Comparing Functional and Team Nursing Models of Care Delivery on Patient Outcomes

By

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I certify that I have read this thesis and that in my opinion it meets the academic and professional standards required by Mountain State University for the degree Master of Science in Nursing.

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Abstract

The purpose of this research is to compare functional and team nursing models of care delivery with nurse sensitive patient outcomes in an acute medical surgical unit. There is a real need to redesign the work in the hospital so that the work can be accomplished with fewer nurses and more efficiently. The ability to have time to do the care for inpatients is important. Today, nurses need to take every opportunity to provide immediate care to the patient at that time due to shorter length of stay. Not fulfilling the patient’s plan of treatment leads to negative patient outcomes. Preexisting data were used to determine whether if there was a relationship between the nursing care models. The statistical analysis showed no significant difference between the two nursing care models. Further research comparing nursing care models involving other nurse sensitive patient outcomes is needed.
Acknowledgements

It is at this time I would like to thank those who assisted me with completing this research project. To my thesis committee, many thanks for all your time spent reading, meeting, and re-reading my paper so that my research was completed. To Dr. Foley, thanks for answering all my questions, assisting me through the IRB at Mountain State University, assisting in providing ideas to complete my paper, and providing encouragement to me. To Mary Heinen, a colleague and friend, thank you for your time guiding and assisting me through the many months until final approval of the IRB and Research and Development Committee at the Washington VAMC. You are a nursing advocate at the highest level.

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Chapter 1

Introduction

There is a real need to both recruit more people into nursing and to redesign the work in the hospital so that the work can be accomplished with fewer nurses and more efficiently. The ability to have time to do the care for inpatients is very important. In previous years if a nurse did not have the time that day to meet the needs of the patient there was always tomorrow. In the present day, nurses need to take every opportunity to provide immediate care to the patient at that time due to a shorter length of stay. There is just not enough time for the nurse to provide the education to meet the patient’s need. Not fulfilling the patient’s plan of treatment can lead to negative patient outcomes. The safety of the patient is in the care of the nurse. Findings of Stanton (2004) suggest that registered nurse (RN) staffing and the function of the nursing care model affect patient outcomes.

Nurses hold the key to achieving quality care for patients. In an effort to survive the nursing shortage and the socioeconomic forces, administration has restructured the work force to establish quality care for patients. Matching available caregiver resources with the complex needs of patients poses a challenge (Houser, 2003). Seago (2002) states that Kaiser Permanente, Northern California informally tried to reduce the RN in the total staff mix to 55% in the early 1990s and to 30% in 1995, but these changes in skill mix led to an increase in workload for RNs, and poor patient outcomes.

In response to redesigning of healthcare system, many hospitals changed their skill mix to include unlicensed assistive personnel (UAP). Lookinland, Tiedeman, and Crosson (2005) state that research has shifted to discovering the optimal number of registered nurses (RNs) that
produce the best patient outcomes with and without the use of UAP. Research has established that the higher the RN skill mix, the lower the incidence of adverse occurrences (Blegen & Vaughn, 1998). Needleman,

Buerhaus, Mattke, Stewart, and Zelevinsky (2002) examined nurse staffing levels and the quality of care in hospitals. They used administrative data from 1997 for 799 hospitals in 11 states to examine the relation between the amount of care provided by nurses at the hospitals and patients’ outcomes. The data involved collection of the number of hours of nursing care per patient day provided by registered nurses, licensed practical nurses, and nurse aides. They found that a higher proportion of hours of nursing are provided by registered nurses and a greater number of hours of care by registered nurses per day are associated with the better care for hospitalized patients.

A study by Horn, Buerhaus, Bergstrom, and Smout (2005) looked at registered nurses (RN) staffing time and outcomes of long stay nursing home residents. The retrospective study of data collected was part of the National Pressure Ulcer Long-Term Study; data were analyzed on 1,376 residents of 82 long-term care facilities whose lengths of stay were 14 days or longer, who were at risk of developing pressure ulcers but had none at the study entry. The results from Horn, et al (2005) showed that more RN direct care time per resident per day was associated with fewer pressure ulcers, hospitalizations, urinary tract infections; less weight loss, catheterization, and deterioration in the ability to perform activities of daily living; and greater use of oral standard medical nutritional supplements. More certified nursing assistant and licensed practical nurse time was associated with fewer pressure ulcers but did not improve other outcomes.
The quality of nursing care received in the inpatient setting is being assessed and reassessed as a result of findings from patients’ satisfaction surveys and the monitoring of adverse reactions that occur during the patient’s stay. The goal is to achieve optimum patient outcomes by the primary healthcare team (Whitman, 2004). Factors that contribute to poor patient outcomes include the acuity level during a patient’s stay, the quality of care provided by nursing staff, and the patient’s perception of the care received (Stanton, 2004).

Alternative solutions in providing quality care need to be considered. The redesigning of roles in the nursing model of care and establishing teamwork are essential component in the vision for the healthcare workforce (Allen, 2003). Evaluating the current model of care will provide an opportunity to introduce a professional philosophy that reflects professional values, capitalizes on professional expertise and enables the hospital to become more adaptive, productive, and competitive (Wenzel, 2004). The model of care must be cost effective and still provide high quality standards of care in relationship to patient safety and the delivery of nursing care (Bartels & Bednash, 2005).

The model of care for the patient must be efficient for the nursing staff to enhance the quality of patient care and not overwhelm the staff. The age of the current workforce is an important factor in the current nursing shortage because nursing can be physically and mentally demanding even to the young. Buerhaus, Staiger, and Auerbach (2000) noted that the average age of the working nurse was 44 years. Therefore the redesigning of the patient care delivery model needs to support the older workforce, include new technology to reduce the physical demands, and offer greater flexibility to scheduling for the nurse.

Studies examining the relationship between care delivery models and patient outcomes
are limited.

Statement of the Problem

There are many nursing models for care delivery, but few have been studied with regard to patient outcomes. Keeping patients safe is imperative and nursing care affects patient safety (Page, 2004). Using lower nurse staffing levels has been linked to adverse patient outcomes. According to Radwin, Washko, Suchy, and Tyman (2005), the goals of nursing extend beyond ensuring that care is safe and that adverse events do not occur. Goals of care include the achievement of desired health outcomes along with the avoidance of adverse patient outcomes (Radwin et al. 2005).

Statement of Purpose

The purpose of this study is to compare functional and team nursing models of care delivery with nurse sensitive patient outcomes in an acute care medical surgical unit.

Definition of Terms

**Nursing care model** is a way of organizing at the unit level to facilitate the delivery of nursing care to the patients. There are four common nursing care models: functional nursing, team nursing, primary nursing, and case management nursing. The two models of care used in this study are the functional nursing and team nursing.

**Functional nursing** is a model in which care is organized and provided according to the task. For example the nursing assistant would provide the personal care, the licensed practical nurse would administer medications and perform complicated treatments such as irrigations of wounds, and application of medicated ointment, and the registered nurse would perform assessments, administer medications and care to central lines, administer blood and blood by-
products, and so forth. Staff are practicing within their scope of care as delegated by the registered nurse (Davis, 1993).

*Team nursing* is a model that employs an assigned group of health care personnel whose varied skills are directed by a team leader to provide total services for a specific group of patients, which includes all tasks for a given patient. The formation of a team is cooperative and collaborative. The team includes a professional nurse who provides leadership, and health personnel who are technically proficient in their respective roles and who participate in a group effort. The care of the patient is conceived of as a group task, with observations, interpretations, and evaluations mutually investigated and shared. The team leader’s responsibility is to coordinate, supervise, and engage the full participation of coworkers in the construction and implementation of nursing care plans for the well-being of the patient (Davis, 1993).

*Nurse Sensitive Indicators-Patient Outcomes* refer to adverse reactions or patient complications as measured by patient satisfaction survey results, medication errors, patient falls, and hospital acquired pressure ulcers. The data are collected and recorded within the facility.

**Conceptual Framework**

Imogene King developed a conceptual model for nursing with the idea that human beings are open systems interacting with the environment (King, 1981). The central focus of King’s framework is man as a dynamic human being whose perceptions of objects, persons, and events influence his behavior, social interaction, and health (King, 1981). King’s conceptual framework includes three interacting systems with each system having its own distinct group of concepts and characteristics. These systems include personal systems, interpersonal systems, and social systems. King’s basic assumption maintained that nursing is a process that involves caring for human beings with health being the ultimate goal (Torres, 1986). The three systems that involve
King’s conceptual framework provided the basis for the development of the Goal Attainment Theory.

The personal system referred to in King’s framework is the individual. The concepts within the personal system and fundamental in understanding human beings are perception, self, body image, growth and development, time, and space (King, 1981). King viewed perception as the most important variable because perception influences behavior. King (1981) stated the following:

“An individual’s perceptions of self, of body image, of time and space influence the way he or she responds to persons, objects, and events in his or her life. As individuals grow and develop through the life span, experiences with changes in structure and function of their bodies over time influence their perceptions of self.” (p. 87)

Interpersonal systems involve individuals interacting with one another. The concepts associated with the interpersonal systems are interaction, transaction, communication, role and stress. Communication between the nurse and the client can be classified as verbal or nonverbal.

The third and final interacting system in King’s model is the social system. Social systems are group of people that share common goals, interests, and values. Social systems provide a framework for social interaction and relationships, and establish rules of behavior and courses of action (King, 1981). It is within these organizations that individual’s beliefs, attitudes, values and customs are formed.

The relationships between these three systems led to King’s Theory of Goal Attainment. King (1981) stated, “Although personal systems and social systems influence quality of care, the major elements in a theory of goal attainment are discovered in the interpersonal systems in which two people, who are usually strangers, come together in a health care organization to help
and to be helped to maintain a state of health that permits functioning in roles.” (p.91) King believed that interactions between the nurse and the patient lead to transactions that result in goal attainment. The mutual goals and goal attainment transactions result in enhanced growth and development of the patient (King, 1981).

After careful analysis of King’s Conceptual Framework and Theory of Goal Attainment, it is evident that this model can be implemented in the medical surgical setting. The concepts associated with the personal system can be integrated into the assessment phase of the nursing process of care. The nurse takes into account the patient’s feelings in regard to perception, self, body image, growth and development, time, and space. The nurse, through the assessment process, establishes with the patient a treatment plan. The patient is educated as to the treatment plan. Communication is very important in explaining the process of establishing treatment plan to meet the goals. Mutual goal setting would only be successful if the patient trusted that the goals would benefit him or her. The goals must be attainable without interfering with their daily lives, or the goals will most likely go unmet. If the plan is not attainable, then the process must be reevaluated and the process starts all over again. Through this process the patients are provided with quality care. Patients and families perceive that care during their stay in the hospital was of high quality and adverse outcomes are decreased.

Significance of the Study

The nursing shortage is very much a reality. The shortage of nurses is widespread geographically throughout the world and is likely to deteriorate more before it improves. Berliner and Ginzberg (2002) suggest that the average age of the nurse workforce is 45.2 years, with only 9.1% younger than 30 in 2000. Upenieks (2003) states, “Although it exists in all practice settings, the nursing shortage is greatest in acute care hospitals.”
Stanton (2004) states, “The U. S. Department of Health and Human Services estimates that nationally, by 2020, hospitals will face a shortage of almost 800,000 nurses—a 29% vacancy rate up from the current rate of 8%. The nursing workforce is “aging out” of its profession, shrinking the healthcare workforce; meanwhile, patient volume continues to grow as baby boomers demand more services.”

Buerhaus, Donelan, Ulrich, Norman, and Dittus (2006) states that even though there was a decrease in the proportion of RNs’ perceiving a nursing shortage in 2004, RNs observed the shortage had negatively affected patient care processes, hospitals’ capacity, and nurses’ themselves. “The shortage had frequently or often negatively affected the timeliness of care; influenced patient centeredness, effectiveness, and efficiency of care; and the shortage had negatively affected the safety and equity of care “(Buerhaus, et al 2006).

The move has gone beyond retaining nurses to engaging nurse into the workforce in helping to create a better workplace and better nursing profession (Buerhaus, 2001). Throughout the last of the twentieth century until the present time numerous changes in nurse staffing and care delivery within hospitals have occurred due to redesigning to meet the fiscal constraints of healthcare (Hall & Doran, 2004). Consumers are fearful that quality of care will suffer. Federal and state legislatures are assigned to create computerized assessment data bases for the evaluation of patient outcomes, recommendation for staffing ratios and nursing staff mix in health care settings, and regulations for quality assurance of health care service (Bostick, Riggs, & Rantz, 2003).

Research Questions

Is there a difference in number of falls based on the two nursing care models in use?
Is there a difference in number of pressure ulcers based on the two nursing care models in use?
Is there a difference in number of medication incident based on the two nursing care models in use?

Is there a difference in patient satisfaction scores based on the two nursing care models in use?

Is there a difference in total RN hours within the two nursing care models?

Summary

Different nursing care models have not been widely studied with regards to their relationship to patient care outcomes. This study will provide a contribution to that body of knowledge.
Chapter 2

Review of Literature

A study conducted by the International Hospital Outcomes Research Consortium to design and implement a cross-national replication of the center’s U.S. research on the effects of nurse staffing and organization on patient outcomes and nurse retention. The study was conducted in 711 hospitals in five countries. The findings from the United States and Canada showed that nurses are more likely to be dissatisfied with working conditions than with their wages as compared to England, Scotland, and Germany. One-third of the nurses from United States and Canada were confident that their patients were adequately prepared to manage at home upon discharge, and nearly half of them believed that the quality of patient care in their institutions had deteriorated in the past year. The work climate in these hospitals are reported as having not enough registered nurses to provide high quality care and not enough staff to provide the quality care needed for the patient. Deterioration in the quality of care was less commonly reported in the European countries. United States and Canadian nurses reported other incidents occurred regular such as medication errors, falls, patient and family complaints and verbal abuse directed toward nurses. The climate in the hospital is unsatisfying to patients and their families as it is to nurses. The European nurses surveyed had a more positive rating of the patient’s preparedness for discharge (Aiken, Clarke, Sloane, et al 2001).

Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky (2002) performed a study to determine if there was a relationship between nurse staffing in hospitals and quality of patient care. The study analyzed medical and surgical patient discharge abstracts in eleven states. Medical patients who received care in hospitals whose nursing staff had a smaller proportion of nursing hours from registered nurses had longer lengths of stay in the hospital and higher rates of
urinary tract infections, pneumonia, shock and cardiac arrest, upper gastrointestinal bleeding, and failure to rescue. The same study showed surgical patients who received care in hospitals whose nursing staff had a smaller proportion of nursing hours from registered nurses had higher rates of urinary tract infections. Patients treated in hospitals with high RN staffing have lengths of stay 3-5% shorter and rates of complications 2% to 9% lower than do hospitals with low RN staffing. Decreased adverse outcomes are associated with higher levels of staffing by registered nurses (Aiken, Clarke, Sloane, Sochalski, & Siber, 2002).

A great deal of research has been done on the relationship between nurse staffing and adverse patient outcomes. Aiken, Sloane, Lake, Sochalski, and Weber (1999) studied the effects of the hospital organization and outcomes. The study compared specialized AIDS units, in non-magnet hospitals and conventional general medical units in non-magnet hospitals with general medical units in magnet hospitals in evaluating patient outcomes. Research indicated that both nurse outcomes and patient outcomes are better in the specialized and magnet hospital units than in conventional general medical units. Nurses are specialized units and magnet hospital units showed significantly lower levels of burnout or emotional exhaustion. Patients were more satisfied with the quality of their nursing care, and were more likely to have been cared for by a primary nurse and to have discussed end of life treatment, which are indicative of higher quality of care (Aiken, et al, 1999).

In response to redesigning of healthcare system, many hospitals changed their skill mix to include unlicensed assistive personnel (UAP). Lookinland, Tiedeman, and Crosson (2005) state that research has shifted to discovering the optimal number of registered nurses (RNs) that produces the best patient outcomes with and without the use of UAP. It has been established that the more RNs available to care for patients, the fewer the number of adverse events. Research
has shown that the higher the RN skill mix, the lower the incidence of adverse occurrences (Blegen & Vaughn, 1998).

Needleman, Buerhaus, Mattke, Stewart, and Zelevinsky (2002) studied nurse staffing levels and the quality of care in hospitals. They used administrative data from 1997 for 799 hospitals in 11 states to examine the relationship between the amount of care provided by nurses at the hospitals and patients’ outcomes. The data involved collection of the number of hours of nursing care per patient day provided by registered nurses, licensed practical nurses, and nurse aides. Findings were that a higher proportion of hours of nursing are provided by registered nurses are associated with higher quality care for hospitalized patients.

A study by Horn, Buerhaus, Bergstrom, and Smout (2005) looked at registered nurse staffing time and outcomes of long stay in nursing home residents. The retrospective study was part of the National Pressure Ulcer Long-Term Study; data were analyzed on 1,376 residents of 82 long-term care facilities whose lengths of stay were 14 days or longer, who were at risk of developing pressure ulcers but had none at the study entry. Horn, et al’s (2005) results showed that more RN direct care time per resident per day was associated with fewer pressure ulcers, hospitalizations, and urinary tract infections; less weight loss, catheterization, and deterioration in the ability to perform activities of daily living; and greater use of oral standard medical nutritional supplements. More certified nursing assistant and licensed practical nurse time was associated with fewer pressure ulcers but did not improve other outcomes.

Aiken, Clarke, and Sloane (2000) conducted a survey in twenty two nonfederal general acute hospitals across the United States to measure elements of nurse practice environment in each hospital. Twenty of the hospitals were magnet and the other two were major teaching hospitals. They used subscales derived from the Nursing Work Index-Revised. The element of
practice included resource adequacy, support for professional nursing practice provided by nurse managers, and status for nursing in the hospital organization. Findings showed significant decreases in each of the dimensions measured for all of the twelve hospitals for which data were available for 1986 and 1998. Findings that link organization of care to outcomes for both nurses and patients showed that nurse control over the practice setting explains the variation in patient satisfaction. This finding is consistent with the thesis that organization of care has an important effect on patient outcomes of nurse staffing (Aiken, Sloane, Lake, Schalski, & Weber, 1999).

Sochalski (2004) assessed whether nursing workload is associated with nurses’ reports on the quality of nursing care in hospitals, and whether workload is related to indicators of the process of nursing care that also are associated with quality care. The study showed that workload does have effect on quality of nursing care. Additionally, it revealed the significant association between quality assessments and patient safety problems suggests that nurses’ appraisals of the quality of their care are congruent with the ratings on an important indicator of the product of that care. The analyses suggest that although workload could be one factor associated with greater frequency of patient safety problems, other features in the work environment are also playing important roles and could be interfering with nurses’ efforts to reduce their occurrence, leading to lower assessments of the quality of care.

The nurse shortage has escalated the challenge to establish appropriate nurse staffing levels. Nurses are concerned about declining levels of quality of care as adverse events increase. Houser (2003) conducted research on a model for evaluating the context of nursing care delivery. Results of the study showed that as nursing staff becomes more competent the incidence of adverse events decline. The data suggest that a linkage between teamwork and a strategy for achieving quality patient outcomes results in a lower incidence of patient adverse events.
Specific quality patient outcomes as a result of teamwork can influence coworker support, and respecting the autonomy of professional nurses. A focus on developing strong leaders can reduce the staff instability and cycle of turnover that often accompany increased demand (Houser, 2003).

A high level of teamwork has been found to lead to greater staff satisfaction. Rafferty, Ball, and Aiken (2001) demonstrated that nurses who report a higher level of teamwork are more satisfied with their jobs, plan to stay in them, and are likely to have a lower burnout score. Other research links nurse job satisfaction with team building interventions (Dimeglio, Padula, & Piatek, 2005).

Providing care to a group of people require nurses to be more efficient and use their time more effectively. Various types of care delivery models are designed to meet the goals of efficient and effective nursing care. The most common nursing care delivery models include functional nursing, team nursing, primary nursing, and case management nursing. Case management nursing or patient focused care is a model that uses RNs as case managers and UAP in expanded roles such as drawing blood, performing EKGs, and performing certain assessment activities (Lyon, 1993). The primary nursing care model uses an all-RN staff to provide all direct care and allows the RN to care for the same patient throughout the patient’s stay (Lyon, 1993). Team nursing care uses the RN as a team leader who supervises lesser trained patient care providers and performs direct patient care that lesser skilled staff is not qualified to provide. Functional nursing uses the staff to function in a capacity such as medication nurse or treatment nurse (Davis, 1993).

Research on the organization of nursing has been concerned with nursing outcomes such as job satisfaction and turnover. As noted from the above research there is also findings on
patient outcomes as related to skilled mix nurse staff. Studies examining the relationship between care delivery models and patient outcomes are limited.
Chapter 3

Methodology

There is a need to provide high quality patient care through nursing care models. The quality of care received from nursing is evaluated through nurse-sensitive patient outcomes. Patients answer questions upon discharge from a survey they receive in the mail that is distributed from Central Office of the Veterans Administration on how they perceived their care as an inpatient. Adverse reactions of patients as inpatients are tracked by quality management and wound and skin nurse of the medical center. The purpose of this study is to compare the relationship between Functional and Team nursing care models and nurse-sensitive patient outcomes.

Research Design

The study was conducted on a thirty-four bed acute care medical surgical unit at a rural Veterans Health Administration hospital. The study examined the nursing models used in two different time frames in relationship to RN hours, falls, pressure ulcers, medication errors and patient satisfaction scores. From October 1, 2003 to June 30, 2004, the nursing care model consisted of a mixed staff providing care to assigned patients. Registered Nurses (RN) and License Practical Nurses (LPN) were assigned (6) patients each. The RN not only had their own assignment, but was assigned to an LPN to assist in carrying out task that were not within their scope of practice. Tasks performed by the RN consisted of admitting and assessing patients, performing transfusions, central line care and Intravenous medication administration, among others. The nursing assistant was assigned to assist the RN with patient care. The model of care that was used during this time frame was the functional nursing model.

The nurse executive met with the nurse manager and requested to change the care model
on the medical surgical unit to team nursing model. From July 1, 2004 through September 30, 2004 staff was preparing to implement the team model, by receiving education and trying out the model. The final plan for team nursing consisted of establishing two teams on the unit. Each team consisted of 17 patients. The nursing staff consisted of RNs, LPNs, and NA which is recognized as a skilled mix. There were 3-4 skilled mixed nursing staff on each team. Each team had a team leader who is the registered nurse who coordinates and delegates staff to perform tasks according to their scope of practice. The team leader also assesses critical situations, informs the provider, communicates with team players, and follows through with treatment plan. Together, the team of 3-4 skilled mix nurses, provides collaboratively and together the care to patients. From October 1, 2004 to June 30, 2005, the team nursing care model was used to guide care to patients.

The sample size consisted of all patients admitted to the medical surgical unit during each time frame October 1, 2003 to June 30, 2004 and October 1, 2004 to June 30, 2005. The total number of RN hours of each model of care was collected from each time frame to evaluate the nurse-sensitive patient outcomes. During the time frames quality nursing-sensitive patient outcome indicators were collected by the management team of the medical center. Patient satisfaction scores were obtained by using the Survey of Health Experiences of Patients (SHEP) that is distributed by mail from the Performance Analysis Center for Excellence (PACE) of the Office of Quality and Performance (OQP). The quality indicators include patient satisfaction SHEP survey results, medication errors, patient falls, and pressure ulcers. All existing data was kept in a locked cabinet by each respective owner of the data with no personal patient information identified.
Permission to conduct the study was granted through the Institutional Review Board at Mountain State University; The Institutional Review Board at Washington, DC VA Medical Center, and Research and Development Committee at Washington, DC VA Medical Center.

Research questions to be answered:

Is there a difference in number of falls based on the two nursing care models in use?
Is there a difference in number of pressure ulcers based on the two nursing care models in use?
Is there a difference in number of medication incident based on the two nursing care models in use?
Is there a difference in patient satisfaction scores based on the two nursing care models in use?
Is there a difference in total RN hours within the two nursing care models?
Chapter 4

Results

The purpose of this study was to determine whether there is a difference in the care patients receive, based on the type of nursing model in use. The number of RN hours was examined relative to each model, to see if that variable might confound the results.

The sample size consisted of the total number of patients admitted to the medical surgical unit during the nine month period for each nursing model. Medical Administration provided the total number of patients to the medical surgical unit. All admissions except for 23 hr observation patients were included in the count. From October 2003 to June 2004 when the functional nursing model was in use, there were a total of 1336 patients admitted to the medical surgical unit. From October 2004 to June 2005 when the team nursing model was in place there were 1535 patients admitted to the medical surgical unit.

Preexisting data were collected from Quality Management on falls and medication errors. The Wound and Skin Integrity RN provided the data on hospital acquired pressure ulcers. Preexisting Patient Satisfaction data were obtained from the Special Assistant to the Director of the Medical Center. Existing data on the RN hours were obtained from the Nursing Scoreboard that is provided monthly by the nurse manager to the Associate Chief of Acute Care of Nursing.

The data were analyzed using the statistical method of the paired $t$ Test. The paired $t$ Test was used to determine significant differences between two measures of independent and dependent variables (Burns & Grove, 2001). The $t$ test that has a significant difference between groups provides no information on the magnitude of the difference. The level of significance tells you nothing about the magnitude of the difference between the groups (Burns & Grove, 2001). In this study the data collected from the patient outcomes were analyzed to determine if
there was a difference between functional and team nursing care models. The paired \( t \) Test has a confidence interval of 95%. The results of the paired \( t \) Test with each research question follows (See Table 1).

The first research question asked whether there was a difference in number of falls based on the two nursing care models in use. The statistical analysis showed that the difference between nursing care models in respect to falls was \( (t = 1.000, p = 0.347) \). There was no significant difference noted between functional and team nursing in relationship to the number of falls that occurred.

Research question two asked whether there was a difference in number of hospital acquired pressure ulcers based on the two nursing care models in use. The statistical analysis showed that the difference between nursing care models in relationship to hospital acquired pressure ulcers was \( (t = 1.206, p = 0.262) \). There was no significant difference noted between functional and team nursing in relationship to the number of hospital acquired pressure ulcers that occurred.

The third research question addressed whether there was a difference in number of medication incidents based on the two nursing care models. The statistical analysis showed that the difference between nursing care models in relationship to medication incident was \( (t = -1.069, p = 0.316) \). There was no significant difference noted between functional and team nursing in relationship to the number of medication incidents that occurred.

A fourth question addressed the difference in patient satisfaction based on the two nursing care models. The statistical analysis showed that the difference between nursing care models in relationship to results of the patient satisfaction survey was \( (t = -0.682, p = 0.514) \). There was no significant difference noted between functional and team nursing in
relationship to results of the patient satisfaction survey.

Research question five examined whether there was a difference in total RN hours within the nursing care models that would affect the care delivery. The statistical analysis showed that the difference between nursing care models in relationship to total RN hours was ($t = 0.811, p = 0.441$). There was no significant difference noted between functional and team nursing in relationship to total RN hours within each nursing care model.

The statistical analysis of the number of admissions showed a significant difference between nursing care models ($t = -2.934, p = 0.019$), with more admissions occurring in the time of the use of the team nursing model.

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Summary of findings

These data revealed no statistical significant differences in nursing outcomes, when the two nursing care models, functional and team, were compared.
Chapter 5
Conclusion

The purpose of this study was to compare functional and team nursing models of care delivery with nurse sensitive patient outcomes in an acute care medical surgical unit.

The statistical analysis showed that there was no significant difference between the nursing care models and any of the patient outcomes. The literature was limited on examining the relationship between care delivery models and patient outcomes.

The statistical analysis comparing the nursing care models and RN hours showed no significant difference despite greater RN hours noted with the functional nursing care model than with team nursing care model, and a statistically significant increase in patient volume. However, there was approximately 50% decrease in hospital acquired pressure ulcer and increase 11% with patient satisfaction score. While statistical significance was not achieved on this variable, nonetheless a decrease in pressure ulcers from eleven to five maybe clinically significant. These findings disagree with the study by Seago (2002) when Kaiser Permanente, Northern California informally tried to reduce the RN to total staff mix to 55% in the early 1990s and to 30% in 1995. Those changes in skill mix led to a perceived increase in workload for RNs, and poor patient outcomes. The literature indicates that the organization of care has an important effect on patient outcomes and nursing staff (Aiken, et al. 1999 and Aiken, et al. 2000). This would bring to the conclusion clinically that with the shortage of RNs predicted in the workforce that working as a team in providing patient care could enhance patient safety and quality of care. Rafferty, et al. (2001) and Dimiglio, et al. (2005) have concluded that a high level of teamwork has been found to lead to greater staff satisfaction in their jobs, plan to stay in their position and likely to
have a lower burnout score.

Kings conceptual model and Theory of Goal Attainment provides a means of measuring the effectiveness of patient care. According to King (1981), nursing interventions are planned to facilitate the quality of interaction by increasing perception and the quality of interaction. Outcomes are identified as goals are attained. The goals attained in this research were the results of nurse-sensitive patient outcome data collected.

Limitations

This study is not without limitations. There is a need to evaluate the turnover of staff during the time frames; total nursing hours of RN and LPN fee basis, regular unit RNs, LPNs and Nursing Assistants; demographics of the nursing staff such as age, degree, certification, year’s experience; and staffing patterns of each model could influence the nursing practice affecting patient outcomes.

During the period of time from July 30, 2004 to October 31, 2004, staff was being educated in developing the team approach of caring for patients. Problems with staff and their response to change could affect patient outcomes.

Patient demographics such as age, sex, service connection, as well as diagnosis, social problems, differencing between medical and surgical patient, and acuity of patient on admission could affect the nursing practice in relationship to patient outcome.

Recommendations

Incorporating other Veterans Health Administration medical centers, and private and public hospitals would provide a larger sample size that could influence the nursing practice affecting patient outcomes.

Future research comparing newer nursing care models built by theorists with nurse-
sensitive patient outcomes might provide evidence on which to base practice.

Summary

The challenge for the healthcare administration is to restructure the work force to establish quality care for patients. Matching available caregiver resources with the complex needs of patients poses a challenge (Houser, 2003). The nursing shortage is truly a reality that is not getting better. The high acuity of patients in the hospital requires higher skilled, competent registered nurses to provide their care. This study revealed that the nursing care models examined did not show a statistically significant difference in the patient outcomes identified. Clinically significant findings, however, may be in the decrease of pressure ulcers and increase in patient satisfaction scores. Further work might illuminate this discussion. Nursing needs to continue to examine various models of care in terms of patient outcomes.
References


Bostick, J. E., Riggs, C., & Rantz, M. J. (2003), Quality measurement in nursing an update of where we are now. *Journal of Nursing Care Quality, 18*(2), 94-104.


registered nurse workforce in the United States. *Nursing Economics, 24*(1), 6-12.


Lyon, J. (1993). Models of nursing care delivery and case management: Clarification of


prevention program. *Nursing Economics*, 21(1), 7-13, 23.


Appendix A
In accordance with the requirements specified on page 7 of Mountain State University's *Manual of Policies and Procedures Governing Research*, the Institutional Review Board (IRB) of Mountain State University has reviewed this research proposal. Specific areas of review were:

- **Nature of the research:** "The Relationship Between Two Nursing Care Models and Patient Outcomes"

- **Privacy protection procedures:** There is no need to maintain specific/personal information on individual participants; therefore, reasonable record maintenance protocols are sufficient.

- **Data safeguard procedures:** Reasonable care.

- **Maintenance of data after research is complete- recommendation is for destruction of any records that might reveal the specific identity of the participants upon completion of the paper"
Conclusion of Review:

- This research is approved. There is no risk of harm.

Wayne E. Ellis, PhD., CRNA
Chair, Mountain State University IRB
Research & Development Committee  
Washington DC VA Medical Center  
Washington, DC

<table>
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<tr>
<th>APPROVAL - Previously Tabled Protocol</th>
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<tbody>
<tr>
<td>Date: February 22, 2007</td>
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<tr>
<td>From: Stephen I. Deutsch, M.D., Ph.D., Chairperson</td>
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<tr>
<td>Investigator: Blanch I. Zimmerman, RN</td>
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<tr>
<td>Protocol: The Relationship of Two Nursing Care Models and Patient Outcomes</td>
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<td>ID: 01076  Prom#: 0001  Protocol#: N/A</td>
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The following items were reviewed and approved at the 01/26/2007 meeting:

- Research Protocol (09/30/2006)
- Exemption from IRB Review - request (09/30/2006)
- Financial Disclosure Form - Zimmerman, B. (09/30/2006)
- HIPAA Worksheet (10/31/2006)
- Initial Review Submission Form (09/30/2006)
- Request for expedited review
- Personnel Roster (10/31/2006)
- Project Data Sheet - w/abstract (10/31/2006)
- Protocol Face Sheet (10/23/2006)
- Scientific Review - #2 (12/31/2006)
- Scientific Review - #1 (11/21/2006)
- Scope of Practice (protocol specific) - Zimmerman, B. (10/31/2006)

Having met the following contingency, this protocol is now fully approved by the R&D Committee:

Review and approval of your response to scientific issues to make sure all the issues were met.

Approval by each of the following is required prior to study initiation:
- Human Studies Subcommittee (IRB) [Approval Granted 12/04/2006]
- Research & Development Committee

As the principal investigator involved in this human studies research, you are aware that: (a) if you conduct research outside of this approval, it will affect your standing in the VA; and (b) you will be held responsible for ethical breaches in the conduct of your research, and these problems may affect your ability to do research with the VA in the future.