



Figure 1: Characteristics of the worker, patient and hospital as risk factors and impacts of worker injury.

direct patient care. Exclusion criteria for articles included methodologies utilizing symptoms and frequency of pain as determinants (rather than injury) and review of healthcare personnel that do not have direct patient contact (e.g. maintenance, food service, laboratory). All articles were published in English anytime through December 2011.

Researchers of each study acquired and documented injury data in various forms. Worker's compensation claims are considered to be particularly useful in assessing health conditions of occupational nature during the course of employment. In this review, these claims were the most popular method, as these data are easily obtained and provides additional information including extended health benefits, long-term disability claims, outpatient medical services to physicians, specialists and other health professionals, and inpatient hospitalizations. Other occupational

health researchers chose various surveillance systems that included standardized operational databases, Occupational Safety and Health Administration (OSHA) logs, insurance data and facility injury data.

Patient risk factors

The patients, with whom healthcare workers interact, generate unique demands based on their physical and cognitive characteristics and requirements. High patient acuity and mobility limitations create challenges for the healthcare provider, often increasing physical and mental stress⁸. Patient demands placed upon the providers by the conditions of the patients and/or the expectations of their families, including technological care and services, increase a provider's workload, placing increased demands on the employee contributing to high musculoskeletal injury rates^{9,10}.

Regarding lifting and moving patients, the obesity epidemic remains a considerable risk factor posing risk of injury to both the patient and the provider¹¹. Morbidly obese patients pose an even greater threat, creating significant physical challenges resulting in lost and restricted work-days for healthcare workers. Both frequency and severity of injuries escalate in bariatric units. While the bariatric patients represent 10% of the patient population, the corresponding injuries account for 30% of occupational injury. The majority of these injuries occur during manual performance required in patient handling tasks¹².

Worker risk factors

Occupational injury is the result of interaction between the affected person and a host of risk factors including those that are personal, non-occupational, occupational and psychosocial in nature. Research demonstrates that personal and non-occupational risk factors are consistent across industries and consistent in research assessing characteristics of individual healthcare workers. The most notable risk factors include age, gender, smoking, education and lifestyle habits. Advancing age represents a statistically linear distribution, as increasing age is associated with increasing risk^{13,14}. Additionally, younger nurses or those with less seniority experience rates of injury similar to more experienced nurses who have accumulated more time in a nursing unit, particularly units that typically require frequent lifting¹⁵.

Females, representing an overwhelming proportion of the healthcare workforce, have a higher incidence of falls, low back symptoms, repetitive motion disorders and high-cost injury claims¹³. In comparison to all industries, healthcare has the highest proportion of days-away-from-work cases of female workers (81% of all incidents)⁵. Socioeconomic status, traditionally

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