span/seeing homework or chores through to the end were less common when parents were injured.

Multivariable analysis confirmed the descriptive findings. After controlling for covariates, the odds that children of injured parents were reported as having many worries or seemed worried were 51% greater than for children of non-injured parents. The odds that children of an injured parent were reported as unhappy, depressed or tearful increased by about the same amount (49%), and a greater increase (70%) was evident for reports that the child of an injured parent had emotional, concentration, behavioral, and relationship difficulties. The odds of reports of good attention span and seeing homework or chores through to the end were reduced by 40% among children of injured parents.

Implications and Conclusion. The studies described make significant contributions to the focus areas of HWD:

The violence-related injuries for classroom personnel study adds to the school violence literature by characterizing the incident, severity, and nature of violence-related injuries for Ohio's K-12 urban public school teachers and teacher aides. The findings can help guide the design, implementation, and evaluation of school-based interventions that seek to prevent violence directed at teachers. The study also highlights the utility of workers' compensation claims as a rich source of objective data for investigations of workplace injuries.

The work flexibility study demonstrated the importance of work flexibility for well-being and provided valuable information about flexibility by work arrangement type. As far as the authors know, this is the first study on this topic in the US context. The findings can be used by various stakeholders, including policy makers.

The parental workplace injury effects on children study opens a new research dimension in occupational safety and health by providing empirical evidence of an association between parental workplace injury and the psychological well-being of children. The authors will suggest further research to confirm and build upon these findings, investigate likely mechanisms of effect, and establish downstream socioeconomic impacts of the outcomes seen here.

Violent victimization of teachers and aides in K-12 urban public schools

Jessica Streit (NIOSH)

BACKGROUND In 2016, the American Psychological Association (APA) declared violence against K-12 teachers a "silent national crisis". Approximately 80% of U.S. teachers who responded to a national online self-report survey indicated they had experienced one or more incidents of victimization in the last year (McMahon et al., 2014). This is staggeringly higher than the annual victimization rates reported for U.S. students, which hover around 3% (National Center for Education Statistics, 2017). Teachers described victimization by violent offenses ranging in severity from damage/theft of personal property (54%) to verbal harassment and intimidation (73%) to physical attacks by colleagues, parents, and students (44%); and teachers in urban schools had significantly higher likelihood of victimization than teachers in either rural or suburban schools (McMahon et al.). Despite its potential to adversely impact multiple levels within the education ecosystem (e.g., worker, student, classroom, school, and district), teacher-directed violence remains an understudied public health problem. Among the limited studies that have been published, most (e.g., McMahon et al.; Robers, Zhang, Truman, & Snyder, 2011) are based on self-report survey data. Studies utilizing objective data sources, which are more robust against the selection, response, and measurement biases that can contaminate survey results—especially for sensitive topics like workplace violence—are lacking in the teacher victimization literature. In addition, there remains a pressing need for studies that provide insight on how and why violence against teachers is occurring in U.S. schools. A recent study of Minnesota school personnel demonstrated the utility of workers' compensation claims as a rich source of objective school violence data (Schofield, Ryan, & Stroinski, 2017). The scope of that study, however, was limited to student-perpetrated injuries. The current study builds upon Schofield et al. (2017) and uses Ohio workers' compensation data to more broadly investigate the extent, severity, nature, and determinants of violence-related injuries sustained by K-12 urban public school teachers and teacher aides. In this study, we defined physical violence as "the use of physical force with the potential for causing death, disability, injury, or harm." METHOD Data The Ohio Bureau of Workers' Compensation (OHBWC) provided access to data for workers' compensation claims for injuries occurring between 2001 and 2012. Each claim includes claimant demographics, injury type, injury severity, a narrative description of the event(s) leading to the injury, and the costs incurred (as both money and time). This research effort focuses on claims filed by or on behalf of teachers and classroom aides from nine major urban public school districts in Ohio. Procedures Secondary data analysis was used to explore workers' compensation claims data. A team of four independent raters manually coded open-field occupation (teacher, aide, other) and accident descriptions (violence-related or not) for all claims. For each violence-related case, the raters also used the claim's accident description to systematically classify the perpetrator-victim relationship and further categorize the circumstances that resulted in a workplace injury (e.g., source, injuring party's intent to cause harm, nature of interactions). PRELIMINARY RESULTS Injuries sustained by teachers and aides accounted for 46.4% (n = 9,064) of the total claims (n = 19,508) filed by employees in the urban public school districts from 2001 to 2012. Nearly 40% (n = 3,426) of injuries to teachers and aides were the result of violent events. Perpetrators exhibited clear intent to cause harm in 96.7% of cases. Teachers and aides were most often injured as the result of direct victimization by a student who was exhibiting aggressive or escalated behavior (40.9%). However, an additional 34.6% were indirectly injured as the result of intervening on violence occurring between two or more parties (students, coworkers, parents). Victimized teachers and aides most frequently suffered contusions (36.3%), followed by sprains to the upper extremities (15.0%) and back (11.0%). Approximately 22% of their reported violence-related injuries were severe enough to result in lost time, with an average loss of 46.3 work days. Additional descriptive analyses and between-group comparisons are currently underway. These results will be available for presentation at the conference and will provide more detail about the extent, severity, and nature of violent victimization of teachers and aides in Ohio's urban public schools. CONCLUSIONS This study adds to the school violence literature by characterizing the incident, severity, and nature of violence-related injuries for Ohio's K-12 urban public school teachers and teacher aides. The findings can help guide the design, implementation, and evaluation of school-based interventions that seek to prevent violence directed at teachers. The study also highlights the utility of workers' compensation claims as a rich source of objective data for investigations of workplace injuries.

Work flexibility and work-related well-being across work arrangements

Tapas Ray (NIOSH)

Objective We assessed the prevalence of work flexibility by work arrangement type among U.S. workers during 2002-2014. We further investigated whether work flexibility was associated with work-related well-being, expressed as job satisfaction, job stress, and health-related quality of life (HRQL). Analyses We used data from the Quality of Work life (QWL) module of the General Social Survey (GSS). Funded by the National Science Foundation, GSS is a biannual nationally representative cross-sectional survey of U.S. households conducted through face-to-face personal interviews by the National Opinion Research Center. GSS utilizes a multi-stage probability design yielding a representative sample of the civilian, non-institutionalized, English-speaking, U.S. adult population (Grosch et al., 2006). In 2002, 2006, 2010, and 2014, GSS was supplemented with a QWL module (www.cdc.gov/niosh/topics/stress/qwlquest.html). Developed by the National Institute for Occupational Safety and Health (NIOSH) with contributions by its partners, QWL assessed an array of psychosocial working conditions and quality of work life topics among GSS respondents who were either employed or looking for work. We analyzed pooled cross sectional data from 2002, 2006, 2010, and 2014 (weighted sample of 5911 observations). To assess work arrangements, we distributed the study sample into five mutually exclusive groups based on responses to the question, How would you describe your employment arrangement in your main job? Response categories were: (1) independent contractor/independent consultant/freelance worker, (2) on call worker/works only when called, (3) paid by temporary agency, (4) working for a contractor who provides workers and services to others under contract, and (5) regular permanent employee (standard). To assess work flexibility, we used the following variables: 1) Work schedule; 2) Telework; 3) Ability to take time off work for non-work matters; 4) Work demands; 5) Productivity-conducive work conditions; 6) Opportunity to develop special abilities; 7) Availability of help and equipment at work; and 8) Freedom to decide. We assessed job satisfaction using responses to the question, All in all, how satisfied would you say you are with your job? (yes = very satisfied, somewhat satisfied; no = not too satisfied, not at all satisfied.) We assessed job stress through the survey question, How stressful is your work? We collapsed responses from a 5-point Likert scale into the following two categories: (1) those who reported being stressed at work (stressed; response options 5 = always, and 4 = often), and (2) those who reported not being stressed at work (non-stressed; response options 3 = sometimes, 2 = rarely, and 1 = never). We used these two categories as a binary response variable, with 1 = stressed and 0 = non-stressed. This is in line and allows for comparison with earlier studies that used QWL data (see Grosch et al., 2006). To assess HRQL, we used four items from the Centers for Disease Control and Prevention (CDC) HRQOL-4 index. Developed in the 1980 s, the HRQOL-4 has been used to derive metrics for government-wide initiatives such as Healthy People 2010 and 2020, and assess the health status of the U.S. population both at the national and state levels (ODPHP DHHS, 2014). Variables from the HRQOL-4 have been used in national level surveys such as CDC's Behavioral Risk Factor Surveillance System and the National Health and Nutrition Examination Survey. The four core questions from the HRQOL-4 were: (1) Would you say that in general your health is excellent, very good, good, fair, or poor? (Likert scale ranging from 1 = poor to 5 = excellent); (2) Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?; (3) Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?; and, (4) During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation? We conducted descriptive and regression analyses and assessed the effect of work arrangement on work flexibility and the association between work flexibility and work related well-being. Preliminary results Overall work flexibility changed minimally during 2002-2014, although some individual flexibility variables followed cyclical trends. Work arrangement was an important determinant of work flexibility. After controlling for demographics and overall health status, work flexibility was positively associated with well-being. Additional results will be presented at the conference. Practical Implications The study demonstrated the importance of work flexibility for well-being and provided valuable information about flexibility by work arrangement type. As far as we know, this is the first study on this topic in the US context. Our findings are relevant for various stakeholders, including policy makers.

Association of Parental Workplace Injury with Emotional and Behavioral Problems of Children

Abay Asfaw (NIOSH)

Problem statement Most studies on the burden of occupational injuries and illnesses focus on worker and workplace-specific economic impacts such as cost of healthcare, loss of productivity, workers' compensation costs, and presenteeism. This study asks whether occupational injuries can reach beyond the worker and the workplace to affect family members of injured workers. We investigated whether children of parents with workplace injury were more likely to manifest emotional and behavioral problems than children of non-injured parents. To our knowledge, these associations have not been previously described. Methods We used data from the National Health Interview Survey (NHIS), a household interview survey. Each year of the survey, a sample child is randomly selected from each sampled household and an extensive array of detailed health, school, behavioral and other information is collected via a proxy/key informant (usually a parent). The questions we used to assess emotional or behavioral health were from the short version of the strengths and difficulties questionnaire and were only asked of respondents of sample children aged 4-17. Injury episode data were collected from the family respondent during the family core interview and establish whether one of the parents experienced an occupational injury. We linked the sample child file with the injury episode file. Five years of data (2012-2016) were combined, yielding 433 children with an injured parent, and a comparison group of 41,574 children. Our independent variable was parental workplace injury, defined as all medically-consulted injury and poisoning episodes that occurred during the past 3 months while working at a paid job. Four target indicators were investigated: 1) child had many worries or often seemed worried; 2) child is often unhappy, depressed, or tearful; 3) a combination indicator reflecting emotional, concentration, behavioral, and relationship difficulties; and 4) child has good attention span/sees homework or chores through to end. The recall period was six months prior to the survey except for the combination measure (no specific recall period). For each question parents answered as 'not true,' 'somewhat true,' or 'certainly true'. We combined certainly true and somewhat true to define cases of emotional or behavioral problems. To examine our results robustness we evaluated responses to two questions on child emotional and behavioral outcomes that we believed would be less influenced by parent injury (control outcomes):

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