



KEY POINT SUMMARY

OBJECTIVES

The purpose of the study was to investigate how different levels of physical restraints influenced the rates of patient falls and fall-related injuries.

The Relationship Between Physical Restraint Removal and Falls and Injuries Among Nursing Home Residents

Capezuti, E., Strumpf, N. E., Evans, L. K., Grisso, J. A., Maislin, G.
1998 | Journals of Gerontology. Series A, Biological Sciences and Medical Sciences
Volume 53, Issue 1, Pages M47-52

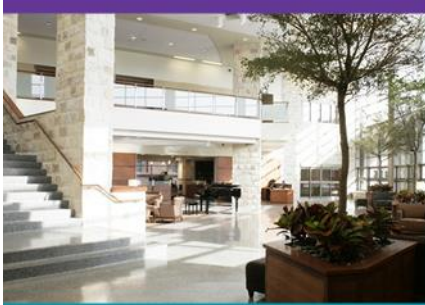
Key Concepts/Context

Patient falls refer to patients' unplanned descent to the floor, either with or without injuries to the patients. Patient falls and related injuries are a leading cause of morbidity and mortality and contribute to high healthcare cost. Healthcare organizations have experimented with many fall-prevention programs including restraint reduction and other modifications of the physical environment.

Physical restraints (i.e. mechanical or manual devices used to limit a patient's physical mobility) including bedrails were used to protect patients with high fall risks from fall-related injuries and reduce potential risks of legal liability of healthcare organizations. However, new lessons from the field suggested that the use of physical restraints not only failed to prevent patient falls but might instead increase the risk of falls and fall-related injuries. As a result, some healthcare organizations implemented restraint reduction programs even though the effects of these programs had not been rigorously evaluated before this study.

Methods

Secondary analyses were conducted on data collected for previous research. The restraint status of the nursing home residents was observed during a 72-hour period and classified as "restrained" or "restraint removed". The outcomes—incidences of patient falls, fall-related minor injuries, and serious injuries—were calculated from a review of incident reports in the six-month period after a restraint reduction program was implemented in two of the three nursing homes participating in the study. Three potentially confounding variables were included in the analysis: cognitive status (measured by the Folstein Mini-Mental State Exam), mobility status (measured by one item on the Psychogeriatric Dependency Rating



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Scale), and psychoactive drug use (determined by reviewing medical records for a 90-day period). Statistical analyses (multiple logistic regression and survival analysis) were conducted on individual patient level as well as on institutional level to examine the relationship between restraint removal and the outcomes.

Findings

Data analysis on individual patient level showed that restraint removal was associated with lower rate of patient falls and minor injuries related to falls. Seven out of eight serious injuries were found in patients using physical restraints. Analysis on the institutional level showed that there were significantly fewer (<50%) falls and fewer (<50%) fall-related minor injuries in the two nursing homes where physical restraint usage were reduced more significantly than the control site. The nursing homes with the most restraint reduction had the lowest rate of fall-related serious injuries. Impaired cognition and psychoactive drug use were associated with increased fall risk.

Limitations

There were several limitations of this study:

- The outcome measurements solely relied on incident reporting, which might underestimate the real rates of falls and fall-related injuries. In addition, the incident reports did not provide information about whether physical restraints were used immediately before or during falls. This prevented more rigorous examination of a direct cause-effect relationship.
- The results may only be applied to the resident groups similar to the residents in religious-affiliated, voluntary nursing homes.
- Because serious injuries were relatively rare, the sample size for the study was perhaps not big enough to detect any statistically significant difference.
- Several variables were based on staff's subjective perception of resident status rather than objective measures therefore the measurements might not be accurate.

Design Implications

The study described an instance in which an environmental feature designed to solve or prevent one problem might actually produce more problems than it solved. The effects of any new environmental feature should be empirically evaluated before wide application.

Designers should pay attention to physical restraints and obstacles in the immediate environment of patients that may cause patient falls and injuries. Innovative design may focus on how environment assisting devices can be hidden or removed when not in need.