



KEY POINT SUMMARY

OBJECTIVES

To identify the ideal shapes of horizontal blind slats for best serving a common hospital patient room that stands beneath a predominantly clear desert sky.

DESIGN IMPLICATIONS

The authors argue that the use of fixed blinds with horizontal slats is quantifiably justified in this study because they provide adequate amounts of natural light without generating too much unwanted sun exposure to hospital interiors.

Shaping the slats of hospital patient room window blinds for daylighting and external view under desert clear skies

Sherif, A., Sabry, H., Wagdy, A., Mashaly, I., & Arafa, R. 2016 | *Solar Energy* Volume 133, Pages 1-13

Key Concepts/Context

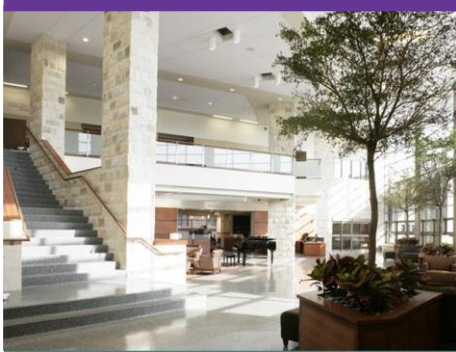
Many previous studies have shown how natural lighting can contribute to the healing nature of a hospital's environment by reducing patient fatigue, stress, and length of stay. Desert locations are often characterized by continually clear skies, making control of the sunlight even more essential to patient satisfaction. It is therefore important to determine the optimal shape of window blind slats so that discomfort can be reduced without compromising levels of illumination.

Methods

One shading system was analyzed in different settings and scenarios. The tested blind system included 105 slats, the depth of each being 2.5 cm with a spacing of 2.5 cm between each slat, and the shapes of all slats were systematically adjusted for each different examination. The two tips of each slat were fixed in position, while the position of a middle point along each slat was adjusted according to vertical and horizontal shifts in order to create different curvatures in the slats. Eventually, 77 different slat shapes were generated using predetermined grid points of adjustment so that different levels of annual sunlight exposure (ASE) could be calculated. The blind positions were tested in the window of a common hospital room that was positioned so as to receive maximum sun exposure.

Findings

ASE did not exceed 10% of the room area, meaning all slat shapes provided acceptable ASE performance. Blinds with slats featuring flat or gently curved shapes maintained better results with regard to both external view exposure and the allowance of natural light. Slats curved downwards generally produced better results.



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Limitations

The authors conducted all of their analyses of slat variations in a single room; using different rooms that were positioned differently in relation to the sun may have generated different findings. No patients were consulted regarding their preference for window blinds in this study. While the authors may have quantifiably found slats that offer an ideal medium of light, patient perspectives could inevitably affect which blinds are used in a given room.

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