

The Impact of Government Health and Safety on Healthcare and Ergonomics in the United States

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Abstract. The purpose of this paper is to examine a major cost associated with the healthcare industry: health and safety. The labor regulatory agency (OSHA) in the USA have recently targeted healthcare facilities with high fines for a number of high-cost injury categories. The reasons for and implications of this enforcement policy are discussed, and a case study regarding ergonomic interventions in healthcare is presented to emphasize the importance of proactive risk reduction measures. Additional benefits of the intervention included increased productivity, throughput, and employee satisfaction.

Keywords. Health and safety, ergonomics, healthcare, workplace injuries

1. Introduction

The cost of healthcare is rising, burdening governments and patients alike. This total cost is significant and increasing at a greater rate in the United States in comparison to Europe. Workplace injuries in healthcare impose a significant risk to employees, further burden the healthcare system, and cost billions of dollars each year. Most recent estimates suggest that the direct costs of workplace injuries in the United States for 2012 were in excess of \$60 billion (Liberty Mutual, 2015). The Occupational Safety and Health Administration (OSHA - the government agency designated with enforcing workplace / labor safety regulations in the United States) continued the national emphasis program (OSHA Instruction CPL 03-00-016) designed to address enforcement and collaborative efforts for workplace hazards with a focus in healthcare.

This paper will explore the current costs of healthcare in the US and Europe, review the data on workplace injuries in healthcare in the US, discuss the details and implications of the OSHA emphasis program, and conclude with a case study regarding ergonomics related hazards in healthcare.

2. Healthcare Costs

Healthcare costs continue to rise in the United States. In comparison to EU countries the cost of healthcare as a percentage of gross domestic product (GDP) in the US is nearly double and rising at a greater rate. Figure 1 demonstrates the differences in these costs over the past decade. A brief analysis of the data show a trend of increasing costs. A major contributor to healthcare costs in the US are related to workplace injuries. Despite a downward trend of injuries over the past decade (in healthcare and all industries alike), healthcare settings have a greater rate of workplace injuries than all other industries (BLS, 2015). Figure 2 illustrates the mean rate of injury in specific healthcare settings in comparison to all other industries.

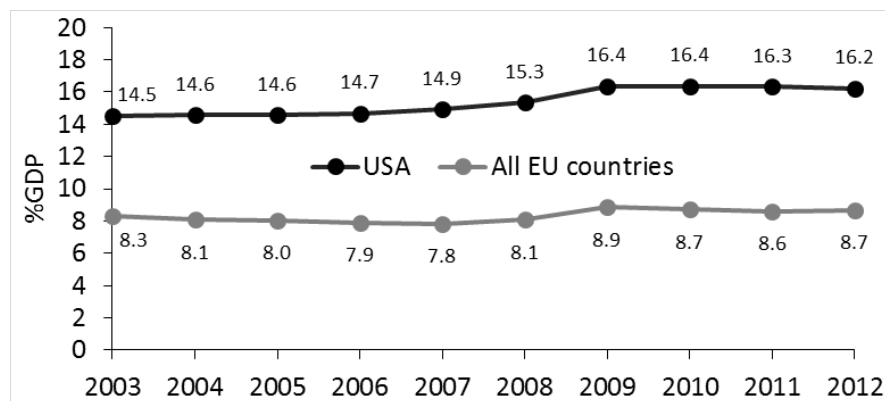


Figure 1. US vs EU countries healthcare expenditure as %GDP over time (Eurostat, 2015).

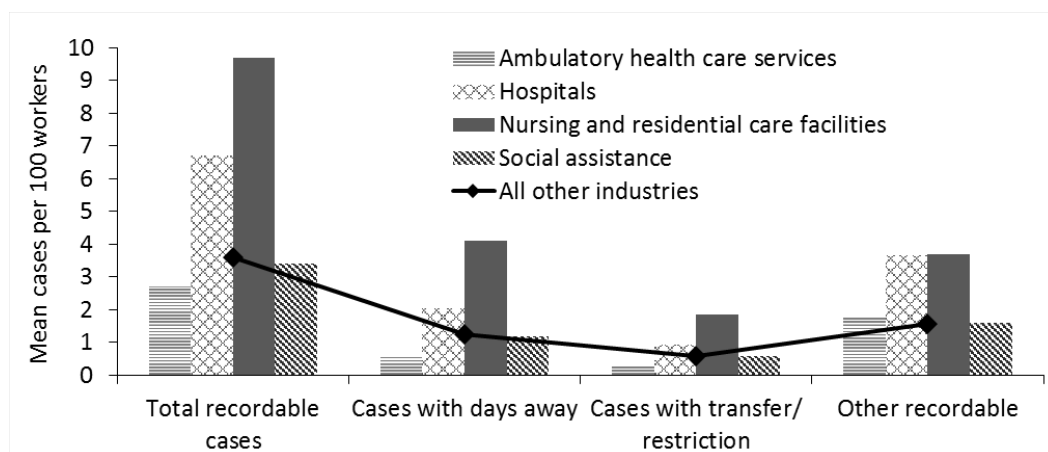


Figure 2. Mean rates of workplace injury types in various healthcare settings and all other industries, by case type in 2013 (BLS, 2015).

Given the injury rates in hospitals and nursing and residential care facilities (Figure 2), it is no surprise that OSHA intends to target these workplaces. The program targets specific workplace hazards which were identified as very costly and prevalent within US healthcare settings.

Figure 3 represents data compiled by the Bureau of Labor Statistics (2015) for the total number of reported cases in 2014. Ergonomic-type injuries (indicated by 'overexertion and bodily reaction' injuries in Figure 3, this terminology is used by the BLS and OSHA to classify such injuries), slips, trips, and falls (STFs), and workplace violence (WV) are three of the five major categories addressed by the OSHA national emphasis program discussed below.

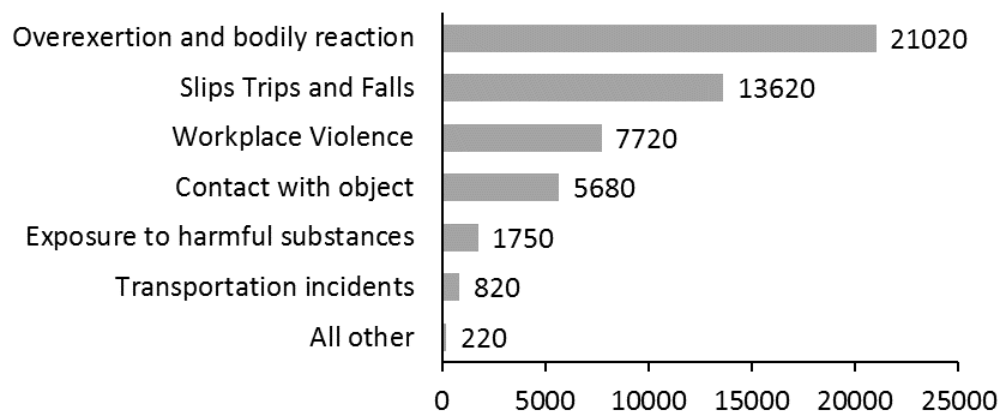


Figure 3. Number of cases resulting in days away from work for nursing and residential care facilities in 2014 (BLS, 2015).

3. OSHA National Emphasis Program

The OSHA national emphasis program targets five major hazards in healthcare. To help reduce hazards and injuries in the emphasis areas, OSHA has proposed an increase in inspections, citations, and fines. Healthcare workplaces tend to approach workplace injury costs and OSHA citations as an inescapable consequence. However, due to the increasing costs of injuries and citations, healthcare settings should consider the benefits of proactive assessment and hazard reduction. This section will focus on three hazards included in the OSHA memorandum in which human factors engineers would be most successful at addressing; ergonomics; slips, trips, and falls; and workplace violence.

3.1 Ergonomics

Ergonomics has always been a controversial topic for OSHA. There is no specific regulation which requires employers to meet an ergonomic "standard" to minimize ergonomics related hazards. Nonetheless, OSHA can cite employers under the General Duty Clause, which states that a workplace must be free of 'recognized hazards'. The "Guidelines for Nursing Homes: Ergonomics for the Prevention of Musculoskeletal Disorders" (OSHA, 2009) breaks down MSD risk into patient handling activities and 'other'. The solutions offered range from the implementation of a training program (lifting techniques, identifying hazardous tasks, etc.) to the purchase of assistive devices such as sliding boards and patient lifts. Guidelines for inspectors focus on establishing incidence and severity rates, and program evaluation (which includes program management, program implementation, and employee training).

Studies have demonstrated the efficacy of implementing ergonomic programs and providing assist devices. Fujishiro, Weaver, Heaney, Hamrick, and Marras (2005) followed units in 86 nursing homes and residential care facilities, comparing injury rates before and up to 2 years after ergonomic interventions. Here, both ergonomic consultation and financial assistance for the purchase of assist devices was offered. Significant decreases were seen for both back and other injuries. The total injury rate decreased from 12.32 to 6.64 per 100 employees, which far exceeded the national average decline.

3.2 Slips, Trips, and Falls

The fast paced nature of healthcare and the importance of a clean environment, frequently combined with patient handling tasks, elevates STFs to a higher risk. Most of the preventative measures for STFs should be formalized in a written safety plan;

requiring spills to be cleaned up quickly, signs to be posted, damaged flooring to be replaced, etc. Since STFs are common in a wide variety of industries there are many potential OSHA regulations under which STFs may be cited including '1910.22 - Walking-Working Surfaces - General requirements' for maintaining clean and dry floors, '1910.145 - General Environmental Controls - Specifications for accident prevention signs and tags' for posting adequate signage, '1910.36 - Means of Egress - Design and construction requirements for exit routes' for keeping exit areas clear, and '1910.132 - Personal Protective Equipment - General requirements' for providing proper safety equipment. The BLS statistics indicate that STFs are a costly and common problem in healthcare settings.

3.3 Workplace Violence (WV)

Healthcare settings pose a higher than average risk of WV, due to the frequent interaction with patients and exposure to visitors who may create an unsafe environment. Figure 3 illustrated that WV is the third most common workplace injury. OSHA has issued a guide directed specifically at healthcare facilities to reduce the risk of WV and ensure compliance (OSHA, 2015). With regard to inspections, the inspectors are instructed to review the required records, required WV safety plan, and then interview employees.

As a result of the OSHA emphasis program focus on WV, numerous costly fines have been issued. A common complaint in these fines is the 'lack of an adequate safety program'. This means that a formal program may not be written, measures to deal with incidents are not consistent or documented, and/or training is inadequate. A facility in Brooklyn, New York was fined \$78,000 for not taking measures to prevent injuries, when over 40 incidents were reported within a two month period (Fitzgerald & Bowser, 2014). A successfully implemented WV plan should help reduce incidence rates and avoid citations.

4. Case Study

This case study presents the results of an ergonomics project conducted in the laboratory setting of a hospital (Subramanian, Ware, & Fernandez, 2015). Employees had been complaining about low back and strain injuries. Several metrics of laboratory throughput were lacking as a result of injuries and general organizational shortcomings:

- Profit per laboratory test
- Materials vs. Revenue Ratio
- Average laboratory test turn-around time
- Average total costs per laboratory test
- Average non-employee costs per laboratory test

To help address these issues a team of outside ergonomic consultants was hired and various full time employees were recruited to be part of the multidisciplinary team. Through direct observation and employee involvement several areas to address became clear.

Figures 4 and 5 demonstrate some of the major ergonomic related hazards identified within the laboratory of this healthcare facility. The ergonomists concluded that addressing these identified hazards were of high priority for reducing injury costs and ensuring compliance during an OSHA inspection.



Figure 4. Work surface and shelving heights presented ergonomic related hazards.



Figure 5. Disorganized supply carts consumed time and conveyed a poor image to patients.

To reduce the ergonomic related risk factors, the workstations and lab setups were modified. The work surfaces were modified to ensure movable, variable height benches and shelves, knee and foot clearances, and step stools. Additionally steps were taken to ensure equipment was ready, easily accessible to employees, as well as conveying a clean aesthetic appearance of the care unit to patients and their families.

These changes helped reduce the risk factors in the laboratory, which subsequently reduced the risk of injuries and their associated costs, e.g. medical procedures, workers' compensation, time away, retraining, etc. The interventions also provided a system which made procedures more efficient thereby further improving the metrics named above. An added effect of the ergonomic intervention was to improve productivity, which had a direct effect on the throughput and efficiency within the laboratory. All of the beneficial changes brought about by the intervention helped to reduce unnecessary costs and improve employee satisfaction.

To assess the perceived efficacy of the ergonomics interventions, subjective ratings for the ease of accessibility were gathered from the employees. Figure 6 presents the mean ratings and demonstrates that the interventions had a positive effect on accessibility. In summary, this case study shows that ergonomic interventions in healthcare can provide cost savings with regard to injuries and citations alike. In addition they can positively influence employee productivity and throughput, resulting in cost savings. It is important that healthcare facilities consider the numerous benefits of interventions before incurring avoidable costs.

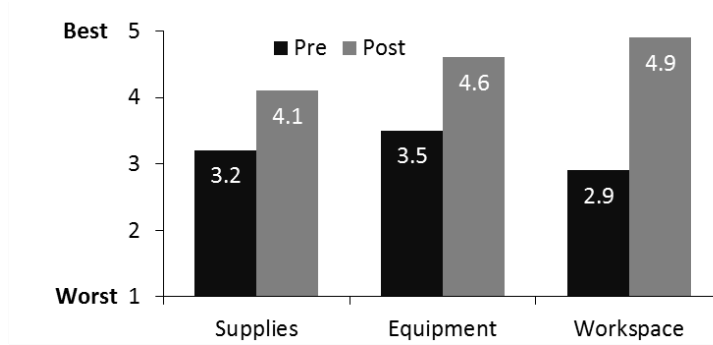


Figure 6. Mean subjective ratings for ease of accessibility for supplies in the laboratory.

5. Summary

Healthcare costs are rising in the US. In comparison to the EU in that the mean %GDP expenditure is nearly double over the past decade and rising at a faster rate. Much of the cost of healthcare is attributable to the higher-than-average incidence rate of injuries, especially in hospitals and nursing homes. OSHA continued their national emphasis program focusing on reducing these injuries in healthcare through greater numbers of inspections and higher citations. Resources have been made available which should help healthcare facilities maintain OSHA compliance. A case study of ergonomic interventions in a hospital laboratory demonstrated the impact that outside consultants may have for reducing risk factors, risk of injuries and avoidable costs. Additional benefits of an intervention included increased productivity, throughput, and employee satisfaction. To help combat the rising cost of healthcare the authors advocate for a proactive approach which targets high cost injuries and ensures regulatory compliance.

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