Hypothesis 2b: Workers on intervention sites will reportimproved diet and leisure time physical activity behaviors than compared to workers on the control sites. The dependent variables were the changes in variables collected from the surveys. For categorical variables, changes were denoted as either improving, staying the same, or getting worse. Linear regression models tested the differences between the control and reference sites adjusting for race, education, and jobsite correlation.

Results: There were no statistically significant differences in workers surveyed on the control and intervention sites in terms of age, BMI, race, education, and job title. No differences between intervention and reference sites were observed in the conditions of work between baseline and follow up 1. In contrast, changes in 12-month pain, physical activity, and diet improved significantly on the intervention sites compared to reference sites at the 6 month follow up. The number of tobacco users with follow up surveys was small with only two workers, one on an intervention worksite and one on a control site, meeting the definition for smoking cessation.

The qualitative data collection indicated that while health week was successful in engaging workers and foremen and the implementation of the ergonomics program did not change work practices. Key barriers identified included the capabilities of the subcontractors to implement ergonomic solutions and buy-in from and manage support by site supervisors and project managers.

Practical implications: Worksites that want to help workers could utilize health week activities to encourage workers to improve health behaviors related to chronic non-communicable diseases.

Conclusions: While a one-week work-site health intervention appears to improve worker health behavior outcomes, the integration with a six week program to change the conditions of work faced challenges. In the construction industry, exploring methods to change the conditions of work and full integration needs to be further explored in order to overcome the challenges observed in this study.

ASSOCIATIONS BETWEEN CONDITIONS OF WORK AND WORKER HEALTH AND PRODUCTIVITY INDICATORS IN SMALL MANUFACTURING COMPANIES

Nicolaas Pronk, PhD, Abigail S Katz, PhD Deborah McLellan, PhD Jack Dennerlein, PhD Jeffrey Katz, MD

Statement of the Problem: In recent years we have seen the emergence of interventions aimed at simultaneously protecting and promoting both worker health and worker safety. Much of this work has been guided by the National Institute for Occupational Safety and Health's Total Worker Health® program.

As a Center for Excellence within the TWH Program, the Center for Work, Health and Well-being (CWHW) at the Harvard T.H. Chan School of Public Health has developed a conceptual model to specify the causal pathways through which policies, programs and practices are expected to influence worker safety and health outcomes.

The present research seeks to build on the conceptual model, by exploring associations between conditions of work as measured by organizational safety and health climates and worker outcomes including health behaviors and productivity measures.

Procedures: Data used in this research were obtained as part of a pilot intervention study disseminating the CWHW's approach as outlined in the CWHW's SafeWell Guidelines. Participating companies included three small-to-medium size manufacturing companies in Minneapolis during the years 2014-15. As part of the study, employees at the participating companies completed a baseline health risk assessment in 2014 (n=959; 53% response rate).

The overarching aim of this study was to examine associations among variables specified as part of the conceptual model. Three aims were identified: Specific Aim (1) Test the association between organizational safety and health climates and worker health behaviors. Behaviors included: physical activity, diet, tobacco use, sleep and alcohol use. Specific Aim (2) Test the association between organizational safety and health climates and physical abuse, emotional abuse, depression, job satisfaction, life satisfaction, back pain (frequency and severity), and self-perceived general health. Specific Aim (3) Test the association between organizational safety and health climates and two different productivity indicators: Work Limitations Questionnaire (WLQ) and Work Productivity and Activity Impairment Scale (WPAI).

Analyses: The independent variables of interest, organizational health and safety climates, were originally coded from 0 to 10, with 10 being a strong health or safety climate. Both climate variables were coded as binary for the analyses, with 0 = weaker climate and 1 = stronger climate. Dependent variables were also expressed as binary variables. Physical activity, nutrition, sleep, satisfaction (job and life) and general health were coded with 1 being the optimal state. Tobacco, alcohol, abuse (physical and emotional), back pain (frequency and severity) and depression were coded with 0 as the optimal state.

A series of logistic regression models were conducted corresponding to each of the specific aims. A two-step approach to modeling was used. Initial bivariate models tested relationship between the independent and dependent variables alone. When initial models demonstrated significant effects, full models were analyzed including covariates. Full models were adjusted for age, gender, education and job type.

Results: Aim 1: Of the five worker health behaviors considered, sleep was the only variable for which significant relationships were found (OR= 1.82; 95%CI=1.35-2.45). In other words, the odds of someone reporting optimal sleep are 1.82 times higher for those who report a report strong worksite climate of safety. Sleep was also found to relate to worker perception of health and well-being climate (OR= 1.32; 95%CI=0.99-1.76), though marginally not at a statistically significant level (p=.058). Aim 2: Of the eight worker outcome variables considered, nearly all were associated with both worker perception variables (safety climate, health climate). Though no effects were identified for physical and emotional abuse outcomes, both perception of climate variables were related to depression, job satisfaction, life satisfaction, back pain (frequency and severity) and self-perceived general health. Aim 3: Two different indicators of productivity were considered for measuring Aim 3. Using the WPAI we found that the odds that a worker will be more productive are higher for those who report a strong culture of worksite safety (OR= .54; 95%CI=0.39-0.75) and culture of well-being (OR=.49; 95%CI=0.36-0.68). The WLQ was not associated with either climate variable.

Practical implications and conclusions: This research demonstrated many of the linkages outlined in CWHW's conceptual model, giving further support to outcomes related to working conditions. We have shown that conditions of the worksite, specifically worker-perceived safety and health climates, are associated with health behaviors such as sleep, outcomes related to emotional and overall health, satisfaction, back pain, as well as worker productivity.

All of the worker outcomes we considered are burdensome for the employee and costly for the employer. Worksite interventions that are coordinated and integrated across safety and health teams, policies and processes, may hold the most promise for promoting strong safety and health climates at the worksite.

FRIDAY, JUNE 9 (continued)

- J6 It's All Relative? Multilevel Effects of Relative Demands and Resources on Engagement, Burnout, And Performance
 - Jennifer P. Barbour, PhD, Macquarie University, Sydney, NSW, Australia; Shari Hendriks, BA
- J7 The Verbalization of Stress: Implications for the Workplace
 - Mari-Amanda Dyal, PhD, Kennesaw State University, GA;
 Todd D. Smith, PhD; Dustin R. Sergent, BS

Prevention/Intervention Methods and Processes

- K1 Factors Associated With Interest in Worksite Health-Related Discussions/Events Among Employed Adults With Chronic Conditions
 - Lu Meng, MASM, University of Georgia, Athens, GA;
 April K. Galyardt, PhD; Kayin Robinson, MPH; David M.
 DeJoy, PhD; Ye Shen, PhD; Heather Padilla, MPH; Heather
 Zuercher, MPH; Matthew Lee Smith, PhD
- K2 Short-Term Outcomes From the MANAGE AT WORK
 Trial: A Self-Management Group Intervention to Overcome
 Workplace Challenges Associated With Chronic Physical
 Health Conditions
 - Elyssa T. Besen, PhD, Liberty Mutual Research Institute for Safety, Hopkinton, MA; Torill H. Tveito, PhD; Robert K. McLellan, MD; William S. Shaw, PhD
- K3 Identifying Barriers to the Use of Personal Protection Measures: Evidence From the Perceptions of Bite-Prevention Measures and Hearing Protection Devices in Military Members
 - Heather McCuaig Edge, PhD, Director General Military Personnel Research and Analysis, Department of National Defence, Ottawa, ON, Canada; Jennifer Born, MSc; Steve Schofield, PhD; Gregory Banta, MD, MSc
- K4 Risk Perception in Chemistry Laboratories Among Undergraduate Students
 - Luz S. Marin, ScD, Indiana University of Pennsylvania; Clara Rosalia Alvarez, ScD; Karla Pérez, BA; Mariona Portell, PhD; Luis Velasquez, ScD; Francisca Munoz, PhD
- K5 Integrity-Based Wellness Interventions With Male Physicians: An Overlooked Population in Occupational Health Psychology
 - Nedra R. Lander, PhD, University of Ottawa, ON, Canada; Danielle Nahon, PhD

9:30-10:45 a.m.

Concurrent Sessions

The Harvard/NIOSH TWH* Center of Excellence:
Research Innovations in Healthcare, Construction, and
Small/Medium-Sized Businesses (Symposium)

Marquette I/II

Chair: Erika Sabbath, ScD, Boston College, Chestnut Hill, MA

- Paper 1 Working Conditions and Dietary Patterns Among Hospital Patient Care Workers
 - Eve Nagler, ScD, Dana-Farber Cancer Institute, Boston, MA; Anne Stoddard, PhD; David Hurtado, ScD; Emily Sparer, ScD; Jessica Williams, PhD; Gregory Wagner, MD; Glorian Sorensen, PhD
- Paper 2 The Relationship Between Organizational Policies and Practices With Work Limitations Within a Cohort of Hospital Patient Care Workers
 - Emily Sparer, ScD, Dana-Farber Cancer Institute,
 Boston, MA; Dean Hashimoto, MD; Jack Dennerlein,
 PhD; Gregory Wagner, MD; Erika Sabbath, ScD;
 Christopher Kenwood, MPH; Eve Nagler, ScD; Les I.
 Boden, PhD; Glorian Sorensen, PhD
- Paper 3 A Cluster Randomized Controlled Trial of a
 Total Worker Health® Intervention on Commercial
 Construction Sites
 - Jack Dennerlein, PhD, Northeastern University, Boston, MA; Justin Rogers, MPH; Michael Grant, ScD; Cassandra Okechukwu, ScD; Justin Manjourides, PhD
- Paper 4 Associations Between Conditions of Work and
 Worker Health and Productivity Indicators in Small
 Manufacturing Companies
 - Nico Pronk, PhD, HealthPartners Institute, Minneapolis, MN; Abigail S. Katz, PhD; Deborah McLellan, PhD; Jack Dennerlein, PhD; Jeffrey Katz, MD

Working on Empty: A Documentary Film (in the Making) That Explores the Impact the Modern Work Environment Has on the Health of Working People and What Can Be Done About It (Symposium)

Marquette III/IV

Chair: Peter Schnall, MD, Center for Social Epidemiology, Marina Del Rey, CA

- Paper 1 Why a Documentary, Including a Discussion of What Is Wrong With the Modern Workplace
 - Peter Schnall, MD, Center for Social Epidemiology, Marina Del Rey, CA; Marnie Dobson, PhD
- Paper 2 The Documentary Working on Empty—What Is It About?
 - Jesus Munoz, Filmmaker, Center for Social Epidemiology, Marina Del Rey, CA
- Paper 3 We Need a Change in the Organization of Work
 - Paul Landsbergis, PhD, Downstate University, Brooklyn, NY

Discussant: Peter Schnall, MD, Center for Social Epidemiology, Marina Del Rey, CA



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