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The Impact of Formal Nursing Education and Nursing Experience on Medication Errors Made by Nurses in the Hospital Setting

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THE IMPACT OF FORMAL NURSING EDUCATION AND NURSING
EXPERIENCE ON MEDICATION ERRORS MADE BY NURSES IN THE
HOSPITAL SETTING

by

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Abstract

The occurrence of medication errors is a problem that is common to health care systems worldwide. There has been countless research performed to try to determine the cause of medication errors. It has been found that shifts worked, pharmacy involvement, miscommunication and multiple other elements contribute to the occurrence of medication errors. The primary person involved in medication administration is the nurse. This study was performed at a Western North Carolina hospital examining recorded medication errors from January 1, 2007 through December 31, 2007. Using a retrospective, descriptive, correlation design (n=293), the study determined that a significant correlation exists between the level of education (Diploma, Associate, Bachelor and Master Degree in Nursing) and years of experience of nurses to medication errors among nurses in the hospital setting.

Acknowledgements

I would like to thank the many people in my life that have made this accomplishment possible. Without the constant support of my core support, this would have not been possible. First, and foremost, is God. To which all glory is given.

My husband, Phillip, who has always supported me in obtaining my goals and holding our family together in every way, I love you. Always. To my children, Drew, Bret and Callie. Thank you for sacrificing many days without me and many nights without bedtime stories. You all are my inspiration and encourage me to "live strong". Always.

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Chapter I

Introduction

Medication errors are an ongoing phenomenon that continues to occur in health care despite the many studies that have been focused on identifying causes and implementing interventions to decrease the errors. The definition of a medication error can range from the wrong dose, patient, drug, route or time to failure to monitor a patient for the effects of the medication (Inlander, Levin, & Weiner, 1988, p. 137).

Each year, it is estimated that 1.3 million individuals are injured by treatments that were given to them with the intention of helping them. Of this same population receiving treatment, approximately 180,000 individuals die secondary to medication errors (Wolf, 2006).

Groups instrumental in the advancement of health care continue to address the importance of medication safety and the epidemic of medication errors. The Institute of Medicine (IOM) addresses this epidemic in investigations, reports and evidence- based practices. The United States Congress, spurred by the urging of the Senate Finance Committee, mandated that Centers for Medicare and Medicaid Services sponsor a study to address the problem of medication errors (The Institute of Medicine (IOM), 2006). The Joint Commission, the agency that is charged with evaluating and accrediting over 15,000 health care agencies and programs in the United States, has placed medication safety on the National Patient Safety Goals (The Joint Commission, 2008). These goals provide hospitals with goals to achieve and requirements to fulfill. These, in turn, prompt hospitals and health agencies to create and initiate policy and procedures to meet the standards expected of the Joint Commission.

While many studies have been performed to identify the causes of medication errors, few have been performed solely targeting the nurse's experience and formal education. The majority of medication errors occur during the administration phase (Maricle, Whitehead, & Rhodes, 2007). This places the greater amount of the responsibility of "double checking" on the nurse. This study seeks to examine if nurses in hospitals are adequately equipped to shoulder this responsibility and potentially when that responsibility is obtained. This study also seeks to identify potential needs for continuing education regarding medication errors. This will be done by examining the influence of nursing education and experience on medication errors in the hospital setting.

Background

Medical mistakes have been appearing in the news at an alarming rate. Errors occur in all industries but those that occur in the healthcare industry are well publicized (Institute Of Medicine, 2000 p.158). Health care is one large system that is composed of many smaller interacting systems (The Institute of Medicine (IOM), 2006, p. 158).

Medication plays a vital part in today's healthcare regimens and treatments. Therefore, those that are involved in administering this element of healthcare are under the watchful eyes of many governing agencies. Regulatory and oversight processes as well as performance standards and expectations for health professionals are defined through licensure, accreditation and certification (ANA).

Research has been performed to identify many facets of the medication administration process and the errors that occur during the process. The common link between medication administration and the role of the registered nurse is one that has long been recognized and examined. Benner stated that "because nurses are ever present

and coordinate the multiple interactions the patient has with the health care team, they are in a position to prevent and detect errors" (2001, p.21).

The profession of nursing has made great strides in identifying and improving the nurse's role and responsibility in medication administration and errors. The goal of the discipline of nursing is to make provisions to increase the quality of life according to the patient's, family's and community's perspective (Parse, 1998, p. 69). All nurses are responsible for practicing in accordance with recognized standards of professional nursing practice and each nurse is held accountable for the quality of care within the scope of practice (American Nurses Association, 2003, p. 8). In order to obtain licensure, one must graduate from an accredited nursing school and be qualified by national examination (American Nurses Association, 2003, p. 76).

The nurses involved in medication administration are prepared for this task beginning in nursing school. These programs provide students with backgrounds in pharmacology and how it relates to the physiological status of clients. The purpose of nursing education programs is to pass on the body of nursing knowledge to others that will move into the profession to practice, teach and conduct research (Parse, 1998, p. 80).

The programs that are attended by nurses have been under constant pressure to update and maintain curriculum that can keep pace with the rapidly advancing healthcare system into which students will be sent. There is a continual need in nursing education to ensure adequate learning opportunities. Many believe that this initial exposure should occur early in undergraduate training (The Institute Of Medicine (Iom), 2006, p. 146)

Each level of nursing degree obtained from an accredited nursing program places emphasis on different areas. Different levels could impact the medication administration process in the healthcare setting. American Nurses Association (ANA)

has consistently affirmed that the baccalaureate degree in nursing is the preferred educational requirement for basic nursing practice (American Nurses Association, 2003, p. 76). Others would propose that it is not the extent of formal education but the extent of nursing experience that determine the level of nursing care given.

The level and area of experience may have an affect on the level of nursing care and, in turn, on the administration of medications and its effects on the client being cared for in the health care setting. It has been suggested that nursing has moved from a global to a more specific way at looking at the nursing field (American Nurses Association, 2003, p. 47). Nurses must be able to think beyond the physical process of administering a medication and be able to think holistically and project what the possible implications for the client may be. Benner states that clinical knowledge is gained over time and that the expert nurse sees the situation as a whole using past experiences to guide her practice (Benner, 2001, p. 4). It has been proposed that the more experience that a nurse has, the more comfortable they will be in the clinical setting. There has been little evidence in research that has linked this idea to the medication administration process.

The incidence of medication errors is not an issue that is confined to Western countries. Studies have been conducted examining health systems around the globe. A study in London revealed that the greatest need was frequent updates on drug calculations (Frye & Dacey, 2007). It has been suggested that different nursing shifts have a bearing on the number and severity of medication errors (Madegowda, Hill, & Anderson, 2007). McBride-Henry and Foureua (2006) concluded that in their study performed in New Zealand, that nurses were merely *delivering* unsafe practices. Many other aspects of health care have been noted to attribute to the occurrence of medication errors.

Theoretical Framework

This study was guided by the From Novice to Expert Model by Patricia Benner. The model uses an adaptation of the Dreyfus Model of Skills Acquisition. The Dreyfus Model of Skills Acquisition was originally developed in a research design by Herbert and Stuart Dreyfus to study the performance of pilots in emergency situations (Benner, 2001, p. xxiii). Herbert Dreyfus was a philosophy professor at Berkley and followed the works of Heidegger on phenomenology.

Phenomenology, as taught by Heidegger, was the study of humans as self-interpreting and humans are described by the individual's concerns, practices and life experiences (Peyton & Comb, 1990). Heidegger believed that humans are engaged in the context of where they are and that practical knowledge occurs when an individual is involved in the situation from which one is to learn (Peyton, et.al., 1990). Heidegger stated in 1962 that experience results when preconceived notions and expectations are refined and challenged (Benner 2001, p. 3).

Patricia Benner expands on the teachings of phenomenology and explores the difference between "know-how" and "know-that". Benner stated that knowledge development in a practice type discipline "consists of extending practical knowledge 'know-how' through theory based scientific investigations and through the charting of the existent 'know-that' developed through clinical experience in the practice of that discipline" (2001). "Know how" is described by Benner as the practical knowledge that is gained by and through skills acquisition and "know that" is the knowledge that is gained from and through the theoretical explanations of the skills and the establishment of casual relationships (Tomey & Alligood, 2002, p. 167) Many nurses in the clinical area will attest to the fact that knowledge of how to perform a task is often obtained

before the knowledge of why the task is being performed. Benner uses this idea to further explore and discover the knowledge that accrues over time. (Tomey, et al., 2002, p. 168).

The Dreyfus Model of Skills Acquisition is situational and describes five levels of skills acquisition and development. The model was adapted to nursing based on a study involving 21 pairs of nurses from six hospitals that underwent two hour interviews. The interpretation of the data from the study was used to identify meaning and content of nurses' input based on Heideggerian phenomenology.

The five levels of competency, which can only be determined by expert judges in the field of practice, are novice, advanced beginner, competent, proficient, and expert (Benner, 2001). Benner describes the levels of competency as follows:

Novice.   The novice nurse is a beginner who has no experience in and of the situations in which they are expected to perform. The behavior of the novice is governed by rules and is inflexible. The skills expected are taught in terms of objective material. Students and nurses entering a new clinical setting are considered to be novices (Benner, 2001, p. 20-21).

Advanced beginner.   The advanced beginner has been involved in enough real situations in the clinical area that meaningful components can be obtained from the situation. These components cannot be adequately sorted for the most important information. The nurses in the advanced beginner level can demonstrate acceptable performance of skills yet continue to need help in setting priorities in the work environment (Benner, 2001, p. 22-25).

Competent.   The competent nurse has been in the same clinical area for two to three years yet continues to lack speed and flexibility in the clinical setting. Situations

are more easily managed and care is viewed in terms of long range goals or plans. The plans made by the competent nurse are based on an analytical, conscious, and abstract review of the problem or situation (Benner, 2001, p. 25-26).

Proficient. Proficient nurses begin to perceive situations as a whole and possess improved decision making. Perception is the greatest accomplishment of the proficient nurse. Performance is guided by maxims. The proficient nurse has worked in the same clinical setting for approximately three to five years (Benner, 2001, p. 27-31).

Expert. The ability to obtain an intuitive grasp of each situation and a vision of the possibilities of care are the hallmarks of an expert nurse. This individual no longer relies on analytical reasoning. This nurse is able to connect an action with the understanding of the theory behind the action. Consultation can be sought from the expert nurse. Dreyfus and Dreyfus stated that the expert nurse is no longer aware of rules and his/her performance becomes "fluid, flexible, and highly professional" (Benner, 2001, p. 34).

The movement through the levels of competency is defined by acts of acquisition that must take place before the next level of competency can be reached. Movement through the levels of competency is thought to be achieved in four steps:

1. Movement from a reliance on rules and abstract principles to the use of past experiences.
2. Shift from a reliance on analytical thinking to the use of intuition.
3. A change in the learner's perception of a situation from viewing it as equally important factors and moving to the recognition of an increasingly complex whole and the ability to ascertain which parts of the whole are most important.

4. A passage from a detached observer to a position of involvement, being fully engaged in the situation.

Benner's explanation of nursing practice is based on "reasonable behavior that responds to the demands of a given situation" (Tomey & Alligood, 2002, p. 168).

Purpose

There has been a copious amount of research performed and reported pertaining to the amount, occurrence and cause of medication errors in the current health care system. Nurses have been identified as a catalyst for the occurrence and prevention of medication errors. Few studies have sought to find any correlation between the nurses' type of formal education and length of experience as a practicing nurse to the occurrence of medication errors.

The purpose of this study was to explore the impact of formal nursing education and nursing experience on medication errors made by nurses in the hospital setting. The results from this study provide information that may be used in the continual revision of nursing program curriculums and identification of additional learning needs of practicing nurses.

Chapter II

Review of Literature

Current literature supports the important role that nursing plays in the medication administration process. There are many reasons provided that suggests the reasons that nursing staff are involved in medication errors.

In a simulation study by Kazoaka, Shtsuka, Uneo and Mori (2007) that examined the communication problems among the nursing staff at two municipal hospitals in Japan, information was obtained from 100 nursing students and 163 nurses (N=263). The nursing students (n=100) were third year students who had been exposed to medications administration in fundamentals of nursing course. The nurses involved in the study were divided into three groups depending on the number of years of service (less than two months n=53, 3-5 years n=47, 6-9 years n=63). Nurses were given scenarios that involved dialog between the nursing team (nurse to nurse, or nurse manager to nurse) regarding the explanation and confirmation involved in the administration of medications. For "no explanation", the number of responders were more in the new nurse (n=53) group (x2=10.81, p<.05) than in the student group (n=100). For "no confirmation", the number of responders was fewer for the new nurses than the student nurses (x2=41.71, p<.01). As a result, it was identified that nurses with more years of service attributed medication errors to poor communication between nurse manager and nurse and less to poor communication between nurses. Communication was sighted as the largest factor affecting medication errors and differed depending on the level of experience.

A study performed in a small rural hospital in the Midwestern United States explored the correlation of medication errors to three nursing shifts (Madegowda, Hill

and Anderson, 2007). Different nursing units and type of errors were also examined. The facility involved in the study reported that a nursing staff shortage was the norm. Pharmacy was available only during limited hours and a Pyxis system was used for medication retrieval. A retrospective, non-experimental design was used to investigate the problem. The study included a sample of 120 medication errors. It was found that during a twelve month period, 22 (18.3%) of the errors in question occurred on Friday and the least occurred (n=7; 5.8%) occurred on Saturday. The highest percentage of errors occurred during the month of January (n=17; 14.2%). The majority of medication errors per shift was found to be on second shift (n=39; 32.5%) on the medical-surgical floor (n=80; 66.7%). This was attributed to the low staffing in this area at this time of day. It was identified that nurse staffing is an important factor in medication administration and errors.

Students were the subjects of a study concerning medication errors during the administration phase using the MEDMARX database operated by the United States Pharmacopeia through the Patient Safety Program. Wolf, Hicks, and Seembus (2006) found that fewer than 3% (n=30) of 1305 student made medication errors resulting in patient harm. Based on the review of the medication records, it was found that students involved in medication errors during the administration phase were more widespread than previously thought. The most common types of errors identified were the wrong dose (n=224; 17.16%) and omission (n=579; 19.00%). Performance deficits, implying that the student had the requisite skills and knowledge to perform medication administration safely but failed to do so, was found to be the most prevalent cause of errors according to the study results (n=579; 51.01%). The leading factor identified to attribute to the errors was inexperience of the students (n=153; 77.71%) with the second being distractions

(n=153; 20.05%). This study recommended nursing faculty to reconsider the medication administration experiences of students.

The information obtained by Wolf, Hicks, and Seembus (2006) is in alignment with the study performed in London, England by Fry and Dacey (2007) which explored the factors contributing to incidents in medication administration by Fry and Dacey (2007). The nurses felt that their overall training and knowledge was adequate to those trained in the United Kingdom and elsewhere. Of the respondents (n=135), 94% said that distractions at work contributed to medication errors. All (n=137) agreed that math calculations played a large part in medication errors and 92% felt that regular updates on calculations would be beneficial.

In a study performed by Smith and Crawford (2003), it was identified that new nurses feel unprepared for their role in the nursing workforce. A stratified random sample (n=2000) of registered nurses (RNs) and licensed practical nurses/vocational nurses with an average of 6.4 +/- 2.8 months of working as a nurse were used in the study. It was found that approximately 13% of the RNs thought that their first assignment was too difficult and 20% reported that their current assignment was too difficult. Of the LPNs studied, 18% thought that their first and current assignments were too difficult. This is evident in the fact that the study revealed that more than 1200 from the sample (n=2000) reported that they had been involved in a medication error. Most attributed this to poor staffing, long work hours, and lack of adequate communication. No correlation was made between the type of degree held and the number of medication errors reported.

Literature is unclear as to a definitive cause of medication errors. Literature involving nurses and their role in medication errors points to communication, nurse

staffing shifts and shortages, student errors and nurses preparation for the work force. These factors have shown statistical significance toward the cause of medication errors. It, however, lends no insight as to the nurses that are involved in the medication errors. Information pertaining to nursing education and experience could lend to curriculum changes in nursing programs that will produce the best possible nursing candidates.

Chapter III

Methodology

A retrospective, descriptive, correlation design was used to examine relationships

of the level of education and nursing experience of registered nurses to medication errors

at a Western North Carolina Hospital. Reported medication errors made by Registered

Nurses from January 1, 2007 through December 31, 2007 were included in the study.

The sample size was based on convenience bearing on the time interval.

Sample

Sample size was determined by the number of medication errors documented

during the dates of 1/1/07 through 12/31/07 that are attributed to nursing error. This

convenience sample size included 320 (N=320) incidents. Excluded from the study were

27 registered nurses due to incomplete data secondary to separation from the facility.

All registered nurses employed at the participating facility, greater than or equal to 18

years of age involved in medication errors, despite religion, race gender, sex or ethnic

background were included in the study. Eligibility was determined by the inclusion of all

nurses employed by the facility involved in medication errors reported during the period

of 1/1/07—12/31//07.

Setting

Data was collected from a municipal hospital located in the Western region of

North Carolina. The participating hospital is a 200 bed facility with a census of 2009

patients during the year of 2007. The facility is an equal opportunity employer and does

not discriminate during the hiring of nurses based on race, age, religion, or level of

nursing degree held at the time of application. The hospital employs a non-punitive

system for reporting medication errors. The non-punitive policy facilitates accurate recording of medication incidents.

Instruments

A data collection spreadsheet created by the researcher was submitted and approved for use by the participating facility. The Excel spreadsheet was utilized to collect and analyze the data for the study.

Ethics

Approval was gained from the participating facility's Internal Review Board (IRB). Approval from the Gardner-Webb University IRB was secured. Identifying information was not removed from the facility, nor was such included in the research study.

Data Collection

Data was collected from two sources. A Risk Management medication error MS Excel file was provided, which was delineated by medication error type/category. The report contained medication errors, identified by name, from January 1 – December 31, 2007. This information was be used in conjunction with the Nursing Human Resources Report MS Excel file containing nurse name, service area, shift worked, employment status, position, license, highest degree held, certifications, nursing graduation year, years of experience and hospital hire date. For each RN medication error, this information was entered in the MSExcel data collection tool with an alphanumeric code at which time the nurse name was deleted.

Nurses involved in medication error incidents were identified during this initial data collection phase as it was necessary to obtain their educational and experience level.

However, this was for research purposes only and the data was made unidentifiable using alphanumeric coding prior to analysis.

Data Analysis Procedures

Utilizing the Excel analysis system, chi-square tests were performed. Un-identifying data was analyzed to determine any correlation between the number of medication errors made by nurses with Diplomas, Associate Degree in Nursing, Bachelor Degree in Nursing, and Masters Degree in Nursing or a higher degree. The data was then examined to identify if a correlation existed between medication errors and years of nursing experience. Additional analyses included descriptive reporting of medication errors related to shift worked, hospital unit and advanced degree.

Chapter IV

Results

The facility involved in the study employs registered nurses with varying levels of nursing education. Medication errors between January 1, 2007 and December 31, 2007 (N=293) were examined. Those involved in medication errors (n=196) include: Diploma (n=8), Associates Degree (n=123), Bachelors Degree (n=59), Masters Degree (n=5) and PhD (n=1). The Masters Degree and PhD were combined into one category (n=6) for data analysis due to the small number in each category. Multiple medication errors made by one nurse (n=97) were accounted for in the statistical analysis of nurse involvement.   Using a chi square test for correlation between the numbers of medication errors reported and the level of education, a significance correlation (p< 0.05) was found. The highest number of errors was made by nurses that hold an Associate degree (n=123; 63%) (see Figure 1). The greatest number of medication error was followed by Bachelor degree prepared nurses (BSN) (n=59; 30%), diploma prepared (4%) and Masters Degree or greater (3%) (see Table 1)

Table 1

Medication Errors and Level of Education

Level of Education	Occurrences	Percentages
Diploma	8	4
ADN	123	63
BSN	59	30
MSN/Doctoral	6	3
Total	196	100

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The nurses involved in the study had varying degrees of years of experience. The years of experience range from one year (n=10) to 44 years. The average years of nursing experience was 11.2 years. Years of experience was grouped for analysis: 1-5years (n=74), 6-10 years (n=31), 11-15 years (n=30), 16-20 years (n=16), 21-25 years (n=14), greater than 26 years (n=31). Utilizing a chi square test for correlation, a significant correlation ($p \leq 0.05$) was found between the number of medication errors and the number of years of experience for the nurses involved. The highest frequency of medication errors occurred at the beginning of a nurse's career with 1-5 years of experience (n=74; 38%). A 22% decrease was noted by the time the nurses gained 6-10 years of experience (n=31; 16%). The number of medication errors increased again with the greatest number of years of experience from 14% to 31%. The least amount of medication errors was made by those nurses with 21-25 years (n=14) of experience (see Figure 2).

The information obtained from the analysis yielded information pertaining to the type of errors that most frequently occurred as it related to the level of education (see Table 2). The most common type of medication error documented was that of medications given that were not ordered (n=75). This accounted for 26% of all medication errors reported during the time period studied. This medication error was most commonly made by nurses at the ADN level (n= 52) and with 1-5 years of experience (n=30).

Table 2

Types of Medication Errors by Level of Education

Error Type	Diploma	ADN	BSN	MSN	Doctoral	Total
Allergy		4				4
Incorrect Narcotic Count	1	5	3			9
Wrong label/MAR		6	1			7
Medication label incorrect		1	1			2
Medication Not indicated		7		1		8
Medication Not ordered		52	23			75
Med. Omitted	2	44	18		1	65
Other Medication Error		22	10	1		33
Wrong Dose/Route	2	18	9	1		30
Wrong Med. Given	1	5	5	1		12
Wrong Patient	1	12				13
Wrong route		2		1		3
Wrong time/frequency	1	25	4	1	1	32
Total	8	203	74	6	2	293

The distribution of medication errors to specific nursing shifts with the greatest number (n=47; 19%) occurred in the Emergency Department of the participating facility. This unit was followed in rank by the Surgical Unit (n=24; 10%) and the Critical Care Unit (n=22; 9%) (see Table 3).The average degree held in the Emergency Department was an Associate degree and had x years of experience. The majority of medication errors (n=114) occurred on the 7a-7p shift (see Table 4).   Fifty (24%) nurses involved in medication errors held advanced certifications (see Table 5).

Table 3.

Medication Errors by Department and Level of Education

SERVICE	observed	percentage
Birthing Center	15	8
Critical Care	22	11
Day Surgery	6	3
Emergency Department	47	24
IPR	4	2
Medical	20	10
O/N	10	5
Oncology	9	5
Operating Room	4	2
Post Anesthesia	4	2
Pediatrics	2	1
Psychiatry	9	5
Specialty Care	1	1
Special Care Nursery	7	4
Surgical	23	12
Telemetry	12	6
Nsg Administration	1	1
	196	100

Table 4.

Medication Errors by Work Shift by Level of Education

Education level	Diploma	ADN	BSN	MSN	PhD	totals
work shift						
11a-11p		15	1			16
3p-3a		4	4			8
day(6a-4p)		15	8	1		24
7A-7P	4	85	22	3		114
7P-7A	2	54	32			88
prn	2	29	7		2	40
weekend		1				1
salary				2		2
						293

Table 5.

Nurses with Advanced Certification by Level of Education

Advanced Certification			observed	percent
Certification			50	26
No Certification			146	74
Total			196	100

Medication Errors Related to Level of Formal Nursing Education
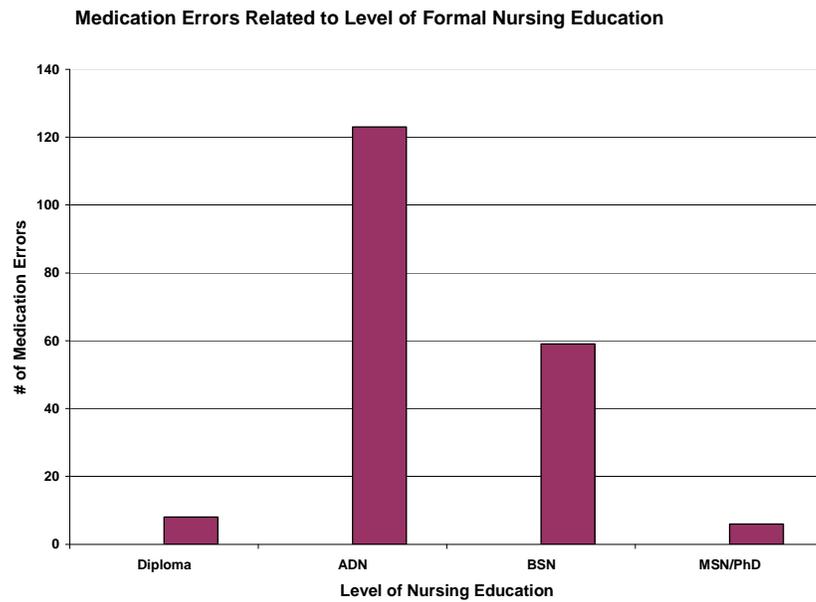
Figure 1. Medication Errors Related to Formal Nursing Education

Medication Errors Related to Years of Experience
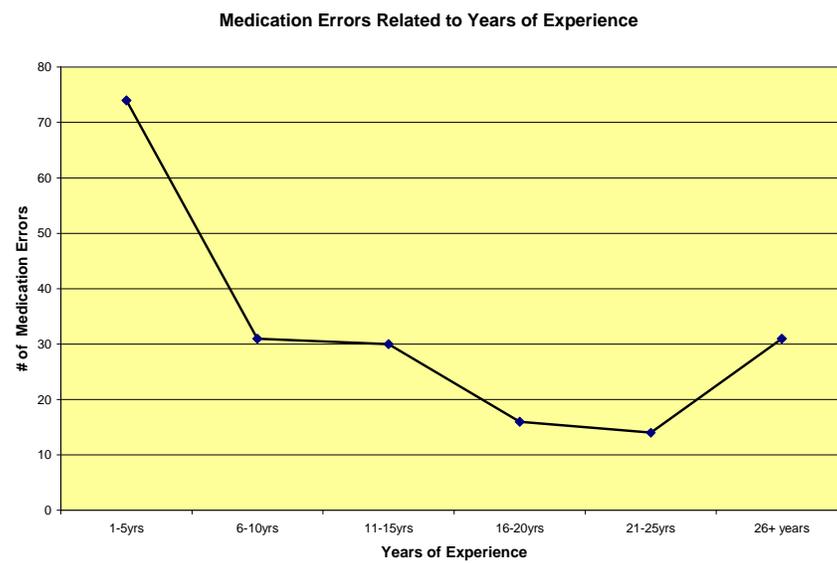
Figure 2. Medication Errors Related to Nursing Years of Experience

Chapter V

Discussion

A total of 350 medication errors from the period of January 1, 2007 to December 31, 2007 were reviewed. Twelve records were discarded due to the unavailability of information for the nurse involved due to separation of the nurse from the facility. It is assumed that the Associate degree is the lesser degree held. The information identifying the type of diploma program attended by the Diploma prepared nurses was unavailable. The highest degree held in nursing for the facility was the PhD. There was one nurse holding the degree of PhD in Nursing. This data was combined with that of the Master of Science in Nursing due to the limited number of nurses holding these degrees. It was found that nurses prepared at the Associate Degree level were involved in the most frequent occurrence of medication errors. The least amount of medication errors occurred at the hands of the nurses prepared above the Bachelor Degree level.

Nurses with the least number of years of experience had the highest number of medication errors.   This was followed by the nurse with the greatest number of years of experience. It was found that nurses were involved in more medication errors at the beginning and the incidents rose again with the nurses with the most years of experience.

More medication errors were made in the units that had more nurses with lower levels of education. Units within the hospital that had nurses involved in medication errors with higher levels of education had a lower number of medication errors. The department with the highest number of medication errors reported was the Emergency Department. The work shift with the highest number of medication errors reported was the night shift which includes the hours of seven o'clock in the evening to seven o'clock

in the morning. Nurses with an advanced certification were less likely to be involved in medication errors.

Implications for Nursing

While the study is not conclusive in describing and identifying strengths and weaknesses in a nurse's practice based on level of education and years of experience, it lends to the possibility that an increase in the level of education and the application of advanced certification has a decreasing effect on the occurrence of medication errors. The information gained within this study shows that there is a correlation between the level of education and medication errors. Hospitals employing registered nurses with all levels of education may see a decrease of medication errors if nurses with higher levels of degrees are more frequently employed.

Nurses with a lesser number of years of experience are involved with more medication errors. This shows the probability that more education is needed at the entry level of nursing. The preceptor ship of new nurses may need more medication education. Patient assignments for new nurses may need to account for the inexperience and the probability of an error being made. The nurses involved in medication errors at the later end of their career show evidence to the fact that continuing education is needed to decrease medication errors.

Departments with higher acuity were more likely to have medication errors occur. The use of higher level medications and patients with multi-system involvement mandates a stronger education base. This coupled with more stressful environments, poses for a higher possibility of medication errors.

Particular attention should be paid to the initial education, initial orientation, medication education and continuing medication education of nurses in order to decrease

the number of medication errors within the hospital setting. Nursing as a profession should strive to uphold the accountability of nurses and their involvement in medication errors.

Implications for Further Research

There is a continual need for evaluation and revisions in curriculum within nursing programs. The study suggests that there is a stronger need for preparation in the area of pharmacology. Further research in this area may lead to revisions within nursing curriculums and hospital education programs. These revisions will allow for initial preparation during clinical education and hospital orientations as well as continuing education for more seasoned nurses. Further research could help attribute to the decrease of medication errors and the promotion of a more accountable health care system.

Limitations

Despite the information that was made available by the facility, the researcher was unable to obtain demographic information pertaining to the nurses involved in the medication errors. Further study of the demographical information could yield information pertaining to the age of the nurse when the nursing field was entered.

Additionally, the researcher was unable to obtain information regarding the number of years within a specific service. This would lend information that would fit more closely with the theoretical background of Patricia Benner involving the thought of expertise being acquired within a particular service area.

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Appendix A

Appendix B