



KEY POINT SUMMARY

OBJECTIVES

This literature review attempts to summarize findings from existing research on the link between the hospital-based emergency department environment and outcomes for children and families.

Effects of the physical environment on children and families in hospital-based emergency departments: A systematic literature review

Gripko, M., Joseph, A., MohammadiGorji, S. 2023 | Journal of Environmental Psychology, Volume 86, Page(s) 101970

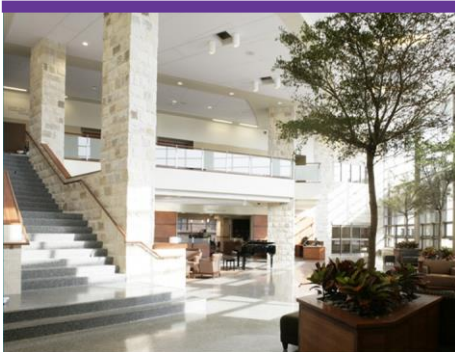
Key Concepts/Context

The emergency department (ED) environment is often a very stressful place, especially for young children and their families. Previous studies show that highly stimulating environments may increase anxiety. There are many complex relationships among the physical environment and healthcare outcomes in the emergency department, and themes in this study include control, positive distractions, family and social supports, and designing for a safe and comfortable experience. The results are an important contribution to the body of knowledge focused on understanding outcomes for children and families.

Methods

The research team relied on the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) protocol, and searched for keywords using a Population, Exposure, Outcome (PEO) framework. Keywords included terms related to children and families, the ED, and outcomes related to attitudes, behaviors, perceptions, and experiences. Four databases were searched: CINAHL, PubMed, PsychInfo, and Web of Science. The team also conducted a “hand search” (the manual process of searching for relevant literature) within literature reviews that came up. Eligibility criteria required that studies be original research published between 1996 and November 2021, in English, in peer-reviewed journals, and available in full-text. The studies also had to be related to the physical environment of hospital-based emergency departments as it relates to children and families.

Two independent reviewers read and evaluated all titles that met the initial criteria, and created a short list for the full review. The team discussed any discrepancies, and a third reviewer made the final decision. In the full review, one reviewer used a spreadsheet template created by the team to document all of the data for each



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study (i.e., citation information, study setting, sample population and size, research objective, study design and methods or tools, design elements, other variables, analysis approach, and key findings). Then, two other independent reviewers reviewed the research design, methodological quality, and risk of bias in each study. The reviewers also scored each study according to an established model called the Levels of Evidence for Healthcare Design, with a score between 1 (high) and 6 (low). Finally, the team summarized the data using a qualitative, inductive thematic coding approach.

Findings

From the initial search, the research team found 545 articles. After removing papers that did not meet inclusion criteria, 36 articles remained in the full assessment. After reading the complete text of these papers, the team found that 15 additional papers did not meet inclusion criteria, resulting in 21 articles, most of which were published after 2010.

From the 21 studies included in the final review, most (60%) focused on general EDs, and the rest (40%) focused on specialized pediatric EDs. Only half of the studies included children as participants.

Most studies in this review were cross-sectional or case-control studies and rigorous qualitative research. Only two of the studies were rigorous experimental or quasi-experimental studies. Results show that most studies used either a qualitative approach, a quantitative descriptive design, or a mixed methods approach.

Using thematic analysis, the researchers found 10 environmental features, seven environmental qualities, and nine patient or family outcomes captured in these 21 studies. The most prevalent environmental quality was privacy, a theme in about half the studies.

Findings highlight several problem areas, including the lack of a sense of control and the overwhelming stimuli in the ED. Nearly all of the studies mentioned something about the experience of waiting, and several focused on how design can provide a sense of control and positive distractions. Signage and communication came up in about a third of the studies, including issues around communication and setting expectations throughout the healthcare experience. Findings revealed the importance of social support not just for children, but also for the parents and family members. The review highlights findings around how the environment can provide a sense of safety and comfort through privacy and visibility, as well as dedicated pediatric zones. Considerations around safety also include issues having to do with behavioral health and infection control.



Limitations

This literature is limited by the sparse availability of research focused on understanding the role of the physical environment in emergency departments on healthcare outcomes for children and their families. Most research that does exist includes adult parents and family members as participants. The authors suggest that more research is needed to understand the child-patient's perspective. Further, there is a need for more quasi-experimental, case-control, or cohort-design studies to add quality and rigor to the knowledge base.

Design Implications

The findings of the study show promising evidence that the physical environment in EDs can make a difference by offering a sense of control, and positive distractions, facilitating social support, and supporting safety and comfort. Findings include the following design considerations: adjustable privacy (e.g., private assessment rooms), dedicated/separate pediatric treatment spaces, comfortable lighting (e.g., adjustable lighting), increased patient/family control (e.g., adjustable temperature), positive distractions (e.g., entertainment devices), and access to amenities.

And Also...

The authors include a matrix diagram categorizing the studies included in the review. The information is organized in a concise manner that tallies the studies according to environmental qualities, patient/family outcomes, and environmental features. The diagram can serve as a helpful resource for researchers to understand where the existing research is focused and to identify critical gaps for future research priorities.

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