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Workplace violence against healthcare workers using nationally representative estimates of emergency department data, 2015–2017

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Abstract

Introduction: Workers in the healthcare industry are at increased risk for workplace violence. The goal of this analysis is to determine the rate of injuries healthcare workers incurred as a result of intentional violence by patients in the workplace.

Methods: Injuries linked to workplace violence that were treated in US emergency departments from 2015 to 2017 were identified using data from the National Electronic Injury Surveillance System–Occupational Supplement (NEISS-Work). All estimates and 95% confidence intervals were calculated using SAS® 9.4 Proc Survey to incorporate the stratified sample design of NEISS-Work.

Results: Approximately 1.14 million injuries to workers in the healthcare industry were treated in US hospital emergency departments between 2015 and 2017. Intentional injuries by another person accounted for 15% of these healthcare-related injuries. The results also showed that male healthcare workers' rate of injuries was 2.3 times higher than their female counterparts despite composing a smaller proportion of the workforce. Injury rates were highest among the less-than-25 age group, and decreased as healthcare workers' age increased.

Conclusions: Workplace violence is a serious problem in today's healthcare settings that affects both employees and patient care. Although violence in the healthcare industry has been researched for decades, there has been an increase in violent incidents in this industrial sector. The disparity in injury rates by sex and age are areas of concern. Further research in these areas is necessary to understand the root causes of these incidents and inform violence prevention strategies.

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AUTHOR CONTRIBUTIONS

Imani Carey and Kitty Hendricks participated in the design and development of this paper including analysis, data interpretation, drafting of the manuscript and subsequent revisions, and final approval of the version to be published.

CONFLICTS OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest.

DISCLOSURE BY AJIM EDITOR OF RECORD

John Meyer declares that he has no conflict of interest in the review and publication decision regarding this article.

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.

Keywords

healthcare; injuries; intentional; NEISS-Work; patients; violence

1 | INTRODUCTION

In 2018, the healthcare and social assistance sector was the largest employer in the United States with over 20 million employees.[1] Healthcare workers are exposed to a variety of factors that increase their risk for physical and verbal workplace violence from patients and visitors,[2] and in 2018, 73% of all nonfatal injuries and illnesses due to violence in the workplace involved healthcare workers.[3] These cases can include injuries that lead to days away from work, significant medical treatment, hospitalization, or even death. Workplace violence is a long-standing issue that contributes to high injury rates among workers in the healthcare industry.[3–5] Between 2011 and 2018, the rate of violent incidents involving healthcare workers increased by 63%.[3] More recent data indicate that in 2020, the healthcare and social assistance sector had an incidence rate of 10.3 injuries per 10,000 full-time equivalents (FTEs) for intentional injuries by other persons. This rate is nearly five times the rate for all industries combined.[6] To better understand the causes and potential solutions, researchers have divided workplace violence incidents into four categories: Type I—violence committed by perpetrators who have no association with the workplace or the employee; Type II—violence committed by someone who is a customer or patient of the workplace; Type III—violence committed by someone who is a current or former employee of the workplace; and Type IV—violence committed by a perpetrator who has a personal relationship with the employee but not the workplace.[7] Violence committed by patients, their families, or their friends (Type II violence) is the most common type of workplace violence found in healthcare settings.[8] This analysis presents an examination of emergency department (ED)-treated injuries resulting from Type II violence perpetrated by patients toward healthcare workers.

2 | METHODS

Data from the National Electronic Injury Surveillance System—Occupational Supplement (NEISS-Work*) were used to identify nonfatal occupational injuries in the healthcare industry related to intentional workplace violence that were treated in US EDs from 2015 to 2017. NIOSH collects surveillance data on work-related nonfatal injuries and illnesses treated in a nationally stratified probability sample of ~67 US hospitals with 24-h EDs.[9] For injuries determined to be work-related or that occurred at work, trained coders abstract demographics, injury characteristics, incident descriptions, and employer information from ED records.

*NIOSH collects NEISS-Work data in collaboration with the Consumer Product Safety Commission (CPSC), which operates the base NEISS hospital system for the collection of data on consumer product-related injuries. The CPSC product-related injury estimates exclude work-related injuries, whereas NEISS-Work estimates include all work-related injuries regardless of product involvement (i.e., NEISS and NEISS-Work cases are mutually exclusive).

A work-related injury is defined as an injury incurred by a US civilian, noninstitutionalized person who was working for pay or other compensation, doing farm-related activities, traveling between locations as a part of the job requirement, or volunteering for an organized group. Although NEISS-Work captures work-related injuries and illnesses, approximately 95% of NEISS-Work cases are classified as injuries. Thus, this report will refer to all cases as "injuries."

In addition to the demographic and injury variables, each NEISS-Work case also contains narrative information describing the workers' injury, industry, and employer. NIOSH staff assign codes for injury sources and events using the Bureau of Labor Statistics, Occupational Injury and Illness Classification System (OIICS).[10] NIOSH coders have assigned industry codes to the narratives based on the Bureau of Census (BOC) industry codes.[11] At the time of analyses, industry codes were available for the years 2015–2017.

For this study, cases were included if the injury: (1) occurred to a worker in the healthcare industry (BOC industry codes 79–82); and (2) had an event code that indicated an intentional injury by persons (OIICS code 11). Cases with missing data for industry, injury event, or primary source of injury were excluded from the analyses, which eliminated approximately 20% of the sample. OIICS defines intentional injuries by person cases as those in which the worker was intentionally injured or made ill by another person. Harmful actions by others that are unintentional or where the intent is unknown are coded in a different major group. Also excluded from intentional injury cases are those in which the worker was purposefully hit, but without malicious intent (e.g., police or martial arts training).[10] Cases were further limited to intentional injuries by patients which were identified by examining the OIICS primary source of injury. Injuries with an OIICS primary source code of "574 patient" were included. Additionally, the injury narratives of cases with a source code of "575—other client or customer" or "578—bodily fluids or substances of other than injured or ill person" were manually reviewed to determine if a patient was involved in the injury event. For example, a narrative indicating a nurse working in a group home was injured by a resident or a patient spit on a healthcare worker would have been included as an intentional injury by a patient or client. The inclusion of these records represented <3% of the total case count.

NEISS-Work estimates the number of nonfatal work-related injuries and illnesses treated in all EDs. Each case was assigned a statistical weight based on the probability of selection of the hospital. National estimates were calculated by summing the weights of selected cases. All estimates and 95% confidence intervals (CIs) were calculated using SAS® 9.4 Proc Survey to incorporate the stratified sample design of NEISS-Work. The SAS procedure uses the Taylor series approximation for calculating sample variance.[12] Employment estimates were derived from the Current Population Survey (CPS) using the online Employed Labor Force query system.[13] The CPS is a monthly national survey that includes employment information for persons as young as 15 years old. These employment estimates were used to calculate rates, which are reported per 100,000 FTE. One FTE equals 40 h of work per week for 50 weeks or 2000 working hours.

3 | RESULTS

Between 2015 and 2017, an estimated 1.14 million (95% CI: 870,300–1,414,000) injuries to workers in the healthcare industry were treated in US hospital EDs. Approximately 15% of those injuries (171,700 95% CI: 100,000–243,400) resulted from an intentional injury by another person, with an overall injury rate of 353 per 100,000 FTE (95% CI: 205–500). Eighty-five percent (146,500, 95% CI: 88,500–204,500) of these intentional injuries were caused by patients. Over half of the intentional injuries caused by patients occurred in a hospital (101,800; 95% CI: 54,600–148,900), followed by residential care facilities, except skilled nursing facilities (21,700; 95% CI: 10,600–32,800), other healthcare services (7200; 95% CI: 2800–11,600), and nursing care facilities (10,700; 95% CI: 6600–14,800). Ninety-nine percent (144,300; 95% CI: 87,500–201,200) of intentional injuries caused by patients were treated and released from the ED.

Females working in the healthcare industry incurred the majority (56%) of intentional injuries caused by patients (Table 1). Healthcare workers between the ages of 25 and 34 years sustained almost one-third (32%) of intentional injuries caused by patients. The head and face were the most commonly injured body part (45%), followed by the arm, wrist, and hand (30%). Contusions and abrasions were the most commonly diagnosed injury (42%), followed by sprains and strains (12%).

Analysis of intentional injuries caused by patients at the more detailed injury event level found that 85% of the injuries involved hitting, kicking, beating, or shoving. These injuries were further analyzed by demographics and injury characteristics to better understand who is impacted by these injuries (Table 1).

Although female healthcare workers experienced the majority of intentional injuries by patients, the injury rate for males in the industry was 2.3 times higher than for females, 529 per 100,00 FTE (95% CI: 256–802) compared to 226 (95% CI: 149–307), respectively. An examination of the cases of intentional injuries by patients that involved hitting, kicking, beating, or shoving had similar findings, with the male injury rate (445; 95% CI: 218–671) being over twice the rate for females (198; 95% CI: 129–268).

When examining 10-year age groups, the rates of intentional injuries caused by patients decreased as the worker's age increased (Figure 1). Workers younger than 25 had the highest intentional injury rate caused by patients at 508 per 100,000 FTE (95% CI: 334–682), whereas workers aged 65 years and older had the lowest rate at 153.6 per 100,000 FTE (95% CI: 82–225). This pattern of injury rates decreasing with age was also found for intentional injuries caused by patients hitting, beating, kicking, and shoving the worker (Figure 1).

4 | DISCUSSION

NIOSH considers any "act or threat of violence, ranging from verbal abuse to physical assaults directed toward persons at work or on duty" as workplace violence, and has been conducting research in this area for decades.[14] This research has resulted in online courses, training, and other resources that give nurses and other healthcare workers tools to prevent or minimize violence during their daily routines.[14] However, the burden of

high rates of injuries in the healthcare sector remains an occupational health challenge. Because these workers are often in close contact with patients during high-stress situations, healthcare workers experience a higher risk of physical violence at work than those in other professions.[3,15,16] It is important to address the differences in injury rates among healthcare workers by sex. Although males represented a smaller portion of the workforce than females, they had a higher rate of injuries related to intentional violence than their female colleagues. Although the reasons for this are unclear, research by Habib et al.[17] found that males report higher exposures to physical violence and abuse, whereas females report more verbal abuse. A higher exposure to physical violence may partially explain higher injury rates. Further research indicates that males and females often have different job assignments and work tasks that could affect work exposures and health outcomes.[17–19]

This study also found that rates for patient-related workplace violence injuries differed by age group, with younger age groups experiencing the highest injury rates. These findings are consistent with previous research showing injury rates decrease as age increases.[20–22] It is unclear if this relationship is confounded by experience on the job. Some researchers have suggested that this relationship may be the result of older healthcare workers being more adaptable, patient, and empathetic.[20,23] Identifying differences in reporting incidents, variances in workplace exposures, and other nuances that may impact these data are important steps toward making the workplace safer for all healthcare workers, regardless of sex or age.

The high proportion of injuries to the head and face is also an area of concern. Previous research has also found a high incidence of violence-related head and facial injuries among healthcare workers.[24,25] Head and facial injuries can often result in severe outcomes, both in terms of days away from work and long-term effects.[26] Additional research is needed for preventive and intervention strategies in this area.

Over the years, there have been many recommendations for preventing violence in the workplace. Free courses and educational material are available to help healthcare workers better understand the nature of violence in the workplace and provide prevention strategies on a personal and organizational level.[27,28] The role of the physical environment in reducing workplace violence in healthcare has been assessed.[29] Awareness and de-escalation training for healthcare personnel have also been evaluated.[30,31] Each of these approaches provides strategies for reducing the incidence of workplace violence in healthcare. However, it is likely that a multi-disciplinary approach, which includes all aspects of the work environment and person-to-person interaction, will be needed to provide a safe working environment in the healthcare industry.

Although NEISS-Work provides robust occupational injury data, there are limitations to this study that may result in underreporting. NEISS-Work relies on the patient to report the reason for their ED visit as work-related and their medical records to capture this information. Patients or ED staff may omit information that would identify the injury as work-related.[32] These omissions could be inadvertent or due to fear of employer reprisals, lack of management responsiveness, a desire to use their own health insurance, or concerns about losing their job.[32,33] Additionally, there may be occupational injuries and incidents

that are not being captured because the level of severity may not be deemed serious enough by the worker or their management to require an ER visit, or because medical treatment was sought in a venue other than the ED. NEISS-work analyses are also limited by the lack of coded occupation data. The addition of occupation coding would allow for occupation-specific analyses in future research.

5 | CONCLUSION

A safe and secure working environment is essential to providing quality care and should be the status quo for all healthcare workers. Although violence in the healthcare industry has been researched for decades, there has been an increase in violent incidents in this industry in recent years.[34] Although research has discovered injury rate disparities, it is important to remember that all workers are at risk for some degree of workplace violence despite their gender or age. Further research in this area is necessary to understand the root causes of these incidents, to reduce the disparities between healthcare workers, and inform the need for intervention research.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from Consumer Product Safety Commission (CPSC). Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the author(s) with the permission of CPSC.

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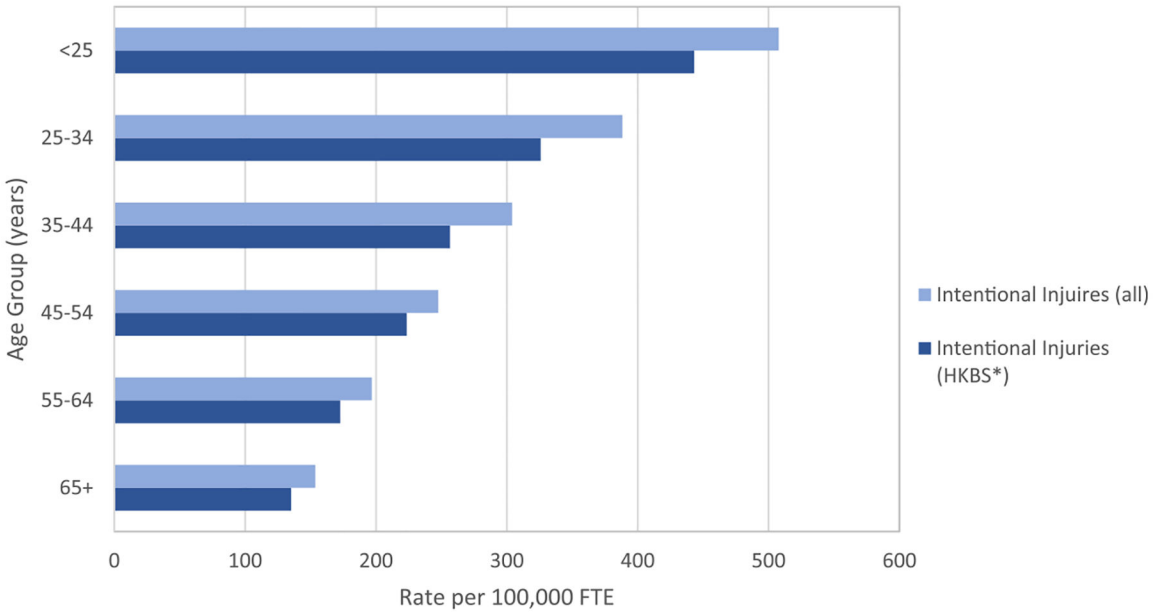

FIGURE 1.

National estimates of injury rates for intentional injuries by patients to healthcare workers in the healthcare industry treated in US Emergency Departments by age group, 2015–2017. FTE, full-time equivalent. *Sources*: National Electronic Injury Surveillance System Occupational Supplement 2015–2017; Current Population Survey 2015–2017. *HKBS—hit, kick, beat, shove.

TABLE 1

National estimates of intentional injuries caused by patients to workers in the healthcare industry treated in US emergency departments, 2015–2017.

	All intentional injuries by patient			Intentional injuries by patient—hit/kick/beat/shove		
	Estimate	**95% CI**	**%**[a]	**Estimate**	**95% CI**	**%**[a]
Total[b]	146,500	±56,800		126,300	±48,200	
Sex						
Male	63,800	±32,100	44	53,600	±26,900	42
Female	82,700	±28,200	56	72,700	±25,000	58
Age group recode (years)						
<25	19,300	±6500	13	16,800	±5900	13
25–34	46,300	±18,600	32	38,800	±16,300	31
35–44	32,400	±14,700	22	27,300	±11,600	22
45–54	27,700	±12,700	19	25,000	±11,400	20
55–64	17,200	±6900	12	15,100	±5700	12
65+	3700	±1800	3	3300	±1800	3
Injured part of body						
Head/face	66,300	±26,460	45	52,100	±26,500	41
Arm/wrist/hand	44,500	±17,836	30	41,300	±17,800	33
Chest/back/ab/shoulder	19,700	±7448	13	18,700	±7400	15
Leg/ankle/foot	7400	±3724	5	6600	±3700	5
All Other/unknown[c]	8500	±3332	6	7700	±3300	6
Diagnosis						
Contusions/abrasions	61,300	±25,872	42	61,300	±25,900	49
Sprain or strain	18,200	±7,056	12	18,200	±7000	14
Internal organ injury	11,200	±3,920	8	11,200	±3900	9
Laceration	5100	±2,156	3	5100	±2200	4
Fracture	3400	±1,568	2	3400	±1600	3
All other[d]	47,300	±21,168	32	47,300	±21,200	37

[a] Percentages may not sum to 100% due to rounding.

[b] Estimates may not sum to the total due to rounding.

[c] Includes internal organs, lower trunk, multiple body parts, and unknown diagnoses.

[d] Includes ingesting/aspirating foreign objects, burns, amputations, concussions, crushing injuries, dislocations, foreign body, hematomas, dental injuries, nerve damage, puncture, anoxia, hemorrhages, electric shock, poison, submersion, avulsions, and dermatitis.

Source: National Electronic Injury Surveillance System Occupational Supplement 2015–2017.