

The University of Iowa Injury Prevention Research Center
Iowa City, Iowa 52242

Project Title: Occupational Injuries Among Older Workers

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Publications:

Zwerling C, Whitten PS, Davis CS, Sprince NL. Occupational Injuries Among Workers with Disabilities: An Analysis of the National Health Interview Survey, 1985-1994. *JAMA* 278:2163-2166, 1997.

Zwerling C, Sprince NL, Wallace RB, Davis CS, Whitten PS, Heeringa SG: Risk Factors for Occupational Injuries Among Older Workers: An Analysis of the Health and Retirement Study. *Am J of Publ Hlth*, 86:1306-1309, 1996.

Zwerling C, Sprince NL, Wallace RB, Davis CS, Whitten PS, Heeringa SG: Alcohol and Occupational Injuries among Older Workers. *Accident Analysis and Prevention* 28(3): 371-376, 1996.

Zwerling C, Sprince NL, Wallace RB, Davis CS, Whitten PS, Heeringa SG: Effect of Recall Period on the Reporting of Occupational Injuries in the Health and Retirement Study. *Am J Ind Med* 28:583-590, 1995.

Zwerling C, Sprince NL, Wallace RB, Davis CS, Whitten PS, Heeringa SG: Occupational Injuries Among Farmers 51 to 61 Years Old: A National Study. *J of Agricultural Safety and Health* 1(4): 273-281, 1995.

Under Review:

Zwerling C, Whitten PS, Davis CS, Sprince NL: Occupational Injuries Among Older Workers with Visual, Auditory and Other Impairments: Analysis of National Health Interview Survey.

Zwerling C, Sprince NL, Davis CS, Whitten PS, Wallace RB, Heeringa SG: Occupational Injuries Among Older Workers with Disabilities: A Longitudinal Study of the Health and Retirement Survey, 1992-1994.

Significant Findings:

Using data on the 459,827 participants in the National Health Interview Survey from 1985-1994 who listed "working" as their primary activity, who were not farmers, and who were between 18-65 years of age, we found that even after adjusting for occupation, self-employment, and age, occupational injury was associated with preceding work disability (odds ratio [OR], 1.36; 95% confidence interval [CI], 1.19-1.56; blindness (OR, 3.21; 95% CI, 1.32-7.85); deafness (OR, 2.19; 95% CI, 1.17-4.12); hearing impairment (OR, 1.55; 95% CI, 1.29-1.87); upper extremity impairment (OR, 1.46; 95% CI, 1.05-2.05); and arthritis (OR, 1.34; 95% CI, 1.07-1.68). Visual impairment was not associated with a significantly increased risk (OR, 1.37; 95% CI, 0.87-2.17).

Using data on the 6,854 employed non-farmers from the Health and Retirement Study, a population-based sample of Americans 51-61 years old, we found that occupational injuries were associated with the following: the occupations of mechanics and repairers (OR, 2.27; 95% CI, 1.49-3.46), service personnel (OR, 1.68; 95% CI, 1.18-2.39), and laborers (OR, 2.18; 95% CI, 1.29-3.67); jobs requiring heavy lifting (OR, 2.75; 95% CI, 2.00-3.78); workers' impaired hearing (OR, 1.60; 95% CI, 1.11-2.30) and impaired vision (OR, 1.53; 95% CI, 1.11-2.09); and jobs requiring good vision (OR, 1.43; 95% CI, 1.04-1.98). Self-employment was associated with fewer injuries (OR, 0.47; 95% CI, 0.32-0.69).

Using data from the 237 farm operators, farm workers, and workers in other agricultural occupations interviewed in the Health and Retirement Study, we found that agricultural workers differ from all other occupations in the pattern of risk factors associated with occupational injuries. While heavy lifting and poor sight were risk factors for both agricultural workers and other workers, self-employment was a risk factor for agricultural workers and a protective factor for other workers. Poor hearing and a job requiring good vision were risk factors for other workers, but were protective for agricultural workers. Depression and dissatisfaction with life circumstances were more strongly associated with injuries among agricultural workers than among other workers.

Studying 7,089 workers between 51-61 years of age in the Health and Retirement Studies, we found that even after controlling for age, sex, education, occupation, and strenuous job activity, alcohol abuse, as measured by three or more positive responses to the CAGE questions, was associated with occupational injuries with an odds ratio of 1.68 (95% CI, 1.04-2.69). When we measured alcohol consumption using the typical number of drinks per day, we found that moderate drinkers, those reporting one to two drinks per day, had the lowest injury rates. Both teetotalers (OR, 1.64; 95% CI, 1.03-2.61) and those who had less than one drink a day (OR, 1.81; 95% CI, 1.17-2.79) as well as those who drank five or more drinks a day (OR, 4.45; 95% CI, 1.77-11.16) had elevated risks of occupational injuries.

Studies of injury morbidity often rely on self-reported survey data. In designing these surveys, researchers must choose between a shorter recall period to minimize recall bias and a longer period to maximize the precision of rate estimates. Using data from the Health and Retirement Study, which employed a recall period of 1 year, we examined the effect of the recall period on rates of occupational injuries among older workers as well as upon rate ratios of these injuries for nine risk factors. We fit a stochastic model to the occupational injury rates as a function of time before the interview and used this model to estimate what the injury rates would have been had we used a 4-week recall period. The adjusted occupational injury rate of 5.9 injuries per 100 workers per year was 36% higher than the rate based on a 1-year recall period. Adjustment for recall period had much less effect on rate ratios, which typically varied by <10%. Our work suggests that self-reported surveys with longer recall periods may be used to estimate

occupational injury rates and also may be useful in studying the associations between occupational injuries and a variety of risk factors.

Usefulness of findings:

The most important new finding of this study was that workers with disabilities, especially those with disabilities of hearing and vision, were at increased risk for occupational injuries. This finding suggests that employers and employees need to pay more attention to designing effective accommodations for workers with disabilities in order to prevent these occupational injuries.

Specific Aims:

Specific Aim 1: The results of the evaluation of the validity of self-reported occupational injuries from the 1992 HRS and the utility of that variable for multivariate modeling were reported in the *American Journal of Industrial Medicine*, 1995 article.

Specific Aim 2: The model of occupational injuries among older workers using 1992 HRS data was reported for the farmers in the *JASH* article in 1995 and for the non-farmers in the *American Journal of Public Health* article of 1996.

Specific Aims 3 and 4 could not be carried out in a timely basis because of a delay in the availability of the 1994 HRS data. Instead, we carried out a prospective validation of the multivariate model using 1985-1994 data from the National Health Interview Survey (New Specific Aim 3). Those results were reported in the *JAMA* article of 1997. However, we have subsequently obtained the 1994 HRS data and have carried out the prospective validation of our original multivariate model. Enclosed is a manuscript, recently submitted to the *American Journal of Public Health*, which describes those results.