

Methods: Active duty military personnel who sought inpatient or outpatient treatment for one or more oral-maxillofacial injuries from 1996-2005 were identified in the Defense Medical Surveillance System using International Classification of Disease, 9th Revision, Clinical Modification (ICD-9-CM) diagnosis codes associated with oral-maxillofacial injuries. ICD-9-CM diagnosis codes were divided into two categories: oral-maxillofacial wounds and oral-maxillofacial fractures. Multiple visits for the same diagnosis within 60 days of the initial visit were excluded to reduce the effect of follow-up visits.

Results: The oral-maxillofacial fracture rates for men were consistently 1.5 to 2 times higher than those for women. Unlike fractures, wound rates for men and women were similar over time. Active duty personnel under age 25 had the highest rates of both oral-maxillofacial fractures and wounds. Falls (27%) were the leading cause of oral-maxillofacial injury hospitalizations in 2005. Falls were 2.5 times more common than the next causes, war/enemy (11%) and land accidents (10%).

Conclusions: Military and civilian populations would benefit from a surveillance system that incorporates not only medical care data, but also dental care data. There is also a need for additional quality intervention studies on the strategies to prevent oral and craniofacial injury. Fall prevention should be considered as a strategy for reducing oral-maxillofacial injuries.

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Title: Concentrations of PM 2.5 in a Faculty Hospital in Turkey

Authors: Erdogan MS, Yurtseven E, Erginöz E

Introduction: Respirable particulates (RP) with aerodynamic parameter smaller than 10 µm (PM10) are easily inhaled and deposited within the respiratory system. RP are divided into a coarse and a fine fraction; the latter is smaller than 2.5 µm in diameter (PM2.5). Fine particles are generally more harmful to the respiratory system than coarse particles. Particulate exposures in hospitals may serve as a carrier for virus transmission since viral adherence to particles may occur. This exposure therefore poses a special threat to the people who visit the hospital. We attempt to characterize the indoor PM 2.5 concentrations in selected places of the hospital, where people gather.

Methods: Indoor air PM 2.5 was measured using light scattering monitor-nephelometer (manufactured by Thermo) 1.5 m above the ground for an 8-hour duration. Samples were collected at 3 lecture halls, the waiting room, and 3 rooms of the main laboratory in Cerrahpasa Medical Faculty of Istanbul University, Turkey. The lecture halls included in the study are located in one of the hospital buildings and have an audience capacity of 300, 150, 100, respectively. These were randomly selected out of 8 lecture halls of the faculty in total.

The main laboratory has a waiting room with the capacity of 70 people and it is always the most crowded space of the hospital. The rooms were selected randomly out of the following categories: "room with 1 personnel working," "2 personnel," and "more than 2 personnel." All the measurements were taken in the weekdays when the facilities were used as normal.

Results: The average/maximum PM 2.5 levels of lecture halls with the audience capacity of 300, 150, 100 were 53.0/200.9, 53.4/132.0, 30.6/100.2, respectively. The average/maximum PM 2.5 levels of the waiting room and 3 different rooms of the main laboratory with 1 personnel, 2 personnel and 3 personnel working were 160.1/367.2, 23.8/63.9, 30.9/105.1, 15.9/126.0, respectively.

Conclusion: There is no accepted permissible exposure limit for indoor PM 2.5. EPA experts provide one limit for the outdoor concentration and suggest that the indoor limit must not exceed 50 % of the outdoor limit. According to this advice from experts, our results are too high and immediate measures should be taken.

Emergency Response

P34

Title: Effect of Boot Weight and Material on Gait Characteristics of Men and Women Fire Fighters

Authors: Chiou S, Turner N, Zwiener J, Weaver D, Spahr J, Pan C

Introduction: According to NFPA, there were an estimated 83,400 fire fighter injuries in 2006, and overexertion and falls accounted for approximately half of those injuries. Fire fighters have traditionally worn heavily insulated rubberized boots as protective footwear. These boots can add an extra 10 pounds to a fire fighter, which may increase their risks for overexertion and fall injuries. The objective of this

study was to determine the effect of boot weight and material on fire fighters' gait characteristics and lower extremity movements.

Methods: Fifteen men and fifteen women fire fighters (31.3±5.2 years) were tested for regular gait or gait while carrying hose while wearing different rubber or leather boots of varying weights. A motion-analysis system and two force platforms were used to quantify gait and posture changes associated with different boots. Spatio-temporal gait parameters and body dynamics of fire fighters were evaluated during simulated firefighting tasks.

Results: The Repeated Measure ANOVA revealed significant gait changes associated with boot types, including reductions in cadence and increases in percentage of double-stance time with heavier boots ($p<0.001$). The increases in the time when both feet were in contact with the floor suggest greater energy cost and a longer time was needed for the body to re-establish stability from one step to another. There were significant reductions in sagittal range of motion at ankles ($p<0.001$) and increases in hip internal and knee external angles ($p<0.01$) when wearing rubber boots. As the weight of boots increased, ankle ranges of motion decreased.

Discussion: This study demonstrates that boot types affect fire fighters' gait characteristics and lower extremity kinematics. Findings from this study are useful for fire fighters and boot manufacturers in boot selection and design modifications, to reduce biomechanical stresses of the lower extremity and to improve gait performance.

Intervention Evaluation

P35

Title: The Sacred Vocation Program: A Meaning-Centered Intervention to Reduce Injuries in Health Care

Authors: Amick III B, Tullar J

Introduction: A recent systematic review (Amick et al, 2007) highlighted the limited number of well-designed interventions to reduce injuries in health care settings. The Sacred Vocation Program (SVP) was designed to change the meaning of work for health care workers. The SVP intervenes at both the individual and organizational level. First, the SVP attempts to connect healthcare workers with meaning from their work through a series of peer group sessions. Second, employees engage in a participatory action research process to suggest changes to the worksite to support

them and allow them to engage in meaningful acts with patients and co-workers.

Methods: Patient care assistants, those with the most direct care with patients in hospitals, from a large health care system in the Dallas area participated in the SVP. A non-randomized field trial was implemented over a 2-year period; one group participated in the SVP ($n=203$) and one group did not participate ($n=318$). The intervention was guided by a theory of change that has as a key outcome injuries. Injury data was collected from on-going injury surveillance systems in the health care system and is not based on self-reports. Exposure time was determined by use of both payroll records and the identification of the work units the employees worked on. Multi-level logistic regression models were estimated to determine if participation in the SVP reduced the risk of injury.

Results: Injury rates were significantly reduced among SVP participants post-intervention compared to other employees with the same job. In unadjusted models the odds ratio was 0.44 (95% CI 0.2-0.98). In adjusted models (adjusted for job tenure, the odds ratio was still significant at 0.45 (95% CI 0.2-0.99).

Discussion: This research shows that interventions that target changing job content can reduce workplace injuries in a population with significant injury problems.

P36

Title: A Communication-Based Train-the-Trainer Program as an Injury Prevention Tool

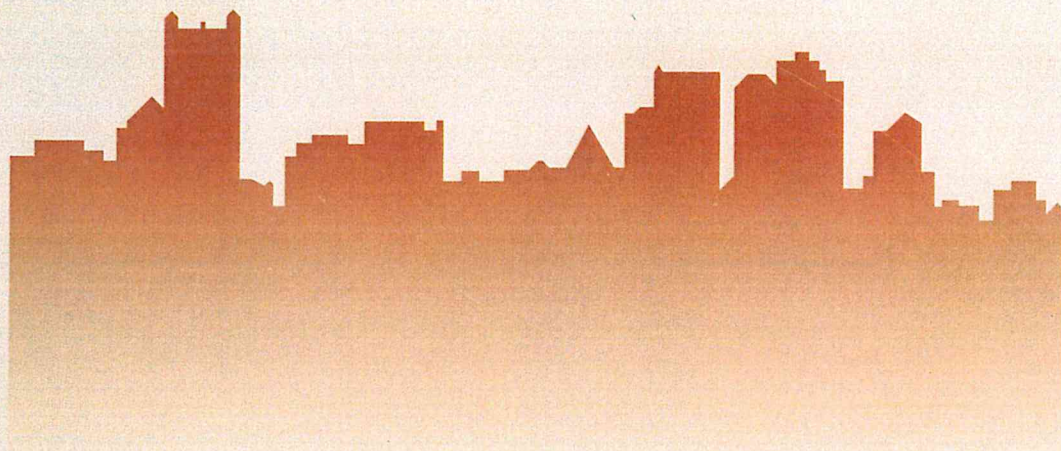
Authors: Smith A, Chen P

Introduction: Leadership plays an important role in injury prevention in any organization. For example, Zohar (2004) found that employee perceptions that supervisors support safety negatively related to occupational injuries. Research also supports that climate for error management and climate for safety communication predict safety behaviors and accidents on the job. The present study describes an intervention targeted at teaching supervisors in the construction industry how to support a climate for safety communication with their employees.

Methods: The intervention took place at a large mechanical contractor in the northeast. Slides describing how to give appropriate feedback, positive recognition, and daily verbal exchanges emphasizing safety were added to the company's existing foreman orientation materials. Thirty-six site-level supervisors (e.g. superintendents, project managers) participated

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