Effects of Nursing Unit Spatial Layout on Nursing Team Communication Patterns, Quality of Care, and Patient Safety


Key Concepts/Context

A number of studies have looked at the impact of different types of healthcare staff communication on patient outcomes, as communication and collaboration are crucial for patient care. One topic that is starting to be studied but requires more research is the effect of nursing unit layout and design on nurse communication. While traditionally nursing units have a centralized layout with one main nursing station used by all staff in the unit, more recently there has been movement toward other types of layouts in an attempt to impact patient care. These include decentralized units that incorporate small nursing stations or pods throughout the unit, and also hybrid designs, which incorporate a main centralized station with a number of smaller “touchdown” spaces. Yet research is limited on their impact on a number of stakeholder outcomes and particularly on communication among staff members. The researchers wanted to study the impact of traditional, centralized nursing units versus decentralized, multi-hub designs on a variety of outcomes, including patient satisfaction, nurse satisfaction, communication, walking distances, and medical outcomes.

Methods

The study took place at Meridian Health’s Jersey Shore University Medical Center (JSUMC). The researchers sought to compare three new medical-surgical units created during a major renovation and construction project to one control, traditional unit through a pre- and post-move research design. That is to say, the study design compared pre- and post-move metrics for the three units – moving from a traditional unit to a multi-hub design – to pre- and post-move metrics for the control in a traditionally designed unit (design did not change in this control case). Data were collected through patient satisfaction surveys, a nurse survey on team
collaboration, an observational study of nurse communication, pedometers, organizational data, clinical/safety data, and nurse interviews. These metrics enabled the researchers to study patient safety and satisfaction, nurse satisfaction, walking distances, and communication. Analyses of the data included comparisons of means and standard deviations, paired t-tests, general linear models (GLMs), satisfaction scores, estimated marginal means, percentage comparisons looking at frequency of communication and communication patterns, comparisons of average steps walked, and review of interview responses.

Findings

Overall, the research showed that patient satisfaction seemed to significantly increase in the new multi-hub units, while nurse satisfaction as a total group did not change significantly from the traditional to the multi-hub designs. When looking more closely at nurse satisfaction by age and length of experience on the unit, the researchers found that job satisfaction in the new units was lower for younger nurses who were newer to their units, likely because their lack of experience led to a desire for greater communication. Also, nurse satisfaction with respect to organizational climate was significantly lower in the new units. Nurse communication did not change significantly when comparing the multi-hub versus the control traditional unit. Exception: a decrease occurred in overall information exchange between doctors and nurses in the multi-hub configurations (but specifically looking at pre- and post- figures for the moved units, communication experienced a rise, especially at the nursing stations), and also a significant reduction in social communication occurred among nurses. Finally, walking distances significantly decreased in the new multi-hub units, and nurses spent less time in patient rooms on the new units. Clinical outcomes seemed not to change significantly.

Design Implications

Overall, the main implications of this study are that the design of hospital environments may have differential impacts on different types of stakeholders. While patients had a positive experience in new multi-hub environments, nurses' communication and collaboration was reduced, which could have negative implications for patient outcomes and safety. More research is needed to determine the exact ways in which all stakeholders might benefit from new nursing unit designs, and how technology might mediate any communication-related issues.

Limitations

The authors mentioned that the dynamic nature of hospital environments resulted in the incorporation of potentially confounding variables such as organizational and technical changes, which might have impacted findings. For instance, one unit went
from a short-stay unit to a stroke unit, and nursing leadership changed as well. Additionally, the incorporation of new technologies may have impacted nurses’ satisfaction and communication in the new environments. Another limitation was the fact that doctor-nurse communication in patient rooms was never measured, nor was technology-mediated communication between doctors and nurses (e.g., text messages). Both of these were believed by the researchers to be valuable types of communication that should be studied in the future, along with doctor perceptions through interview data.