



KEY POINT SUMMARY

OBJECTIVES

Researchers investigated how staff perceived the impact of noise, lighting, and temperature on patient care and staff performance in ED trauma rooms.

The impact of sensory stimuli on healthcare workers and outcomes in trauma rooms: A focus group study

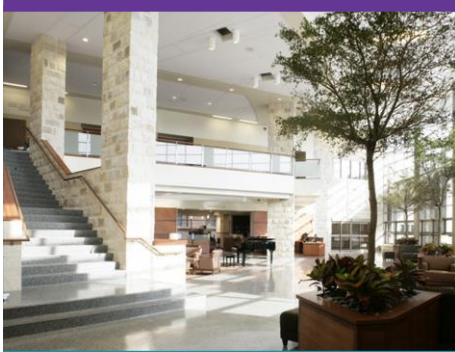
Bayramzadeh, S., Ahmadpour, S. 2023 | HERD: Health Environments Research & Design Journal, Pages in Press

Key Concepts/Context

Research demonstrates that excessive sensory stimuli in healthcare settings can negatively impact patient, staff, and organizational outcomes. Because emergency department (ED) trauma areas can be especially chaotic, understanding issues related to noise, lighting, and temperature is the first step toward addressing the problem. The results of this study can be used to inform future work to mitigate excessive environmental stimuli in EDs.

Methods

In this qualitative study, researchers conducted 20 focus groups to elicit perspectives from 65 ED staff from six different hospitals. Participating organizations were large urban teaching hospitals from five different states with the United States. Four of the facilities had trauma rooms that were enclosed and two had open bays. Participants were recruited via email invitation, and 15 trauma nurses, 24 physicians, 12 resident physicians, and 14 other ED support staff participated in the semi-structured, web-based focus group sessions. Researchers developed the focus group questionnaire from the results of a literature review on noise, lighting, and temperature in trauma rooms. Open-ended questions were used to prompt discussion. The semi-structured format allowed participants to describe their experiences and share their perspectives. Video recordings of the focus groups were transcribed and researchers used qualitative software to identify common themes and subthemes within the three categories of noise, lighting, and temperature. One researcher initially identified patterns in the data which were subsequently reviewed by the second researcher. Next, both researchers simultaneously evaluated and discussed themes identified from the focus group transcripts to achieve consensus.



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Findings

In the noise category, the first theme identified noise-related issues including communication disruptions, alarm fatigue, errors, and care delays. The constant beeping of alarms without the ability to silence them for an extended period of time was of particular concern, since the physiologic metrics of trauma patients are often beyond typical thresholds. The second noise theme noted sources of noise to include environmental factors, patients, staff, and equipment. Environmental factors included the opening and closing of doors, and that while open bay layouts allow for more immediate access to patients, they have higher noise levels which can interrupt communication. Because trauma events are often attended by learners whose conversation adds to ED noise levels, one staff recommendation proposed was an alcove with a glass window that would permit observation yet mitigate noise and disruption.

For the lighting category, the first theme highlighted issues including glare and the importance of lighting to medical evaluation such that white walls and LED lighting were reported to not only distress staff, also to make evaluating patient pupil size and light responsiveness difficult. The second theme specified issues with lighting control, including identification of controls, adjusting light intensities for different tasks, and equipment malfunction such as problems with lightbulbs or switches. The final lighting theme captured participant concerns about windows with staff indicating that trauma rooms did not need natural light and that windows would likely distract staff and compromise patient safety and security.

In the temperature category the themes of temperature control and temperature fluctuations due to environmental design were identified. Although trauma rooms can be uncomfortably warm for staff, they are typically kept between 75-85 degrees Fahrenheit for the benefit of patients. Because staff appreciate the value of maintaining a therapeutic room temperature, they often try to keep doors closed or mitigate traffic in and out of the room.

Limitations

Limitations for this study include the convenience sampling method and the lack of nuanced information (work culture or available technology) for different work contexts. Additionally, the interprofessional nature of the focus groups might have inadvertently impacted open discussion. While generalizability of findings may not be possible, the results provide a starting point for solutions that can curb sensory stimuli related to noise, lighting, and temperature in ED trauma settings.

Design Implications

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