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Overview

Obesity in Patients and Nurses Increases the Nurse's Risk of Injury Lifting Patients

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ABSTRACT

As the number of Americans who are overweight and obese grows, the risk of lifting injuries to both patients and nurses increases. Occupational back and other musculoskeletal injuries are preventable; however, many changes in the workplace must occur in order to assure prevention and safe lifting.

INTRODUCTION

LIFTING AND MOVING PATIENTS, a frequent part of nursing care in any patient environment, is a high-risk activity that most nurses engage in without considering the potential impact. Nursing consistently rates high among the occupations with back pain and occupationally related back injuries.[1,2] One study measured the lifting load of nurses and reported that during an 8-hour shift, a nurse may lift a total of 1.8 tons.[3]

This article reviews the literature about work-related injury in nurses and discusses how obesity affects caregiver injury. In the literature related to occupational injury in health care workers, the type of injury may be specified, such as back injuries—and the terms may include work-related back pain (WRBP) and work-related low back pain (WRLBP)—or general, such as musculoskeletal injuries or musculoskeletal disorders (MSD). Although many of the data and national statistics about injury are related to back injury, much of the more recent literature that examines the scope of injury in nurses due to lifting and moving patients refers to the general term MSD.

LITERATURE REVIEW

Over the past 30 years, much of the effort to reduce MSD in nurses from work-related injuries has focused on body mechanics and lifting techniques.[4] Nurses are taught, during their education and clinical orientation, that the primary way to prevent back injuries is to always use proper body mechanics.[1] As the statistics on back and other musculoskeletal injuries related to nursing tasks of lifting and moving patients continue to be collected, it is clear that training in proper body mechanics has failed

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to have a positive effect on preventing this problem.

The National Institute for Occupational Safety and Health (NIOSH) has published lifting guidelines.[5] According to these guidelines, an average woman should be able to safely lift about 46 pounds. For example, lifting an average 200-pound patient would take five people of average strength and fitness to safely accomplish. Yet these guidelines, not developed for lifting people, suggest that the average individual is at risk of injury when lifting over only 50 pounds![1]

Others have stressed that the NIOSH guidelines for safe lifting, which were not developed with human parameters in mind, should not be applied to nursing tasks for many reasons, including the characteristics of the load lifted and of the work environment, and the ability of the patient to cooperate with the activity (and not provide resistance). This is best understood by a conceptual model developed from the scientific literature that illustrates these risks and provides a framework for understanding work-related musculoskeletal injuries in nurses. In this model, several factors contribute to injury: host factors, such as personal characteristics of the caregiver; and agent factors, such as characteristics of the lifted load and the task performed, including the frequency and duration of the activity.[3] Although one of the goals of Healthy People 2000 was to decrease the rate of occupational back injuries, the rate had actually increased by 1997. The need for ongoing research is evident.

Ergonomics, the study of the relationship of people to the physical activities they perform, is an essential component for understanding the problem of occupational back injuries in nurses.[6] The ergonomics of delivering nursing care show that nurses must lift, bend, and stoop as well as pull and twist. Additionally, the environment in which nurses work is often cramped, requiring them to reach across furniture and the patient. The patient may be uncooperative or resist, adding to the forces against the nurse. Biomechanical evaluation of nursing activities has demonstrated that these factors add to the risk of lifting during nursing tasks.[3,4]

Several studies have incorporated ergonomic principles in the analysis of safety protocols. One large study used an intervention aimed at creating safer work environments for nurses who deliver bedside nursing care on 23 high-risk units in 7 facilities. In addition to the ergonomic assessment protocol, the program included patient handling assessment criteria and decision algorithms, a peer leader, state of the art equipment, after action reviews, and a no-lift policy.[4] In a different approach, ergonomics consultants were hired to design and implement a back injury training program which addressed risk factors for back injuries, risky activities commonly performed, control strategies, and the use of proper body mechanics. This study, which highlighted the engineering and administrative controls needed to change behavior, failed to demonstrate a direct contribution of training to changes in either the knowledge or behavior of the individual participants.[7] The decision to lift that each nurse must make is a complex series of assessments (including evaluation of risk to himself or herself, as well as the patient) in each unique situation.[1]

PREVENTION

Because of the prevalence, cost, and risk of occupational musculoskeletal injuries to nurses, as well as the national efforts to support research initiatives, there is a growing body of literature about programs for prevention of injury and promotion of safe patient handling. Nelson describes the three categories of administrative controls used to prevent injuries as no-lift policies, ergonomic assessments, and patient lift teams.[4] A no-lift policy is an administrative control that assures workers that proper equipment for lifting will be available and safely maintained.

In one study using a combination of the walking belt and mechanical hoist, injuries were cut almost in half (from 83 to 47 per 200,000 work hours).[1]

Eleven different friction-reducing devices specifically made for lateral transfers were analyzed for their effectiveness, and all showed benefits over manual lifting.[7] The Veterans Administration, Florida region, has developed a safe patient handling and movement (SPHM)

program. This program, implemented in 23 high-risk units, includes a no-lift policy as well as ergonomic assessment. Injury rates (reported per 100 workers) decreased significantly from 24 to 16.9 following the implementation of the program.[4,8]

Lifting teams are strong and fit individuals specifically selected and trained in safe lifting techniques and equipment who work together to perform patient transfers.[7] A lift team that pairs individuals of similar height and strength removes the need for a situational analysis and decision-making by the nurse who may be fatigued, untrained with the lifting devices, or unable to coordinate the lift activity.[4] In a study upon implementing an internal lift team in one hospital, the team was found to positively impact employee satisfaction, retention, and cost savings due to fewer injuries.[9] In one summary analysis of the experience of lift teams in 12 hospitals, all realized significant reductions in their rates for severity and frequency of back injury when the associated cause was patient transfer, and all have shown reductions in workers' compensation and medical costs associated with injury due to transferring patients.[10]

The relationship between MSD in RNs and the availability of assistive devices and training on the devices was evaluated using an anonymous survey mailed to 2000 active nurses in two states.[11] Findings included the following: nurses with lifting teams and lifting devices in their workplace were significantly less likely to have an MSD compared to nurses with access to transfer boards and adjustable beds.[11]

OBESITY

Obesity effects both the patient and nursing populations today. Two out of three adults are believed to be overweight, and as many as a quarter of the population qualify as obese, with a body mass index (BMI) $\geq$30.[12,13] Recognition of the obesity epidemic has brought attention to the needs of bariatric and obese patients and the issues related to caring for them in hospitals. The obese patient clearly presents special challenges in terms of lifting safety and resource requirements to accomplish all mobility tasks. A pilot study measuring the time and number of personnel required to carry out several common essential nursing activities with the extremely obese patients was an important starting point.[14]

Nurses have two concerns about lifting obese patients: the risk of injury to the patient as well as the risk of injury to the nurse. The challenges for nurses, already prone to back injuries, are easy to appreciate. Both the patient and nurse must understand how to safely proceed.

As the weights of patients and nurses increase in line with the trend for the overall population, what is the effect on the incidence of occupational injuries? Using the previously mentioned conceptual framework[3] two of the three agents that lead to injury are affected by obesity. Regardless of the nurse's overall strength and fitness, the body mass of the nurse and that of the patient will add to the stress on spinal forces of the lifter.

While there are statistics to indicate the scope of the problem of occupational injuries in nurses, there is no measurement of injuries suffered by family and friends who assist patients at home. Regardless, the implications of injury to any caregiver are the same: pain and disability that will directly or indirectly affect the care delivery to the patient as well as interruption in the wellbeing of the caregiver.

SOLUTIONS

Based on the literature, successful solutions to the problem of injury from lifting and moving patients must address the following: no-lift policies, ergonomic assessments and controls, and ongoing research. The American Nurses Association (ANA) published a position statement that called for engineering controls, no-lift policies, and additional research. "ANA believes that manual patient handling is unsafe and is directly responsible for musculoskeletal disorders suffered by nurses."[15] In addition, several states have undertaken efforts to legislate safe patient handling. Both Washington and Texas have successfully passed legislation, and bills have been introduced in Massachusetts, California, Rhode Island, Florida, and

New Jersey. In September, 2006, a bill was introduced to the House of Representatives calling for a national safe patient handling standard (H.R. 6182, which was never brought to a vote before that session of Congress expired).

Many authors talk about the need for a paradigm shift from requiring nurses to learn body mechanics to requiring the organization to provide the safe environment through ergonomic research, no-lift policies, and education.[1,9,11] As the research continues to show the financial cost of occupational back injuries, and the shortage of nurses becomes more critical, organizations will shift to the new paradigm out of necessity.

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REFERENCES

1. Edlich R, Woodward C, Haines M. Disabling back injuries in nursing personnel. J Emerg Nurs 2001;27:150–155.
2. Lloyd J. Biodynamics of back injury. In: Charney W, Hudson A. (eds.). Back Injury Among Healthcare Workers. Boca Raton: Lewis Publishers, 2004:27–35.
3. Nelson A, Matz M, Chen F, Siddharthan K, Lloyd J, Fragala F. Development and evaluation of a multifaceted ergonomics program to prevent injuries associated with patient handling tasks. Int J Nurs Studies 2006;43:717–733.
4. Kneafsey R. The effect of occupational socialization on nurses' patient handling practices. J Clin Nurs 2000;9:585–593.
5. National Institute for Occupational Safety and Health. Guidelines for protecting the safety and health of health care workers. Updated 1998. Available at www.cdc.gov/niosh/hcwold1.html. Accessed 5 January 2007.
6. Bielecki J. Dimensions of care: Back injuries in healthcare workers. Occupational Health Tracker 2002;5:2.
7. Nelson A, Baptiste A. Evidence-based practices for safe patient handling and movement. Online J Issues Nurs 2004;9:4. Available at www.nursingworld.org/ojin/topic25/tpc25_3.htm. Accessed 8 January 2007.
8. Siddharthan K, Nelson A, Tiesman H, Chen F. Cost effectiveness of a multifaceted program for safe patient handling. Advances in Patient Safety 2005;3:347–358. Available at www.ahrq.gov/downloads/pub/advances/vol3/Siddharthan.pdf. Accessed 8 January 2007.
9. Hefti K, Farnam R, Docken L, Bentaas R, Bossman S, Schaefer J. Back injury prevention: a lift team success story. AAOHN J 2003;51:246–251.
10. Charney W. How to accomplish a responsible cost-benefit analysis in the health care industry. In Charney W, Hudson A (eds.): Back Injury Among Healthcare Workers. Boca Raton: Lewis Publishers, 2004:41–48.
11. Trinkoff A, Brady B, Nielson K. Workplace prevention and musculoskeletal injuries in nurses. J Nurs Admin 2003;33:153–158.
12. Gallagher S. Bariatrics: Considering mobility, patient safety, and caregiver injury. In Charney W, Hudson A (eds.): Back Injury Among Healthcare Workers. Boca Raton: Lewis Publishers, 2004: 139–158.
13. Racette SB, Deusinger SS, Deusinger RH. Obesity: overview of prevalence, etiology, and treatment. Phys Ther 2003;83:276–288.
14. Rose M. Nurse staffing requirements for care of morbidly obese patients in the acute care setting. Bariatr Nurs Surg Patient Care 2006;1:115–120.
15. American Nurses Association. Position statement on elimination of manual patient handling to prevent work-related musculoskeletal disorders. Available at http://www.nursingworld.org/readroom/position/workplac/pathand.htm. Accessed 8 January 2007.

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1. Stephen P Cowley, Susan Leggett. 2010. Manual handling risks associated with the care, treatment and transportation of bariatric patients and clients in Australia. *International Journal of Nursing Practice* **16**:3, 262-267. [CrossRef]
2. Pamela J. Springer, Bonnie K. Lind, Johanna Kratt, Ed Baker, Joanne T. Clavelle. 2009. Preventing Employee Injury. *AAOHN Journal* **57**:4, 143-148. [CrossRef]