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Nonfatal Occupational Falls Among U.S. Health Care Workers, 2008–2010

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Abstract

The purpose of this study was to describe antecedents and characteristics of nonfatal fall-related injuries among health care workers in the United States. A special request was made for the Bureau of Labor Statistics to obtain nonfatal fall-related injury data from 2008 to 2010. Overall, workers in the nursing-related profession had the highest percentages of workplace fall-related injuries. Ninety-one percent of these injured workers were female, and more than 50% were between the ages of 45 and 64 years. More than 25% of fall injuries resulted in 31 or more workdays being lost. This study indicated that the most affected body parts were the lower extremities, with most injuries resulting in sprains, strains, and tears. Accordingly, this 3-year study revealed that a high number of fall injuries occurred at night for health care workers compared to other workers in the U.S. private sector.

Fall accidents are prevalent in the workplace and are responsible for a significant proportion of worker absenteeism and disability (Yeoh, Lockhart, & Wu, 2012; Yoon & Lockhart, 2006). Injuries from a fall contribute, on average, a greater number of days away from work than other occupational injuries and illnesses (Yoon & Lockhart, 2006). According to Cotnam, Chang, and Courtney (2000), the health care industry is the largest employer group in the United States (i.e., 13 million employees), and ranks second among eight industries with the highest percentage of claim costs associated with falls. The lost workday injury rate due to falls on the same level in nursing homes and residential care facilities was 38.2 per 10,000 employees, 90% greater than the average fall rate for all other private industries combined (i.e., 20.1 per 10,000 employees) (Bureau of Labor Statistics, 2009). Employment demand for nurses is expected to create a 20% shortage in the nursing labor pool by 2015 and 30% by 2020 (American Nurses Association, 2003). The high injury rate, coupled with a critical nursing shortage, raises serious concerns about the nursing work force's capacity to care for the nation's growing population. This critical shortage will place additional pressure on the nursing labor pool, increasing the workload and possibly increasing occupational injuries. In addition to risking their own health and safety, fall incidents among nurses can frequently result in serious disabling injuries that impact their ability to complete job tasks, including diminished ability to care for patients (U.S. Department of Health and Human Services, 2010). The aim of this study was to address the chain of events in a nonfatal fall-related accident: the exposure to hazards, the initiating events, and the final outcome leading to injury and disability.

METHODS

The Bureau of Labor Statistics compiles national data on nonfatal occupational injuries and illnesses in private industry from the Survey of Occupational Injuries and Illnesses (SOII) and estimates the overall occupational injury and illness experience (Bureau of Labor Statistics, 2011). Nonfatal injury and illness-related work absences of 1 or more days are classified by nature, source, injured body part, age, gender, occupation, race, and length of service. To better understand the risks of injuries from a fall for this work group, a special request was made for the Bureau of Labor Statistics to release nonfatal fall-related injury data on health care workers. Health care workers in this study were from two major occupational groups classified by the Bureau of Labor Statistics: “29-0000 Healthcare Practitioners and Technical Occupations” and “31-0000 Healthcare Support Occupations” (Bureau of Labor Statistics, 2010). Healthcare Practitioners and Technical Occupations includes chiropractors, dentists, dietitians and nutritionists, optometrists, pharmacists, anesthesiologists, family and general practitioners, obstetricians and gynecologists, pediatricians, psychiatrists, podiatrists, registered nurses, therapists, veterinarians, audiologists, health diagnosing and treating practitioners, medical and clinical laboratory technicians, dental hygienists, radiologic technologists and technicians, emergency medical technicians and paramedics, licensed practical and licensed vocational nurses, medical records and health information technicians, opticians, dispensing, orthotists and prosthetists, health technologists and technicians, occupational health and safety specialists, occupational health and safety technicians, athletic trainers, health care practitioners, and technical workers. Conversely, Healthcare Support Occupations includes home health aides, nursing assistants, orderlies, occupational therapy assistants and aides, physical therapy assistants and aides, massage therapists, dental assistants, medical assistants, medical equipment preparers, medical transcriptionists, pharmacy aides, veterinary assistants and laboratory animal caretakers, and phlebotomists. Identifying the nature, affected body part, occupation, age group, gender, days away from work, time of fall, and event distribution of injuries provides a detailed overview of the risk of falls among these workers. The current study is a compendium of fall-related injury data based on the SOII, from 2008 to 2010. All nonfatal injury and illness data in this article involved at least 1 day away from work following the day the incident occurred. The data published in this article have been certified by the Bureau of Labor Statistics to maintain accuracy (Andrew Kato, Economist, Injuries, Illnesses, and Fatalities Program, Office of Safety and Health Statistics, Bureau of Labor Statistics, personal communication, September 21, 2012).

RESULTS

Table 1 specifies the 3-year period from 2008 to 2010 in which approximately 2.98 million work-related nonfatal injuries involving days away from work occurred in the United States; more than 22.1% (656,070) of these accompanied falls. Of the 656,070 fall injuries, 73,030 cases (11.2%) were reported by health care workers. The Bureau of Labor Statistics categorizes four main events or exposures in fall-related injuries: “fall to lower level,” “fall on same level,” “jump to lower level,” and “unspecified” events. Fall on same level events occur when contact with the source of injury is made on the same level or above the surface supporting the injured person. Fall to lower level events occur when the source of injury makes contact below the surface level supporting the individual. Conversely, jump to lower level events transpire when the injured person voluntarily leaps from an elevation, albeit to avoid an uncontrolled fall or other injury. Events peripheral to these categories are labeled unspecified. The percentage of fall-related injuries for each event is shown in Table 2. Among these events, fall on same level cases were associated with the most fall-related injuries, with 84.5% of total occupational falls occurring this way, followed by fall to lower level cases, accounting for 12.8% of all injuries.

Table 3 presents the total number and percentage of fall injuries by gender and age group. The results indicate that the majority of the victims were female workers: 91.9% women compared to only 8.0% men during the 3 years. Among the age groups, the 45 to 54 year olds had the highest number of injuries (28.4%); the 55 to 64 year olds and the 35 to 44 year olds were the second and third largest fall populations, with 22.5% and 20.2%, respectively. The percentage of fall-related injuries among selected occupations is also listed in Table 3. Workers in the nursing aides–orderlies–and attendants occupation had the highest number of fall-related injuries involving days away from work—34.4% of total falls.

The characteristics of occupational falls are presented in Table 4: part of body injured, nature of the injury, number of days away from work, and time of day injury occurred. The lower extremities—knees, feet, and toes—were the most affected areas, accounting for an average of 26.2% of total fall-related injuries. Workers injured multiple body parts in approximately 26.2% of fall-related accidents; the Bureau of Labor Statistics uses the classification multiple body parts for any injury in which body parts from two or more divisions of the body are injured. The trunk, including the shoulders and the back, was the third most injured body part (22.1%). Regarding the nature of the injury, sprain–strain–tear (40%), bruise–contusion (15.7%), and fracture (11.5%) contributed to more than 65% of the fall-related injuries during the past 3 years. In terms of absence from work, more than 25% of health care workers' falls resulted in 31 or more workdays lost, followed by 19.4% for 3 to 5 days away from work. Table 4 reveals that falls reported between 8:01 a.m. and 4:00 p.m. and 4:01 p.m. and 12:00 a.m. contributed to 25.7% and 19.9% of all falls, respectively. Moreover, falls that occurred between 4:01 a.m. and 8:00 a.m. contributed to approximately 15.5% of the total fall-related injuries.

DISCUSSION

The current study provides a detailed analysis of nonfatal fall-related injuries among health care workers in U.S. private industry from 2008 to 2010. Although the number of overall occupational injuries involving days away from work decreased by 144,940 during the 3-year period (i.e., 1,078,140 cases in 2008 to 933,200 cases in 2010), the percentage of overall fall injuries actually increased incrementally, from 21.8% in 2008 to 22.3% in 2010 (Table 1). The results suggest that fall injuries among health care workers contribute to more than 11% of overall occupational injuries. The Bureau of Labor Statistics (2009) reported that the lost workday injury rate due to falls on same level in nursing homes and residential care facilities was 38.2 per 10,000 employees, which was 90% greater than the average rate for all other private industries combined (20.1 per 10,000 employees). The current study results indicate that 84.5% of the fall injuries were falls on the same level.

Female workers were involved in a considerably greater proportion of injuries associated with falls than male workers (average of 91.9% vs. 8.0% during the 3-year period), because women hold the majority of jobs in the health care sector. Accordingly, falls are a significant problem for the aging work force. The combination of the 45 to 54 years and 55 to 64 years age groups' injury histories yielded the total injury rate of 50.9 per 100 associated with falls. Kemmlert and Lundholm (2001) reported that older workers were more likely to suffer from slips, trips, and fall-related injuries. Fall-related accidents among the elderly may be associated with age-related deterioration in visual, proprioceptive, and vestibular signals concerning postural control (Lockhart, Woldstad, & Smith, 2003; Lockhart, Woldstad, Smith, & Ramsey, 2002). Nursing aides–orderlies–and attendants was the major occupational group that had the highest number of falls, 34.4% during the past 3 years, followed by registered nurses and miscellaneous healthcare support occupations, with 19.6% and 12.6%, respectively. Licensed practical and licensed vocational nurses ranked fourth, with 8.2% during the preceding 3 years. Nursing aides–orderlies–and attendants are workers

who provide basic patient care under the direction of the nursing staff and perform duties such as feeding, bathing, dressing, grooming, or moving patients, or changing linens. Miscellaneous healthcare support occupations includes dental assistants, medical assistants, medical equipment preparers, medical transcriptionists, pharmacy aides, veterinary assistants and laboratory animal caretakers, and phlebotomists. Current findings demonstrate that falls are a growing concern for workers in nursing-related occupations; registered nurses, licensed practical and licensed vocational nurses, and nursing aides–orderlies–and attendants occupational groups reported 62.2% of all fall injuries.

Although the falls reported in this study involved nonfatal injuries, they can still be severe (i.e., skeletal fractures, muscle strains, back injuries, and concussions) (Cattledge, Schneiderman, Stanevitch, Hendricks, & Greenwood, 1996; Courtney, Matz, & Webster, 2002). Injuries due to falls are a major cause of years lived with disability (Murray & Lopez, 1996). The results of this analysis indicated that the most affected body parts were the lower extremities and the trunk. The correlation between aging and skeletal fractures, particularly female worker fall on the same level injuries, cannot be overstated as several studies have reported that women 45 years and older are at increased risk of fracture due to falls (Cherry et al., 2005; McNamee, Kemmlert, Lundholm, & Cherry, 1997; Stevens & Sogolow, 2005). One fourth of the health care workers who suffered from falls required 31 or more days to recover, which may impact health care employees' ability to return to work and care for patients (U.S. Department of Health and Human Services, 2010).

Because more employees work from 8:01 a.m. to 4:00 p.m., the total number of falls that occurred during this time period generated more than 45% of the total injuries. Interestingly, this 3-year study revealed that a high number of occupational fall injuries occurred during the 12:01 a.m. to 8:00 a.m. time period (20.1%), compared to the national average of 14.6%. Despite its links with decreased sleep quantity and quality (Charles et al., 2007), metabolic syndrome (Esquirol et al., 2009; Violanti et al., 2009), metabolic risk factors for cardiovascular disease (Ha & Park, 2005), and prostate cancer (Kubo et al., 2006), night shift work is common in the health care industry. Further, Flain (1986) reported that 36% of health care workers engage in shift work; among them, nursing staff were the largest group of professionals on the health care team, providing 24-hour patient care across a 7-day work week. Horwitz and McCall (2004) found that night shift health care workers had an increased risk of injury (risk ratio = 1.58) compared to daytime workers. Although the National Institute for Occupational Safety and Health (NIOSH) has released a workbook on slips, trips, and falls causes in an attempt to offer prevention advice to health care workers (U.S. Department of Health and Human Services, 2010), more fall prevention research is needed for night shift workers to prevent falls.

Several limitations are noted. The Bureau of Labor Statistics data were subject to employees' recollections of the incidents and their ability to identify environmental risk factors. Furthermore, the narrative analysis method is limited by the completeness and consistency of the available text data (Lincoln et al., 2004). For instance, Lombardi et al. (2005) reported that it is not known whether words were truncated, forgotten, omitted, or even lost in conversation by those reporting or recording the claim. In fact, growing evidence suggests that the annual Bureau of Labor Statistics SOII underestimates the true injury burden due to the under-reporting of injuries (Azaroff, Levenstein, & Wegman, 2002; Boden & Ozonoff, 2008).

IMPLICATIONS FOR PRACTICE

Employment demand for nurses is expected to create a shortage in the nursing labor pool of 20% by 2015 and 30% by 2020. The high injury rate, coupled with a critical nursing

shortage, raises serious concerns about the nursing work force's capacity to care for the nation's growing population. This critical shortage will place additional pressure on the nursing labor pool, increasing both the workload and the possibility of occupational injuries. The purpose of this study was to describe the characteristics and antecedents of occupational fall injuries among health care workers. This information can be used by occupational health and safety professionals to design and implement preventive measures in the U.S. health care industry and to provide workers with an understanding of risk factors associated with falls in the workplace. Considering the direct and indirect costs (e.g., lost productivity and stress for workers' families), occupational falls bring enormous burdens to society. As Leamon and Murphy (1995) concluded, "Based on the frequency and costs to industry and workers, prevention of falls should be given a high priority" (p. 495). Preventive actions by the employer should be multidimensional, including a review of organizational practices and policies, work environment, and health management programming.

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Table 1

Number and Percentage of Occupational Fall-Related Injuries Involving days Away From Work in U.S. Private Industry, 2008–2010

Year	All Events ^a (N)	Total Occupational		Health Care Worker Fall	
		N	% ^b	N	% ^b
2008	1,078,140	234,840	21.8	23,900	10.2
2009	964,990	212,760	22.0	25,100	11.8
2010	933,200	208,470	22.3	24,030	11.5

Note. Source: Bureau of Labor Statistics (2009, 2010, 2011).

^a All injuries in U.S. private industry.

^b Percentage of fall-related injuries in private industry.

Table 2
 Number and Percentage of Fall-Related Events Among Health Care Workers in U.S. Private Industry, 2008–2010

Event or Exposure	2008		2009		2010	
	N	%	N	%	N	%
Fall events	23,900	85.7	25,100	87.4	24,030	86.9
Fall to lower level	3,030	12.7	3,460	13.8	2,900	12.1
Jump to lower level	30	0.1	20	0.1	30	0.1
Fall on same level	20,330	85.1	21,050	83.9	20,340	84.6
Unspecified	510	2.1	570	2.3	760	3.2
Slip–trip–loss of balance—without fall	3,980	14.3	3,610	12.6	3,620	13.1

Note. Source: Bureau of Labor Statistics (2009, 2010, 2011).

Table 3

Characteristics of Workers With Fall-Related Injuries, 2008–2010

	2008		2009		2010	
	N	%	N	%	N	%
Gender						
Women	25,530	91.6	26,220	91.3	25,620	92.7
Men	2,340	8.4	2,450	8.5	1,990	7.2
Not reported	10	0.0	40	0.1	40	0.1
Age group (years)						
16 to 24	1,790	6.4	1,950	6.8	1,640	5.9
25 to 34	4,250	15.2	4,630	16.1	5,110	18.5
35 to 44	5,890	21.1	5,670	19.7	5,440	19.7
45 to 54	7,910	28.4	8,360	29.1	7,690	27.8
55 to 64	6,150	22.1	6,580	22.9	6,190	22.4
65	1,320	4.7	1,190	4.1	1,320	4.8
Age not reported	570	2.0	330	1.1	260	0.9
Occupation						
Registered nurses	5,330	19.1	5,630	19.6	5,560	20.1
Licensed practical nurses and licensed vocational nurses	2,250	8.1	2,250	7.8	2,370	8.6
Health diagnosing and treating practitioner support technicians	970	3.5	840	2.9	960	3.5
Nursing aides—orderlies—and attendants	9,550	34.3	9,670	33.7	9,770	35.3
Miscellaneous health care support occupations	3,760	13.5	4,130	14.4	2,760	10.0

Note. Percentages may not total 100% due to rounding. Source: Bureau of Labor Statistics (2009, 2010, 2011).

Table 4

Characteristics of Occupational Fall-Related Injuries, 2008–2010

	2008		2009		2010	
	N	%	N	%	N	%
Part of body injured						
Head	990	3.6	1,420	4.9	1,090	3.9
Neck, including throat	250	0.9	220	0.8	210	0.8
Trunk	6,230	22.3	6,290	21.9	6,060	21.9
Upper extremities	2,740	9.8	2,920	10.2	2,600	9.4
Lower extremities	10,180	36.5	10,300	35.9	10,090	36.5
Body systems	70	0.3	20	0.1	50	0.2
Multiple body parts	7,310	26.2	7,360	25.6	7,400	26.8
Nonclassifiable	110	0.4	180	0.6	150	0.5
Nature of the injury						
Dislocation	130	0.5	200	0.7	190	0.7
Fracture	3,180	11.4	3,340	11.6	3,210	11.6
Sprain–strain–tear	11,110	39.8	9,720	33.9	10,280	37.2
Cut–laceration	130	0.5	200	0.7	240	0.9
Bruise–contusion	4,320	15.5	4,930	17.2	4,000	14.5
Sprain and bruise	1,730	6.2	1,490	5.2	1,770	6.4
Back pain—hurt back	800	2.9	710	2.5	710	2.6
Soreness–pain–hurt—except back	2,830	10.2	3,650	12.7	3,120	11.3
Number of days away from work						
1	3,500	12.6	4,190	14.6	3,910	14.1
2	3,890	14.0	3,180	11.1	2,960	10.7
3 to 5	5,370	19.3	5,680	19.8	5,270	19.1
6 to 10	3,650	13.1	3,720	13.0	3,330	12.0
11 to 20	3,000	10.8	3,110	10.8	3,230	11.7
21 to 30	1,720	6.2	1,470	5.1	1,710	6.2
31	6,750	24.2	7,390	25.7	7,250	26.2
Time of day injury occurred						

	2008		2009		2010	
	N	%	N	%	N	%
12:01 a.m. to 4:00 a.m.	910	3.6	1,300	4.5	1,020	4.2
4:01 a.m. to 8:00 a.m.	4,400	15.8	4,080	15.9	4,540	16.4
8:01 a.m. to 12 noon	7,180	25.8	7,160	24.9	7,270	26.3
12:01 p.m. to 4:00 p.m.	6,080	21.8	5,510	19.2	5,170	18.7
4:01 p.m. to 8:00 p.m.	4,090	14.7	4,370	15.2	4,100	14.8
8:01 p.m. to 12 midnight	2,350	8.4	2,380	8.3	2,370	8.6
Not reported	2,870	10.3	3,910	13.6	3,170	11.5

Note. Source: Bureau of Labor Statistics (2009, 2010, 2011).