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To see or not to see: Investigating the links between patient visibility and potential moderators affecting the patient experience

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ABSTRACT

Perhaps more than ever before, healthcare organizations and designers strive to create patient environments that deliver a superlative patient experience. Outstanding healthcare design requires a delicate balance of interdependent characteristics. This exploratory investigation evaluated whether the staff-to-patient visibility (low versus high) is associated with potential moderating variables that may either enhance or detract from the patient experience. The findings from this investigation demonstrate that patient visibility is associated with improvements among three moderating variables, including increased staff presence in patient rooms, better staff perceptions of their work environment, and reduced unwanted noise reaching patients. The fourth moderator, privacy, was assumed to be higher in the low visibility condition. Although the data related to the patient experience did not allow statistical analysis of patient satisfaction scores, there was a three percent improvement in patient satisfaction in the low visibility environment (specifically overall rating). Although there was an increase in patient fall rates, this difference was not significant.

1. Introduction

Healthcare facilities are being built and renovated at a rapid rate, due to an aging infrastructure and changes in the way healthcare is being provided. According to the Health Facilities Management/American Society for Healthcare Engineering 2015 Hospital Construction Survey, 75 percent of hospitals are either expanding or renovating their care facilities (Vesely, 2015). Although there has been an increase in the number of research studies that investigate the relationships between the designed environment and health-related outcomes, most design decisions, including major ones, must be made in the absence of solid evidence (Stichler, 2014). This investigation contributes to the evidence-based design knowledge base by examining the relationships between the built environment and health-related outcomes.

2. Specific aim

The purpose of this exploratory study is to investigate whether the level of staff-to-patient visibility (low versus high) affects four potential moderating variables (staff presence, staff perceptions of the environment, noise, and patient privacy) that may enhance or detract from the patient experience.

3. Research problem

The research problem builds upon the classic dialectic of autonomy and security as described by Parmelee and Lawton (1990), who stressed the importance of providing a reasonable balance of the dialectical notion. Autonomy involves one's sense of control

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over his or her environment. Security is associated with both "physical safety and peace of mind". In the healthcare setting, designers oftentimes experience difficulty creating environments that provide the perfect balance of autonomy and security. For example, in a hospital where there is high visibility, patients are nearly constantly in view of members of the nursing staff and may feel as though they have little autonomy over environmental conditions, such as visual and acoustical privacy. On the other hand, high visibility may improve patient safety (i.e., security), since staff members may see patients trying to get out of bed and rush to their aid. Table 1 lists proposed dimensions of the autonomy-security dialectic regarding staff-to-patient visibility in a healthcare setting. Specifically, this investigation explores whether patient visibility (low or high) is associated with potential moderators of the patient experience (Fig. 1).

An iconic hospital with a radial nursing unit design renovated its 6th floor, adding more patient beds to meet growing demand. The orthopedic medical-surgical unit moved from the 5th floor to the 6th floor, providing a unique opportunity to investigate whether reorienting the patient beds, in an effort to increase privacy and reduce unwanted noise, might improve the patient experience. On floors one through five, staff visibility of patients in the nursing units is high due to the location of the patient beds: staff can see the patients' heads from their work stations, unless the privacy curtain is drawn. Administrators thought that the existing condition, high in staff-to-patient visibility but low on privacy, might be associated with lower patient satisfaction scores they received. Patient satisfaction scores now affect a hospital's level of reimbursement from the Center for Medicare and Medicaid Services, making those scores more important than ever before. In an effort to make the 6th floor quieter and increase patients' privacy, the decision was made to design the patient rooms on the 6th floor so that the head of the patient bed is not visible from the corridor or central work station. On the renovated unit, the bed is instead located behind the bathroom, which is on the corridor side of the patient room, reducing staff-to-patient visibility, but providing patients with increased visual and acoustical privacy, therefore greater autonomy. This condition created the opportunity to investigate the relationships between staff-to-patient visibility and proposed moderators believed to affect the patient experience (Fig. 2).

Except for the bed location, most other variables remained the same. Both the 5th floor unit and the 6th floor unit share the same unit layout, similar work station design, same flooring type, same ceiling tile type, same patient toilet room location (on the corridor wall (inboard), not along the exterior wall (outboard)), room size, and similar patient room doors with a glass panel. Additional information regarding the similarities and differences between the two units is located in Section 5.1.

Although this particular investigation focuses on radially designed units in a community hospital, the environmental conditions compared, high visibility (HV) and low visibility (LV), are important in all types of hospitals, regardless of unit design. Whether the hospital is a community hospital or tertiary care hospital, and whether the units are radial or linear, healthcare organizations strive to create the best possible patient experience, in part, by optimizing the potential moderating variables explored in this study.

Although nurses liked the pre-move environment, where they could observe patients without having to enter the patients' rooms (Fig. 3), the administration expressed concern that the perceived quality of care delivery may be adversely affected when staff members view patients from the corridor or work station rather than entering the patients' rooms to check on them. This study provides the hospital's decision-makers with data to guide decisions regarding the bed location in future renovations, and the findings may inform the design of medical-surgical units in other hospitals.

4. Supporting literature

This study was informed by a review of the literature addressing several main themes that are represented by the environmental, moderating, and outcome variables investigated, including: 1) radial nursing unit design; 2) privacy; 3) noise; 4) staff-to-patient visibility and safety; and, 5) nurse time spent in direct patient care. The literature search primarily focused on studies performed in the United States since 1990. Some older studies or studies in other countries were included if they were deemed particularly relevant, when considering cultural contexts and modernity of the nursing unit layout and model-of-care.

4.1. Radial nursing unit design

The present study evaluates the impact of relocating the bed in the patient room in two units with a radial layout. Other studies have shown that unit layout can impact visibility, patient satisfaction, and other outcomes (Shepley & Davies, 2003; Trites, Galbraith, Sturdavant, & Leckwart, 1970). Traditional layouts for nursing units include radial unit designs and linear corridor unit designs, as shown in Fig. 4. There is no agreed upon set of unit design typologies, but radial and linear designs are two common typologies used by healthcare designers.

In a radial unit, patients' rooms are placed along the exterior wall and accessed by a circular corridor. In the central core area are the work station and other supports. A primary advantage of radial unit design is the ability to see each patient room (or each patient head) from the central work station. Another advantage of the radial unit is reduced walking distance for nurses travelling from patient to patient. Sturdavant (1960) compared two intensive care units, one with a radial design and the other with a linear corridor design, at Rochester Methodist Hospital in Minnesota. He found that nurses walked less frequently to patient rooms in the radial unit design due to the increased visual supervision of the patient from the nursing station, while the average time spent within patient rooms was equivalent. Increased patient visibility in the radial unit also enabled nurse practitioners and nurse managers to participate more in patient care than those in the linear design. Trites et al. (1970) showed that in the radial design nurses travelled significantly less when compared with linear corridor unit design. From interviewing staff members who worked in both a radial unit

Table 1
Possible dimensions of the autonomy – security dialectic regarding patient visibility in the acute care setting.

Environmental Attributes	Security	Autonomy
Patient visibility	Staff presence in patient rooms; Risk of patient falls	Visual privacy; Acoustical privacy; Noise disturbance; Behavioral options; Curiosity