

Final Progress Report

Social Inequalities in Occupational Health and Health Services Grant # R21OH07322-02

Start Date: September 30, 2001
Extended End Date: March 31, 2003

Center for Health Policy and Research
University of Massachusetts Medical School
222 Maple Avenue
Shrewsbury, MA 01545

Project Team:

Allard E. Dembe, Sc.D., Project Director
Steven M. Banks, Ph.D., Statistician
Judith A. Savageau, Co-Investigator
Jay S. Himmelstein, Ph.D., Co-Investigator
J. Biana Erickson, M.S., Data Analyst*
Rachel Delbois, M.S., Data Manager*
Benjamin C. Amick, III, Ph.D., Consultant**

* Applied Epidemiology, Inc.
Amherst Massachusetts

** University of Texas - Houston,
School of Public Health
Houston, Texas

Abstract

Aims and Objectives: The aims of this exploratory research project were to determine whether there are disparities in the occurrence of occupational injuries and illnesses and in associated medical care for work-related disorders, based on workers' race, ethnicity, and socioeconomic status (SES). The study's hypothesis was that nonwhites, Hispanics, and those with low socioeconomic status (as measured by indicators such as income, education, and home ownership) have a disproportionately high incidence of occupational injuries and illnesses, receive inferior medical care, have a greater likelihood of being exposed to workplace hazards, have greater disability and slower return-to work, and are less likely to receive workers' compensation benefits compared to workers without those selected sociodemographic characteristics (e.g., whites, those with high socioeconomic status). A secondary objective of this project was to test a novel method of studying these issues that is based on performing secondary analysis of existing data from three national population-based surveys of patients and health care providers, the National Ambulatory Medical Care Survey (NAMCS), the National Longitudinal Study on Youth (NLSY), and the Health and Retirement Survey (HRS).

Methods: Data from 1997 and 1998 were obtained from the NAMCS, NLSY, and HRS, and teams of analysts from Applied Epidemiology and UMass Medical School created the requisite analytical data sets to identify the type and distribution of occupational injuries and illnesses within the study groups. Additional analyses were then performed on each data set stratified by workers' race, ethnicity, and SES to assess socially-based disparities in the incidence and impacts of occupational accidents, and to comparing the experiences of those with work-related injuries and illnesses to comparable employed survey respondents not experiencing work-related conditions. Descriptive information was also obtained on respondents' medical care received, workers' compensation insurance payments, and a variety of other vocational and economic effects. Based upon the findings of the stratified analysis, a multivariate regression analysis was performed of each data base to identify and evaluate the determinants of occupational injury, illness, and related medical care, and the relative influence of workers' race, ethnicity, and SES in producing those observed effects.

Results:

1) Our analysis of NAMCS data showed that compared to visits for non-work related conditions, ambulatory care visits for work-related conditions were more likely to involve X-rays, injury prevention counseling, and physiotherapy. Surgical procedures, mental health counseling, prescription drug medication, and the taking of blood pressure were found to be relatively less common. Authorization for care was required considerably more often at visits for work-related conditions, and the provider for patients with work-related conditions was less likely to be the patient's regular primary care physician. Preliminary analyses suggested that Black patients accounted for 11.9% of

ambulatory visits for work-related conditions and that Hispanics accounted for 18.7% of visits, over twice their share of other (nonoccupational) office visits. Multivariate analyses of the NAMCS data for patients receiving care for work-related conditions revealed that compared to white patients, Black patients were more likely to receive mental health counseling and physical therapy, and less likely to see a nurse, after controlling for age, gender, geographical region, and MSA status. Hispanic patients were more likely to receive X-rays and need insurer authorization for care, and less likely to receive a prescription drug or to see a physician, compared to non-Hispanics.

2) Our analyses of the NLSY data identified various determinants of occupational injuries and illnesses, specifically: low family income (OR=1.32, CI: 1.01-1.74) and rural residence (OR=1.24, CI: 1.01-1.53), as well as several employment characteristics including working in a high-hazard occupation (OR=2.24, CI: 1.79-2.79), job dissatisfaction (OR=2.41, CI: 1.78-3.26), and exposure to six specific hazardous job activities: performing lots of physical effort on the job (OR=2.25, CI: 1.81-2.81), lifting or carrying more than 10 pounds (OR=1.90, CI: 1.42-2.55), using stairs and inclines (OR=1.28, CI: 1.01-1.62), kneeling or crouching (OR=1.89, CI: 1.37-2.60), reaching (OR=1.41, CI: 1.01-1.97), and hearing special sounds (OR=1.67, CI: 1.32-2.10). The incidence of occupational injuries and illnesses was found to be 21.2% higher among Hispanics (compared to non-Hispanics) and 55% higher among the foreign born (compared to those born in the U.S.), but, surprisingly, 14% lower among Blacks (compared to non-Blacks). Multivariate analyses were also conducted to assess the relationship between various demographic factors and the propensity for injured workers to sustain specific vocational consequences following a work-related injury or illness. In these analyses, we found that Black race (OR=1.37, CI: 0.91-2.07), Hispanic ethnicity (OR=1.82, CI: 1.02-3.25), low educational level (less than high school graduate) (OR=2.10, CI: 1.07-4.13); and low annual family income (\leq \$25,000) (OR=1.96, CI: 1.16-3.31) were associated with a greater likelihood for the patient to miss work as a result of the injury, after controlling for gender, region, occupation, and industry. In addition, injured workers with annual family incomes less than \$25,000 were found to be more likely (than those with incomes above \$25,000) to have been laid off, changed occupations, or lost wages as a result of the injury, and to have either needed to temporarily change jobs, worked less than full time, or be unable to perform normal job duties.

3) HRS data covering the experiences of older (>51 years old) workers were analyzed separately for four time periods (1992-1994, 1994-1996, 1996-1998, and 1998-2000), using a study design in which occupational injury and illness incidence was examined in the two years following baseline assessment of particular variables including job activities and demands, health status, health behaviors, and selected demographic factors including education, race, and ethnicity. After controlling for occupation, age, gender and race, we found that low education (less than 12 years of formal education) was associated with a higher incidence of injury for workers aged 51-63 in 1992-1994 (OR = 1.84, CI: 1.34 - 2.52), but no significant association for older workers (aged 53-69

in the subsequent survey periods. In this study, no significant relationship was observed between Black race and injury incidence or Hispanic ethnicity and incidence.

Conclusions:

Analyses of each of the three data bases provided evidence of associations between sociodemographic variables, the incidence of occupational injuries and illnesses, medical care, and the subsequent vocational consequences of those injuries that are consistent with the study's original hypotheses. Specifically, the NAMCS analyses suggest that blacks and Hispanics have somewhat differing patterns of medical care provided for work-related injuries and illnesses. The NLSY studies suggest that Hispanic and foreign-born workers (but not Blacks) experience a higher incidence of work-related injuries and illnesses and that they suffer more severe vocational consequences following an injury. Those with low education and low family income experience the most severe repercussions. The HRS analysis of older workers did not find evidence of an association between race or ethnicity and the incidence of injury, but it did suggest that older workers aged 51-63 in 1992 to 1994 with low income were at greater risk.

Significance

These exploratory studies represent the nation's first systematic investigation of racial and ethnic differences in medical care for patients with work-related injuries and illnesses. We have used national survey and medical care data to document the extent of differences in the incidence of occupational injuries and illnesses, medical care care for those injuries, and vocational consequences of those injuries, rated to workers' race, ethnicity, and socioeconomic status. Though previous evidence and anecdotal accounts have suggested that such differences exist, the use of nationally representative study populations has allowed us to identify and quantify specific variations in injury incidence, medical care, and vocational consequences that are not available from other data sources. Our analyses have controlled for covariables including age, gender, and geographical location, which have not been taken into consideration in previously published investigations of socially-based differences in occupational health. In addition, these studies have allowed us to test and confirm a novel method of deriving information about differences in workers' health and health care based on their sociodemographic characteristics.

The variations identified in these exploratory studies are potentially important and deserve further attention. Recognizing the areas in which differences exist is a critical first step in designing and implementing protective measures to ensure that timely and appropriate care is afforded to all injured workers, irrespective of race, ethnicity, gender, or socioeconomic status. More intensive research is needed to determine the specific factors contributing to variations in care for work-related conditions, and in workers' vocational and social consequences, along with an accompanying examination of workers' compensation insurance processes, employer practices, preventive measures,

and health care provider actions, all of which potentially affect the ultimate workers' outcomes and experiences.

Protective measures might include: a) education for managers and supervisors concerning ways of avoiding inequitable placement of low wage and minority workers in hazardous jobs, b) monitoring systems to ensure equitable treatment of all workers in employment, medical care, workers' compensation, and return-to-work practices, c) having multi-lingual and culturally diverse staff available, or d) having trained interpreters available for applicable workers, and e) providing applicable workers with translated versions of literature, forms and notices.

Publications and Presentations Resulting from this Grant Project

Peer-Reviewed Articles Published or Accepted

Dembe, A., J. Savageau, B. Amick, S. Banks. "Racial and Ethnic Differences in Office-Based Medical Care for Work-Related Injuries and Illnesses." *Journal of the National Medical Association* Vol. 97, No., in press. 2005.

Dembe, A., J. B. Erickson, R. Gross. "Predictors of Work-Related Injuries and Illnesses: National Survey Findings" *Journal of Occupational and Environmental Hygiene*. Vol. 1 (no. 8):542-550, 2004.

Dembe, A., J. Savageau, B. Amick, S. Banks. "Office-Based Medical Care for Work-Related Conditions: Findings from the National Ambulatory Medical Care Survey, 1997-1998." *Journal of Occupational and Environmental Medicine*, Vol. 44 (no. 12):1106-1117, 2002.

Peer-Reviewed Articles in Preparation

Dembe A., R. Delbos, B. Erickson, S. Banks. *Vocational Consequences of Work-Related Injuries and Illnesses*. To be submitted to: *Journal of Occupational Rehabilitation*.

Dembe A., R. Delbos, B. Erickson, B. Amick, S. Banks. *How Income and Education Affects the Vocational Consequences of Work-related Injuries and illnesses*. To be submitted to: *Social Science and Medicine*.

Dembe A., J Kim. *Risk Factors for Occupational Injuries and Illnesses Among Older Workers*. To be submitted to: *Journal of Aging and Health*.

Dembe A., J Kim, M. Mastroberti. *Social Inequalities in Occupational Healths among Older workers*. To be submitted to: *Ethnicity and Disease*.

Presentations

Dembe A., J. Savageau, B. Erickson, S. Banks. *Social Inequalities in Occupational Health and Health Care*. Poster presentation at the annual meeting of the Academy of Health Policy and Health Services Research; Washington, D.C.; June 23, 2002. Abstract published.

Social Inequalities in Occupational Health and Health Services: Research Findings. Presentation at the Third Biannual National Institute for Occupational Safety and Health NORA Symposium, Washington, D.C., June 27, 2001.

Using National Survey Databases to Analyze Medical Care for Workplace Injuries and Illnesses: New Studies from the United States. Presentation at the Fifth International Congress of Work Injuries: Prevention, Rehabilitation, and Compensation, Adelaide, Australia, March 20, 2001. Abstract published.

Using National Survey Databases to Analyze Medical Care for Workplace Injuries and Illnesses: New Studies from the United States. Lecture presented for the Occupational Health. Program seminar series, Department of Environmental Health, Harvard University School of Public Health, April 30, 2001.

Attachments

- A. Dembe, A., J. Savageau, B. Amick, S. Banks. "Racial and Ethnic Differences in Office-Based Medical Care for Work-Related Injuries and Illnesses." *Journal of the National Medical Association* Vol. 97, No., in press. 2005.
- B. Dembe, A., J. B. Erickson, R. Gross. "Predictors of Work-Related Injuries and Illnesses: National Survey Findings" *Journal of Occupational and Environmental Hygiene*. Vol. 1 (no. 8):542-550, 2004.
- C. Dembe, A., J. Savageau, B. Amick, S. Banks. "Office-Based Medical Care for Work-Related Conditions: Findings from the National Ambulatory Medical Care Survey, 1997-1998." *Journal of Occupational and Environmental Medicine*, Vol. 44 (no. 12):1106-1117, 2002.
- D. Dembe A., J. Savageau, B. Erickson, S. Banks. *Social Inequalities in Occupational Health and Health Care*. Poster presentation at the annual meeting of the Academy of Health Policy and Health Services Research; Washington, D.C.; June 23, 2002. Abstract published..
- E. Dembe A., J Kim. *Risk Factors for Occupational Injuries and Illnesses Among Older Workers*. To be submitted to: *Journal of Aging and Health*. .