SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

The objective of this study is to evaluate the design of emergency departments (EDs) with regard to efficiency, teamwork, and COVID-19.

Efficiency and teamwork in emergency departments: Perception of staff on design interventions

Ahmadpour, S., Bayramzadeh, S., Aghaei, P., 2021 | HERD: Health Environments Research & Design, Volume 14, Issue 4, Page(s) 310-323

Key Concepts/Context

The authors build on previous research regarding emergency department (ED) layout and teamwork. When clinicians can move efficiently in a space that allows for collaboration, both staff and patients benefit. The results of this study inform the growing body of knowledge on ED flow and provide insight from ED staff who worked during the COVID-19 pandemic.

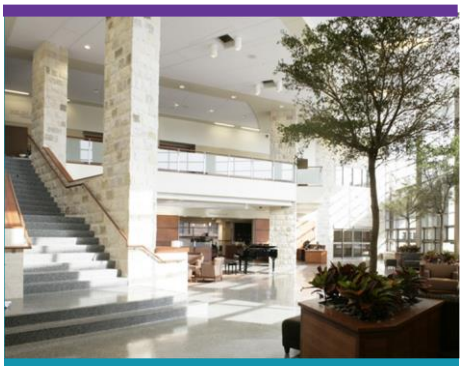
Methods

Researchers used the results of a literature review to create a 12-item tool that was then evaluated by an ED physician. The tool included questions related to demographics and three topics: efficiency, teamwork, and COVID-19. ED nurse managers sent ED staff Invitations to participate via email and links to the web-based study were also shared via social media and via snowball sampling. Some questions asked participants to rank-order design elements as they related to enhancing efficiency. Other questions were specific to design features that enhanced teamwork or reduced the spread of COVID-19, and still others addressed changes made in response to COVID-19.

Statistical analysis for the demographic information and the quantitative questions were completed through the Qualtrics XM platform and NVivo 12 was used for content analysis of the qualitative responses. Researchers categorized the units represented in the responses according to number of beds (small: <40 exam rooms, medium: 40-65 exam rooms, and large: >65 exam rooms) and then considered each group according to efficiency, teamwork, and insights related to COVID-19.

Findings

A total of 45 ED clinicians (nurse managers, physicians, nurses, clinical specialists) responded overall and results were organized via the survey topics of efficiency,



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teamwork, and COVID-19. From an efficiency standpoint, participants were asked about design elements that could be changed to reduce walking distance. In small EDs, almost half of participants indicated their walking distances would be reduced by decentralizing disposal rooms. In mid-sized EDs, 40 percent of participants indicated that hybrid nursing stations would decrease walking distances, and in large EDs, almost 40 percent of staff indicated that decentralizing medication supplies would reduce their walking distances. Approximately 45 percent of respondents across all sizes of EDs preferred centralized workstations over decentralized or hybrid layouts. To access patient data, participants working in small and mid-sized EDs preferred retrieving patient data at the patient bedside compared to a mobile workstation, a central location, or charting outside of the patient room. In large EDs, the options of bedside charting and "other" were both rated equally. Of the 30 participants who shared their preferences regarding location of radiology unit, medication room, equipment room, and soiled utility room, the majority preferred radiology to be near the trauma suite; medication rooms to be near nursing stations; equipment to be stored in alcoves between patient rooms and near exam rooms; and soiled utility areas to be near patient rooms.

Centralized nursing stations and proximity of nurse and physician workspaces were mentioned as important because they foster both communication and teamwork. Recommendations from participants regarding ED design features that changed as a result of COVID-19 included the need for PPE and supply cabinets outside of patient rooms, donning and doffing areas, and more trash cans. Participants also recommended more negative pressure rooms, wider hallways, and the ability to flex spaces as needed for one-way tracks and different patient severity.

Limitations

The authors note some limitations to the study. The majority of respondents represented smaller EDs, resulting in a smaller number of respondents at each site. There was the potential for organizational policies to confound results. Additional limitations noted by the authors include the absence of questions regarding nursing station design, PPE access, and common communication methods used. There was a lack of detailed demographic information about the participants, and there was no detail about the survey (e.g., open-ended questions, validation).

Design Implications

This descriptive study, while not generalizable to all EDs, has the potential to inform future exploration into how EDs can maximize efficiency, support teamwork, and remain prepared for high-volume and infectious disease incidents. The authors provide several recommendations to consider when designing EDs, including fast-track areas, design elements that support teamwork and visibility, and storage areas that are accessible from both the patient room and the hallway.