

An Ergonomic Assessment of Caregivers Preparing Patients for Patient Transfer Task

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In recent years, the number of musculoskeletal disorder (MSD) related injuries in the health care industry has seen a significant increase. Studies have shown incident rates of injuries within the nursing profession to be seven times higher than the average among other industries. Patient handling was involved in 98% of these injuries. Despite new technologies being available to nursing personnel, such as patient lifting devices, manual handling of patients is still required in certain tasks such as applying a sling onto immobile patients. In addition, there is a lack of proper handling techniques when doing such tasks. Traditional ergonomic risk assessment approaches in this environment present challenges, such as lack of resources, limited access to the population sample, and time constraints. This project aims to use the Jack™ digital human modeling software to model and assess ergonomic risks of male and female caregivers maneuvering a patient during manual handling task to attach a sling. Effects of different bed heights and handling methods (pushing and pulling) are explored to assess the spinal compression forces on the lower back (L4/L5 joint). Results showed that male caregivers experience higher compression forces than female caregivers during the patient handling task. Also, higher bed heights showed lower impact on the lower back joint, and the action of pushing the patient showed more favorable results.