

Original article

Adolescent Occupational Injuries and Workplace Risks: An Analysis of Oregon Workers' Compensation Data 1990–1997

Brian P. McCall, Ph.D.^a, Irwin B. Horwitz, Ph.D.^{b,*}, and Bethanie S. Carr, M.P.H.^b

^aIndustrial Relations Center, University of Minnesota, Minneapolis, Minnesota

^bSchool of Public Health, University of Texas, Houston, Texas

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Abstract

Purpose: Injuries to adolescents from occupational activities has been recognized as a significant public health concern. The objective of this study was to quantify adolescent injury rates, analyze risk factors, and measure the severity of injuries sustained using Oregon workers' compensation data.

Methods: From 1990–1997, a total of 8060 workers' compensation claims, submitted by claimants 16–19 years old, were accepted by Oregon and used in these analyses. Data from the Bureau of Labor Statistics were used to derive injury rates.

Results: An overall estimated claim rate of 134.2 (95% confidence interval [CI] 124.9–143.6) per 10,000 adolescent workers was found, with males having over twice the rate of females. The total average annual claim cost was \$3,168,457, representing \$3145 per claim. The average total temporary disability period per claim was 22.3 days. Precision production workers had the highest claim rate of 296.2 (95% CI 178.9–413.4) and highest associated costs (\$8266) for all occupations, whereas those in the farming/fishing/forestry occupation had the longest average periods of indemnification with 31.6 days. Day shift workers had the highest claim rates and most severe injuries relative to other shifts.

Conclusion: The injury rates found among adolescent workers demonstrates that continued safety interventions and increased training are needed. Because of high claim rate and injury severity, particular attention should be focused on adolescents in food service, manufacturing, and agricultural occupations. Understanding the differences of adolescent circadian rhythm patterns in establishing work schedules and supervisory practices could also prove valuable for decreasing injury risk. © 2007 Society for Adolescent Medicine. All rights reserved.

Keywords:

Adolescents; Occupational injuries; Workers' compensation; Surveillance; Public health

Research has demonstrated that adolescent workers are a vulnerable population that is at particularly high risk for experiencing on-the-job injuries [1,2]. According to recent data from the U.S. Bureau of Labor Statistics, 141 work-related deaths of workers aged 19 years and under occurred in 2004 alone [3], and the National Institute for Occupational Safety and Health (NIOSH) estimates 230,000 teens

experience nonfatal occupational injuries annually [1]. Although the federal government has attempted to address the problem by enacting legislation to augment restrictions established in the 1938 Fair Labor Standards Act (FLSA), compliance and enforcement are minimal [4,5], and many incidents of injury go unreported [6–8]. It has become recognized by occupational researchers that continued surveillance and analysis of workplace risks are necessary for developing interventions to improve the safety of adolescent employees [9,10].

Investigators have acquired adolescent occupational injury data from sources including: emergency room records,

*Address correspondence to: Dr. Irwin B. Horwitz, Department of Management, Policy and Community Health, University of Texas School of Public Health, 1200 Herman Pressler, E303, Houston, TX 77030.

E-mail address: irwin.horwitz@uth.tmc.edu

Occupational Safety and Health Administration fatality investigations, death certificates, the National Electronic Injury Surveillance System, self-reported industry data, and surveys of teenage workers [10–18]. Although each of these methods offers unique advantages, another method, the use of workers' compensation claims data, has proven to be especially valuable for providing information on adolescent workplace injuries. To date, workers' compensation information has been used to study adolescent injuries in the states of Connecticut [19], Massachusetts [20], Minnesota [21], New York [22], North Carolina [23], Rhode Island [24], Texas [25,26], Washington [27,28], and West Virginia [29]. Although rate estimates varied considerably across these studies, their findings consistently demonstrated that a higher proportion of injuries were to male workers, and the highest number of claims were among adolescents working in food, construction, and agricultural occupations.

This study contributes to the literature by examining adolescent workers' compensation claims in the state of Oregon for the 8-year period of 1990 through 1997. Workers' compensation data from Oregon are valuable because of the detailed records maintained by the state. Important variables include employee demographics (gender, age), job tenure, time of injury and number of hours worked, claimant occupation and industry, duration of missed work, nature and source of injury, and various costs associated with the claims. As the state requires reporting of all incidents resulting in 3 days of indemnification (days of paid leave for missed work) or more, a large amount of information on serious occupational injuries is collected. Results of the analyses are compared with previous findings for greater understanding of occupational risks for adolescents.

Methods

This study used workers' compensation claim data that were provided by the Oregon Department of Consumer and Business Information and Management Division for the period 1990–1997. Records were kept for all claims that were disabling or potentially disabling (i.e., considered by employers to likely result in lost work time at the time when injury was reported), and some but not all records were available for claims that did not actually result in disability. For this study, only accepted claims from workers aged 16 to 19 years at the time of the injury were analyzed.

The data set included information on claimant occupation and industry, claimant demographics (e.g., age, gender), claimant work schedules, nature of reported injury, body part affected, compensated days of lost work by claimant and associated cost of claims. The classification codes used to identify injuries were from the U.S. Bureau of Labor Statistics Occupational and Illness classification system. Claims costs were tracked through 1999 and the cost data reflect accumulated claim costs through this time. By the end of the observation period, 98% of all accepted claims

used in this study were closed, and for these claims the cost data were complete. Of those claims that remained open, only two out of 203 involved any medical or indemnity payments and are likely to have remained open because employer/insurer failed to file a notice of closure.

The workers' compensation data from Oregon recorded information on the hour that a claimant began work. To investigate work injuries by shift of work, we defined day, evening, and night shifts as follows: individuals who reported starting work between 7:00 a.m. and 11:59 a.m. were classified as day shift workers, individuals who reported starting work between 12:00 p.m. and 6:59 p.m. were classified as evening shift workers, and individuals who reported starting work between 7:00 p.m. and 3:59 a.m. were classified as night shift workers.

Because the Oregon workers' compensation data contains no information on the number of adolescents employed in the state, yearly employment levels for Oregon adolescent workers who were not self-employed were obtained from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) for the years 1990–1997. The QCEW is obtained from the universe of employees in which the employer must pay unemployment insurance taxes. Thus, the QCEW contains virtually all workers except those that are self employed. The QCEW, however, contains no demographic data such as the worker's age or gender.

To estimate employment levels for different categories of adolescent workers, the data were combined with proportion estimates using survey data from the United States Bureau of Census' Current Population Surveys (CPS). The CPS is a monthly random survey of approximately 50,000 households of the noninstitutionalized population in the United States. Each monthly survey contains demographic and individual employment information. Estimates of the proportion of adolescent employees belonging to different age, gender, and occupation groups were calculated using a random sample of 732 Oregon adolescent workers between the ages of 16 and 19 years that were derived from the monthly outgoing rotation group (CPS-MORG) files for the years 1990 through 1997. These files contain data for all individuals participating in their fourth or eighth monthly survey. For individuals in CPS-MORG, additional questions pertaining to an individual's employment are asked. Claimant occupations were determined using Census/CPS three-digit occupational codes. As Oregon excludes self-employed individuals from workers' compensation coverage, our estimates using the CPS also excluded self-employed individuals so as to ensure equivalence between the populations in calculating injury rates.

For all adolescent workers as well as each age, gender, and occupation subgroup, the proportion of adolescents that worked day, evening, or night shift were estimated using a random sample of adolescent workers derived from the May 1991 and May 1997 CPS surveys. In May of 1991 and 1997,

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