SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

The objectives of the study were to determine the odds of fall initiation from analyzing video recordings of mock-up trials and develop a priority list of possible physical design interventions for future examination.

Top Five Physical Design Factors Contributing to Fall Initiation

Pati, D., Lee, J., Mihandoust, S., Kazem-Zadeh, M., Oh, Y., 2018 | *HERD: Health Environments Research & Design Journal*. Volume 11, Issue 4, Pages 50-64

Key Concepts/Context

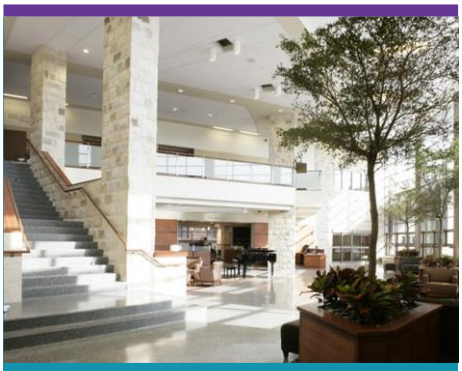
Falls in older patients are dangerous and are of major concern for healthcare professionals. Several studies were done on the associated causes of the falls but few have addressed the impact of the physical environment. This study was Phase II of a larger study that expanded the analysis of data previously collected in Phase I on physical design questions and interventions, to reduce patient falls by developing a priority list of items to be addressed.

Methods

A physical mock-up of a medical–surgical inpatient room was created in Phase I of the study. 180 videos of trials were collected and used for the expanded analysis. The total number of trials conducted was 600 which included three repetitions of each trial. The video segments were coded in four areas: 1- Location of fall 2- The patient's activity at the time of fall 3- The associated patient posture 4- The physical environment aspects that contributed to the fall. Four coders later examined the videos for analysis and inserted the number of times a particular posture was exhibited. The focus was exclusively on the patient posture variables to examine the odds of fall initiation. The data was inserted into MS Excel then exported to R programming for the statistical analysis.

Findings

The analysis of the bathroom data resulted in four patient postures that were statistically significant: turning, pulling, pushing, and bending forward. The bedroom had three patient postures that were significant: grabbing, pushing, and sitting. Inside the bathroom there were four physical elements that were found to contribute to fall initiation: bathroom door, configuration forcing turns, IV management, and hardware. In the bedroom five physical elements were



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contributors to falls: IV management, bedroom configuration forcing turns, patient chair, over-bed table, and bed height.

In the end, the study found five areas of design that needed to be addressed by hospital designers: bathroom door, bathroom configuration, door and toilet hardware, space available in the clinician zone and on the path to the bathroom, and configuration of the clinician zone. Furthermore, there were issues concerning medical furniture and equipment that included: IV pole, over-bed table, patient chair, patient bed, and the toilet fixture.

Limitations

The limitations discussed by the authors were that the patients participating in the study were healthy for their age group, and the mock-up simulations were limited to unassisted ambulation in medical-surgical rooms. The results could have been different with an unhealthy group and with other activities that were not simulated. The study also did not consider different types of patient populations interacting with the physical environment. Moreover, the mock-ups were not physically accurate to represent real-life situations due to video recording requirements.

Design Implications

Physical design factors resulting in fall initiation were identified by the authors above and need to be studied by hospital designers to improve their attributes. Further studies are needed to be based on these findings to examine alternative design solutions.