

IMPROVING FIREFIGHTER SAFETY AND HEALTH: A CLOSER LOOK AT THE ROLE OF THE FIRE STATION

Emily H. Sparer, ScD*, Harvard T.H. Chan School of Public Health and Dana-Farber Cancer Institute, Gregory Wagner, MD, Harvard T.H. Chan School of Public Health, Glorian Sorensen, PhD, Harvard T.H. Chan School of Public Health and Dana-Farber Cancer Institute

Statement of the problem: Firefighters are at elevated risk for a range of safety and health outcomes, including musculoskeletal injuries, burns, cardiovascular disease, and certain types of cancer. Much of the research on firefighter safety and health has focused on in-field exposures, since firefighters may encounter chemical and physical exposures as well as potentially high levels of stress when responding to calls. In many fire departments throughout the US, however, firefighters spend the majority of their working hours inside the fire station, where working conditions (including the physical environment, work organization, psychosocial factors, and job tasks/demands) can influence individual safety and health outcomes and behaviors. Little research has been reported on the working conditions found at the fire station. To improve firefighter safety and health and plan interventions that are responsive to their work setting, we need to broaden our understanding of the workforce, and the day-to-day conditions of work at the fire station.

Procedures: We completed semi-structured key informant interviews with fire lieutenants and captains at four fire stations in the Boston area (n=7) in the spring of 2016. The purpose of the interviews was to assess the work environment at the fire station, with the aim of identifying conditions of work that may influence the safety and health of firefighters. Questions focused on the daily activities of firefighters at the station, the role of the fire station in firefighter safety and health, and workforce characteristics. Interviews lasted approximately 40 minutes. Additional qualitative data were collected through participation observation of firefighters and documented with formal note taking immediately following the observations.

Analyses: Interviews were transcribed and analyzed for thematic content using Nvivo (QSR International (Americas) Inc., Burlington, MA, USA). Notes from the participant observations were used to further explore themes from the interview transcripts.

Results: The qualitative data revealed several important themes about firefighters and the fire station work environment. First, a majority of the firefighters in Boston (62% overall, and 96% of new hires since 2010) are veterans, as a result of a state law that gives preference for civil service jobs to veterans. Issues such as post-traumatic stress disorder and past exposures from time in the military may impact health of the firefighters. The second theme observed was high levels of stress in general, due to both past military experiences, as well as related to on the job exposures. In addition to witnessing traumatic events such as fires, accidents, and other events in the field, firefighters jump into action within seconds when a call comes in, which can be quite stressful and impact sleep both on and off the job. The third theme to emerge, poor air quality in stations, was the main health issue specifically related to the fire station. Many firefighters questioned the effect the perceived poor air quality had on their health. Specific concerns related to diesel exhaust from trucks idling or entering/exiting the fire station and from off-gassing from contaminated bunker gear and equipment brought back to the station from fires. The final theme from the qualitative data collection related to a strong sense of brotherhood among the firefighters. This was attributed in part to past military experience, as well as the bonding that can form during and after stressful events experienced on the job and the fact that firefighters work in shifts of 24 hours, spending a lot of time at the station, which can feel like a second home. Firefighters work as a team throughout the day, and often exercise, meals, and other recreational activities are done together.

Practical Implications: The effectiveness of interventions to combat the high rates of injury and illness among firefighters may improve when it responds to the conditions of work found at the fire station, including environmental exposures and the work organization. Further emphasis should be placed on the fire station as a place to focus future firefighter research and practice, given the potential impact it may have on safety and health behaviors and outcomes.

Conclusions: The conditions of work encountered by firefighters at the fire station are unique when compared to other industries. Firefighters have intermittent high stress/high demand work, with periods of low work activity in between calls. The fire station becomes a second home for many firefighters due in large part to the strong brotherhood between firefighters. Many firefighters, especially in the Boston area, are veterans. In addition to specific workforce characteristics and daily activities at the fire station that may influence safety and health of firefighters, the environmental conditions of the fire station, specifically the poor air quality, and the potential adverse impact on firefighter health was noted as a concern. Future research on firefighter health and safety should consider these aspects of the job when designing studies in order to create targeted and effective workplace interventions.

CORRESPONDING AUTHOR: Emily H. Sparer, ScD, Department of Social and Behavioral Sciences, Harvard T.H. Chan School of Public Health, 677 Huntington Avenue, Boston, MA, 02115, USA

- Paper 1** Ten Recommendations for the Design, Implementation and Evaluation of Improvements in Organizations
- Ulrica von Thiele Schwarz, PhD, Karolinska Institutet, Stockholm, Sweden; Julie Reeds, PhD; Henna Hasson, PhD; Kasper Edwards, PhD; Johan Simonsen Abildgaard, PhD; Christine Ipsen, PhD; Caroline Lornudd, PhD; Pamela Mazzocato, PhD; Carl Savage, PhD; Anne Richter, PhD; Karina M. Nielsen, PhD
- Paper 2** Using a Performance Tool to Facilitate Implementation of Action Plans
- Karina M. Nielsen, PhD, Sheffield University Management School, Sheffield, England, UK; Terese Stenfors Hayes, PhD; Henna Hasson, PhD
- Paper 3** Acting With Consideration for Level of Influence
- Christine Ipsen, PhD, Technical University of Denmark, Copenhagen, Denmark; Kasper Edwards, PhD
- Paper 4** Program Logic in a Co-Created Process
- Henna Hasson, PhD, Karolinska Institutet, Stockholm, Sweden; Ulrica von Thiele Schwarz, PhD; Anne Richter, PhD

Discussant: Henna Hasson, PhD, Karolinska Institutet, Stockholm, Sweden

Underlying Disparities in Occupational Health and Injury in Immigrant and Racial Disparities (Paper Panel Session)

Marquette V/VI

Chair: Gargi Sawhney, PhD, Clemson University, SC

- Paper 1** Racial Disparities in Occupational Injury: Obscured by Administrative Data?
- Erika Sabbath, ScD, Boston College, Chestnut Hill, MA
- Paper 2** Exploring the Impact of Precarious Employment on the Health of Racialized Immigrant Women in Waterloo Region, Ontario, Canada
- Elizabeth C. Watters, MSW, Wilfrid Laurier University, Kitchener, ON, Canada
- Paper 3** Immigrant Women Workers and Occupational Health
- Nancy L. Marshall, EdD, Wellesley Centers for Women, Wellesley College, MA
- Paper 4** Immigration, Work and Emotional Health: Experience of Latino Immigrant Workers
- Michael A. Flynn, MA, NIOSH, Cincinnati, OH; Donald E. Eggerth, PhD

The Economics of Non-Standard Employment Arrangements (Symposium)

Marquette VII/VIII

Chair: Regina Pana-Cryan, PhD, NIOSH, Washington, DC

- Paper 1** Employment Arrangement, Job Stress, and Health-Related Quality of Life
- Tapas K. Ray, PhD, NIOSH, Cincinnati, OH

- Paper 2** Work Precariousness and Job Stress
- Anasua Bhattacharya, PhD, NIOSH, Cincinnati, OH

- Paper 3** Impact of Non-Standard Employment Arrangements on Earnings and Fringe Benefits: Evidence From the 2010 and 2015 National Health Interview Surveys
- Abay G. Asfaw, PhD, NIOSH, Washington, DC

- Paper 4** Association Between Non-Standard Employment and Financial Stress in a Nationally Representative Sample of U.S. Workers
- Toni Alterman, PhD, NIOSH, Cincinnati, OH

Firefighters and Miners: Environmental Factors and Interventions to Promote Occupational Safety and Health (Paper Panel Session)

Marquette IX

Chair: Andrea Davis, MA, MPH, CPH, Drexel University, Philadelphia, PA

- Paper 1** Improving Firefighter Safety and Health: A Closer Look at the Role of the Fire Station
- Emily H. Sparer, ScD, Harvard T.H. Chan School of Public Health, Boston, MA; Gregory Wagner, MD; Glorian Sorensen, PhD
- Paper 2** Overweight and One-Year Long-Term Sickness Absence in Professional Firefighters: Comparison of Three Different Adiposity Measures
- BongKyoo Choi, ScD, University of California Irvine; Marnie Dobson, PhD; Peter Schnall, MD; Haiou Yang, PhD
- Paper 3** Evaluating the Effects of a Psychosocial and Fitness Intervention in Wildland Firefighters
- Caleb Leduc, MHK, Lancaster University, England, United Kingdom; Sabir Giga, PhD; Bill Cole, PhD; Michelle Young, BAHSc; Ian Fletcher, PhD; Sandra Dorman, PhD
- Paper 4** A Field Evaluation of the Physiological Demands During a Simulated Mine Rescue
- Justin Konrad, BSc, Laurentian University, Sudbury, ON, Canada; Dominique Gagnon, PhD; Emily Jago, BSc; Alison A. Godwin, PhD; Tammy Eger, PhD; Caleb Leduc, MHK; Sandra Dorman, PhD

Person-Centered Approach to Burnout (Symposium)

Conrad A

Chairs: Anne Mäkikangas, PhD, University of Jyväskylä, Finland; Michael Leiter, PhD, Deakin University, Geelong, Australia

WORK, STRESS AND HEALTH

contemporary challenges and opportunities

*The 12th International Conference on
Occupational Stress and Health*

Conference Program • June 7-10, 2017 • Preconference Workshops on June 7, 2017

HILTON MINNEAPOLIS MINNEAPOLIS, MINNESOTA

Convened by:
American Psychological Association
National Institute for Occupational Safety and Health
Society for Occupational Health Psychology

