SYNOPSIS

KEY POINT SUMMARY

OBJECTIVES

To physically measure lighting levels in a hospital setting, compare these levels with employee perceptions, and propose solutions for improvement.

DESIGN IMPLICATIONS

Lighting characteristics can affect employees' satisfaction and job performance, along with employee and patient safety and health. Appropriate installation and maintenance of lighting fixtures, along with carefully considered lighting color combinations, can significantly improve the quality of a given work environment. Designers could consider consulting employees from different areas on their lighting concerns so that more informed design decisions can be made.

Objective and subjective assessments of lighting in a hospital setting: Implications for health, safety, and performance

Dianat, I., Sedghi, A., Bagherzade, J., Jafarabadi, M. A., & Stedmon, A. W. 2013 | *Ergonomics*. Pages 1-11

Key Concepts/Context

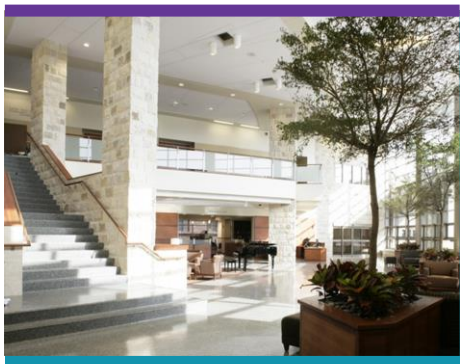
Poor lighting conditions in workplaces, particularly healthcare environments, can cause discomfort for both patients and staff members, while also negatively affecting the performance of standard tasks. Ailments such as eyestrain, headaches, and indigestion may evolve from low lighting levels, high amounts of glare, and even flickering light sources. Conversely, previous studies have shown that optimum performance may be achieved when office lighting systems consist of both direct, adjustable task lighting, and indirect ambient lighting. All of these conditions have been well documented through previous studies conducted in different environments; however, little research has been done on perceptions of lighting conditions among patients and staff within hospitals.

Methods

This study took place over the course of a month in a hospital in Iran. Surgical wards, general medical wards, pediatric wards, administrative offices, nursing stations, and critical care units (CCUs) were all included in the study. Some 208 employees were given a questionnaire regarding the lighting conditions of their work environment and their general levels of satisfaction. These surveys were followed up by semi-structured interviews. For comparison to the qualitative data, over 90 lighting measurements were taken from different departments around the hospital.

Findings

After lighting levels were measured, considerable variations in levels of luminance were found, ranging from 93 lux in some administrative offices to 9946 lux above operating tables. On average, the levels were lower than the standards for 52.2% of workplaces. In most cases, participants' perspectives on lighting levels



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corresponded with how close these levels came to meeting workstation standards. Lighting characteristics including the type of light sources and light color were highly correlated with employees' overall lighting satisfaction. Light disturbances such as unwanted shadows were correlated with eye fatigue, job performance, falls or slips and constant posture changes, while glare was correlated with the changing posture for better view and falls or slips. Flickering lights were correlated with eye fatigue and constant posture changes.

Limitations

The authors note a few limitations within this study. The source of the light ratings on which this study is based has been widely criticized in previous literature. Overall building design was not factored into this study of lighting conditions. Since this study took place within a single hospital, the results may not be representative of lighting perspectives and concerns in facilities everywhere.

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