



# Association between workplace harassment and occupational injury among adult workers in the United States

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## ABSTRACT

**Objective:** Occupational injuries can be severe, with substantial consequences for involved adult workers, their families, employers, and society. Although the association between workplace harassment and occupational injury is widely recognized, nonsexual workplace harassment has not been independently investigated relative to occupational injury.

**Methods:** A total of 4629 adult workers who completed the 2002, 2006, 2010, and 2014 U.S. General Social Survey were included in the study to examine the association between workplace harassment (sexual and nonsexual) and occupational injury. The Holistic Model of Stress guided variable selection. A zero-inflated negative binomial regression was conducted to examine hypothesized associations between workplace harassment and occupational injury, controlling for work stressors and individual demographic factors.

**Results:** Nonsexual workplace harassment was associated with absence of occupational injury ( $OR = 0.36$ ,  $p < 0.05$ ) and number of occupational injuries during a 12-month recall period ( $IRR = 1.58$ ,  $p < 0.05$ ). Sexual harassment was not significantly associated with occupational injuries. Repeated physical work ( $p < 0.01$ ) and forceful/awkward movement ( $p < 0.05$ ) were negatively correlated with absence of occupational injury.

**Conclusions:** Nonsexual workplace harassment, but not sexual workplace harassment, is associated with increased likelihood of occupational injury. Types of workplace harassment should be differentiated when studying the cause of occupational injury. Findings from this study provide new evidence to help policy makers and employers recognize and address nonsexual workplace harassment as a primary contributor to occupational injury among U.S. adult workers.

## 1. Introduction

In 2014, 107 occupational injury and illness cases were reported per 10,000 full-time U.S. workers (U.S. Bureau of Labor Statistics, 2015). Occupational injury comprised 28.6% of all non-fatal injuries among U.S. adults and 37.5% of all non-fatal injuries among U.S. employees (Smith et al., 2005). Worldwide, researchers (Concha-Barrientos et al., 2005) have estimated that occupational injury resulted in 10.5 million disability-adjusted life years. A review (Driscoll et al., 2005) of estimates of the global burden of occupational injury and illness has concluded that the best estimate of work-related deaths is about two million every year worldwide. Apart from associated pain and suffering, occupational injury also contributes to social and economic stressors among injured workers and their families (Brown et al., 2007). The social, family, and work roles of injured workers are compromised by reduced earnings, restricted long-term physical activity and spawned fear and depression (Boden et al., 2001). Both accidental injury and chronic musculoskeletal injury can be considered as occupational

injury. Both accidental injury and chronic injury can happen or accumulate in the workplace; however, accidental workplace injury and chronic workplace injury are fundamentally different in their cause, nature, and consequence. Our study is specifically interested in accidental injuries which occur within the workplace. In this article, workplace injury is defined as accidental injuries which occur within the workplace.

Workplace harassment and occupational injury are positively correlated (Roelofs et al., 2011; Sabbath et al., 2014). The U.S. Equal Employment Opportunity Commission (EEOC) broadly defines workplace harassment as discrimination based on “race, color, religion, sex (including pregnancy), national origin, age (40 or older), disability or genetic information” (EEOC, 2016). Previous studies identified workplace harassment, including sexual harassment, as an important job stressor (Hutagalung and Ishak, 2012) and a proven, significant contributor to occupational injury (Abby et al., 2011; Goldenhar et al., 2003). To date, however, few empirical studies have established a significant association between nonsexual workplace harassment and

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occupational injury within the U.S. adult workforce. Furthermore, the relationship between workplace harassment and occupational injury has primarily been examined within the European population (Chilvers et al., 2005), regional sectors (Rospenda et al., 2005), and certain industries (Goldenhar et al., 2003).

Nonsexual workplace harassment has rarely been studied relative to occupational injury. Most previous studies included only limited types of nonsexual harassment (Roscigno et al., 2007; Murray, 2003), did not differentiate sexual harassment from nonsexual harassment (Raver and Nishii, 2010; Salin, 2008; Claybourn, 2011) or focused solely on sexual harassment (Willness et al., 2007; McLaughlin et al., 2012). In a recent study, Farnacio et al. (2017) investigated 16,417 adult workers in the 2010 National Health Interview Survey to identify associations between occupational psychosocial risk factors and work-related injury. The study found a hostile work environment was positively associated with work-related injury. Nevertheless, due to lack of availability of the detailed information in hostile work environment, the study was not able to differentiate different hostile behaviors in the workplace. Our study addressed this issue by using data from the General Social Survey (GSS) to separately study nonsexual and sexual workplace harassment with work-related injury. Although Brown et al. (2011) investigated sexual workplace harassment and generalized workplace harassment separately and identified the relationship between generalized harassment and increased injury rate, injury, illness, and assault were, however, combined in their measurement; the effect on injury alone was not isolated.

To address the identified population gap in the literature, this study aimed to investigate the association between each of the two workplace harassment types and occupational injury by analyzing applicable data collected from a representative sample of U.S. adult workers. Distinctively, the conceptualization of nonsexual workplace harassment in this study includes a wider variety of items (e.g., discrimination, bullying, aggression, abuse) that better conform to survey respondents' impressions of workplace harassment. This approach makes it possible to determine whether sexual harassment is independently associated with occupational injury after controlling for a wide range of workplace

harassment types. Specific research questions were: Is nonsexual harassment associated with the likelihood and/or count of occupational injury? If so, is sexual harassment independently associated with occupational injury after controlling for other types of workplace harassment?

## 2. Material and methods

### 2.1. Conceptual framework

The Holistic Model of Stress (Nelson and Simmons, 2003) was used to conceptualize the association between workplace harassment and occupational injury. As depicted in Fig. 1, several work-related factors (i.e., role demands, interpersonal demands, physical demands, workplace policies, and job conditions) affect health outcomes by generating stress. In this study, the health outcome assessed was the number of occupational injuries during the previous 12 months among adult U.S. workers relative to covariates included within the Holistic Model of Stress and other recognized sources.

### 2.2. Data and study sample

Data from the Quality of Working Life (QWL) Module and Core Module of the 2002, 2006, 2010, and 2014 GSS were analyzed. Since 1972, the University of Chicago NORC group has fielded the GSS to monitor attitudes, behaviors, and attributes across the American society. GSS samples English-speaking and Spanish-speaking (since 2006) adults at least 18 years old, currently living in the continental U.S. (Smith et al., 2017), in order to examine the structure and function of society together with roles played by relevant subgroups (Smith et al., 2017). Every four years, GSS fields a standard core questionnaire with demographic, behavioral, and attitudinal questions plus questions in several topical modules for selected subgroups (Smith et al., 2017). QWL was a topical module conducted in 2002, 2006, 2010, and 2014 among a subset sample of non-institutionalized working adults (age  $\geq 18$ ). QWL measured the relationship between work-related factors

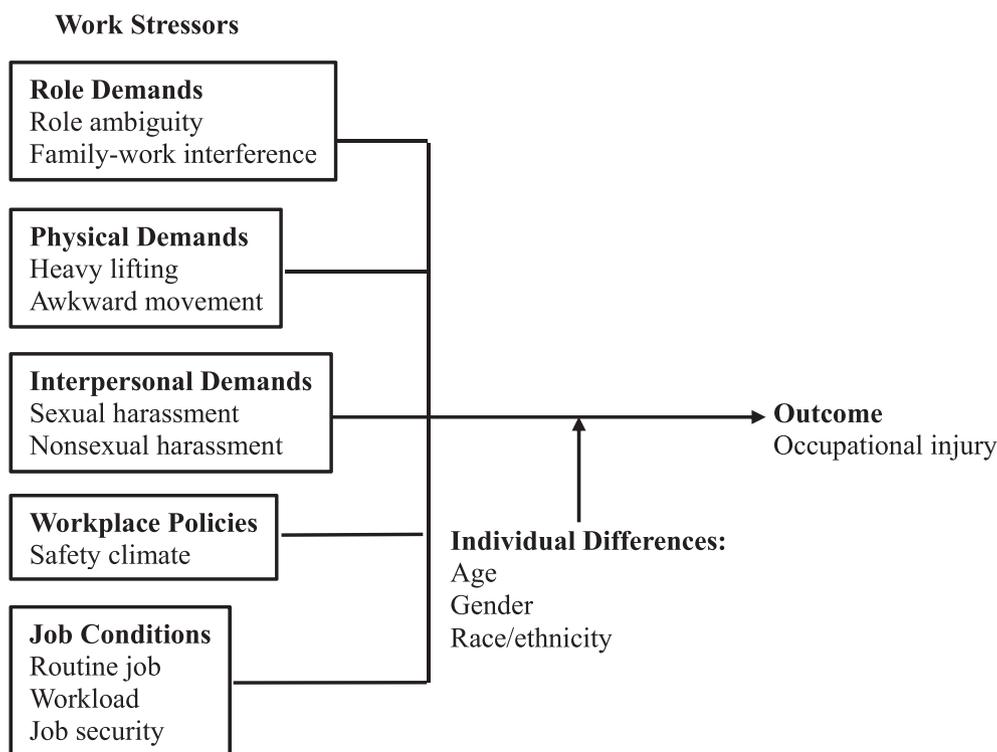


Fig. 1. Association between workplace harassment and occupational injury adapted from the Holistic Model of Stress (Nelson and Simmons, 2003).

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