

The Effect of Environmental Design on Reducing Nursing and Medication Errors in Acute Care Settings

Abstract

The Problem

It has been estimated that approximately 44,000 Americans die in hospitals each year as a result of preventable medical errors (Kohn et al., 2000a). The estimated national costs of adverse events in the United States is 37.6 billion dollars, while the national costs of preventable adverse events has been estimated to be 17 billion dollars (Kohn et al., 2000b). Physical environment is an important component in the acute care setting that can directly impact patient safety, nursing and medication errors, as well as contribute to staff fatigue, stress and burnout resulting in errors.

Methods

This study examines this issue in the medical-surgical units with multiple methods that include:

- Literature Review and Analysis (204 empirical and 148 non-empirical journal articles, books, book chapters and reports were reviewed and analyzed. Among these 352 items, 112 were specifically on nursing and medication errors).
- Survey on Nursing Staff in Four Hospitals in the Pacific Northwest
- Focus Groups with Nursing, Administration and Pharmacy Staff Members
- Site Visits to Three Selected Facilities that have implemented Design for Enhanced Patient Safety and Reduction of Errors

Key Findings and Conclusions

The review and analysis demonstrated that the following environmental variables contribute to work place errors: spatial design, micro-environmental design, ergonomics, noise levels, lighting, color, heating, ventilation, and air conditioning. Staffing levels, age and health of workers were among non-environmental variables associated with workplace errors. These variables contributed to errors through workers' fatigue, stress, disruptions, distractions, and other mediating factors. Ten major design recommendations

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are given based on the findings of the study. For example, the authors suggest finding a balance between patient accessibility and a reduction of disruptions. In addition, standardization and automation are emphasized.

Table of Contents

With over 170 pages of literature review and empirical analysis content, *The Effect of Environmental Design on Reducing Nursing and Medication Errors in Acute Care Settings* provides a comprehensive review of a very important issue. The reader will also find over 20 graphs that showcase the evidence. In addition, more than 25 images present a visual reference for the issues discussed.

- I. Acknowledgements
- II. Abstract
- III. Executive Summary (22 pages)
 - a. Highlights of the Literature Review and Analysis
 - b. Summary of Empirical Study
 - c. Summary of Results from Survey with Nursing Staff in Selected Hospitals in Oregon and Washington
 - d. Recommended Design Principles to Reduce Nursing and Medical Errors
- IV. Review and Analysis of the Literature (91 pages, 2 graphs)
 - a. Overview
 - b. Literature Review Method
 - c. Errors in the General Workplace
 - d. Errors in Acute Care Environments
 - e. Error in Healthcare Settings
 - f. Hospital Design and Environmental Variables Related to Staff Health and Safety
 - g. Hospital Design and Environmental Variables Related to Patient Safety
 - h. Healthcare Facility Management, Design, and Environmental Variables Related to Staff Outcomes
- V. Empirical Study (57 pages, 19 graphs, 26 images)
 - a. Survey Results
 - b. Focus Group Findings
 - c. Selected Facility Visits
- VI. Annotated Bibliography
- VII. Grouped Bibliography
- VIII. Complete Bibliography
- IX. Tables (16 pages)
- X. Appendices (13 pages)
- XI. Continuing Education Questions
- XII. PowerPoint

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