

**NURSING HOMES**

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**Aims**

Musculoskeletal disorders have been associated with physical work demands of manual resident handling by nursing assistants in nursing homes. In 2005, a large nursing home corporation implemented a "No-Lift Program" (NLP) involving installation of resident handling equipment plus procedures for staff training and equipment maintenance. We evaluated the program's effect on combined biomechanical load resulting from exposures such as lifting and non-neutral body postures. Hollmann et al.(1) developed an index of physical workload using employee self-reported frequencies of postures and manual handling activities, weighted by a weighting factor which is the difference between the standard compressive force on the L5-S1 vertebra and the compressive force estimated for a given posture. We adapted this index to our observational data and used it to compute the net biomechanical change in load on the lumbar spine.

**Methods**

Ergonomic exposures of clinical nursing staff in seven nursing homes were observed by trained ergonomists at baseline, 3-month, 12-month, and 24-month follow-up. We used the PATH(2) method, modified to add resident handling activities and specific types of equipment. An index of physical workload for nursing tasks was computed using the frequencies of PATH variables for trunk, arm, and leg postures and manual handling as exposure scores. The University of Michigan's 3D Static Strength Prediction Program was used to calculate weighting factors for each exposure. The products of these two inputs were summed for an overall score.

**Results**

Thus far preliminary scores for the index of physical workload have been calculated using trunk and arm postures. Additional scores for manual handling will be computed. Results from our observational data showed that loads heavier than 50 pounds were handled less frequently and loads lighter than 10 pounds more frequently, after two years. The results indicated baseline higher scores for nursing assistants than Licensed Practical Nurses, as expected. Nursing assistants' preliminary index scores decreased over the four time periods, both overall and specifically within resident handling.

**Conclusion**

The index of physical workload allows for examining the combined biomechanical effects of multiple ergonomic exposures. Based on these preliminary findings, the workload index shows a reduction of physical exposures following NLP implementation. The observed reduction in heavy lifting suggests that the addition of the remaining index inputs will continue to show improved index scores for nursing assistants.

**Reference 1 :**

[1] Hollman, S., Klimmer F., et al. 1999. Scandinavian Journal Work Environment Health 25(2): 105-114.

**Reference 2 :**

[2] Buchholz, B., Paquet, V., et al. 1996. Applied Ergonomics, 27:177-187.

**Keyword 1 :**

Biomechanics

Keyword 2 :

Exposure measurement methods

Keyword 3 :

Intervention studies