



Low Back Pain Prevalence and Related Workplace Psychosocial Risk Factors: A Study Using Data From the 2010 National Health Interview Survey

Haiou Yang, PhD,^a Scott Haldeman, DC, MD, PhD, FRCPC,^b Ming-Lun Lu, PhD,^c and Dean Baker, MD, MPH^a

ABSTRACT

Objectives: The objectives of this study were to estimate prevalence of low back pain, to investigate associations between low back pain and a set of emerging workplace risk factors, and to identify worker groups with an increased vulnerability for low back pain in the United States.

Methods: The data used for this cross-sectional study came from the 2010 National Health Interview Survey, which was designed to collect data on health conditions and related risk factors from the US civilian population. The variance estimation method was used to compute weighted data for prevalence of low back pain. Multivariable logistic regression analyses stratified by sex and age were performed to determine the odds ratios (ORs) and the 95% confidence interval (CI) for low back pain. The examined work-related psychosocial risk factors included work-family imbalance, exposure to a hostile work environment, and job insecurity. Work hours, occupation, and other work organizational factors (nonstandard work arrangements and alternative shifts) were also examined.

Results: The prevalence of self-reported low back pain in the previous 3 months among workers in the United States was 25.7% in 2010. Female or older workers were at increased risk of experiencing low back pain. We found significant associations between low back pain and a set of psychosocial factors, including work-family imbalance (OR 1.27, CI 1.15-1.41), exposure to hostile work (OR 1.39, CI 1.25-1.55), and job insecurity (OR 1.44, CI 1.24-1.67), while controlling for demographic characteristics and other health-related factors. Older workers who had nonstandard work arrangements were more likely to report low back pain. Women who worked 41 to 45 hours per week and younger workers who worked >60 hours per week had an increased risk for low back pain. Workers from several occupation groups, including male health care practitioners, female and younger health care support workers, and female farming, fishing, and forestry workers, had an increased risk of low back pain.

Conclusions: This study linked low back pain to work-family imbalance, exposure to a hostile work environment, job insecurity, long work hours, and certain occupation groups. These factors should be considered by employers, policymakers, and health care practitioners who are concerned about the impact of low back pain in workers. (*J Manipulative Physiol Ther* 2016;39:459-472)

Key Indexing Terms: *Low Back Pain; Demographic Analysis; Workplace; Behavior; Psychology; Epidemiology*

^a Center for Occupational and Environmental Health, University of California, Irvine, CA.

^b Neurology Department, University of California, Irvine, California; Department of Epidemiology, School of Public Health, University of California, Los Angeles, CA.

^c Division of Applied Research and Technology, National Institute of Occupational Safety and Health, Cincinnati, OH.

Corresponding author: Haiou Yang, PhD, Center for Occupational and Environmental Health, University of California, Irvine, 100 Theory, Suite 100, Irvine, CA 92617. Tel.: +1-949-824-8004. (e-mail: hyang@uci.edu).

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INTRODUCTION

Low back pain is a common health problem in the workplace, and most workers are expected to experience symptoms of low back pain during their working life.^{1,2} Low back pain has a profound impact both directly and indirectly on individual workers and their families, industries, and governments.³⁻⁶ Direct health care expenditure for low back pain has been reported to range from \$50 to \$90.7 billion annually in the United States.⁶⁻⁸ Total costs of direct medical expenditures and loss of work productivity combined related to pain, including low back pain, have been estimated to be as high as \$635 billion annually in the United States.⁹

Considerable research conducted on this topic in the past 3 decades has identified a number of demographic, behavioral, and health- and work-related factors associated with low back pain.^{2,10-12} The 2 major categories of work-related risk factors for low back pain are physical¹³⁻²⁰ and psychosocial.^{12-14,20-25} In the past, much of the research on work-related psychosocial risk factors was conducted within the job strain framework.^{26,27} In this framework, job strain occurs when there is a combination of high job demands and low job control. *Job demands* are operationalized as psychosocial demands (work pace, time pressure, competing demands), and *job control* is defined as job autonomy and skill discretion.^{22,28,29} This area of research has reported an association between job strain and low back pain, as well as the association between job demands and low back pain.^{19,30-33}

In recent years, emphasis has shifted toward identifying some emerging psychosocial risk factors and work organizational characteristics associated with low back pain, including work-family conflict,³⁴ hostile work environment,³⁵ job insecurity,^{36,37} long work hours, and mandatory overtime work hours.³⁸⁻⁴⁰ Two studies on the US working population reported associations between low back pain and a set of psychosocial variables, including job satisfaction, supervisor support, job freedom, and mandatory overtime work.^{13,14} Another US population-based study linked long work hours to occupational injuries and illnesses, including low back pain.⁴⁰ Two occupation-based studies on US health care workers also revealed associations of musculoskeletal pain with work-family conflict and with a hostile work environment.^{35,41}

The previously mentioned emerging psychosocial and work organizational risk factors for low back pain have been examined for specific occupations in the United States.⁴² However, no research has been conducted to explore their associations with low back pain at the population level.

The purposes of this study are (1) to estimate low back pain prevalence in the general working population in different demographic groups in the United States; (2) to explore the associations between low back pain and a set of emerging workplace psychosocial risk factors in different demographic groups in the United States; and (3) to explore the associations between low back pain and a set of work organization- and job-related risk factors in different demographic groups of the working population in the United States.

METHODS

Data

Data for this study came from the 2010 National Health Interview Survey (NHIS) core and supplementary occupational health questions. The NHIS is a yearly cross-sectional survey of the civilian and noninstitutionalized population in

the United States. The NHIS core questionnaire remains the same each year, whereas the supplementary questions vary from year to year, collecting additional data on special health topics.⁴³ The 2010 NHIS included an Occupational Health Supplementary Survey (NHIS-OHS),⁴⁴ which provided new data on emerging psychosocial and work organizational factors.⁴² Two 2010 NHIS data files used for this study were the Person and Sample Adult files. The data of the NHIS-OHS was included in the Sample Adult file. The final response rate for the Sample Adult component was 60.8% for 2010.⁴⁵ The measurements of variables used in this study included low back pain, demographics, socioeconomic status, health behavior, mental health, and work-related factors. The data used for this study included respondents aged 18 to 64 years who worked for pay in the week before the interview. The sample size was 13 924 for the variance estimations of the study population. This study used the public use files from the NHIS, which were approved by the Research Ethics Review Board of the National Center for Health Statistics,⁴⁶ and the study was exempted by the institutional review board of the University of California, Irvine.

Measurements

Low Back Pain. The low back pain in the NHIS-OHS survey was self-reported and defined by the yes/no question, "During the past three months, did you have low back pain?" This definition is similar to the chronic low back pain classification defined by the Task Force on Research Standards for Chronic Low Back Pain, but it has no assessments of the chronicity, intensity, and interference.⁴⁷

Work-Related Factors. Work-related factors explored in this study were psychosocial risk factors, work organizational factors, work hours per week, and occupation. Psychosocial risk factors included work-family imbalance, exposure to hostile work environment, and job insecurity. Work-family imbalance was measured by the following question: "Please tell me whether you: strongly agree, agree, disagree, or strongly disagree with this statement: It is easy for me to combine work with family responsibilities." Responses of "strongly disagree" and "disagree" were defined as high work-family imbalance. Exposure to hostile work environment was measured by the yes/no question, "During the past 12 months were you threatened, bullied, or harassed by anyone while you were on the job?" Response of "yes" was defined as exposure to hostile work environment. Job insecurity was measured by the question, "Please tell me whether you: strongly agree, agree, disagree, or strongly disagree with this statement: I am worried about becoming unemployed." Responses of "strongly agree" and "agree" were defined as high job insecurity.

The 2 work organizational factors examined were nonstandard work arrangements and alternative shifts. *Nonstandard*

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