The health care environment is evolving and organizations are working to adapt to the changing needs of their patients. One area on which many hospitals are focusing is the creation and use of flexible resources. Flexible resources such as float pool nurses help hospital leaders staff units effectively while also allowing adjustment to the changing needs of the patient population. Additionally, as hospitals face continuing economic and regulatory restraints, nursing leaders are being challenged to maintain safe nurse-to-patient ratios, decrease patient length of stay, and manage increasing patient acuity. Dougan, Lanigan, and Szalapski (1991) found that unlike staffing agencies, with variable staffing by nurses who do not work specifically for the organization, float pool nurses are more autonomous and reliable due to their training and familiarity with the organization. This approach has contributed to improved patient care. Therefore, the more that nurses are cross-trained and competent to work in various areas within the hospital, the easier and safer it is to provide quality care to patients as it is needed (Strzalka & Havens, 1996).

Gosztyla and Fowler (1998) and Cavouras (2002) found flexible resources, such as float pool nurses, can benefit health care organizations. However, evidence indicates hospitals with float pools have decreased from 87% to 71% (Cavouras, 2002; Gosztyla & Fowler, 1998). Anecdotal reports from float pool nurses at Abbott Northwestern Hospital (ANW) suggested that float pool nurses receive more difficult patient assignments than regularly scheduled unit staff nurses. This perception increased staff dissatisfaction and potentially discouraged nurses from joining a float team.

Literature Review

Online databases were used to search for float pool related articles published between 1990-2007. Databases used were CINAHL, PubMed, and Ovid. Search terms included float pool, nurse resource team, nurse staffing equality, floating, staffing acuity, and nurse staffing. The literature review revealed no published quantitative studies related to the differences in difficulty of patient assignments for float pool nurses versus unit staff nurses.

Several authors (DziubaEllis, 2006; Vandankumar & Warner, 1976) identified float pool nurses as a group of nurses who accommodate unit staffing in response to variability in patient care needs. The first published literature on floating was the work of Connor (as cited in McHugh, 1997), who found measuring patient census alone would not balance registered nurse (RN) workload. Instead, Connor developed a method for looking at workload and patient acuity together, in which floating and controlled variable staffing were created to help control costs and provide sufficient caregivers (DziubaEllis, 2006; McHugh, 1997). Since Connor's original work, float pools, more recently known as resource teams (DziubaEllis, 2006), have become an invaluable part of the nursing workforce within a hospital.

In addition to providing patient care, float pool RNs also may offer other benefits. For example, because the float pool nurse would be the first to float between units during times of low patient census, scheduled staff may experience increased satisfaction. In a survey of 76,000 nurses, the American Nurses Association (ANA, 2000) found that nurses who work in float pools were more satisfied with their jobs and had higher patient satisfaction scores than nurses who did not.

In this study, the differences in patient assignments between float pool nurses versus scheduled unit staff nurses were examined. Although there was a tendency for float pool nurses to receive more difficult patient assignments, this was not statistically significant (at alpha=0.05).
Research for Practice

2005a) found approximately 29% were experiencing increased floating between units. Nurses have described negative feelings about floating, ranging from unfamiliarity with the float unit to concerns about competence in providing care (Banks, Hardy, & Meskimen, 1999; Nicholls, Duplica, & Meyer, 1996). Floating also can be a source of stress for nurses (Nicholls et al., 1996). One survey revealed 73% of nurses disliked floating between units (Ornstein, 1992). A survey by Centra Health sought to determine strategies for staff retention; results indicated floating between units dissatisfied nurses (Bethune, Burnette, Cavouras, & Wolf, 2004). Consequently, Centra Health put closed staffing in place and created a float pool team that maintained competency in several areas.

Additional benefits to having a hospital float pool include cost savings. For example, an approach used when hospitals are understaffed is to hire outside agency nurses. Agency nurses cost ANW approximately $71.00 per hour per nurse. In contrast, the average ANW nurse salary is $38.00 per hour (H. Kapaun, personal communication, January 8, 2010). Therefore, it is in the hospital’s financial best interest to avoid using agency nurses if possible.

Despite the patient and staff benefits the float pool nurse provides, anecdotal reports suggest pool nurses receive the most difficult patient assignments and are treated poorly and with little consideration (Kidner, 1999; Nicholls et al., 1996; Roberts, 2004). This often dissuades nurses from joining a float pool team. In addition, the usual benefits given to float pool nurses, such as salary, choice of schedule, or choice of shift (Dziubalellis, 2006), are now the same for unit staff nurses (Cavouras, 2002).

In spite of these negative aspects associated with floating, nurses who choose to work in float pools like the variety of experiences, including exposure to new advances in nursing and medicine (C. Graham & C. Sebold, personal communication, December 3, 2011). Nurses also find working in the float pool allows for independence, gives them the opportunity to work with a variety of people, and makes them more marketable (Gosztyla & Fowler, 1998). In fact, according to Altimier and Sanders (1999), three hospitals in Ohio joined forces to create cross-trained nurses who would float between two facilities in Cincinnati. At the completion of their cross-training program, nurse leaders found the program helped with staffing, decreased nurses’ perceived stress, created unity across the hospitals, and developed a more flexible, competent, and marketable nursing.

Patients also benefit from float pools. The relationship between staffing ratios and quality of patient care has been demonstrated in the literature (Needleman, Buerhaus, Mattke, Stewart, & Zelevinsky, 2002). Without properly cross-trained float pool nurses, nursing units may not have enough nurses on a given shift to provide safe patient care. Float pool nurses can fill any variance in staffing on a unit and can ensure enough staff are available to care for patients adequately and safely.

Even though qualitative evidence published in the literature (Kidner, 1999; Nicholls et al., 1996) supports the belief float pool nurses receive the most difficult assignments, there are no published quantitative studies to support this. Because there is very little published literature on the difficulty of patient assignments given to float pool nurses, the purpose of this study was to determine any differences in patient assignments between float pool nurses and scheduled unit staff patient assignments. The null hypothesis was as follows: There is no difference in patient assignments between float pool nurses’ and scheduled unit staff nurses in a hospital setting. This study was part of the float pool’s initiatives to increase job satisfaction and employee engagement.

Methods

Setting and Sample

This comparative study was performed in medical-surgical, cardiovascular, neurology, and orthopedic inpatient units at a large, quaternary care hospital in the Midwest. The hospital is stratified in “communities” of service that include cardiovascular (ICU 16 beds; CCU 16 beds; three progressive care units of 22 beds each), medical-surgical (general 40 beds; renal 34 beds; oncology 34 beds; GU/GYN 40 beds), neurology ICU (27 beds), neurology (46 beds), spine (40 beds), and orthopedics (two units with 20 beds each).

At the study hospital, medical-surgical units are staffed at a ratio of one nurse to four patients on a day or evening shift, and one nurse to five or six patients on a night shift. The intensive care units are staffed at a ratio of one nurse to every one or two patients. The current care delivery model incorporates an all-RN staff with assistive personnel assigned to the RNs.

Inclusion criteria were the medical-surgical, orthopedic, neurology, and cardiovascular inpatient care units. Many of the specialty units within the hospital are considered closed staffed, meaning the float pool does not consistently work in those areas. The closed staffing units were not included in this study. Exclusion criteria were women’s care, mental health, emergency department, and outpatient care units.

Procedure

After obtaining approval from the hospital’s institutional review board, researchers randomly selected three 8-hour shifts (7:00 a.m.-3:00 p.m., 3:00-11:30 p.m., and 11:00 p.m.-7:30 a.m.) and two 12-hour shifts (7:00 a.m.-7:30 p.m. and 7:00 p.m.-7:30 a.m.) occurring November 1-December 13, 2007 (excluding Thanksgiving week). The staffing office was utilized to determine to which units float pool nurses were assigned. One of two research assistants (RAs) rounded on units that had float pool nurses working on them during the selected shifts. Rounding consisted of stopping by each unit to obtain the staffing sheets for the shift. The RAs were both RNs who worked in the float pool. Using the tracking tool developed for this study (see Figure 1), the
FIGURE 1. Data Collection Tool

| Patient Care Unit | Float RN | Unit RN | Difficulty - Total score | Acuity - Each patient rated 1-5 | Flow - 1 point for each admission, discharge, transfer, or surgical patient | Volume - number of patients cared for throughout the shift | Nursing assistants | Operations technicians | Operations coordinators | Qualitative comments by charge nurses such as: Total care Confused Isolation Fall risk |
|-------------------|---------|---------|--------------------------|--------------------------------|---------------------------------|---------------------------------|-----------------|----------------------|----------------------|-------------------------------------------------|-------------------------|

RAs collected data about the patient care assignments of float pool nurses and unit staff nurses for the shift from the patient assignment sheet. Occasionally, conversations occurred between the RA and the charge nurse of participating units in order to verify or clarify any questions from the RA. The RA did not speak with the individual nurses.

**Data Collection Tool**

At the time of data collection, not all patient care units in the hospital were using the same acuity system developed for the organization (see Figure 2). Because of this, a consistent data collection tool needed to be created. By using this tool, researchers could compare data from multiple units more accurately. The data collection tool was developed specifically for the purposes of this study (see Figure 1) and was used to assign a composite level of difficulty to each patient assignment. The composite level of assignment difficulty was represented with three dependent variables: patient volume, patient flow, and acuity of patient condition. Patient volume was defined as the total number of patients for whom a nurse provided care during the worked shift. Patient flow was defined as the number of admissions, discharges, transfers, or surgical patients for whom a nurse cared during the shift. The patient acuity rating was utilized on units that were using the acuity tool developed for the hospital (see Figure 2). When data on all the variables were collected, they were added. Assignment difficulty could range from 2 to 24, with a higher number indicating a more difficult patient care assignment. For example, if a nurse started with four patients, the volume would be four. If the nurse had one patient discharge and then received a surgical patient, the flow would be two. If the acuity was 16, the difficulty score would be 22 (4 [volume] + 2 [flow] + 16 [acuity]).

Float staff were RNs from the float pool (approximately 142 RNs) as opposed to unit RNs floating between units. Unit RNs were those RNs who were assigned to the patient care unit where they were working. Additional data were collected, such as any assistive personnel working on each unit. Assistive personnel included certified nursing assistants, operation coordinators, and operations technicians. Operations coordinators and operation technicians are assistive personnel who are specially trained to perform phlebotomy and obtain ECGs. Finally, a space on the data collection form titled “other” allowed for qualitative comments from the charge nurse. “Other” included patient characteristics that RNs informally identified as making the patient more complex. All patient assignments were covered with an opaque piece of paper to maintain confidentiality of information.

**Statistical Analysis**

Descriptive statistics were used to describe trends, patterns, and factors of patient assignment of float and unit nurses. The independent variable was the nurse group: float vs. non-float. Three t-tests were used to test the null hypothesis that there is no difference in patient assignments between float pool nurses and scheduled unit staff nurses in a hospital setting. The tests of significance were non-directional and conducted at the 95% confidence level. Because the assumption of homogeneity of variance was not met, the Satterthwaite method was used to compute standard errors. The SAS 9.1 for Windows software package was used for the computations.

**Results**

Patient assignments from 217 shifts were analyzed and, although there was a tendency for float pool nurses to receive more difficult patient assignments compared to unit staff nurses, this was not statistically significant (p=0.38). Although float pool nurses on average handled more admissions, discharges, transfers, and surgical patients during a shift than unit staff nurses, the difference was not statistically significant. Finally, in terms of patient volume, the mean...
for float pool nurses was 12.7 and the mean for unit staff nurses was 11.8, a difference of 0.90 ($p=0.41$). In summary, although there was a trend toward float pool nurses providing care for more acute patients, having more patient movement during the shift, and greater number of patients, the differences were not statistically significant.

The “other” category comprises patient characteristics that contribute to the complexity of care for a patient, making it more difficult for the nurse to provide care. Frequently, this includes patient characteristics that affect safety and infection control. In the “other” category (see Figure 4), confusion (n=65) was the most frequent factor identified by nurses, followed by fall risk (n=46) and isolation (n=45).
Discussion

Although results of this study were not statistically significant for measures of patient acuity, patient flow, and patient volume, there was a trend toward more difficult assignments for float pool nurses (see Figure 3). Because this is the first known published study on differences in staffing patterns between float pool nurses and unit staff nurses, no data are available to compare the results.

As identified in the literature (Cavouras, 2002), this trend has dissuaded some inpatient nurses from transferring to the float pool and may be the reason many nurses have left the float pool. Concern over consistency and equality of patient care assignments have been brought to the attention of the float pool manager. Presenting this study’s data to the nursing leadership teams has led to changes in charge nurse orientation and support of a house-wide acuity system. Also, data collection and response to staff concerns have led to increased float pool recruitment, retention, and employee engagement based on the belief float pool nurses will be supported in their work.

One surprising trend noted when analyzing the data was the frequency of the “other” qualitative data nurses used to describe patient characteristics or factors that added to the complexity of care (see Figure 4). In greater than 60 of the 217 shifts analyzed, float pool nurses cared for patients with confusion. Characteristics such as confusion may add to the complexity of care of patients. Recognizing this information may provide opportunities for recommendations of quality improvement projects related to patient care (Sendelbach, Guthrie, & Schoenfelder, 2009).

Isolation was noted in the “other” category and was cited frequently as a factor contributing to a difficult patient care assignment. Methicillin-resistant Staphylococcus aureus (MRSA) rates are increasing steadily. In 1974, 2% of S. aureus infections in an intensive care setting were caused by MRSA. In 1995, that number increased to 22%, and in 2004 reached 64% (Centers for Disease Control and Prevention, 2007). Klevens and colleagues (2007) found MRSA infections were associated with greater lengths of stay, higher patient mortality, and increased costs. An increase in MRSA means more time gowning and gloving for inpatient nurses, more money spent on isolation precautions for an organization, and increasing challenges in the management of patient care.

Patients at risk for falls also were identified in the “other” category. Affected patients pose challenges to nurses, resulting in an increase in assignment difficulty. Patient falls have been associated with understaffing or poor nursing care; patient harm can occur (ANA, 2005b), leading to increased lengths of stay and health complications. This information, along with the Joint Commission’s National Patient Safety Goals related to patient safety and infections (Joint Commission, 2009), has led to hospital-wide initiatives to reduce the number of patient falls and decrease the nosocomial infection rate.

Study Limitations

The medical-surgical and critical care results were analyzed together, affecting the measurement of patient flow and patient volume in data collection. For example, data showed over half the float pool nurses had only one patient during a shift and had no admissions or discharges (see Figure 5). Because most critical care assignments involve only one patient, this is likely reflective of a critical care assignment versus an accurate representation of a typical medical-surgical assignment.

All the shifts also were analyzed together. The volume of patients and patient flow varies from shift to shift. A day shift medical-surgical nurse may have three to five patients, including new admissions, while a night medical-surgical nurse may have six patients with no patient flow. By analyzing all shift data together, the researchers may not have represented accurately the measure of patient flow difference between medical-surgical and critical care units.

Two RAs were used to collect data for this research study. The tool was

![FIGURE 4. Other Category Qualitative Data Used to Describe Patient Characteristics/Factors Contributing to Complexity of Patient Care](chart.png)
Conclusion

Although results of this study were not statistically significant, a trend was shown of float pool nurses receiving more difficult assignments. As hospitals and other health care organizations adjust and adapt their practices to remain viable in the changing health care environment, flexible resources such as float pools will be paramount to their success. Addressing and monitoring the equality of patient care assignments of float pool nurses versus unit staff nurses may increase float pool recruitment and retention and assist health care organizations to adapt to changes in health care demand.

REFERENCES


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Staffing Patterns

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ADDITIONAL READINGS

