



KEY POINT SUMMARY

OBJECTIVES

The objective was to study ED nurse perceptions of efficiency and satisfaction with design by examining the physical structures, processes, and outcomes of a newly built emergency department.

Emergency Nurses' Perceptions of Efficiency and Design: Examining ED Structure, Process, and Outcomes

Fay, L., Carll-White, A., Real, K., 2018 | *Journal of Emergency Nursing, Volume V44, Issue 3, Pages 274-279*

Key Concepts/Context

Emergency departments (EDs) must work to improve efficiency in order to maintain standards of safe and effective care. Physical structures can significantly impact efficiency, and processes defined as the activities of emergency care can also play a role in efficiency. Outcomes are the perceptions of efficiency along with satisfaction to work or be treated in the designed environment. Rarely has the physical environment been studied in an emergency department especially when examining the relationships of structure, process, and outcome. Using a hierarchical linear regression, the authors determined that all structures and processes examined were associated with efficiency and design.

Methods

Data were collected by observing staff members and with physical measurements and staff questionnaires. Visibility was used to observe ED nurses' lines of sight to see their patients, call lights, and co-workers, along with the amount of time they spent accessing storage units. Visualization of PPE (personal protection equipment) storage was conducted in the express, critical, acute, and pediatric areas of the ED. The trauma area does not include PPE storage, so the use of similar supplies was collected for comparison with the other units in the ED. Distances walked for nurses, physicians, and patient care technicians were collected by pedometer data over 84 total hours, and the average distance walked per hour was calculated. A questionnaire was developed to elicit staff perceptions of the structure, process, and outcome factors. ED staff were emailed an online version of the questionnaire, and to improve participation, the researchers distributed paper copies of the questionnaire. The questionnaires included questions on unit configuration,



efficiency, equipment and storage, the physical environment, treatment rooms, and staff satisfaction. Each question was measured using a 5-point Likert scale.

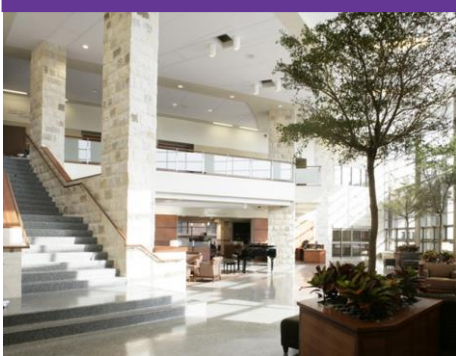
Findings

In this newly opened emergency department each nurse could see from 0 to 3 patients but could see 2 to 7 patient rooms from a seated position at a centralized station. Line of sight of colleagues ranged from 2 to 10 across the ED. However, each unit (pediatrics, express, critical care, acute care, trauma) within the ED had slightly differing results. The average for the entire ED of accessing storage was 3.8 times per hour or 45.7 times per 12-hour shift. This ranged from the pediatric unit accessing storage 3.1 times per hour to the trauma unit using PPE 11.4 times per hour. The staff pedometers showed that emergency nurses walked 4.06 miles per 12-hour shift, physicians walked 3.84 miles per 12-hour shift and patient care technicians walked 5.99 miles per 12-hour shift.

Using correlation analysis to identify the relationships between structure, process, and outcomes, it was found that all the structure and process factors were significantly associated with both efficiency and staff satisfaction of design. The structural factors of storage and patient room layout had the greatest relationships to staff perceptions of efficiency. Storage and technology were the structural factors most related to staff satisfaction with design. The process factors of data access and staff stress were found to be of the highest significance for both perceptions of efficiency and staff satisfaction with design.

Limitations

There are no other studies examining the relationships of structures and processes to determine the outcomes of efficiency and staff satisfaction. More research needs to be done to examine these factors as they apply to efficient care in emergency departments. Also, because there are no other studies, no comparisons could be made -- a significant limitation of this study. Furthermore, this study addressed only one newly opened emergency department without a pre- and post- study, so even comparison of this exact emergency room was self-limited. Further research is required to explore if the findings in the one emergency department are relevant to other emergency departments.



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Design Implications

This study was the first to examine the relationships of structure and processes to the outcomes of staff perceptions of efficiency and satisfaction with design. All factors of structure and process were found to have a significant relationship to the outcomes, and storage had the greatest correlation with both outcomes of efficiency and design satisfaction.

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