Occupational Injury Fatalities Among Older Workers in the United States, 1980–1994

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KEY WORDS: older workers; injury surveillance; causes of death; industry; occupational health and safety; work environment

BACKGROUND

Data from the National Traumatic Occupational Fatalities (NTOF) surveillance system indicate that workers aged 65 and older had the highest rate of work-related injury death from 1980 through 1991 [Kisner and Pratt, 1997]. The fatality rate for workers aged 65 years and older was almost three times the rate for workers aged 16 to 64.

Between 1996 and 2006, the number of workers aged 55 and older is projected to increase 44% [Fullerton, 1997]. The number of workers aged 25 to 54 is projected to increase only 5%. In view of this projection, it will become increasingly important to identify job-related risks associated with high rates of work-related fatalities among older workers. The purpose of this analysis is to update the earlier study done by Kisner and Pratt.

METHODS

Data were extracted from the NTOF surveillance system for 1980 through 1994. The NTOF data are composed of information obtained from death certificates from 52 US vital statistics reporting units (the 50 states, New York City, and the District of Columbia) for decedents 16 years of age or older with an ''external'' cause of death (International Classification of Diseases-9th Edition [ICD-9], codes E800–E999) [World Health Organization, 1977] and a positive response to the ''Injury at Work?'' item.

Despite the limitations inherent in using death certificates to ascertain work-related fatality information that have previously been described, they identify an average of 80% of all work-related fatalities [Jenkins et al., 1993]. Frequencies presented in this paper should be considered minimum values.

Fatality rates were calculated using annual average employment data from the Bureau of Labor Statistics (BLS) publication, Employment and Earnings [BLS, 1981–1995].

RESULTS

There were 6,471 civilian fatalities of workers aged 65 and older from 1980 through 1994. The fatality rate for this group of workers (13.7 per 100,000 workers) was almost three times higher than the rate for workers aged 16 to 64 (5.1). The four leading causes of death for workers aged 65 and older were machines (28%), motor vehicles (19%), homicides (13%), and falls (13%). The rate of machinery-related deaths among males aged 65 and older was almost 6 times the rate for males aged 16 to 64 (Table I). The fatality rate for falls among females aged 65 and older was 14 times the rate for females aged 16 to 64.

Industries with the greatest proportions of fatalities among workers aged 65 and older were agriculture/forestry/fishing (ag/for/fish) (34%), services (11%), manufacturing

TABLE I. Rate per 100,000 Workers by Cause of Death, Age, Gender: NTOF 1980–1994[a]

	Males		Females	
Cause of Death	**16–64**	**65+**	**16–64**	**65+**
Motor Vehicle	2.0	4.0	0.19	0.47
Machine	1.1	6.4	0.03	0.10
Homicide	1.0	2.6	0.31	0.67
Falls	0.8	2.6	0.03	0.42
Electrocution	0.7	0.4	0.01	–

[a]Rates not calculated for cells with fewer than three deaths.

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TABLE II. Rate Ratios Comparing Workers Aged 16 to 64 Years to Workers Aged 65 Years and Older by Cause of Death and Industry Division: NTOF, 1980–1994[a]

Cause of Death	Industry Division	Rate (65+)	Rate (16–64)	Rate Ratio
Falls	Fin/Ins/RE	0.83	0.08	10.4
Falls	Retail Trade	0.69	0.08	8.6
Machinery	Transport/Comm/PU	5.41	0.63	8.6
Machinery	Public Admin	1.64	0.20	8.2
Flying Obj/Caught in or Between	Fin/Ins/RE	0.08	0.01	8.0
Homicide	Manufacturing	1.74	0.23	7.6
Homicide	Mining	2.78	0.38	7.3
Machinery	Retail Trade	0.54	0.08	6.8
Suicide	Manufacturing	0.67	0.10	6.7
Falls	Public Admin	1.27	0.22	5.8
Falls	Transport/Comm/PU	2.70	0.47	5.7

[a]Rates per 100,000 workers.

(11%), and construction (11%). Industries with the highest rates were mining (64.4), ag/for/fish (49.9), and construction (37.4).

Highest rates by cause of death and industry for workers aged 65 and older were observed for machinery-related incidents in ag/for/fish (25.9) and mining (16.1), and motor vehicle-related incidents in transportation/communication/public utilities (TCPU) (14.8). Although incidence was low, rates for older workers were 10 times more than those for workers 16 to 64 for falls in finance/insurance/real estate (Table II).

DISCUSSION

The elevated fatality rates among older workers are even more striking if full- and part-time status is considered. In 1990, workers aged 65 and older in non-agricultural industries worked an average of 29 hours a week, whereas workers aged 20 to 64 worked an average of 37 to 41 hours a week [BLS, 1991]. If decreased exposure time were taken into account, the result could be higher fatality rates than those reported here [Jenkins et al., 1993]. Conversely, older workers may be undercounted in employment data, which would result in lower fatality rates [Jenkins et al., 1993].

Studies have shown that results of injuries are more severe among older workers. Older workers may be more likely to experience injuries that result in death or permanent disability [Doering et al., 1983]. Other researchers have associated increased mortality among older patients with complications and infections [Schiller et al., 1995; DeMaria et al., 1987] and pre-existing diseases and medication side effects [Rossignol, 1994].

Persons charged with workplace safety will be responsible for training and accommodating vastly greater numbers of older workers. As the workforce ages [Fullerton, 1991] and the number of older persons remaining in or re-entering the labor force to work part-time, continues to increase [Quinn and Burkhauser, 1994], it will become increasingly important to adapt work practices and settings to effectively protect older workers from fatal injuries.

REFERENCES

Bureau of Labor Statistics. 1981–1995. Household Data Annual Averages. Employment and Earnings 28–39. Washington, DC: U.S. Government Printing Office.

Bureau of Labor Statistics. 1991. Household Data Annual Averages. Employment and Earnings 38. Washington, DC: U.S. Government Printing Office.

DeMaria EJ, Kenney PR, Merriam MA, Casanova LA, Gann DS. 1987. Survival after trauma in geriatric patients. Ann Surg 206:738–743.

Doering M, Rhodes SR, Schuster M. 1983. The Aging Worker. Beverly Hills, CA: SAGE Publications Inc 61–82.

Fullerton HN. 1991. Labor Force Projections: The baby boom moves on. Monthly Labor Rev 114:31–44.

Fullerton HN. 1997. Another look at the labor force. Monthly Labor Rev 120:23–38.

Jenkins EL, Kisner SM, Fosbroke DE, Layne LA, Stout NA, Castillo DN, Cutlip PM, Cianfrocco R. 1993. Fatal Injuries to Workers in the United States, 1980–1989: A Decade of Surveillance–National Profile (DHHS [NIOSH] Pub No 93-108). Morgantown, WV: National Institute for Occupational Safety and Health.

Kisner SM, Pratt SG. 1997. Occupational fatalities among older workers in the United States: 1980–1991. J Occup Med 39:715–721.

Rossignol M. 1994. The case-fatality rate of occupational injuries: The effect of aging. Am J Public Health 84:1696–1697.

Schiller WR, Knox R, Chleborad W. 1995. A five-year experience with severe injuries in elderly patients. Accid Anal Prev 27:167–174.

Quinn JF, Burkhauser RV. 1994. Retirement and labor force behavior of the elderly. In: LG Martin, SH Preston, editors. Demography of Aging. Washington, DC: National Academy Press 50–101.

World Health Organization. 1977. International Classification of Diseases: Manual on the International Statistical Classification of Diseases, Injuries, and Causes of Death, Ninth Revision. Geneva, Switzerland: World Health Organization.