, Medical and Health Services Managers	10 (11.0%)	419 (10.8%)	.948	12 (12.4%)	1,607 (12.9%)	.876
Transportation and material moving, production, installation maintenance and repair	Ambulance drivers and attendants, Laborers and freight, stock, and material movers	<10	91 (2.3%)	.724	<10	250 (2.0%)	.134
Sales	Personal care, sales and related occupations	0	29 (0.8%)	.408	<10	103 (0.8%)	.147
Scientists	Computer and mathematical, architecture and engineering, life, physical, and social science occupations	<10	39 (1.0%)	.241	<10	378 (3.0%)	1.00
Other[a]	Not in workforce or unknown	<10	135 (3.5%)	.374	<10	278 (2.2%)	.727

Note. <10 indicates suppressed data to comply with NVDRS reporting requirements for small numbers. Reported p-values are for chi-square test; Fisher's exact test was used for all comparisons with significant % of expected cell counts <5.

[a]Student, homemaker, volunteer, or unable to work—for example, child, patient, inmate.

Table 3. Precipitating Circumstances and Relationship of Victim to Suspected Perpetrator, Homicides Among Decedents With Usual Industry in Select Healthcare Industries and Occupations, National Violent Death Reporting System, 2017 to 2022

Homicide precipitating circumstance	Workplace (*n*=71)		Non-workplace (*n*=2,989)	
	n	%	*n*	%
Precipitating circumstance				
Suspect was patient/client/customer OR known to patient/client/customer[a]	27	38.0	—	—
Suspect was known to Victim (not work-related)[a]	24	33.8	—	—
Intimate partner violence-related[b]	21	29.6	—	—
Victim was a bystander or intervener assisting a crime victim[b]	12	16.9	—	—
Substance use or alcohol was involved (victim or suspect)[a]	10	14.1	—	—
Workplace dispute or revenge for termination[a]	<10	—	—	—
Easy entry into facility or forced entry[a]	<10	—	—	—
Relationship of victim to suspected perpetrator				
Current or ex-girlfriend, boyfriend, or spouse[c]	16	22.5	1,049	35.1
Other person, known to victim	13	18.3	196	6.6
Relationship unknown or missing	13	18.3	989	33.1
Stranger	12	16.9	170	5.7
Current/former work relationship	<10	—	<10	—
Acquaintance	<10	—	138	4.6
Family member[d]	<10	—	330	11.0
Other[e]	0	—	19	0.6
Friend or roommate	0	—	93	3.1

Note. <10 indicates suppressed data to comply with NVDRS reporting requirements for small numbers. Multiple factors could be attributed to each death, so percentages may not sum to 100.
Where circumstances were known (if any information is available in the coroner/medical examiner record or law enforcement report about the circumstances; this was missing for 20/91 workplace homicides and 900/3,889 non-workplace homicides),
[a]New variables created based on review of case narratives by two authors (NTS and SM),
[b]Standard NVDRS variable (not coded from narrative review).
[c]Includes new partner of suspect's ex-partner, ex-partner of suspect's current partner.
[d]Includes sibling, in-law, parent, child, grandparent, stepparent, or foster parent, or other family member (e.g., cousin, uncle, etc.).
[e]Includes rival gang member, intimate partner of suspect's parent, child of suspect's boyfriend/girlfriend.

not significantly differ by workplace status including depressed mood, intimate partner problem, history of suicidal thoughts, and disclosure of suicidal intent.

Review of narratives for workplace suicide events (Table 4) identified specific job-related problems or stress, including those related to reprimand, firing, or work-related legal concerns (*n*=11, 13.6%), unhappiness with job, co-worker or supervisor problems (*n*=12, 14.8%), or job-related financial problems (*n*<10). Additionally, 10 (12.3%) decedents had accessed suicidal means through their workplace (medications or equipment). Ten (12.3%) decedents disclosed their suicidal intent to co-workers or on social media.

Over one-quarter (*n*=26, 26.8%) of workplace suicide events occurred in an office building, while hospital or medical facility was the next most common location (Table 5). Review of

Table 4. Precipitating Circumstances for Suicides Among Decedents with Usual Industry in Select Healthcare Industries and Occupations, National Violent Death Reporting System, 2017 to 2022

Suicide precipitating circumstance	Workplace (*n* = 81)		Non-workplace (*n* = 11,043)		*p*-Value
	n	%	*n*	%	
Standard NVDRS variables[a]					
Current known diagnosed mental health problem	40	49.3	6,669	60.4	.044
Left a suicide note	35	43.2	4,221	38.2	.358
Ever treated for mental health problem	32	39.5	4,819	43.6	.455
Current depressed mood	24	29.6	3,769	34.3	.395
Intimate partner problem	22	27.2	2,781	25.2	.683
Current mental health or substance use treatment	24	29.6	3,779	34.2	.385
Disclosed suicidal intent	21	25.9	2,481	22.5	.458
Job problem	17	21.0	1,156	10.5	.002
Financial problem	16	19.8	804	7.3	< .001
History of suicidal thoughts or plans	22	27.2	4,076	36.9	.070
Argument or conflict	11	13.6	1,617	14.6	.788
Alcohol problem	10	12.4	1,943	17.6	.216
Physical health problems	10	12.4	2,447	22.2	.034
Substance use problem (excludes alcohol)	<10	—	1,714	15.5	.274
Prior history of suicide attempt	<10	—	2,790	25.3	.002
Any crisis variable[b]	27	33.3	3,301	29.9	.500
Intimate partner problem	11	13.6	1,238	11.2	.501
Financial problem	<10	—	135	1.2	<.001
Job problem	<10	—	346	3.3	<.001
Variables coded from narrative review[c]					
Co-workers noticed change in demeanor, or prior attempt or SI known/suspected by co-workers	12	14.8	—	—	—
Job stress: reprimand or firing, or legal concerns	11	13.6	—	—	—
Job stress: unhappy with job, or co-worker or supervisor problem	12	14.8	—	—	—
Accessed means at work - medication or equipment	10	12.3	—	—	—
Disclosed to co-workers or social media	10	12.3	—	—	—

Note. <10 indicates suppressed data to comply with NVDRS reporting requirements for small numbers. Multiple factors could be attributed to each death, so percentages may not sum to 100. Reported *p*-values are for chi-square test; Fisher's exact test was used for all comparisons with significant % of expected cell counts <5. Where circumstances were known (if any information is available in the coroner/medical examiner record or law enforcement report about the circumstances; this was missing for 16/97 workplace suicides and 1,407/12,450 non-workplace suicides).
[a]Standard NVDRS variable (not coded from narrative review).
[b]Crisis variables were problems that occurred within 2 weeks of death.
[c]New variables created based on review of case narratives by two authors (NTS and SM).

Table 5. Location of Workplace and Non-Workplace Homicides and Suicides, Decedents with Usual Industry in Select Healthcare Industries and Occupations, National Violent Death Reporting System, 2017 to 2022

Workplace	Homicide (*n*=91)		Suicide (*n*=97)	
	n	%	*n*	%
Hospital or medical facility	29	31.9	25	25.8
Office building	<10	—	26	26.8
House, apartment	15	16.5	10	10.3
Supervised residential facility	14	15.4	<10	—
Motor vehicle, parking lot/public garage, or street/road, sidewalk, alley	10	11.0	<10	—
Other commercial establishment (e.g., grocery store, retail outlet)	<10	—	<10	—
Other[a]	<10	—	<10	—
Unknown	<10	—	<10	—
Specific locations within hospital or Medical facility, Office building, or Supervised residential facility[b]	38	—	51	—
Clinic, office, or administrative area	<10	21.1	12	23.5
Inside facility, other or unspecified[c]	15	16.5	19	37.3
Outside facility, other or unspecified[d]	<10	8.8	11	21.6
Lobby, waiting area, lounge, breakroom, or bathroom	<10	—	<10	—
Unknown	<10	—	<10	—
Non-Workplace[e]	**Homicide (*n*=3,889)**		**Suicide (*n*=12,450)**	
	n	%	*n*	%
Hospital or medical facility	<10	—	53	0.4
House, apartment	2,271	58.4	9,500	76.3
Hotel/motel	48	1.2	396	3.2
Natural area, park, playground, public use area, sports, or athletic area	83	2.1	666	5.3
Supervised residential facility or jail, prison, detention facility	16	0.4	111	0.9
Bank, bar, nightclub, service station, or other commercial establishment (e.g., grocery store, retail outlet, laundromat)	125	3.2	52	0.4
Street, sidewalk, alley	574	14.8	184	1.5
Motor vehicle (excluding public transportation)	378	9.7	573	4.6
Parking lot/public parking garage	91	2.3	158	1.3

(continued)

Table 5. (continued)

Non-Workplace[e]	Homicide (*n* = 3,889)		Suicide (*n* = 12,450)	
	n	%	*n*	%
Place of worship	<10	—	<10	—
Abandoned house, building, or warehouse	<10	—	<10	—
Other[f]	60	1.5	211	1.7
Unknown, or missing	194	5.0	274	2.2

Note. <10 indicates suppressed data to comply with NVDRS reporting requirements for small numbers.
[a]Includes jail, prison, detention facility; sports or athletic area; farm.
[b]New variable created based on review of case narratives by two authors (NTS and SM); among cases where circumstances were known (*N* = 38 for homicides, *N* = 51 for suicides).
[c]Includes inpatient wards, storage area, operating area; for homicides, also includes lobby, waiting area, lounge, or breakroom.
[d]Includes parking lot or garage.
[e]These are non-workplace deaths as the decedent was not working at the time of the injury/event.
[f]Includes elementary, middle, or high school; college/university including dormitory, fraternity/sorority; farm; office building; industrial or construction areas; cemetery or graveyard.

narratives suggested that within healthcare settings, like workplace homicides, the most common locations were in a clinic, office, or administrative area (*n* = 12, 23.5%) or other location inside the facility (*n* = 19, 37.3%). Among non-workplace suicides, house or apartment was the most common location (*n* = 9,500, 76.3%).

Discussion

This analysis of 2017 to 2022 NVDRS data characterizes violent deaths among decedents who worked in select healthcare industries and occupations. The findings provide insight into precipitating circumstances for homicides and suicides that occurred in and outside of the workplace. There were almost as many homicides (*n* = 91) as there were suicides (*n* = 97) that occurred in the workplace, which contrasts with the previous NVDRS analysis of healthcare worker violent deaths from 2003 to 2016 which found that workplace suicides outnumbered homicides (Braun et al., 2021). This difference may be partially explained by expansion of states reporting to NVDRS in recent years; in the previous analysis, 7 to 32 states reported annually during the study period. Outside of the workplace, there were roughly three times more suicides than homicides among HCWs. The sociodemographic characteristics of both homicides and suicides differed by whether the injury occurred at work. Where circumstances are known, the largest proportion of homicide decedents knew their perpetrator. Furthermore, known current mental illness was relatively prevalent among suicides, and a higher proportion occurring at the workplace had job and financial problems, physical health problems, and a prior history of a suicide attempt, compared to non-workplace occurrences.

The distribution of demographic factors for homicides and suicides highlights gaps in occupational safety that reaches all HCWs. Per recent Current Population Survey data (CDC, 2024), males comprise 21% of the healthcare industry. However, they experienced almost half (44.0%) of the homicides that occurred in the workplace in our study, and a disproportionately high number of workplace (78.4%) and non-workplace (43.6%) suicides. These numbers contrast with the general population, where nearly 80% of both homicide and suicide victims are male (CDC, 2025b; Remrey, 2025). The high numbers of female healthcare industry decedents reflect the demographics of the healthcare workforce, and the disproportionate burden of intimate partner violence and Type II violence that females face, which some studies have identified (Reibling et al., 2020; Rossi et al., 2023). Approximately 17% of HCWs are Black, yet they accounted for nearly one-third of workplace homicide victims and over half (51%) of non-workplace homicides; the latter is similar to the 58% of homicides among Black Americans in the population overall (Remrey, 2025). Non-workplace deaths due to suicide among current or former military personnel (~11%) were nearly triple that of the percentage of veterans in the healthcare industry (~4.3%; Frogner, 2016).

Nationally, approximately one-third of healthcare industry employment is made up of healthcare practitioners and technical occupations, and healthcare support occupations account for slightly less (29%; BLS, 2022). The proportion of homicides and suicides among these occupations identified in this study exceed these numbers, although a direct comparison or rate determinations cannot be made with NVDRS data. Studies focused on physicians and nurses have found that burnout and work and home stress are associated with suicide

risk (Feskanich et al., 2002; Menon et al., 2020). An online survey of 1,084 non-physician healthcare staff in the context of the COVID-19 pandemic found depression, workplace physical violence, and low leadership support were associated with suicidal ideation (Chan et al., 2024). This underscores the potential value in efforts addressing both interpersonal violence and mental health in the workplace.

Healthcare support occupations (nursing, medical, and veterinary assistants; home health aides) accounted for the largest proportion of non-workplace homicides. Of workplace homicides, the largest proportion included equal numbers of healthcare support occupations and healthcare practitioners, and technical occupations (nurses, physicians, pharmacists, etc.).

A notable concern was the number of workplace homicides occurring in apartments or houses, where home HCWs accessed their patients. While well-known that nurses and physicians are at high risk of violence (Jang et al., 2022; Liu et al., 2019; Rossi et al., 2023), violence against healthcare support workers, including home care workers, is less studied (Phoo & Reid, 2022). The inclusion of various occupations in healthcare industries (and not just clinical roles) in this study may have affected the demographic distributions of homicides and suicides, although those in clinical roles comprised most of the decedents.

Precipitating Circumstances

Our study reinforces previous research that homicide decedents generally know their perpetrators (current or former partner, family member, patient/client/customer; BLS, 2020; Braun et al., 2021; Funk et al., 2025; Robiner et al., 2023). In fact, an NVDRS analysis of homicides among select HCWs from 2003 to 2020 found a plurality of perpetrators were current or ex-partners (Robiner et al., 2023) which was also the most prevalent category among known cases in our study. This finding contrasts with nonfatal workplace violence studies where more perpetrators are patients or visitors (Chakraborty et al., 2022; Phillips, 2016). Evidence-based practices may be used to address workplace violence and domestic violence against HCWs which reaches the workplace through interventions such as comprehensive workplace violence programs, which could include training to improve understanding of violence and its impact in the workplace, increasing staff awareness of resources and confidential supports, and other components (Dheensa et al., 2023). The analysis of precipitating circumstances where circumstances are known shows that aside from clear work-related concerns (job stress/problems, financial problems among suicides; workplace disputes, violence by patients/clients among homicides), problems in personal life and relationships were substantial as well. These include intimate partner violence, known mental health problems, and substance use/misuse. While mental illness was identified in a large portion of suicides, this may still have been underestimated given how the data were collected (e.g., based on information collected at the scene, usually from next of kin). Additionally, barriers to HCWs' care-seeking for mental health and substance use, due to perception of professional repercussions, may affect these findings (Jain et al., 2024). Disclosure of thoughts/plans to commit suicide in the past month and being perceived to be depressed at the time of injury were common among both workplace and non-workplace suicides. While we were unable to assess this in the current study, disclosure in supportive workplaces provides potential opportunities to intervene (McGrath et al., 2023). As previous studies have noted, the relationships among work-related stressors such as long hours, low job autonomy, exhaustion, poor job security, job satisfaction, and personal/home life stressors and co-morbid mental illness are complex regarding suicide risk (Dutheil et al., 2019; Jain et al., 2024).

Implications for Prevention

Given the prevalence of non-workplace precipitating circumstances identified in this study, and the known relationship between workplace violence and mental health of workers generally (Rugulies et al., 2023) and healthcare staff specifically (Caruso et al., 2022; Tiesman et al., 2023; Vidal-Alves et al., 2022), comprehensive, multidimensional approaches that address upstream factors may offer value (CDC, 2022b; HHS, 2024). Consistent with the hierarchy of controls, strategies that emphasize eliminating harmful exposures, overall improving working conditions, and enhancing mental health over implementing worker-directed measures could be useful (LaMontagne et al., 2024; Rugulies et al., 2023). Based on previous research, strategies could include organizational, structural/infrastructural, and environmental approaches to prevention and mitigation, such as: flexible leave policies and working hours where possible; ongoing workforce training that includes supervisors; channels for confidential help-seeking and referrals; improved security of restricted areas; improved patient flow and changes to reduce wait times and other sources of patient dissatisfaction with care; identification of patients at high-risk of violence and providing warning to staff; improved systems for tracking/reporting incidents with adequate follow-up; initiatives to improve staff social connectedness; and fostering strong workplace safety culture (Caruso et al., 2022; Dutheil et al., 2019; Giménez Lozano et al., 2021; Jain et al., 2024; Tak et al., 2010; TJC, 2021, 2023; Wirth et al., 2021). In a review of evidence-based interventions to address HCWs' mental health, individual interventions were more common than organizational/system-level ones, and while effective, this points to a gap in research on the effectiveness of upstream approaches (Anger et al., 2024). Post-incident response is also crucial for alleviating staff distress after violent deaths, as are general efforts to reduce stress and improve resilience (LaMontagne et al., 2024; Pearce et al., 2021).

The results of this study suggest that the unique stressors of the healthcare work environment and overall worker wellbeing may be important factors when identifying interventions. Evidence from a recent National Academies of Science report

on contributing factors to suicides suggest policies or practices that can collectively address the full spectrum of wellbeing could be most effective in reducing suicide deaths (National Academies of Sciences, Engineering, and Medicine, 2021; Sterling & Platt, 2022). Effective suicide prevention efforts (CDC, 2022b; Milner et al., 2015) such as peer support networks tailored to address the unique stressors of the healthcare work environment are consistent with the NSSP. Additionally, the NIOSH Impact Wellbeing™ campaign is tailored toward hospital leaders and intends to address burnout and improve wellbeing among HCWs and supports systems-level actions that include workplace violence prevention (NIOSH, 2025). The Occupational Safety and Health Administration (OSHA) also has special guidance for workplace violence prevention programs tailored to different healthcare settings. Programs implementing components of OSHA guidance, including management commitment, employee involvement, and hazard assessment and control activities have been effective (Raveel & Schoenmakers, 2019). About one dozen states require employer-run workplace violence prevention programs, and several more have enacted increased penalties for assault against specific healthcare worker groups (Ninan et al., 2024). In 2022, TJC implemented new workplace violence prevention standards for all Joint Commission accredited hospitals (TJC, 2021), with recent updates for behavioral care (TJC, 2023). Holistic evaluation of these approaches is still in process.

Another important consideration is that suicidal thoughts alone are insufficient for an attempt; there must also be a personal capability and availability of lethal means for suicide (Anestis et al., 2017; Klonsky et al., 2018). Current treatments focus largely on suicidal ideation and do not address capability—the ability to carry out a suicide attempt (Anestis et al., 2017; Klonsky et al., 2018). Capability-based prevention efforts might be more effective at a systems level rather than individual, to prevent attempts among those who underreport ideation. Measures like limiting access to common methods of suicide have historically led to substantial reductions in suicide rates in public settings, although the potential benefit of such approaches in a healthcare worker population specifically has not been evaluated (Anestis et al., 2017). In healthcare settings, this could imply better securing medications, medical equipment, and access to unsafe exposed areas such as building rooftops. This approach aligns with the NIOSH Impact Wellbeing™ framework.

These findings underscore opportunities for expanded research, including studies aimed at assessing the effectiveness and real-world feasibility of interventions across a broader range of settings and occupations than is typically examined (e.g., outpatient care, home health, residential facilities, commercial establishments including pharmacies). While temporal trend analysis was not possible, other data sources suggest that overall workplace homicide and suicide rates may be stabilizing (Hendricks et al., 2024; Tiesman & Hendricks, 2025), while suicides among the working-age population are increasing (Sussell et al., 2023). Research on violent deaths among non-physician or nursing staff is scarce. Prevalence of violent deaths among healthcare support workers, for example, indicates additional research may be warranted.

Limitations

These data are not nationally representative. Several large states had incomplete inclusion during the study period (e.g., Florida, Texas, Pennsylvania, California). Circumstances surrounding the death were unknown for some cases (14% missing), and there may have been potential miscoding of industry and occupation. Small case counts makes interpretation of certain results challenging. This study aimed to provide a broad overview of violent deaths in the healthcare industry and did not provide detailed analyses or comparisons of specific occupations, as other published NVDRS analyses have done. Mental health data are based on information provided at the scene, and not medical records.

This is only a cross-sectional snapshot of the context of suicides and homicides. Ascertaining causal relationships requires analysis of more robust data of the relationships between work, precipitating circumstances, and violent deaths over time. While not a focus of this study, future studies would also benefit from exploration of weapon used or mechanism of injury, as this could inform prevention efforts at a societal level. Further, we used previously coded variables provided by NVDRS and manually extracted key elements from the case narratives. The results from narrative coding of cases should be cautiously interpreted due to limitations of the narrative data derived from CME or LE reports. However, the narrative coding of even a few cases may be useful for understanding the broader phenomena contributing to homicides and suicides in healthcare.

Implications for Occupational Health Practice

While workplace fatalities in healthcare are less common in comparison with other industries, violent deaths remain a leading cause of industry fatalities. The safety of the healthcare workforce is an occupational safety and health priority and a patient safety priority (President's Council of Advisors on Science and Technology, 2023). The mental health and wellbeing of HCWs remains a source of concern based on reports of stress and burnout (Nigam et al., 2023; Silver et al., 2022) and the interconnectedness between workplace violence and mental health.

The findings of this study align with calls for further research and implementation of multidimensional interventions to better address the complex, multi-factorial nature of both homicides and suicides among HCWs that occur both in and outside the workplace.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the National Institute for Occupational Safety and Health, Centers for Disease Control and Prevention. In addition,

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Acknowledgments

The authors wish to thank the following colleagues for their insightful review of the manuscript: Jennifer Bell, Aaron Sussell, Andrea Steege, and Emily Haas.

Author Contributions

Conceptualization: NTS, SMM, CSM, JH, EF, VP, and CMM; Data analysis: NTS, SMM, EF, and CMM; Writing—original draft preparation: NTS, SMM, and CMM; Writing—review and editing: NTS, SMM, CSM, JH, EF, VP, and CMM; Supervision: CMM.

Declaration of Conflicting Interests

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

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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Note

1. See e.g., 45 C.F.R. part 46.102(l)(2), 21 C.F.R. part 56; 42 U.S.C. §241(d); 5 U.S.C. §552a; 44 U.S.C. §3501 et seq.

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