

Light Can Reduce Errors, Improve Outcomes in Health-Care Settings

by Tracy Ostroff

A research review, "The Impact of Light on Outcomes in Healthcare Settings," conducted for the Center for Health Design, concludes there is strong evidence that adequate lighting is essential for staff performing visual tasks in hospitals, and poor lighting conditions can result in errors. The study also cites research suggesting that these visual lighting needs differ from biological lighting needs, such as to stimulate the circadian rhythm for people working long shifts under artificial light.

Light impacts human health and performance

Joseph highlights studies that show that the amount of light is directly related to task performance, with better performance correlating with higher light levels. Joseph says a 1981 study "shows that, if the amount and distribution of light are controlled, most everyday visual tasks (such as reading and writing) can be performed as well under artificial light sources (such as fluorescent light) as under daylight conditions. However, in 2003, another study reported that "daylight is superior for tasks involving fine color discrimination when it is provided at a high level without glare or any reduction in task visibility caused by veiling reflections or shadows."

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Stressful working environments in hospitals call for study of how light affects error rates. One 1991 study examined the effect of different illumination levels on pharmacists' prescription-dispensing error rate. Consistent with findings from other settings, the researchers found that "error rates were reduced when work-surface light levels were relatively high." Joseph notes that more research is needed to "understand the optimal lighting requirements for supporting the complex tasks performed by nurses and physicians, especially in the context of the changing demographics of the workforce."

The older our eyes, researchers note, the greater our need for abundant light. "This is significant in that the workforce in American hospitals is aging, and, therefore, there may be a need to critically assess the lighting provisions for different types of tasks performed by nurses and other staff," Joseph writes.

Positive effects of natural daylight

Another positive outcome of abundant light in health-care settings is that it helps control the circadian system, a critical capability for workers and staff whose success depends on their ability to perform during night shifts.

Joseph reports that exposure to light:

- Reduces depression with seasonal affective disorder and bipolar depression
- Decreases length of stays in hospitals

- Improves sleep and circadian rhythms
- Lessens agitation among dementia patients and eases pain
- Improves adjustment to night-shift work among staff.

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Further, Joseph reports studies show that there are better outcomes for patients on the unit's bright side, with patients experiencing less perceived stress, less pain, taking 22 percent less analgesic medication per hour, and incurring 21 percent less medical costs.

Joseph notes that proving that windows improve mood and work performance has been challenging. "In most hospitals, nurses' stations and break rooms do not have windows or access to natural light. There is need for further research to understand the importance of natural light to staff, as well as the impact of artificial light on staff mood and performance."

Reference:

Visit the Center for Health Design [www.healthdesign.org]

Read the full report, "The Impact of Light on Outcomes in Healthcare Settings." [www.healthdesign.org/aboutus/press/releases/lightpaper0806.php]

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