

NURSING UNITS AND COMMUNICATION

Considering the built environment's impact on social support and job satisfaction

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Adapted from a full-length article, "Application of Space Syntax Theory in the Study of Medical-Surgical Nursing Units in Urban Hospitals" by Stefnee J. Trzpuć, CID, EDAC, LEED AP and Caren S. Martin, PhD, CID, FASID, published in the Fall 2010 issue of HERD (Health Environments Research and Design) Journal, vol 4, no 1

INTRODUCTION

Nurses are primary contacts for all those involved in a patient's care, creating a complex system of communication responsibilities (Leppa, 1996). The work environment of nurses is complicated, stressful, detail-oriented, and it significantly influences patient outcomes. Communication between nurses and members of the patient care team is critical to the delivery of quality health care. Understanding how and when nurses communicate with each other could help designers of health care spaces create more effective environments that support nurses' work and personal health and welfare.

Several issues facing the nursing profession have been the focus of nursing researchers, including job satisfaction, work stress and burnout, and the nursing shortage. Recent research on job satisfaction for nurses highlights the importance of job satisfaction as a means of minimizing the current threat of unsafe health care environments caused by staff shortages (Atencio, Cohen, & Gorenberg, 2003; Lynn & Redman, 2005; Ruggiero, 2005).

To date, the majority of attention in health care design research has been given to the design of the nursing unit and how it can directly or indirectly affect work efficiency, staff fatigue, worker and patient safety, and reduce nosocomial infection rates (Berry & Parish, 2008; Chaudhury, Mahmood, & Valente, 2009; Pati, Harvey, & Barach, 2008; Rashid & Zimring, 2008; Ulrich et al., 2008). Less research has studied how the design of nursing units influences staff in terms of informal communication, learning opportunities, job stress, and satisfaction (Becker, 2007).

Spatial characteristics within office environments have been studied to have social consequences (e.g., productivity, collaboration) for the occupants of that environment. It is possible that these design concepts, studied and used in office settings, could be applied to health care environments and be beneficial to nurses and patient outcomes.



THE NURSING PROFESSION

The nursing profession is complex, rapidly changing, and psychologically and physically intense. At the same time, nurses are responsible for patient safety, optimal care delivery, and patient outcomes (Bureau of Labor Statistics, 2009; Clarke, 2007; Clarke & Donaldson, 2008; Institute of Medicine, 2000, 2004). Nurses coordinate care plans with other members of the patient care team, working simultaneously for the health needs of the patient. In addition to the heavy work demands involved with caring for a patient, the nurse is typically responsible for the difficult task of communicating with all members of the patient care team (Leppa, 1996).

IMPORTANCE OF COMMUNICATION AND SOCIAL SUPPORT TO NURSES

Communication in the nursing unit environment is becoming increasingly important. Tucker and Spear (2006) noted that a major contributor to the complexity of the work that nurses perform comes from their coordination role, which was found to occupy between 34% and 49% of a typical work shift. Nurses must have continuous knowledge of what other members of the patient care team are doing, adding to their already heavy cognitive load. Stress levels for individuals working in the nursing profession are a concern and can be difficult to study because all individuals do not experience stress on the same level (Jenkins & Elliot, 2003; Jennings, 2008; Rashid & Zimring, 2008).

Stress experienced on the job is a highly subjective experience. Studies have shown that stress is a contributing factor to organizational shortcomings such as inefficiencies, increased staff turnover, higher absenteeism because of sickness, and decreased job satisfaction (Wheeler & Riding, 1994). Extreme stress has

the potential to lead to both individual and group burnout (Garman, Corrigan, & Morris, 2002). Burnout is characterized by depersonalization, emotional exhaustion, and negative feelings toward personal accomplishments (Maslach & Jackson, 1986).

Social support is an important “buffer” to a person’s stress level at work. Low social support or isolation can contribute to negative job outcomes. Workplaces with high social support help protect workers from the negative effects of high-strain jobs (Pelfrene et al., 2002). Nursing is a profession often characterized by high strain and high stress. It is therefore important to the exploration of nursing work environments to consider how social support influences job satisfaction and stress. “... Altering the nurse work environment, therefore, has the potential to influence nurse workload, satisfaction, burnout, and retention, as well as patient safety and overall mortality” (Hendrich et al. 2009, p.18).

TYPES AND DESIGNS OF MEDICAL-SURGICAL NURSING UNITS IN URBAN HOSPITALS

Two distinct models for medical-surgical nursing unit design have been typical in health care facilities since the 1950s. A traditional approach is most commonly associated with a centralized design, which has one main nursing station that is central to the patient rooms in that area. At the beginning of the 21st century, the concept of decentralized design was introduced to nursing units; this design places smaller nursing work stations throughout a unit, closer to patient rooms. This type of layout nearly eliminates the need for one large central nurse station.

A third, more recent design evolved from these two models. A hybrid unit design includes a larger nursing unit with several touchdown areas located throughout the nursing unit and closer to patient rooms. Touchdown areas are typically designed to offer a place for quick charting, preferably not located in a high-traffic location; they include a small writing surface.

The physical layout of the nursing unit influences face-to-face communication among members of the patient care team within nursing units.

Common to each of these designs is the nursing station, but its location and quantity vary depending on the layout. The nursing station is the main work area for nurses. Activities at the nursing station include charting, phone calls, and collaboration with the patient care team. Communication that occurs at the nursing station has been studied as an important factor in the daily work activities of nurses (Becker, 2007; Gurascio-Howard & Malloch, 2007; Rashid, 2009).

IMPACT OF MEDICAL-SURGICAL NURSING UNIT DESIGN ON NURSES' COMMUNICATION AND SOCIAL SUPPORT

Studies have suggested that the design of the medical-surgical unit influences staff communication (Becker, 2007; Gurascio-Howard & Malloch, 2007; Hendrich et al., 2009). Nursing stations serve as important locations for both work-related interaction and social interaction (Hendrich et al., 2009). Both work-related and social interaction include communication related to patient care and important education opportunities for nursing staff (Wakefield, 2002). Ritchey and Pati (2008) state, "the unit design and configuration must support team interactions and communication, provide places for the team members to work and acquire supplies at the point of service, and maintain proximity to the point of service [the patient]" (p. 128).

Accessibility and visibility (i.e., line of sight) on medical-surgical units have also been found to be factors in nurses' communication. Accessibility on a nursing unit refers to the configurations that allow for physical access to spaces. Visibility on a nursing unit refers to the provision of opportunities that allow users of a space to see into adjacent spaces.

The physical layout of the nursing unit influences face-to-face communication among members of the patient care team within nursing units (Becker, 2007; Gurascio-Howard & Malloch, 2007; Rashid, 2009; Ritchey & Pati, 2008). Examples of such design characteristics include full-height walls, which can block visibility and accessibility to others on the unit. Decentralized nursing stations with no central point of gathering can create feelings of isolation for nursing staff (Ritchey & Pati, 2008). The size and configuration of the layout also determine how visible members are to each other.

Analysis of inpatient unit flexibility (Pati, Harvey, & Cason, 2008) illustrates the complexity of studying nursing units and highlights the importance of peer line of sight (i.e., sight lines, visibility) for nursing staff. Several implications for inpatient unit design relate to improving peer visibility:

- Simply shaped unit configuration that permits as much distal visibility as possible



- Corner locations of any caregiver workstations within the support core
- Backstage corridors linking caregiver stations that may be designed within the core space. (Pati, Harvey, & Cason, 2008, p. 216)

Several design characteristics can create obstructions to peer visibility, including:

- Double-loaded corridors of patient rooms extending off of and beyond a racetrack configuration
- Curvilinear corridor configurations (particularly with the dramatic increase in the size of today's patient rooms)
- Charting alcoves so deep that sight lines are lost
- Opaque support cores that obstruct visibility across a unit (Pati et al., 2008, pp. 216-217)

These design recommendations are difficult to balance with multiple considerations of patient visibility, zoning, and proximity of support areas.

Nursing units that strive to support communication for the purposes of building social support can contribute to the complex issue of job satisfaction; however these outcomes (communication and social support) cannot be achieved as isolated events.

LOOKING TO OFFICE DESIGN TO INFLUENCE BETTER COMMUNICATION, COLLABORATION, AND JOB SATISFACTION

As health care has learned from the manufacturing industry for improving efficiency and work processes and the airline industry for improving safety, we can now look to office design models for improving communication, collaboration, and staff satisfaction. One model that has been used to study office environments is the theory of space syntax.

A major resource for any organization is not only its employees, but the space they occupy (Rashid, Kampschroer, Wineman, & Zimring, 2006). Space syntax theory enables an investigation of how spatial layouts affect opportunities to communicate with other individuals.

Developed in 1984 by Bill Hillier and Julienne Hanson, space syntax theory is a framework for studying whether “the layout of space and its connectedness to other spaces—permeability, visibility, and so forth—is capable of influencing (and being influenced by) social behavior” (Hasell & Peatross, 1991, p. 54). Space syntax looks at the organization of spatial configurations as a determinant in building social relationships. The six constructs of space syntax as defined by Ziesel are boundary partitions (openness); depth (path length); connectivity; rings, circuits, and chains (accessibility); degree of control; and line of sight (visibility) (2006, pp. 344-345).

Using space syntax theory to study the physical work environment of a medical-surgical nursing unit could help determine the design direction of future medical-surgical nursing units that enhance

nurse communication. Several studies emphasize the importance of promoting good communication through opportunistic meetings and peer lines of sight (i.e., visibility between individuals).

STUDYING MEDICAL-SURGICAL NURSING UNITS

Peers on a nursing unit value direct line of sight as a contributor to perceptions of flexibility and stress levels (Pati et al., 2008). Even though a decentralized model offers better sight lines to patients, this configuration makes patient care team members susceptible to feelings of isolation from their peers (Ritchey & Pati, 2008). Ritchey and Pati (2008) recommend that units be designed “to provide a peer line of sight, so staff members know where others are should the need for assistance arise” (p. 130). Visibility of other staff members also affords better opportunities for mentoring by more experienced nurses and helps create a better environment for interdisciplinary interaction. Buckingham and Coffman (1999) reported the importance of staff relationships — especially with unit supervisors — as a critical factor in determining staff satisfaction.



The designed environment is one of many factors operating within the complexities of the nursing work environment. These factors determine stress levels and job satisfaction for nurses. A model was developed to display the variables considered in this exploration (see Figure 1). The independent variables include demographics and designed environment characteristics. The demographics of an individual or group of individuals influence communication and perceptions of social support. The designed environment influences how communication occurs.

The intermediate variables of communication and social support have a mediating effect on each other and on an individual's stress, the dependent variable. An individual's stress is an influencing factor in determining overall job satisfaction. Although this model graphically displays the interrelationships among the variables, a deeper understanding is needed about how and why these outcomes occur.

Relationship of Variables to Study Communication, Design, and Job Stress

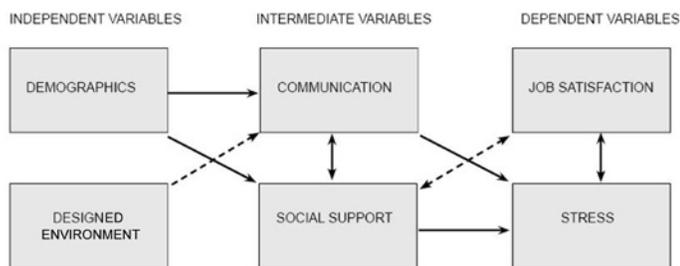


Figure 1. Relationships of independent, intermediate, and dependent variables. Relationships are shown between sets of variables. Solid lines indicate a strong relationship. Dashes indicate that a relationship exists, but there is not enough research to confirm a strong relationship.

Improvements to the work environment may help increase overall job satisfaction for nurses. Job satisfaction is a multidimensional phenomenon, and it encompasses factors such as working conditions, autonomy, staffing levels, decision-making involvement, salary and benefits, and opportunities for advancement (Ruggerio, 2005). Nursing units that strive to support communication for the purposes of building social support can contribute to the complex issue of job satisfaction; however, these outcomes (communication and social support) cannot be achieved as isolated events. Just as job satisfaction is multidimensional, so must be the approach to improving it.

CONCLUSIONS AND IMPLICATIONS

Nurses working on a medical-surgical nursing unit are affected by the layout of their unit in terms of the factors that contribute to



communication. Medical-surgical nursing unit configurations designed to optimize accessibility and visibility could enhance nurse team communication via improved accessibility and improved sight lines to other nurse stations.

While a gap exists in our knowledge of how the built environment affects the users of spaces that designers perceive as thoughtfully designed — in this specific case, nurses on medical-surgical nursing units — a better understanding of how users are affected by certain design characteristics will yield a higher level of predictability for human behaviors through design. This understanding will also require humans to use fewer adaptive behaviors to function in their work environments. Nurses' work environments should meet and exceed goals for communication, social support, efficiency, safety, and ergonomics to enable them to deliver consistent, high-quality patient care.

Nurses' work environments should meet and exceed goals for communication, social support, efficiency, safety, and ergonomics to enable them to deliver consistent, high-quality care.



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