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Attitudes of Nurses Toward Research

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ATTITUDES OF NURSES TOWARD RESEARCH

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By

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ABSTRACT

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The purpose of this study was to examine the attitudes of nurses toward research. Donabedian's framework of structure, process and outcome is the conceptual model. A convenience sample (n=119) of registered nurses at a Midwest hospital answered Boothe's Attitudes on Nursing Research Scale. The scale contains 84-items answered on a 5-point Likert scale. The scores were analyzed using descriptive statistics, t-tests, and ANOVA. Comparisons were made of the top and bottom quartile of item scores. The results indicate items that reflect structure and process are a subscale of the interest and environment scale. The most positive attitudes of the nurses are related to the benefits and payoff scale. The results of the study revealed no significant differences on overall scores between groups of nurses by academic degrees held or roles in the institution. Rankings of items based on academic degrees and roles held in the institution were significant.

Dedication

This work is dedicated to Steve, Janel and Leah for their patience, support, understanding, and encouragement throughout my graduate work and thesis project.

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Table of Contents

Table of Contents-Continued

List of Tables

List of Figures

FIGURE

List of Appendices

APPENDIX

CHAPTER 1

INTRODUCTION

Research in nursing can be traced back to Florence Nightingale. Her data collection and analysis related to factors affecting soldier mortality and morbidity during the Crimean War led to changes in nursing care and public health (Polit & Beck, 2004). Nursing research continued to grow through the 20th and 21st century. Polit and Beck define the current trends for nursing research as: "(a) increased focus on outcomes research, (b) increased focus on biophysiologic research, (c) promotion of evidence-based practice, (d) development of a stronger knowledge base through multiple confirmatory strategies, (e) strengthening of multidisciplinary collaboration, and (f) expanded dissemination of research findings" (p.10).

Research is discussed as part of professional nursing practice by the American Nurses Association (ANA) (2004) in its publication, *Nursing: The Scope and Standards of Nursing Practice.* The standards of nursing practice are divided into two categories, the standards of practice and the standards of professional performance. The standards of practice include assessment, diagnosis, outcome identification, planning, implementation, and evaluation. The standards of professional performance systematically evaluate the quality and effectiveness of nursing practice. These groupings of standards include research. The standards on research state that the registered nurse integrates research findings into practice. The specific criterion related to research requires the registered

nurse to make use of the highest level of existing evidence, utilizing research when available. Professional nurses participate in activities related to research appropriate to the nurses' level of education and also their position (ANA, 2004).

Polit and Beck (2004) define the differences in nursing research, research utilization, and evidence-based practice. "Nursing research is the systematic inquiry designed to develop knowledge about the issues of importance to the nursing profession" (p. 3). "Research utilization is the use of research findings in a practice setting" (p. 4). "Evidence-based practice is broadly defined as the use of the best clinical evidence in making patient decisions" (p.4). As stated above, the ANA includes all three aspects in its standards supporting nursing research to define the nurse's role.

The American Nurses Credentialing Center (ANCC), a subsidiary of the American Nurses Association, oversees the Magnet Recognition Program®. Research on hospitals who have achieved Magnet status shows several benefits. The benefits of achieving Magnet status include improved patient outcomes, expanded recruitment and retention of nurses and other healthcare personnel, and enhanced nursing staff satisfaction and productivity (ANCC, 2005). Assimilating, disseminating and enculturating the practice environment grounded in evidence-based practice and nursing research is an essential force of magnetism and must be present in an organization to achieve magnet status (Turkel, Reidinger, Ferket, & Reno, 2005). Organizations need not only to create, disseminate and enculturate the practice environment but evidence-based practice should be included in the framework for nursing administrative decision-making (Turkel et al., 2005). Only a small number of hospitals (n=186) have achieved the level of magnet status in which an environment grounded in evidence-based practice and nursing research is present (ANCC, 2006).

The American Nurses Association is not the only healthcare organization supporting the use of research and evidence-based practice. The Joint Commission of Accreditation of Healthcare Organizations (JCAHO) has several standards related to research. Their focus relates to the supporting procedures or processes for doing research and in particular, the protection of human subjects and informed consent (Redfearn, Lacey, Cox, & Teasley, 2004). The Institute of Medicine's 2001 report, *Crossing the Quality Chasm: A New Healthcare System for the 21st Century,* makes a case for the use of evidence-based practice in the care of patients, especially those with chronic conditions. Therefore, the research process is regarded as increasingly important within the healthcare industry and the nursing profession. It is critical to provide the necessary support to meet such standards and criteria.

Hospitals, despite having committees for critical pathway development, policies and procedures, and protocols, often do not have the structure and processes in place to support nurses' practice that is grounded in research evidence. Yet, the use of evidence-based practice has shown better patient outcomes because patient care decisions are supported by scientific evidence. Therefore, in order to move nursing practice toward a profession grounded in research, nurse administrators must create structure and processes to incorporate evidence-based decisions in day to day nursing practice. In order to cultivate an environment that supports research, administrators must also acknowledge the barriers staff nurses encounter and work toward eliminating them (Newhouse, Dearholt, Poe, Pugh, & White, 2005).

Based on these resources and perspectives, research is a hallmark of professional nursing. Multiple regulatory organizations are focusing on revitalizing research through research utilization and evidence-based practice in nursing in the first decade of the 21st

century. To understand the causes of the phenomenon of dissonance between research as integral to the profession of nursing and the limited application and utilization of nursing research in the hospital setting, an appreciation of the registered nurse's attitudes toward nursing research is warranted.

Numerous studies look at the individual characteristics of nurses and how they influence the conduct and use of research in clinical practice (Bostrom, Malnight, MacDougall, & Hargis, 1989; Estabrooks, Floyd, Scott-Findlay, O'Leary, & Gushta, 2003; Hutchinson & Johnston, 2004; Kajermo, Nordstrom, Krusebrant, & Bjorvell, 1998, 2000; Kyei, 1993; McKenna, Ashton, & Keeney, 2004; Melnyk et al., 2004; Pravikoff, Tanner, & Pierce, 2005). Previous studies have been consistent in their findings of the greatest deterrents to the conduct or use of research. These include time constraints, lack of awareness of available research literature, insufficient authority to change practice, inadequate skills in critical appraisal, and lack of support for implementation of research findings (Bostrom et al., 1989; Estabrooks et al., 2003; Hutchinson & Johnston, 2004; McKenna et al., 2004; Melnyk et al., 2004; Kajermo et al., 1998, 2000; Kyei, 1993; Pravikoff et al., 2005). The greatest facilitators to research, research utilization, and evidence-based practice include availability of more time to review and implement research findings, availability of more relevant research, and colleague support (Bostrom et al., 1989; Hutchinson & Johnston, 2004).

The aim of this study is to build on existing studies related to research, research utilization, and evidence-based practice. Specifically, the purpose of this study is to examine the attitudes toward nursing research at a Midwest hospital. The hospital was the focus of a study done by Bostrom and colleagues in 1989 as the organization developed its nursing research procedures.

> The findings indicated that many nurses were interested in research and believed that the institution would support research activities and the implementation of research findings. Some deterrences to conducting research include: time, lack of knowledge, and the nurses's [*sic*] perception of the supervisory support and the research support services. (p. 915)

During the mid-1990s this hospital underwent reengineering practices that restructured nursing practice. The outcome of this restructuring was the loss of the nursing research procedures. This study will examine the current attitudes of nurses toward research and provide a foundation for interventions to improve the organization's structure and processes related to nursing research, research utilization, and use of evidence-based practice.

CHAPTER 2

LITERATURE AND CONCEPTUAL FRAMEWORK

Conceptual Framework

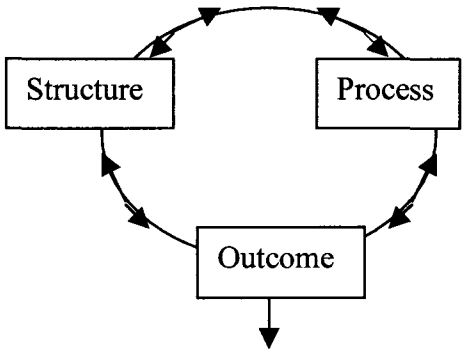
The theoretical framework used in this research project is Donabedian's paradigm of structure, process, and outcome (Donabedian, 1988). The original framework addresses aspects of the infrastructure needed by an organization to support quality. Donabedian's work originated in the 1960s as the healthcare industry was just starting to define quality. The framework defines assumptions about quality of care that are drawn from three categories: structure, process, and outcome.

Donabedian's structure represents the characteristics of the settings in which care occurs. This includes the aspects of:

> material resources, human resources, and organizational structure. Material resources include such items as facilities, equipment and money. Human resources are defined as the number and qualifications of personnel. Organizational structure refers to staff organization, methods of peer review and methods of reimbursement. Process denotes what is actually done in giving and receiving care. It includes the patient's activities in seeking care and carrying it out. Outcome denotes the effects of care on the health status of patients (Donabedian, 1988, p. 1745).

These are not attributes of quality; rather they are the kinds of information from which inferences can be made about the quality of care. Donabedian's approach concludes that good structure is the basis of good processes. Good processes in turn ultimately leads to quality outcomes (Donabedian, 1992). The continuous feedback loop in the model infers that structure and process are linked together and impact outcomes. Therefore improvements made in structure or processes have the ability to improve outcomes. Figure 1 depicts the continuous feedback loop that exists between structure and process. Donabedian's framework suggests good structure in combination with good processes produces good outcomes.

Figure 1. The relationship of structure, process, and outcome.



Applying Donabedian's framework to the research process can be done. Structure in terms of material resources includes the facilities, equipment, and money to do research. Human resources include the number of qualified personnel who have been educated in the research process and who can perform and assist in research. Organizational structure in terms of research includes a nursing research committee or nursing research program and presence of an Institutional Review Board (IRB).

Process research is the day-to-day activities of doing research. This allows nurses the time to conduct research. Performing the analysis of the research findings is also a

process. Other examples of processes related to research include support from other members of the nursing team and a clear procedure to develop a research proposal. An important aspect of process includes the ability to incorporate research findings into daily practice.

When applying Donabedian's framework to research, outcome refers to the "effects of implementation and improvement in nurses' knowledge of the research process evidenced by an increase in the number of nurses who take part in research" (Redfearn et al., 2004, p. 346). A good supporting structure/process has the ability to achieve several outcomes related to nursing research. These include: (a) increasing nursing research knowledge, (b) increasing support for nursing research through mentoring, and (c) development of a nursing research education program (Redfearn et al., 2004). Another potential of the application of Donabedian's framework is having nursing practice grounded in research. Nurses use protocols, procedures, and clinical pathways to guide care delivery in daily practice. Infusing protocols, procedures, and clinical pathways with evidence-based interventions provides the support for practice based in research.

Nursing attitudes toward the organizational infrastructure (structure and process) have an impact on the nurses' perceived ability to participate in research at any level. Attitudes can either facilitate or suppress research; therefore, they affect the outcomes of nursing interventions and practices grounded in research. If organizations, for example, do not attend to both the infrastructure for nursing research and nursing attitudes, they will have difficulty providing the environment in which nursing research is practiced.

Review of Literature

Many studies have examined nurses' attitudes toward research and the facilitators of and barriers to research, research utilization, and evidence-based practice. In 2004, Hutchinson and Johnston performed a study using a 29 item instrument titled Barriers to Research Utilization or the BARRIERS Scale. The aim of the study was to gain an understanding of perceived influences on nurses' utilization of research and to explore differences or commonalities between the findings and various studies done in the last 10 years. The convenience sample was obtained at a major teaching hospital. The study had a 45% response rate or n=371. The findings suggest that the greatest barriers to research utilization included time constraints and lack of awareness of available literature. In addition, the authors found insufficient authority to change practice, inadequate skills in critical appraisal, and a lack of support for implementing research findings. In contrast, the greatest facilitators to research utilization included availability of time to review and implement research findings. The researchers also found availability of relevant research and support from colleagues as facilitators. Limitations of the study include a self-reporting method and the accuracy of nurses' perceptions. Low response rate may reflect a bias. For seven items on the questionnaire, more than 10% of respondents reported no opinion or failed to respond. Findings were conducted in one organization and are difficult to generalize to other settings.

Melnyk and colleagues published a study in 2004. The aims of the study were to: "(a) describe nurses' knowledge, beliefs, skills, and needs regarding evidence-based practice, (b) determine whether relations exist among these variables, and (c) describe major barriers and facilitators to evidence-based practice" (p. 185). The method used was a convenience sample of 160 nurses attending an evidence-based practice

conference. The theoretical framework used in this study was a combination of the Transtheoretical Model of Change and Control Theory. The researchers developed nine hypotheses to be tested. The tool was a survey consisting of 52 questions validated by evidence-based practice experts. The survey contained nine demographic questions, seven questions measuring beliefs and knowledge, and nine dichotomous items about implementation of evidence-based practice. The survey ended with 13 open ended questions about implementation of evidence-based practice. The findings indicated the beliefs about evidence-based practice were high and knowledge of evidence-based practice was relatively low.

> Significant relationships were found between the extent to which the nurses' practice is evidence-based and: (a) nurses' knowledge of evidence-based practice, (b) nurses' beliefs about the benefits of evidence-based practice, (c) having an evidence-based practice mentor, and (d) using the Cochrane Database of Systematic Reviews and National Guideline Clearinghouse (p. 185).

The reported correlation between the extent to which the nurses' practice is evidence-based and: (a) nurses' knowledge of evidence-based practice was $r = .42$, $p<.0001$, (b) nurses' beliefs about the benefits of evidence-based practice was $r = .40$, $p <.001$, (c) having an evidence-based practice mentor was $r = .28$, $p< .003$, and (d) using the Cochrane Database of Systematic Reviews and National Guideline Clearinghouse was $r =.43$, $p< .003$ (Melnyk et al., 2004).

The implications of the study suggest the changes that need to occur in healthcare systems if evidence-based practice were to be strengthened. These changes include implementing interventions that increase nurses' evidence-based practice knowledge and skills, making mentors available, and assessing all organizational structures and

processes. The limitations of the study include the use of a convenience sample obtained prior to the beginning of an evidence-based practice conference that the participants chose to attend. Another limitation is the variability in the number of nurses who responded to the individual items on the survey. The researchers identified refinement of the survey to avoid this variable response in the future.

Pravikoff et al. released a study in 2005 that examines nurses' "perceptions of their skills in obtaining evidence and their access to tools with which to do so" (p.41). The study was a quantitative descriptive exploratory survey mailed to a geographically stratified random sample of 3,000 United States (U.S.) registered nurses. The return rate was 37% or 1,097 surveys. The sample was condensed to include those currently working and excluding those working in administration and education, leaving a sample of 760. The measurement tool was a 93 item questionnaire used in earlier studies and was modified for use in this research. Content validity was established by experts. The researchers found that the nurses acknowledged they frequently need information for practice, they felt much more confident asking peers or colleagues, or searching the Internet than using databases such as PubMed or Cumulative Index to Nursing and Allied Health Literature (CINAHL®). One limitation of the study is that while the educational preparation and ages were identified, the data analysis was not separated accordingly. Diploma and associate degree nurses accounted for greater than 50% of the clinical respondents. In the age demographics, 79% of the study participants were 40 years of age or old. Educational preparation along with technological readiness (age factor) may have an effect on the interest of using evidence-based practice and research in the nurses' work. The researchers made no attempt to analyze the data based on these factors

(extraneous variables) and made generalizations on the readiness of U.S. nurses based on this study.

Bostrom and colleagues completed a study seventeen years earlier (1989). The purpose of the study was to "systematically assess staff nurses' attitudes that may facilitate or hinder the incorporation of nursing research in one service setting" (p. 916). The sample was obtained from one Midwest hospital with 464 beds and 925 registered nurses with a participation rate of 77.8% or n=720. The design of the study was a quantitative descriptive study. Boothe developed the Attitudes on Nursing Research Scale in 1981. The 46 item questionnaire addressed three subscales including: (a) interest and environmental support, (b) payoff and benefits, and (c) barriers to conducting research. The coefficient alpha for the instrument and its subscales ranged from 0.64-0.87. The findings of the study indicated interest and a perception that the institution would be supportive of research activities. The barriers included insufficient time, insufficient knowledge, perceived lack of supervisory support, and support services for research.

Limitations of the study include the inability to generalize results beyond the study hospital. The other limitation of the study was the Boothe Scale was developed for nursing faculty members and was used on staff nurses.

McKenna et al.'s study in 2004 attempted to identify barriers to evidence-based practice in primary care. The sample included 356 general practitioners and 356 community nurses. The response rate was 65% or n=462. The questionnaire was mailed to the sample. The design was a quantitative, descriptive exploratory survey of the general practitioners and community nurses in the United Kingdom. The study used two instruments, the BARRIERS scale and the Evidence-Based Medicine in Primary Care questionnaire. The authors found that general practitioners ranked barriers differently

than the community nurses. General practitioners believed that the most significant barriers to using evidence-based practices were limited relevance of research to practice, the difficulty keeping up with all the current changes in primary care, and the ability to search for evidence-based information. In contrast, the most significant barriers for community nurses were related to the lack of structure such as poor computer facilities and process issues evidenced through difficulties influencing changes within primary care. Limitations of the study include a low response rate attributed to mailing out the questionnaire and restricting the questionnaire to general practitioners and community nurses due to time constraints. The researchers did not define the roles of each group, so it is difficult to understand the structure of practice without these definitions. The results are based on nurses from Northern Ireland and therefore cannot be generalized.

Mott et al. published a study in 2005 that sought to "evaluate baseline knowledge in order to assess and inform a multifaceted intervention to promote evidence-based practice in Western Sydney, Australia" (p. 96). The convenience sample consisted of 229 nurses. The design was a quality assurance project that was reviewed by the IRB. The instrument was investigator developed and consisted of five questions related to the concepts of evidence-based practice. According to the findings, 62% of the participants stated they were aware of evidence-based practice; however, 38% of the participants stated they were not familiar with the term. The researchers were concerned with the finding that 43% of respondents were unable to "identify a source of information and resources about evidence-based practice" (p. 96). The limitations of the study include use of a convenience sample with a non-validated instrument. The ability to generalize the results is not possible. "The absence of demographic data and small number of items using dichotomous responses limited the use of inferential statistics" (Mott et al., p. 101).

Funk, Champagne, Wiese, and Tornquist performed a large-scale study in 1991. The purpose of their study was to "determine clinicians' perceptions of the barriers to using research findings in practice and to solicit their input as to what factors would facilitate such use" (p.90). The researchers used the ANA membership roster to select 5,000 nurses. The sample was randomly selected from the educational categories of diploma, associate degree, bachelor's, master's, and doctoral degrees. Nurses were excluded if they were not employed full time. Their return rate was 40% or n=1,989. The sample was defined as those reporting their job function as clinical versus administrative, teaching or research. This left a sample of 924 respondents. The descriptive survey was a quantitative design with one qualitative question. The qualitative question asked respondents to choose the three greatest barriers and to write comments specifying the facilitation of using research findings in practice. The instrument used was the BARRIERS scale. The researchers divided the tool into four subscales or factors. These four factors include the nurse, setting, research, and presentation. Each factor is defined through the:

> (a) characteristics of the nurse (nurse's research values, skills and awareness), (b) characteristics of the setting (barriers and limitations perceived in the work setting), (c) characteristics of the research (methodological soundness and appropriateness of conclusions) and (d) characteristics of the presentation of research and its accessibility (p. 91).

The findings suggest that the two greatest barriers are insufficient time periods to implement new ideas and not enough authority to change patient care procedures. All eight items related to the characteristics of the settings were among the top ten rated barriers. These were: (a) authority to change procedures, (b) insufficient time, (c)

uncooperative physicians, (d) unsupportive administration, (e) unsupportive peers, (f) inability to generalize results to their setting, (g) inadequate facilities for implementation, and (h) not enough time to read research. Facilitators to research that were identified included increasing administrative support and encouragement, improving accessibility of research reports, and improving the research knowledge base of the practicing nurse. Colleague support was also a facilitator to research along with increasing time for reviewing research and assisting with understanding research reports.

Funk et al. also explored the relationship between selected demographic characteristics and research barriers/facilitators. The characteristics included a breakdown by educational level: 50% of the sample held a diploma or associate degree, 40% had a bachelor's degree and 10% held either a master's or doctoral degree. The authors did find weak effect of educational preparation on the BARRIERS scale score. While statistically significant, the authors felt the actual difference of two tenths of a point on the Barriers four-point scale was not of any importance.

Lacey (1994) reviewed empirical studies about research utilization, and then described a small pilot study carried out in the United Kingdom. The study attempted to measure research utilization among general nurses and to assess the validity of a self-report questionnaire as a measurement of research utilization. The sample consisted of 20 general nurses working in adult acute care. The sample was obtained from two contrasting sites: one a general hospital and the other a high profiled teaching hospital. The design involved both quantitative and qualitative methods. Nurses were surveyed following a semi-structured interview lasting 20-30 minutes. The survey questionnaire utilized a Likert-type scale to assess four main variables: "(a) attitudes to research, (b) availability of research findings, (c) support for implementation of research findings, and

(d) research utilization itself" (p. 990). Findings for the quantitative aspect of the study included a regression analysis of the three main variables (attitude, availability and support with research utilization). Lacy found 35.4% of the variance for research utilization was explained by the attitude, availability and support. She entered attitude as a single variable in the regression analysis and found attitude accounted for 42.2% of the variance. Lacey's study "suggests that attitude alone is a powerful predictor of utilization, and the remaining two variables are not so useful" (p. 992).

In the qualitative portion of the study, the findings showed very few (number not given) participants were able to give an adequate definition of research. In contrast, when the participants were asked to give examples of their use of research, "all the nurses were able to give appropriate examples" (p.992). The biggest deterrents to the implementation of research findings in practice were lack of autonomy, resources, and adequate educational preparation. The limitation of the study is that the pilot study was small and had an unrepresentative sample so it is difficult to generalize.

Dunn, Crichton, Roe, Seers and Williams performed a study in 1998 using the BARRIERS scale. The purpose of the study was to "identify those things that present barriers to the use of research by nurses in the United Kingdom, and to compare the findings from the United Kingdom with those from the United States" (p. 1205). The researchers wanted to explore any similarities or differences between the two settings. The sample size was a total of 361, which consisted of three distinct subgroups. These included 139 clinical nurse specialists involved in palliative care, 132 nurses involved in the care of the elderly, and 45 nurses undertaking a 1-day course to gain critical appraisal skills. The design used was quantitative and descriptive. The researchers reported that content validity and reliability for the BARRIERS scale had been established in earlier

studies. The findings included items that are consistently perceived as strong barriers and appeared in both countries' list of top ten barriers. These items include: (a) insufficient time, (b) statistical analysis not understandable, (c) physicians will not cooperate with implementation, (d) facilities are inadequate for implementation, and (e) no time to read the research. Differences did emerge between nurses from the United Kingdom and the United States on several items. These include the confidence in evaluating research and perception of the nurses' authority to change practice. These are more of a barrier in the United Kingdom than in the United States. A limitation of the study identified by the authors included using a convenience sample of limited size. Additionally, on five of the 29 items, 10% of the sample did not answer or responded with no opinion.

Estabrooks et al. (2003) performed an integrative literature review and meta-analysis. The purpose was to "report findings on a systematic review of studies that examine individual characteristics of nurses and how they influence the utilization of research" (p. 506). For an article to be included in the meta-analysis it had to "measure one or more individual determinants of research utilization, measure the dependent variable (research utilization), and evaluate the relationship between the dependent and independent variables" (p. 506). In addition to the above-mentioned criteria, the studies had to "indicate the direction of the relationship between the independent and dependent variables, report a *p* value and the statistic used, and indicate the magnitude of the relationship" (p. 506). Twenty studies met the criteria. The findings comprise six categories of potential individual determinants. The authors categorized them as: (a) beliefs and attitudes, (b) involvement in research activities, (c) information seeking, (d) professional characteristics, (e) education, and (f) socio-economic factors. "Methodological problems surfaced in all the studies and apart from attitude to research,

there was little to suggest that any potential individual determinant influences research use" (p. 506). The overall limitations the authors found in their review were "study designs used self-reports, failed to address social desirability, were underpowered and did not allow for careful analysis of inter-correlations among variables" (p.519).

In summary, while methodological issue were identified, the majority of the studies in this thesis's literature review did not state the theoretical framework in their research. Melnyk and her colleagues were the exception. They clearly defined the use of a conceptual framework and used theory to guide survey development.

Implications for Study

The studies performed over the last two decades cannot be generalized on their own but when combined several themes emerge. Common barriers to research include: (a) insufficient time, (b) inadequate support from administration, (c) difficulty understanding research/statistical analysis, (d) lack of authority to change practice, and (e) inadequate computer access. Hutchinson and Johnston in their 2006 article compiled the common barriers to research as reported by researchers using the BARRIERS scale since 1991. These include: (a) lack of time, (b) lack of confidence in critical appraisal skills, (c) lack of authority, (d) organizational infrastructure, (e) lack of support, (f) lack of access, and (g) lack of evidence. Unclear in the literature is the effect that educational preparation has on research attitudes and the subsequent use in practice.

The proposed study is not expected to find significant differences in the attitudes of nurses related to research compared to other studies. Instead this study will begin to explore the relationship between nursing attitudes towards research and the supporting infrastructure. The specific items on the instrument will be reviewed to determined if the attitude questions address structure, process, both or neither. The interventions to

improve research at the organization can then focused on the specific aspects of structure and process perceived to be the largest barriers at the institution. Educational preparation is a variable not fully explored in other studies. Implications of education on the attitudes towards research will also be an area explored in this study. The last aim of this study is to provide a baseline assessment of this organization. Serial assessments can continue to determine if the interventions done at this institution are effective. Interventions that are effective in changing the implementation of evidence-based practice and nursing research are absent in the literature. Hopefully, interventions that address structure and process will be identified through this work.

Research Questions

The research questions identified for this study are as follows:

1. What are the attitudes of nurses toward research?
2. What attitudes suggest interventions to the current infrastructure.
3. What is the difference in the attitudes of nurses towards research based on their nursing educational level?
4. What are the differences in the attitudes toward research between staff nurses and nurses with leadership roles in the organization?

Definition of Terms

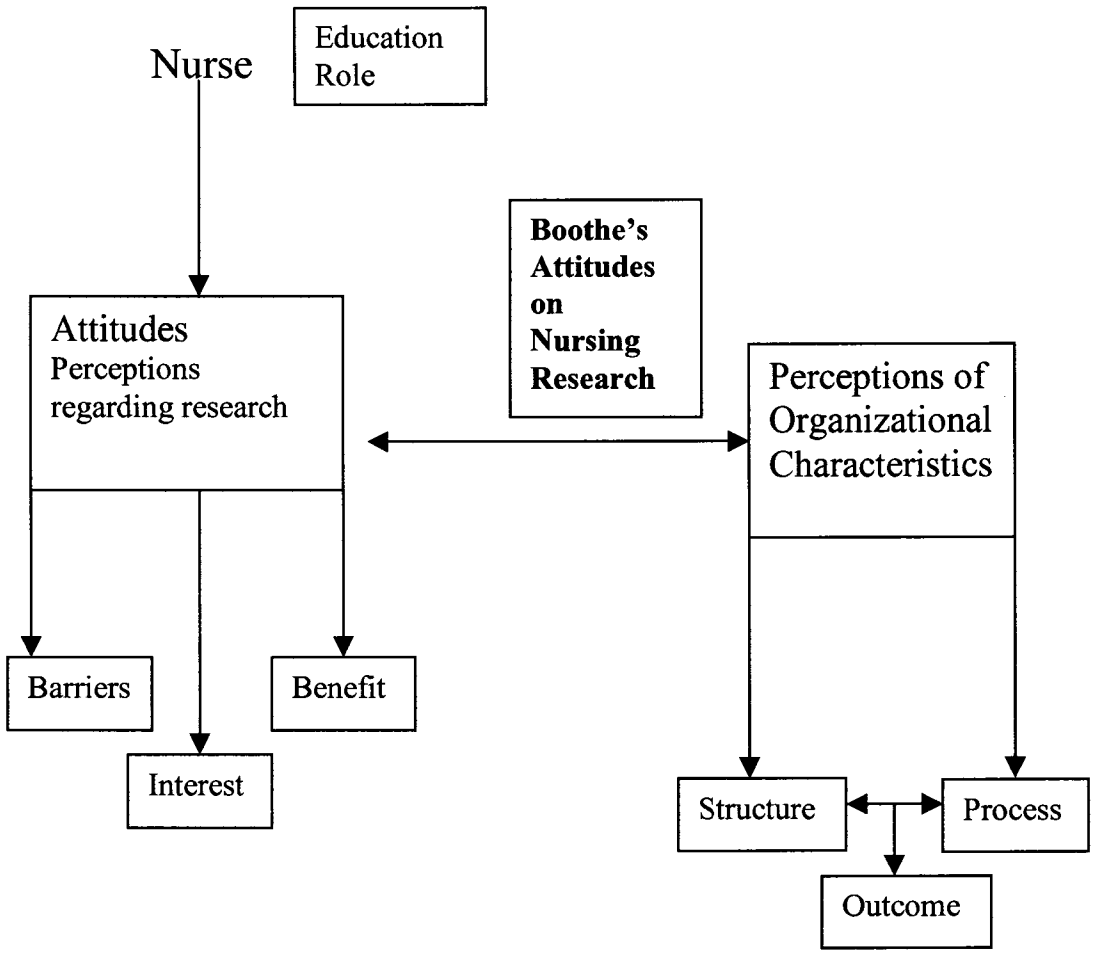
The characteristics of nurses are defined in several ways. The first is by the educational level. Educational level is defined by the highest level of nursing education obtained. Associate degree and diploma education are considered non-baccalaureate nursing education. Baccalaureate nursing education is defined by obtaining a Bachelor of Science in Nursing or a Bachelor of Science with a major in nursing. Master's and

doctoral preparation are defined by obtaining a graduate degree in nursing or another discipline.

The role of the nurse in the institution of study is also a characteristic requiring definition. The two roles for this study are those of a staff nurse and those in leadership roles. Staff nurses are defined as those who deliver direct patient care greater than 50% of their time. Direct patient care is defined as time spent in assessing, planning, implementing, and evaluating patient care. By this definition, charge nurses are included in the staff nurse grouping. Leaders are defined as those in formal leadership positions such as unit coordinator, nurse manager and director positions along with those in nontraditional leadership roles such as educators, clinical nurse specialists, case managers and outcomes coordinators.

Attitudes toward research are defined by using Boothe's Attitudes on Nursing Research Scale. Boothe's scale is divided into three subscales specific to attitudes. These are (a) interest and environmental support, (b) payoff and benefits, and (c) barriers to conducting research. The figure below diagrams the relationship between the concept variables and the study variables.

Figure 2. Relationship between concept variables and study variables



CHAPTER 3

METHODS

Design

This research project is a quantitative, non-experimental, descriptive study that used a survey methodology. The researcher did not manipulate variables to determine causality. The goal of the research was to describe nurse attitudes toward research and examine how those attitudes describe the existing infrastructure.

Sample

The source of this study's participants was a convenience sample derived from all registered nurses (n=953) employed at a 343-bed acute care hospital in the midwest. While causal inference is not the intent of this design, threats to the validity of the findings can results from selection of the sample and its resulting characteristics, and history in terms of events occurring around the tie of data collection. This may affect conclusions and generalizability. One historical threat at this facility is the current focus by nursing administration on evidence-based practice, research utilization, and research. Nursing administration had recently increased support for nursing research, which included forming a nursing research committee, securing consultative services from nurses educated at the doctoral level, implementation of a clinical ladder which includes a mandatory criterion for participation in evidence-based practice, research utilization, and research depending on the participants' educational level. Another historical threat at this

hospital is exposure to research projects. The organization has increased the number of nursing research studies over the past year. Staff members are frequently invited to participate in these studies, both as collectors of data and as study participants. These events may influence how participants responded to the items in the survey.

Convenience sampling uses the most readily available persons as participants in the study. A response rate of 30-40% from this hospital, or about 300-400 respondents was anticipated. Those included were not only staff nurses but also those who work in roles supporting the bedside nurses. These included nurse directors, nurse managers, unit coordinators, educators, outcome coordinators, and clinical nurse specialists. Nurses other than those at the bedside were included because of their ability to influence the implementation of evidence-based practice, research utilization, and ability to perform research. If the research findings indicate there is not administrative/managerial support, then interventions would need to focus on the administrative/managerial group first rather than the staff nurses. Non-registered nurse personnel were excluded from the study. These included licensed practical nurses, patient care assistants, and unit clerks.

A total of 119 (12.48% response rate) nurses completed the survey. Of the respondents who completed the age questions, age ranged from 22 to 64 years old with an average age of 41.6 (*SD* 9.57) years. Those who took the survey tended to be older practitioners with 68.7% (n=77) greater than 35 years of age or 31.3% (n=35) of the respondents 35 years or younger. The gender of those taking the survey was 9% (n=10) male and 91% (n=102) female. This is consistent with the organizational demographics. A large majority of respondents were married (81% or n=90). More than half (55.5%) of those who completed the survey held staff nurse positions (n=61). Respondents in management (unit coordinators, nurse managers, and nurse directors) accounted for

22.7% (n=25). Registered nurses not falling into staff or management totaled 21.8% (n=24) of the respondents. These nurses held positions in the hospital such as clinical nurse specialists, outcome coordinators, educators, and case managers.

The respondents were asked their basic educational preparation that qualified them to enter the nursing profession. The distribution was fairly equal among the three entries into practice. The breakdown consisted of 37.5% (n=42) who had obtained an associate degree, 32.1% (n=36) who had obtained a diploma degree and 30.4% (n=34) who had entered into the nursing profession with a baccalaureate degree. Of those responding, 94.5% (n=103) indicated some degree of motivation for continuing education. This is consistent with the large numbers of nurses (74.1%, n=83) who had pursued further education. The respondents were asked their level of education beyond their basic education. Thirty percent (n=33) had not pursued further formal education or had taken classes for non-credit. Those who obtained degrees in nursing, either at the baccalaureate or master's level accounted for 58.2% (n=64) of the respondents. Non-nursing continuing education accounted for 11.2% (n=13).

Based on the combination of initial and further formal education the educational groupings were determined. Those with less than a baccalaureate degree accounted for 21.9 % (n=18). Those nurses who held a baccalaureate degree accounted for 66.2% (n=57). Those with a master's degree accounted for 12.7% (n=11) of the respondents. The participants in the survey had higher overall educational levels than the organizational characteristics. The percentage of those with a baccalaureate degree was more than twice as high as the organizational characteristics, 66.2% compared with 32% in the organization. Those with a master's degree were more numerous at 12.7% compared with the organizational characteristic of 1%. The educational characteristics of

the sample suggest that the sample has more educational preparation in research than the total group of employed nurses based on the organization's educational mix. External validity, or generalizability, is limited even for the hospital from which the sample was obtained.

Instrument

The Attitudes on Nursing Research Scale was used for this study (Appendix A). The scale was developed by Boothe in 1981 as part of her dissertation and used by Bostrom and colleagues in 1989. The original survey consists of 46 items designed to determine attitudes related to nursing research. The items on the survey were divided into three subscales. These subscales are (a) interest and environmental support, (b) payoff and benefits, and (c) barriers to conducting research. The preliminary instrument reliability coefficient reported by Boothe (1981) for subscale one (interest and environmental support) was 0.913. This subscale consists of 21 items. Subscale two (payoff and benefits) consists of 17 items with a coefficient of 0.874. Subscale three (barriers to conducting research) consists of eight items and has a coefficient of 0.716. A subsequent study done by Boothe produced reliability coefficients for the three subscales identified in the preliminary scale as interest and environmental support 0.836; payoff and benefits, 0.691; and barriers to conducting research, 0.648 (Boothe, 1981). Appendix B is a listing of the specific survey items related to each subscale. The survey uses a 5-point Likert-like scale ranging from "1" indicating strongly disagree (SD) and "5" indicating strongly agree (SA). Permission to use the tool was obtained from Boothe (Appendix C).

Bostrom modified the instrument for use in her study to read in first person (Bostrom et al., 1988). Coefficient alpha for the modified instrument used by Bostrom

was 0.87. The study produced reliability coefficients for the three subscales of interest and environmental support, 0.83; payoff and benefits, 0.80; and barriers to conducting research, 0.64. The modified tool responses were arranged from strongly agree "1" to strongly disagree "5". Permission to use the modified survey tool was obtained from Bostrom (Appendix D). The instrument item responses for the current study were rearranged from strongly disagree "1" to strongly agree "5". Therefore, the overall total score ranged from 46 to 230. The range for subscale one was 21 to 105, subscale two ranged from 17 to 85, and subscale three ranged from 8 to 40.

A high score on the positive items represented more positive attitudes toward research and a high score on the negative items represented more negative attitudes toward research. To achieve a single score for analysis, the negative items were reverse scored. The process to determine the negative items involved four steps. The first step involved the initial reading of the item to determine if the item read negatively. The second step involved looking at mean scores, and items with a mean score less than 3 were reviewed. The third step entailed looking at the frequency distribution of those items that met the above criteria. The last step involved looking for the presence of negative words. After this four-step process, five items were reversed in their scoring. The items that were reversed were item numbers 9, 10, 27, 42, and 46.

Coefficient alphas to determine reliability were performed on the full scale using all items and on the three original subscales of (a) interest and environmental support, (b) payoff and benefits, and (c) barriers to conducting research. Cronbach's alpha for all items with the five identified items reversed was .879. Scale one, interest and environmental support, consisted of 21 items with a Cronbach's alpha of .840. Scale two, payoff and benefits, consisted of 17 items with a Cronbach's alpha of .844. Scale three,

barriers to conducting research, consisted of 8 items with a Cronbach's alpha was .571. If the reversed items (10 or 46) from scale 3 are deleted separately, the reliability improved slightly and was .600 and .593 respectively.

Expert opinion was obtained to determine if categories of structure, process, and outcome based on Donabedian's conceptual framework could be determined. This was done through a cover letter (Appendix E) and a questionnaire (Appendix F) sent to ten doctorally prepared nurses with a background in nursing administration. Six responses were returned for a response rate of 60%. Using the questionnaire, the experts categorized the items on the Boothe Attitudes on Nursing Research Scale as structure, process, outcome, or neither. The results were compared with Boothe's subscales to determine the degree to which alignment exists in Boothe's original three subscales and Donabedian's conceptual framework of structure, process, and outcome.

In addition to Boothe's scale, 18 additional questions assessed the knowledge related to statistical and design methods. These questions were included in the Bostrom et al. (1989) research at the organization of interest and it was believed this information would add value in the overall assessment of research at the organization. The final portion of the survey covered the demographic information of the participant. This represented 20 items on the survey. The total number of items on the survey tool for this study equaled 84.

Procedures

The study took place at a 343 bed acute care hospital in the Midwest. The organization is a regional referral center for trauma, burns, high-risk antepartum, neonatal, and pediatric services. A computer-based program administered the survey. The data were collected by a self-reporting method. The computer-based program

prevented participants from taking the survey more than once. The nature of the online survey program did not allow for identification, so this was not detected when reviewing the data. The study was initiated on December 4, 2006 at 00:01 and data collection ended on December 24, 2006 at midnight.

All registered nurses received an email (Appendix G) from the principal investigator inviting them to participate in the online survey. The email included basic instructions for completing the survey. The link to the actual survey was included in the email. Once linked to the survey, the opening section contained the informed consent followed by the actual survey. An email reminder (Appendix H) was sent each week for two weeks to thank those who had completed the survey and reminding those who had yet to do so (for a total of two reminders). The survey was available for a total of three weeks. After this time, the link was removed and data collection ended.

The survey was sent by email to 953 nurses with 119 respondents or a return rate of 12.48%. The majority of responses occurred after each of the email invitations were sent. Of those responding, 47% (n=56) did so in the first 48 hours after the initial email. The first email reminder generated an additional 23% (n=27) responses in the 48 hours after being sent and the last email reminder generated another 11% (n=13) in the following 48 hours after being sent.

Human Subject Protection

The study received Human Subject Institutional Review Board (HSIRB) approval at both the university (Appendix I) and organization of interest (Appendix J). The risks identified for study participants were minimal. The risks included the possibility of participants feeling they could be identified in the study and a potential for perceived coercion. Methods to reduce the two identified risks in completing the survey included

use of a computer-based program in which no person-specific identifying information would be required. This prevented recognition of individuals. The last two methods to reduce risk were the informed consent (Appendix K) that addressed anonymity and the voluntary nature of the study. Participants could have exited from the survey anytime in the process of taking the survey without jeopardy to employment or adversely affecting their relationship with the investigator. Monetary compensation did not occur as part of this study. Participation could have been perceived as burdensome, as the survey took approximately 20 minutes to complete.

The risks were minimal for this research, and approval for the study was obtained through expedited review. The consent was written at the 12^{th} grade reading level according to the Flesch-Kincaid grade level score. This grade level is higher than usually accepted for the general population but is appropriate for registered nurses taking the survey. Appendix L is the online/computerized survey that shows the format, informed consent, Boothe Attitudes on Nursing Research scale, Bostrom's additional methodology questions, and questions related to the characteristics of the nurses completing the survey.

The computer program used for the survey organized the data into an excel spreadsheet. The file is maintained in a secure directory with access only by the principal investigator and the creator of the survey. The data file does not contain any specific identifying information of the participants. Once the survey timeframe was completed, the raw data were transferred to a secured portable flash drive and the original survey file deleted from the system. The raw data will be maintained long-term digitally on a secured file accessible only by the principal investigator.

CHAPTER 4

RESULTS

Sample Characteristics

The demographic data were evaluated using descriptive statistics. The age of the nurse, gender, marital status, and initial education in nursing are described in chapter three. Characteristics of the nurses include current educational level in nursing and their role in the organization.

The data were analyzed by three educational groups: group 1 with less than a baccalaureate degree, group 2 with a baccalaureate degree and group 3 with greater than a baccalaureate degree. Of the 85 respondents who reported their educational level, 21.1% (n=18) had less than a baccalaureate degree, 65.8% (n=56) had a baccalaureate degree, and 12.9% (n=11) had greater than a baccalaureate degree. The gender of the three educational groups remained consistent ranging from 89-93% female and 7-11% male. The mean ages of the three educational groups were consistent ranging from 39.6 to 40.4. This is fairly consistent with the average age of the nurses at the organization, which is 42. Table 1 displays the characteristics of the three educational levels.

The data were also analyzed by role in the organization. Of the 60 respondents who identified themselves as staff nurses and completed the educational level questions, 31.7% (n=19) had less than a baccalaureate degree, 40% (n=24) held a baccalaureate degree, 11.6% (n=7) had a master's degree, and 16.7% (n=10) were taking classes. Organizational data compared to staff nurses who took the survey show the percent of respondents who hold a baccalaureate degree and master's degree is higher in this

sample. The latest organizational data indicate 32% of staff hold a baccalaureate degree and 1% hold a master's degree or higher.

Table 1

Characteristics of the Educational Groups

		< BSN	BSN	Master's
Age	Range	27-60	22-57	26-58
	M (SD)	39.61(10.19)	40.40 (9.38)	40.09 (11.21)
Gender	Male	11.1%	7.0%	9.1%
	Female	88.9%	93.0%	90.9%

Of the 47 respondents who identified themselves as leaders (nurse directors, nurse managers, unit coordinators, outcome coordinators, educators, and clinical nurse specialist), 6.4% (n=3) had less than a baccalaureate degree, 51.5% (n=24) held a baccalaureate degree, 42.5% (n=20) held a master's degree or greater. The expectation for the leaders is minimal education at the baccalaureate level. This is reflected in their job performance standards.

Question1

The first research question, "What are the attitudes of nurses toward research?" used descriptive statistics on each item on the Boothe Attitudes Toward Nursing Research Scale. The overall scores of all items on Boothe's Scale ranged from 101 to 193 (n=97, M=146.48, SD=17.44). Since a total score of 230 was possible on this 46-item instrument, this score indicated a slight degree of uncertainty to a slightly positive attitude toward research.

The attitudes toward research based on scale one, interest and environmental support, had a mean of 62.76 (range 39-79, *SD* 9.71). This score represents uncertainty of attitude toward research related to interest and environmental support. The mean is just under the score of 63 that represents uncertainty if all items received a score of "3." Attitudes toward research based on scale two, payoff and benefits, were slightly more positive. The mean was 58.63 (range 39-77, *SD* 8.11). This mean is just under the midpoint of uncertain "3" to agree "4." While the respondents perceive the payoff and benefits of research, they are uncertain about their interest and environmental support for research. The barriers to conducting research, scale three, had a mean of 24.3 (range 14-35, *SD* 4.25). This mean is the midpoint of "3" and represents uncertainty.

When the items were analyzed on an individual basis, positive attitudes toward research are evident. Table 2 displays the 12 most positive items (top quartile) in the Boothe Scale. The numbers of respondents answering agree or strongly agree, along with the percentage are displayed. Fifty percent of the items (n=23) had greater than 50% of the respondents answering agree or strongly agree to the item. Of the top quartile, nine of these twelve items (75%) are from scale two. Scale two measures payoff and benefits. From this analysis, the respondents see the payoff and benefits of conducting research. The most positive item was number 24 "Research findings that are advantageous to good patient care can be implemented in my working environment." Eighty-eight percent of the respondents were in agreement with this item with no respondents strongly disagreeing with this item. Only four (3.4%) respondents disagreed with this item. Overall, thirteen out of the seventeen items (76.47%) in scale two had more than 50% of the respondents answering agree or strongly agree. This shows positive attitudes toward

research in regards to the payoff and benefits. Appendix M provides the means and medians of all the items by scale.

Table 2

Top Quartile (12 Items) of the Most Positive (Agree and Strongly Agree) Responses on the Boothe Scale

#	Item	Mean	Median	Respondents n [a] (%)	Scale
24	Research findings that are advantageous to good patient care can be implemented in my working environment.	4.09	4.00	103 (88.03)	2
25	Nursing research is the means whereby the theoretical basis for nursing practice is derived.	3.92	4.00	96 (81.35)	2
32	Nursing research should be initiated by nurses in the clinical area.	3.86	4.00	89 (76.00)	2
44	I believe that I would conduct research if someone more knowledgeable would help me in the process.	3.70	4.00	85 (72.00)	2
39	Nurses would conduct research if relief time were given to conduct research.	3.66	4.00	72 (61.10)	2
38	Nurses would conduct research if they were provided time for research.	3.62	4.00	69 (58.47)	2
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	3.60	4.00	67 (57.26)	2
36	I am interested in conducting research.	3.53	4.00	72 (61.00)	1
27	Nursing research requires more from me than I am willing to give to my job. [b]	3.52	4.00	77 (65.81)	1

5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	3.50	4.00	63 (53.84)	1
22	I would conduct research if I had the time.	3.49	4.00	67 (56.80)	2
23	I would conduct research if I know how to write the proposal, conduct and analyze the results and findings.	3.48	4.00	67 (56.77)	2

Note. [a] Number of total respondents for each item varied from 117-118 [b] reversed scored

Table 3 displays the least positive items (bottom quartile) in the Boothe Scale. The first item (31) has the lowest mean overall. The items follow in ascending order of the means. The numbers of respondents answering agree or strongly agree, along with the percentage are displayed. Most of these items are from scale one; nine of the lowest twelve items in the lowest quartile came from the interest and environmental support scale.

Table 3

Bottom Quartile (12 Items) of the Least Agreement (Agree and Strongly Agree) Responses on the Boothe Scale

#	Item	Mean	Median	Respondents n [a] (%[a])	Scale
31	Nursing research is more essential in the medical setting than in the psychiatric setting.	2.17	2.00	11 (9.32)	1
12	I believe my job provides the time necessary to conduct research.	2.20	2.00	21 (17.80)	1
3	Nursing research is conducted because it allows nurses to be promoted.	2.29	2.00	19 (16.00)	2

19	I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	2.38	2.00	14 (12.00)	1
8	I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	2.48	2.00	16 (13.56)	1
18	I believe my working environment provides ample opportunity to conduct research.	2.81	3.00	44 (37.61)	1
21	I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	2.85	3.00	27 (23.10)	1
28	Nursing research should be conducted by nurses with a baccalaureate degree.	2.85	2.00	41 (34.74)	3
37	Nurses receive praise from their peers and colleagues when they conduct research.	2.86	3.00	43 (37.00)	2
16	My job provides ongoing educational programs in order to conduct research.	2.91	3.00	44 (37.50)	1
6	My supervisor would allow time in my daily assignment to conduct research.	2.92	3.00	42 (35.00)	1
20	I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	2.93	3.00	31 (26.70)	1

Note. [a]Number of total respondents for each item varied from 117-118.

Question 2

The second research question "What attitudes suggest interventions to the current infrastructure?" used the data from the expert doctorally prepared nurses' opinions to determine if subscales existed for structure, process, and outcome. Agreement at the 80%

level was used as the criterion to place an item into a subscale of structure, process, or outcome. Table 4 displays items identified as structure.

Table 4

Structure Items Identified by Experts at 80% or Higher Agreement (n=6)

#	Item	% (n)
4	I believe my place of employment would provide me with ample assistance during the research process.	100% (6)
5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	100% (6)
6	My supervisor would allow time in my daily assignment to conduct research.	83% (5)
16	My job provides ongoing educational programs in order to conduct research.	100% (6)
18	I believe my working environment provides ample opportunity to conduct research.	83% (5)
19	I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	100% (6)
20	I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	100% (6)
21	I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	100% (6)
28	Nursing research should be conducted by nurses with a baccalaureate degree.	83% (5)
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	100% (6)

Seven items related to structure had 100% agreement. The three other items had at least 80% agreement. Review of the items for applicability to structure was performed. All items except item 28, "Nursing research should be conducted by nurses with a

baccalaureate degree" were applicable to the structure definition. Cronbach's alpha with all 10 items on the structure subscale was .819. With item 28 removed, Cronbach's alpha increases to .854.

Three items were identified as a subscale of process (Table 5). Item 15, "I believe my peers in nursing would assist in conducting research," was the only item with 100% agreement. Item13 and 14 had at least 80% agreement. All three items relate to peer/collegial encouragement/support. The three-item subscale had a Cronbach's alpha of .772.

Table 5

Process Items Identified by Experts at 80% or Higher Agreement (n=6)

#	Item	%	(n)
13	My colleagues (other professionals) would encourage me to conduct research.	83%	(5)
14	My peers in nursing would encourage conducting research.	83%	(5)
15	I believe my peers in nursing would assist in conducting research.	100%	(6)

A pattern developed as the structure and process items were analyzed. With the removal of item 28, all but one item (number 34) fell into scale one, interest and environmental support. Item 34 "Nurses would conduct more research if more funds were available for them to use for this purpose" is included in Boothe's payoff and benefits subscale. Based on the expert opinion, it appears structure and process is a subscale of Boothe's interest and environmental support scale. Of the nine items in the structure subscale, six fell into the lower quartile of scores. In other words, these six items (items 6, 16, 18, 19, 20, 21) had the least positive attitude scores. Review of these items reveals the structure for time, ongoing education, opportunity to conduct research,

and assistance (secretarial, statistical, analysis of findings) is not perceived to be present in the organization of study. Two items related to structure fell in the upper quartile of scores. The respondents believe the organization would provide ample consultive assistance and funds are available to do research. The other four items fell in neither the upper or lower quartile (items 4, 13, 14, 15). Item 4 relates to assistance in general and items 13, 14, 15 relate to peer and collegial support and assistance.

Only one item (number 24), "Research findings that are advantageous to good patient care can be implemented in my working environment" was identified as an outcome. Therefore, with only one item, no subscale was identified.

Question 3

The third research question is "What is the difference in the attitudes of nurses toward research based on their nursing educational level?" The three educational groups were defined as nurses with less than a baccalaureate degree, with a baccalaureate degree and nurses with a master's degree.

As the educational level increased, the overall score of attitudes toward research increased indicating a more positive attitude. Out of a possible score of 230, those with associate and diploma degrees had the lowest score with a mean of 138.35 (range 101-160, *SD* 18.67). Those nurses with a baccalaureate degree had a mean overall score of 146.12 (range 114-186, *SD* 16.00). The nurses with a master's degree and above had an overall score of 154.12 (range 119-174, *SD* 19.43). Table 6 displays the means, standard deviation, and range for the overall scores and two subscales.

Table 6

Boothe Total and Subscale Scores by Educational Group

Score	<BSN	BSN	Master's
Overall Score			
M (SD)	138.35(18.67)	146.12(16.00)	154.12 (19.43)
Range	101-160	114-186	119-174
Interest and Environmental Support Subscale			
M (SD)	59.33 (11.25)	62.16 (9.81)	68.88 (7.09)
Range	39-76	44-79	54-77
Payoff and Benefits Subscale			
M (SD)	57.94 (9.32)	58.54 (7.16)	58.58 (11.48)
Range	39-75	44-73	39-74

The differences between total scores for the three educational groups were analyzed using an analysis of variance (ANOVA) and appropriate post hoc procedures. The ANOVA did not show statistical significance between the groups at p=.05. The ANOVA was performed using the two subscales of interest and environmental support (Table 7) and payoff and benefits (Table 8). Boothe's third subscale was not analyzed because of its low reliability and five of the eight items in the subscale relate more to educational preparation of the nurse than to attitudes towards research.

Table 7

Analysis of Variance of Interest and Environmental Support Scale

Source of variance	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	532.593	2	266.297	2.694	0.074
Within Groups	7116.793	72	98.844		
Total	7649.387	74			

Table 8

Analysis of Variance of Payoff and Benefits Subscale

Source of variance	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	1.556	2	0.778	0.011	0.989
Within Groups	4972.444	72	69.062		
Total	4974.000	74			

Table 9 displays the top quartile overall means comparing each educational group and the rank of the item within each specific group. Table 10 displays the bottom quartile overall means comparing each educational group and the rank of the item within each specific group.

Table 9

Top Quartile (12 Items) of the Most Positive (Agree and Strongly Agree) Responses in the Boothe Scale Compared Across the Three Educational Groups

#	Item	Overall Mean	<BSN Mean & (Rank)	BSN Mean & (Rank)	Master Mean & (Rank)
24	Research findings that are advantageous to good patient care can be implemented in my working environment.	4.09	3.78(3)	4.09(1)	4.27(1)
25	Nursing research is the means whereby the theoretical basis for nursing research is derived.	3.92	3.94(1)	3.81(3)	4.09(2)
32	Nursing research should be initiated by nurses in the clinical area.	3.86	3.83(2)	3.88(2)	3.64(13)
44	I believe that I would conduct research if someone more knowledgeable would help me in the process.	3.70	3.56(8)	3.75(4)	3.27(31)
39	Nurses would conduct research if relief time were given to conduct research.	3.66	3.72(5)	3.60(5)	3.64(4)
38	Nurses would conduct research if they were provided time for research.	3.62	3.67(6)	3.53(8)	3.73(10)
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	3.60	3.78(4)	3.47(9)	3.82 (6)
36	I am interested in conducting research.	3.53	3.39(16)	3.40(15)	3.55(20)
27	Nursing research requires more from me than I am willing to give to my job. [a]	3.52	3.44(11)	3.47(10)	3.63(18)
5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	3.50	3.39(14)	3.59(6)	3.64(15)

22	I would conduct research if I had the time.	3.49	3.39(15)	3.44(12)	3.64(16)
23	I would conduct research if I knew how to write the proposal, conduct and analyze the results and findings.	3.46	3.39(17)	3.56(7)	3.27(32)

Note. [a]Reverse scored

Table 10

Bottom Quartile (12 Items) of the Least Agreement (Agree and Strongly Agree) Responses in the Boothe Scale Compared Across the Three Educational Groups

			<BSN	BSN	Master
#	Item	Overall mean	Mean & (Rank)	Mean & (Rank)	Mean & (Rank)
31	Nursing research is more essential in the medical setting than in the psychiatric setting.	2.17	2.17(44)	2.16(45)	2.09(46)
12	I believe my job provides the time necessary to conduct research.	2.20	2.00(46)	2.09(46)	2.55(44)
3	Nursing research is conducted because it allows nurses to be promoted.	2.29	2.39(41)	2.28(44)	2.45(45)
19	I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	2.38	2.06(45)	2.53(42)	2.82(42)
8	I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	2.48	2.28(42)	2.44(43)	2.91(40)
18	I believe my working environment provides ample opportunity to conduct research.	2.81	2.56(36)	2.84(40)	3.18(34)
21	I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	2.85	2.44(40)	2.95(33)	3.09(37)

28	Nursing research should be conducted by nurses with a baccalaureate degree.	2.85	2.28(43)	2.95(34)	2.93(41)
37	Nurses receive praise from their peers and colleagues when they conduct research.	2.86	2.61(34)	2.89(36)	3.09(38)
16	My job provides ongoing educational programs in order to conduct research.	2.91	2.61(33)	2.93(35)	3.55(20)
6	My supervisor would allow time in my daily assignment to conduct research.	2.92	2.50(37)	2.82(41)	3.45(24)
20	I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	2.93	2.50(38)	3.09(29)	2.82(43)

The less than baccalaureate degree and the baccalaureate degree groups had many similar responses. Seven of the top ten overall most positive responses were seen in the top ten most positive responses in both of these educational groups. The less than baccalaureate degree group was more positive about doing research if they knew more about it, disagreed most with the statement that nurses are criticized too much by their peers when conducting research, and felt time spent giving patient care is more important than time spent conducting research. The baccalaureate degree group was more positive about their employer providing ample consultive assistance for conducting research and would conduct research if they knew how to write the proposal, conduct and analyze the results, and present the findings.

The nurses with a master's degree had only two of the overall most positive responses in their top ten most positive responses. These two items were item number 24 "Research findings that are advantageous to good patient care can be implemented in my working environment" and item 25 "Nursing research is the means whereby the

theoretical basis for nursing practice is derived." The master's prepared nurses were more positive about: (a) the statistical procedures needed to conduct research, (b) the skills and knowledge required to conduct research, (c) research should be conducted by individuals with doctoral degrees, (d) the place of employment providing ample assistance during the research process, (e) peers assisting in conducting research, (f) research being conducted by nurses if more funds available, and (g) collegial encouragement/support for conducting research being present.

A Kruskal-Wallis test was performed on all items of the survey based on educational level. Once initial significance were found with the Kruskal-Wallis, additional post hoc procedure with a Mann-Whitney U were performed to determine the significance between educational groups on the individual items. Of the 46 items on the survey, three items were statistically significant. These were item 11 "I am familiar with select statistical procedures used for analysis of research findings," item 17 "I have skills and knowledge necessary for me to conduct research," and item 40 "Nursing research should be conducted by nurses with a doctorate." Mann-Whitney U showed no statistical significance between the <BSN and BSN groups. Statistical significance was found when comparing the <BSN and BSN groups separately to nurses with a master's degree, with the master's prepared nurses rating the items higher in all comparisons. Tables 11and 12 displays the results for the analysis between the educational groups.

Table 11

Mann Whitney U Results of the <BSN Compared to Master's Level Nurses

#	Item	(*M* Rank) <BSN	Master	Z	*p*
11	I am familiar with selected statistical procedures used for the analysis of research findings.	11.00	21.55	-3.391	0.001
17	I have the skills and knowledge necessary for me to conduct research.	11.61	20.55	-2.865	0.005
40	Nursing research should be conducted by nurses with a doctorate.	12.06	19.82	-2.464	0.016

Table 12

Mann Whitney U Results of the BSN Compared to the Master's Level Nurses

#	Item	(*M* Rank) BSN	Master	Z	*p*
11	I am familiar with selected statistical procedures used for the analysis of research findings.	31.41	50.50	-3.127	0.002
17	I have the skills and knowledge necessary for me to conduct research.	31.44	50.36	-3.011	0.003
40	Nursing research should be conducted by nurses with a doctorate.	32.35	45.64	-2.123	0.034

Question 4

The last research question is "What are the differences in the attitudes toward research between staff nurses and nurses in leadership roles?" Staff nurses answered their present job responsibilities as either staff nurse or charge nurse. Leaders answered their present job responsibilities were either unit coordinators, managers, directors or other. The characteristics of the staff include 31.7% (n=19) with less than a baccalaureate

degree, 40% (n=24) held a baccalaureate degree, 11.6% (n=7) had a master's degree, and 16.7% (n=10) were taking classes. Of the respondents who identified themselves as leaders 6.4% (n=3) had less than a baccalaureate degree, 51.5% (n=24) held a baccalaureate degree, and 42.5% (n=20) held a master's degree or higher. The leader group tended to have a higher level of education. This is expected as a baccalaureate degree is required for nurse managers and a master's degree is required for nurse directors.

The leaders had just slightly overall positive score 148.23 (range 117-193, *SD* 16.20) compared to the staff nurses whose overall score was 146 (range 101-186, *SD* 18.37). The statistical procedure used to answer this fourth research question was a t-test performed on the subscales. The t-test procedures did not show statistical significance between the role groups (Table 13) however, scale one, interest and environmental support approaches statistical significance. Further exploration of this finding seemed warranted since the leader group contained several types of leaders.

Table 13

T-Test Results for Staff Nurses and Nurse Leaders

	Mean		*t*	*df*	*p*
	Staff	Leaders			
Scale 1- Interest and Environmental Support	61.60	64.61	-1.033	90	0.055
Scale 2- Payoff and Benefits	59.77	57.87	.865	90	0.744

Table 14 displays items with the most agreement on the Boothe Scale compared to overall means and role group means with their rank. Table 15 displays the lowest quartile of the overall means and the role group means with their rank.

Table 14

Top Quartile (12 Items) Overall Means Compared by the Role Group Means and Rankings

#	Item	Overall Mean	Staff *M* (Rank)	Leader *M* (Rank)
24	Research findings that are advantageous to good patient care can be implemented in my working environment.	4.09	3.97(1)	4.24(1)
25	Nursing research is the means whereby the theoretical basis for nursing practice is derived.	3.92	3.95(2)	3.92(2)
32	Nursing research should be initiated by nurses in the clinical area.	3.86	3.95(3)	3.79(3)
44	I believe that I would conduct research if someone more knowledgeable would help me in the process.	3.70	3.79(5)	3.65(6)
39	Nurses would conduct research if relief time were given to conduct research.	3.66	3.84(4)	3.52(14)
38	Nurses would conduct research if they were provided time for research.	3.62	3.74(6)	3.57(10)
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	3.60	3.62(6)	3.69(4)
36	I am interested in conducting research.	3.53	3.52(11)	3.59(8)
27	Nursing research requires more from me than I am willing to give to my job. [a]	3.52	3.60 (9)	3.40(19)
5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	3.50	3.40(17)	3.67(5)
22	I would conduct research if I had the time.	3.49	3.48(13)	3.55(12)
23	I would conduct research if knew how to write the proposal, conduct and analyze the results and findings.	3.48	3.54(10)	3.49(14)

Note. [a]Reverse scored

Table 15

Bottom Quartile (12 Items) Overall Means Compared by Role Group Means and Rankings

#	Item	Overall Mean	Staff *M* (Rank)	Leader *M* (Rank)
31	Nursing research is more essential in the medical setting than in the psychiatric settings.	2.17	2.23(45)	3.41(22)
12	I believe my job provides the time necessary to conduct research.	2.20	2.07(46)	3.37(24)
3	Nursing research is conducted because it allows nurses to be promoted.	2.29	2.38(44)	2.18(44)
19	I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	2.38	2.41(43)	2.37(43)
8	I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	2.48	2.52(42)	2.45(41)
18	I believe my working environment provides ample opportunity to conduct research.	2.81	2.85(35)	3.10(32)
21	I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	2.85	2.14(41)	3.49(18)
28	Nursing research should be conducted by nurses with a baccalaureate degree.	2.85	2.82(37)	3.13(31)
37	Nurses receive praise from their peers and colleagues when they conduct research.	2.86	2.85(34)	3.52(17)
16	My job provides ongoing educational programs in order to conduct research.	2.91	2.82(36)	2.79(40)
6	My supervisor would allow time in my daily assignment to conduct research.	2.92	2.75(40)	3.14(31)
20	I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	2.93	2.80(38)	3.55(14)

When the items were analyzed by role in the organization, the staff nurses had nine out of the top twelve items of the overall most positive items in their rankings of most positive items. The other top three items for staff nurses in their top twelve include items 41, 23, 30. All three of these items related to conducting research. Items 41 and 23 relate to knowledge and item 30 relates to time to conduct research (lightening patient assignments).

The leaders also had nine of the top twelve items in their rankings. These items were items 24, 25, 32, 44, 38, 34, 8, 5, 12. The other top three items for leaders in their top twelve include items 41, 4, and 1. These items indicate they would like to do research especially if they knew more about it (items 41 and 1) and they believe their place of employment would provide ample assistance with the research process. Item 1 "I would conduct research" ranked 13th overall by all respondents.

A Mann-Whitney U was performed based on the nurses' role (staff versus leader) in the organization on the 46 items in the survey. Six items were noted to be statistically significant; three (11, 13, 24) were rated higher by nurse in a leader role whereas three items (30, 39, 41) were rated higher by nurses in a staff role. Items number 11 and 13 are from the interest and environmental support scale and item numbers 24, 30, 39, and 41 are from the payoff and benefits scale. Table 16 displays the results.

Table 16

Mann Whitney U Comparing Staff to Leader Mean Ranks

#	Item	Staff (*M* Rank)	Leader	Z	*p*
11	I am familiar with selected statistical procedures used for the analysis of research findings.	47.65	65.28	-3.072	0.002
13	My colleagues (other professionals) would encourage me to conduct research.	48.80	63.85	-2.610	0.009
24	Research findings that are advantageous to good patient care can be implemented in my working environment.	49.83	61.34	-2.213	0.027
30	I would conduct research if patient assignments were lightened.	58.83	47.60	-1.975	0.048
39	Nurses would conduct research if relief time were given to conduct research.	59.98	48.67	-1.994	0.046
41	I would conduct research if I knew more about it.	60.21	48.38	-2.114	0.035

The leader group was subdivided into those nurses in management positions (directors of nursing, nurse manager, and unit coordinator) and other roles (clinical nurse specialist, outcomes coordinator, and educators). A Kruskal-Wallis was performed on all 46 items of the survey. Once initial significance was found, appropriate post hoc procedures using a Mann Whitney U were performed to determine statistical significance between the three role groups. Tables 17, 18, and 19 display the results. With two exceptions both leader groups rated the identified items higher than the staff nurse group. Staff nurse clearly saw a possible role for bedside nurses in conducting research. IN the comparison of the two leadership groups, the management group saw the structural supports of the institution. The other leadership group of clinical nurse specialist,

educators, and outcomes coordinators saw the benefits and barriers to clinically focused research.

Table 17

Mann Whitney U Comparing Staff to Management

#	Item	Staff	Management (*M* Rank)	Z	*p*
4	I believe my place of employment would provide me with ample assistance during the research process.	39.63	52.94	-2.399	0.016
5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	38.20	54.52	-2.968	0.003
6	My supervisor would allow time in my daily assignment to conduct research.	39.53	53.18	-2.375	0.018
7	The process of submission of the research proposal to the hospital nursing research committee is too detailed.	39.38	49.86	-2.132	0.033
11	I am familiar with selected statistical procedures used for the analysis of research findings.	39.37	53.58	-2.546	0.011
30	I would conduct research if patient assignments were lightened.	47.28	32.13	-2.694	0.007
32	Nursing research should be initiated by nurses in the clinical area.	46.83	35.38	-2.236	0.025

Table 18

Mann Whitney U Comparing Staff to Other Leader Roles

#	Item	Staff (*M* Rank)	Other leaders (*M* Rank)	Z	*p*
11	I am familiar with selected statistical procedures used for the analysis of research findings.	39.28	52.46	-2.338	0.019
13	My colleagues (other professionals) would encourage me to conduct research.	39.30	52.42	-2.337	0.019
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	39.49	51.92	-2.273	0.023

Table 19

Mann Whitney U Comparing Management to Other Leader Roles

#	Item	Management (*M* Rank)	Other Leaders (*M* Rank)	Z	*p*
4	I believe my place of employment would provide me with ample assistance during the research process.	29.26	20.56	-2.308	0.021
5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	29.98	19.81	-2.698	0.007
7	The process of submission of the research proposal to the hospital nursing research committee is too detailed.	28.82	21.02	-2.087	0.037
30	I would conduct research if patient assignments were lightened.	19.83	27.50	-2.061	0.039
32	Nursing research should be initiated by nurses in the clinical area.	20.86	28.46	-2.065	0.039
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	19.58	29.42	-2.712	0.007

Qualitative Analysis

The two open-ended questions on the survey yielded interesting results. The first asked, "If you were in a position to participate in a research study, what information and support would you need to fulfill this activity?" The second simply asked for open-ended comments. The data from these two questions are qualitative, and content analysis was used to systematically review the information for emerging themes.

Comments from the two questions were combined for analysis. A total of 88 comments were reviewed for emerging themes. The comments were read in their entirety. Consecutive readings were performed and groupings developed. Four emerging themes were time, support, education, and financial support.

Support was the theme with the most comments. Of the 88 comments, 43 contained a reference to support. The most comments about the support needed for conducting research related to a mentor, doctorally prepared/resource person to assist and support them in the research process. Generally, what was needed is the support of someone more knowledgeable of the research process (including statistical analysis) available to participate in research activities. There were 37 comments related to this specific type of support. Another six comments related to secretarial support needed to participate in research activities while six other comments related to administration support for research. These comments ranged from upper administration to manager support for research.

Time was the next theme that emerged. Thirty-three of the respondents commented on time as a needed allocation to participate in research activities. Some

elaborated on ways to allocate time but most just needed time away from their patient care assignment in order to participate in the research process.

Education was the third theme to emerge. Twenty-two comments about educational needs were recorded. Specific educational needs included in the comments related to the hospital procedures for research, IRB procedures, and the procedures related to the research process itself. The last theme that emerged related to the financial aspect of research. The process to apply for grants, along with the general funding for expenses related to research, accounted for seven of the comments.

Statistical and Design Methods

Additional findings of the survey include an analysis of knowledge related to statistical and design methods. Questions 49 through 66 were a list of terms related to statistical and design methods used in research. The respondents answered the questions based on their level of familiarity with such terms. Four answers were possible ranging from "1" representing unfamiliarity to "4" representing having a working knowledge of the term. The data were analyzed by separating respondents into the same educational groups used previously and by staff nurses and leaders groups (Table 20).

Review of the mean scores indicate familiarity and knowledge with statistical and design methods is low with few items moving towards "working knowledge" in a few groups. In the three educational groups, knowledge and familiarity consistently rise as the educational level increases. This occurs in every question but the one involving "ratio scale" in which the <BSN group had a higher mean than the BSN group. The leaders are consistently higher in knowledge and familiarity in each term than the staff nurse group.

Table 20

Statistical and Design Methods

	Means				
	<BSN n=18	BSN n=57	MSN n=11	Staff n=61	Leaders n=48
Measures of central tendency	2.06	2.61	3.55	2.43	3.14
Probability	2.22	2.54	3.55	2.46	3.04
T-Test	1.11	2.02	2.73	1.72	2.48
Interview schedule	1.59	1.66	3.00	1.78	2.06
Ratio scale	2.11	1.80	2.55	2.05	2.15
Placebo control	2.06	2.18	3.36	2.28	2.43
Validity	2.17	2.29	3.45	2.42	2.73
Correlations	2.22	2.36	3.55	2.47	2.71
Measures of variability	2.11	2.51	3.73	2.43	2.92
Chi square	1.22	1.82	2.82	1.67	2.31
Ordinal scale	1.22	1.48	2.55	1.53	2.04
Interrater reliability	1.11	1.80	2.82	1.62	2.37
Random sample	2.33	2.67	3.55	2.59	3.10
Regression analysis	1.22	1.63	2.91	1.61	2.14
Randomization	2.18	2.39	3.45	2.37	2.78
Informed consent	3.00	3.18	3.55	3.18	3.25
Questionnaire development	2.33	2.35	3.18	2.39	2.73
Convenience sample	1.50	2.04	3.30	1.97	2.63

Note. 1= Unfamiliar
2=Have heard of it
3=Have used it
4=Have working knowledge

CHAPTER 5

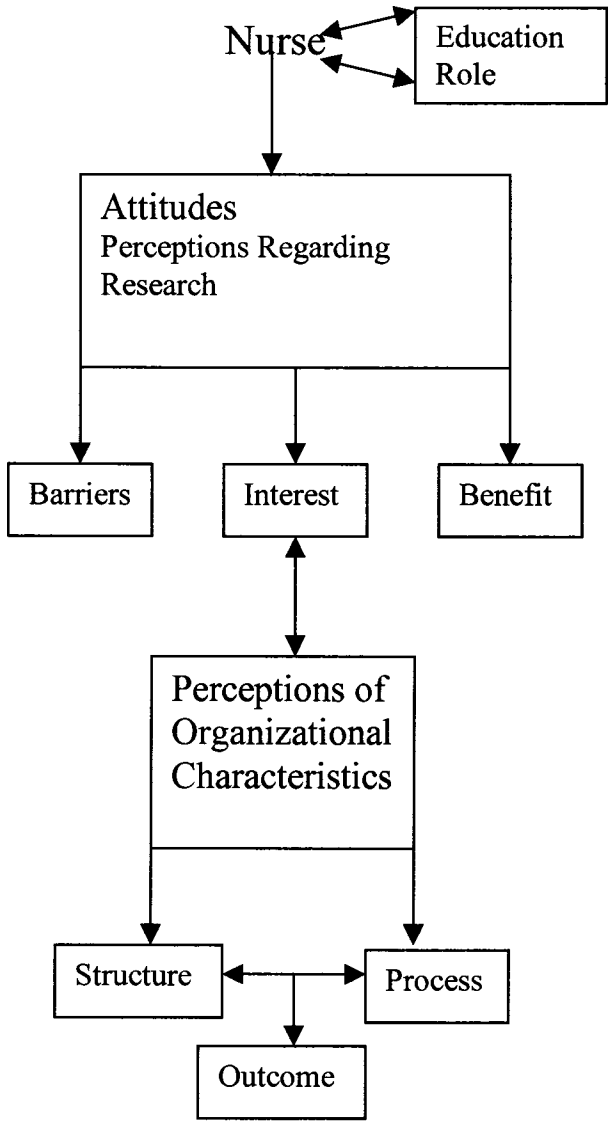
DISCUSSION AND IMPLICATIONS

Conceptual Framework

Donabedian's conceptual framework of structure, process, and outcome was useful in analyzing the concept variables and study variables. The organization of interest is in the early stages of formulating their research program. Donabedian's premise of good structure is the basis of good process, which in turn is the basis for good outcomes, is supported by the results of this survey. The application of Donabedian's conceptual framework to this survey supports the need for good structure and process for research to be in place for good outcomes of research to occur. The application of structure and process to the instrument shows structure and process are a subscale of scale one, interest and environmental support. Based on the findings, a change in the relationship between concept variables and study variables is warranted. Figure 3 represents the new relationship between concept variables and study variables.

This change represents that structure and process are not separate variables but are a subset of the interest and environmental support scale. Based on study results, the organization of interest could strengthen their research program by defining research procedures and also by specifically addressing structure items such as time, ongoing education programs, opportunities to conduct research, and comprehensive assistance in the research process.

Figure 3. New relationship between concept variables and study variables



Findings in Relation to the Literature

The findings of this project are consistent with the literature review. The literature review of previous studies found many common barriers related to nursing research. As

stated in Chapter 2, common barriers to research include: (a) insufficient time, (b) support from administration, (c) understanding research/statistical analysis, (d) authority to change practice, and (e) adequate computer access (Bostrom et al., 1989; Estabrooks et al., 2003; Hutchinson & Johnston, 2004; Kajermo et al., 1998, 2000; Kyei, 1993; McKenna et al., 2004; Melnyk et al., 2004; Pravikoff et al., 2005). Hutchinson and Johnston in their 2006 article identified the common barriers to research as reported by researchers using the BARRIERS scale since 1991. These include: (a) lack of time, (b) lack of confidence in critical appraisal skills, (c) lack of authority, (d) organizational infrastructure, (e) lack of support, (f) lack of access, and (g) lack of evidence. Unclear in the literature is the effect educational preparation has on research attitudes and the subsequent use in practice. The literature does not address the role of the nurse and their perceived attitudes toward research.

The results of this study are generally consistent with the research except for one very important aspect. Authority to change practice was cited in the majority of the research and lack of authority was included in the 2006 overview done by Hutchinson and Johnston. The ability to change practice based on research findings could be argued to be as important as research itself. The item receiving the most positive response in this research was item number 24 "Research findings that are advantageous to good patient care can be implemented in my working environment." This positive attitude toward research findings by nurses at the organization of interest is a key indicator of moving nursing toward a practice based on evidence.

The other findings in the literature of lack of time, lack of understanding of research and statistical analysis, organizational infrastructure, and lack of support are also

seen in this study. Findings not seen in this research are lack of access and lack of evidence.

Overall Findings

Overall attitudes toward research are neutral to slightly positive in the organization of interest. Findings overall did not indicate statistically significant differences in the various groups of their attitudes towards research based on the ANOVA and t-test performed. Findings did indicate statistically significant differences on specific mean rankings of individual items based on educational level and role in the organization.

Breakdown of individual items shows attitudes toward research are positive when looking at the payoff and benefits of research. Based on this, one could conclude the nurses at the organization of interest understand the importance of implementing research into practice and see the benefits in the outcomes for patients.

The items are with the least agreement related to interest and environmental support. The organization of interest has a core group of nurses who understand the payoff and benefits of research but do not feel the infrastructure for a supportive research environment is present. This research provides data to guide specific interventions that can be undertaken to strengthen their research program.

Question 1: What Are the Attitudes Toward Nursing Research?

Overall scores of respondents to the survey were generally one of uncertainty toward research. The overall cumulative mean score was 146.48 resulting in an overall individual mean of 3.18 indicating a degree of uncertainty of attitudes toward research. When analyzing individual items based on items that had a greater than 50% response to agree and strongly agree, a pattern begins to develop. The pattern is the most agreement

in attitudes toward research relate to payoff and benefits whereas the least agreement in attitudes toward research relate to interest and environmental support. This is an important factor when initiating any change such as improving a nursing research program. If those involved with evidence based practice, research utilization and research do not understand the benefit to patient care, the success of the change will be compromised.

Question 2: What Attitudes Suggest Interventions to the Current Infrastructure?

This question provides specific direction to the organization of interest on their research program. Changes the organization should consider are related to addressing the structure for research. Structural changes include developing a mechanism in which time is available for nursing research. Another intervention is providing educational programs related to conducting research and support by those more knowledge in the research process. Assistance with statistical analysis is seen as another important component for improvement. These items are all seen in the lower quartile of item rankings and were also identified in the qualitative themes that emerged from the comments.

Question 3: What Is the Difference in the Attitudes of Nurses Toward Research Based on Their Nursing Education Level?

There was no statistically significant difference found between the three educational groups based on the ANOVA. Analysis of individual items indicated differences based on mean ranking. Nurses with less than a BSN or BSN had many similarities in attitudes toward research. A Kruskal Wallis with appropriate post hoc procedures was performed resulting in statistically significant differences on several items. No statistical significance was found between the less than a BSN and BSN group. Statistical significance was consistent between the less than a BSN and BSN and

the masters prepared nurse. The three items identified in this test all related to knowledge and skills of doing research. Based on their master's level educational preparation and exposure to formal research, it is not surprising to see differences in their rankings. This does present a different challenge for conducting research with this group, and suggests that the master's prepared nurses will need different support from the organization. They appear to have a fundamental knowledge of research and need time allocated in their role. Since collegial support is present, building on joint research would be a positive first step.

The less than a BSN and BSN groups present different challenges. Since these two groups make up the majority of nurses at the organization of interest, a focus on improving their scores related to interest and environmental support is warranted. Issues addressed by structure and process are the most appropriate starting point. Again, addressing issues related to time, ongoing education and assistance are priorities.

Overall, as the educational level increased, scores also increased. This indicates a more positive attitude toward research as educational level increases. The rankings of the less than less than a BSN and BSN groups were fairly similar which is consistent with their educational exposure to the formal process of conducting research. The master's prepared nurses ranked individual items differently, which is not unexpected due to their familiarity with the research process. They perceive they have the skills and time necessary to conduct research but need more statistical assistance and secretarial support related to research.

Question 4: What Are the Difference in the Attitudes Toward Research Between Staff Nurses and Nurses in Leadership Roles?

No statistical significance was found for the responses of the nurses on subscale one or two between the role groups using the t-test. The *p* value comparing responses on

the interest and environmental support scale approached statistical significance and further analysis was done. First, mean rankings were compared and were fairly consistent with each group having nine out of the top twelve overall items in their rankings. A Kruskal Wallis with appropriate post hoc procedures identified six items with statistical significance. The management group had significantly more agreement about statistical procedures, collegial support and implementation of advantageous research findings. The staff had significantly more agreement about needing more knowledge related to conducting research and conducting research if more time were allocated for this purpose.

Since the leader group consisted of those in formal management positions and other leaders, additional analysis was conducted to determine if differences between the three groups (staff, management, and other leaders) existed. The Kruskal Wallis and appropriate post hoc procedures showed statistically significant differences between these groups. The staff group was significantly higher in their scores on items 30 and 32. Staff would conduct research if patient assignments were lightened and those in clinical areas should be conducting research.

The management group was significantly higher on items 4, 5, 6, 7 and 11. Management perceives their employer would provide ample assistance and also consultive assistance in conducting research. They also are significantly higher in their attitude of allocation of time for research by their supervisor. Their attitudes about their knowledge related to statistical procedures for analysis was significantly higher. Last, the management group attitude toward the process of submission to the hospital nursing research committee being too detailed was significantly higher.

Comparing the staff group to the other leader group, three items were statistically significant, all with more agreement in the other leader group. The three items are 11, 13 and 34. The other leaders (clinical nurse specialist, outcomes coordinators, and educators) were more familiar with statistical procedures and collegial support. The other leaders were more positive that more nursing research would be conducted if funds were available for this purpose. The findings are consistent with the practice of the other leaders who are engaged in research, research utilization and evidence-based practice as a formal part of their role in the organization.

Comparison of the management group to the other leader group showed differences on six items. Four items were significantly higher for the management group than the other leader group. These items are 4, 5, 7 and 30. The other leader group was significantly higher on two items, 32 and 34. The management group believed their place of employment would provide ample assistance and consultive assistance during the research process. The management group also believed they would conduct research if assignments were lightened and the process of submission to the nursing research committee is too detailed. The other leader group was significantly higher in their attitude that nurses in the clinical area should conduct nursing research.

Comparing all three groups, staff and other leaders are significantly higher in their attitude that nurses in the clinical area should initiate nursing research. Management group was significantly higher in their attitude that their place of employment would provide them with ample assistance and ample consultive assistance for conducting research.

Nurses in formal management positions are the drivers of unit practices. They are responsible for the quality of care. Understanding and applying research is the first step

in supporting research endeavors and in improving outcomes, which in turn improves quality. Findings for the management group suggest a dissonance between support for initiating nursing research at the clinical level and the attitudes of those who control resources to make this a reality. This finding is consistent with the lack of time for nurses to conduct research cited in the literature.

Limitations

The main limitations of this study are sample size and survey delivery method. The number of respondents was low and threatens the ability to apply results to the organization or research community. The online computer method to administer the survey did not produce response rates the organization has seen for other surveys administered in this method. This may be due to a number of factors. More frequent reminders sent out with organizational surveys and remuneration with "fabulous prizes" are part of the organizational culture. This survey provided no remuneration for participation in the survey. Although the results cannot be generalized to the nursing population, the information learned from this research will be beneficial to the organization of interest as they develop their nursing research program. The survey did produce over 100 responses from nurses who had enough interest in research to participate in the study.

Timing of the study is potentially a limitation due to the time of year this study was conducted. This probably had an effect on the sample size. The period from Thanksgiving to New Years is not the most optimal time to conduct any survey and timing of this research study fell directly in the middle of this period.

Potential participants may also have felt email burden with large numbers of emails sent out on a daily basis. An organizational initiative is currently underway

addressing alternatives to using email to communicate to employees. Despite the low number of respondents, the goal of the research was to describe nurse attitudes toward research and examine how those attitudes describe the existing infrastructure. We do not know if the respondents who are more interested in research were more likely to participate in the survey or those most disinterested in research were more likely to participate in the survey. However, findings from this study provide preliminary knowledge to examine possible changes to the evidence based practice and research program at the organization of interest. It is unrealistic to believe every nurse will participate in research. With just over 100 respondents, it appears there is a core group of nurses that could begin to strengthen the nursing research program.

The last effect on sample size is the method of data collection. Technology has advanced to make data collection via online methods very easy to send out to potential respondents. This method may have had an adverse effect on the sample size. The convenience and ease of email has led to an overall increase in email volume. Many trivial messages are sent by email. Combining the increasing volume and a possible perception of the lack of importance of a message sent by email may serve as an explanation for the response rate.

A last limitation is related to the instrument and the reversal of the specific items. No data were found in Boothe's previous work related to scoring of negatively worded items. The researcher does not believe this had any effect on the overall results of this study but consistency in the scoring process is needed as further research is done.

Application to Administrative, Clinical, and Educational Practice

Administrative practice. In general, implications for administrative practice are consistent with the literature. Time, support, and education were identified as areas for interventions to change the attitudes toward research in nursing.

Results of this research, despite a low response rate, provide important information regarding implications for administrative practice. The data, both quantitative and qualitative, suggest changes in the structure for research. Consistent with previous studies, time, support, and education are three factors the organization must address in order to improve attitudes and ultimately outcomes of research. These three factors fall into the structure framework. Administrators control the resource allocation related to the structure for improving nursing research. For instance, the study organization has recently implemented a nursing professional advancement ladder. Evidence-based practice/research is a mandatory category of this ladder. This has potential to address the expectation for some level of research in nursing practice. Changing the structure of a professional advancement ladder so once a nurse has achieved a level on the ladder, time is allowed in the work schedule to participate in the research process would be an intervention that could improve attitudes and the outcomes of research further.

Implications for support are also an opportunity. The availability of educational resources such as those mentioned in the participants' comments could be incorporated into the organization. These include an on-site doctorally prepared nurse who is available for education, guidance, mentoring and consultation related to research. An educational class to increased knowledge related to the research process is also an opportunity. In 2007, the study organization started a comprehensive evidence-based practice class that

addresses many of the research processes. The focus of the class is to understand research and its applicability to practice. This provides the foundation of research and spirit of inquiry needed for a robust nursing research program.

Those in administrative roles have an opportunity to increase their knowledge and skills related to research. This would potentially have a positive effect on their attitudes toward research and a potential influence on support for initiating nursing research in the clinical areas.

Clinical practice. Findings are consistent with previous research that identified insufficient (a) time, (b) support from administrative, and (c) understanding research/statistical analysis as the common barriers to conducting research. The major difference is other research studies identified inability to change practice as a common barrier. This is not consistent with this study, which found the most agreement attitude overall was the belief that research findings advantageous to good patient care can be implemented in their work environment. As the nursing profession moves more toward practice grounded in evidence, this finding increases in its significance. The final step in the research process is dissemination of research findings. Application of research findings is the ultimate in dissemination of research findings. The current study suggests that the study organization has more positive attitudes about making practice changes based on research than suggested by the literature.

Results indicate a core group that is interested in research if the structure and processes of the organization could support them. Implications for clinical practice suggest that clinical practice can be changed when research findings are advantageous. Providing those in clinical practice the opportunity for exposure to advantageous research findings through such activities as journal clubs, nursing grand rounds, or practice

councils would support changes in attitudes to research. The items in scale one (interest and environmental support) must be addressed. Addressing structure items in scale one such as ongoing educational programs, time away from their patient assignment, and consultative assistance are the first priorities. Addressing structural aspects could have a potential effect on the process items identified in the research. These three items all related to peer and collegial support and assistance in conducting research.

Educational practice. This study did show differences in attitudes toward research based on educational preparation. As education increases, a more positive attitude toward research emerges although it is not statistically significant. The master's prepared nurses had the most positive attitudes and also knowledge as demonstrated by the scores related to statistical and design methods. This group had consistently higher scores related to statistical and design methods ranging from 2.55 to 3.73 on the individual items. Their knowledge base related to research is falling between "have heard of it" to "have used it." This indicates areas for educational growth related to statistical and design methods.

Suggestions for Further Research/Modifications

Additional research on Boothe's instrument and the relationship to Donabedian's framework is warranted. Based on the expert opinion of a group of six doctorally prepared nurses and using at least an 80% agreement on individual items, items related to structure, process and outcome were identified. Item 28, "Nursing research should be conducted by nurses with a baccalaureate degree" was removed based on this analysis after review by the researcher. Research utilization and evidence-based practice are taught at the baccalaureate level in nursing but the process of doing research is not taught until the master's level. The American Nurses Association (2004) document, *Nursing:*

Scope and Standards of Practice states nurses at the baccalaureate level "integrate research findings into practice" (p.40). In contrast, the nurse prepared at the master's level "contributes to nursing knowledge by conducting or synthesizing research" (p.40). Modification of the survey item to align with current American Nurses Association *Nursing: Scope and Standards of Practice* is warranted.

Research related to interventions to improve research attitudes of nurses and effectiveness is warranted. This information is lacking in the literature. Replication studies, such as this one, after specific interventions are implemented are appropriate. Exploration of what interventions for providing time, support and education should be evaluated through the research process. Interventions such as including research in a nursing professional advancement ladder should have effectiveness evaluated through the research process. Specific education provided by organizations on the research process and application of evidence should also be evaluated through the research process.

Research specifically related to the structure and process of robust nursing research programs related to nursing attitudes would be of tremendous interest. This research would provide insight into potential structural interventions that have been successful at other institutions. This would provide information on what interventions are most effective and help prioritize the interventions for any organization interested in improving their nursing research program.

There has been a trend for master's in nursing programs not to require a thesis as a requirement for graduation. The long-term effects of this changed requirement on the attitudes toward research would be an area for additional future research. Additional research on master's prepared nurses who have completed a thesis requirement versus those who have not would provide information on the usefulness and long-term

implications of nursing research. The master's prepared nurses who have completed a thesis provide the foundation for continuing education at the doctorate level. If the trend is moving away from the thesis requirement, this may have a long-term consequence on the numbers of doctorally prepared nurses, specifically those with a PhD.

Further research on the management role related to research is indicated. Their attitudes set the stage for clinical staff acceptance including interest and benefits of research. Multi-center research studies on the nurse management group and clinical nursing research might provide further insight into interventions necessary for a successful nursing research program.

Response rate information from previous online surveys was used as the basis for the methodology for the study. The organization of interest reports much higher response rates on other surveys performed annually. The annual employee opinion survey and registered nurse staff satisfaction survey have produced response rates ranging from 76% to 93% over the last several years. In general, the literature reports much higher response rates than occurred in this study for mailed or telephone survey methodologies. Research in the area of using online delivery of surveys is warranted.

Conclusions

This study has shown overall attitudes towards research have not significantly changed over the last 26 years in the nursing profession. The same barriers of insufficient time, lack of support from administration, and lack of understanding research/statistical analysis are still seen as common barriers to conducting research. This study suggests there is a positive attitude toward implementing advantageous research finding into the practice environment. The organization of interest appears to be further along on this specific attitude item than what is reported in the literature.

This study supports the use of Donabedian's framework of structure, process and outcome for development and/or changes related to research programs. The importance the infrastructure plays in supporting outcomes is demonstrated in this study and cannot be ignored. Ongoing research about the way that structure and process influence attitudes toward research is necessary. Overall, the nursing profession needs to address the structural aspects of doing nursing research to move research forward in clinical, educational and administrative practice.

The study did not identify differences in the overall attitudes of nurses based on their educational level; the study did identify statistical differences based on individual mean rankings. The less than a BSN and BSN nurses were consistent in their mean rankings and did not show any significant difference. The study showed education at the master's level was significant pertaining to having the skills and knowledge to conduct research. Additional research based on educational level related to research is needed.

While the master's prepared nurses had the most positive attitudes and knowledge, access to a doctorally prepared nurse researcher is needed in the acute care setting. Research on the effectiveness of nursing research practice models that incorporate a doctorally prepared nurse is warranted.

Overall, no statistical significance was found between the staff and leader groups but differences on individual rankings were found. One of the most significant findings in this study was the difference in attitudes between the staff group and management group. This organization has a group of staff nurses who would like to conduct research paired with a management group who do not agree that nursing research should be initiated by clinical nurses. Harmonizing the perception of these two groups is an important step in moving nursing research forward at this study institution.

This study is consistent in findings with many previous studies performed over the last 26 years. New findings on differences in attitudes between education levels and roles in the organization were identified in this study. This is an important finding and presents opportunities for further research in this specific area of nursing attitudes toward research.

APPENDICES

APPENDIX A

Boothe Attitudes on Nursing Research Scale

This inventory consists of a number of statements designed to determine attitudes related to nursing research. Read each item carefully and determine the extent to which you agree or disagree with the statement. Click on the circle that indicates the degree to which you agree or disagree with that statement about nursing research. Click on circle SA if you strongly agree, A if you agree, U if you are uncertain, D if you disagree, and SD if you strongly disagree.

Item	1	2	3	4	5
1. I would like to conduct research.	SD	D	U	A	SA
2. I would like to put research high on my list of priorities.	SD	D	U	A	SA
3. Nursing research is conducted because it allows nurses to be promoted.	SD	D	U	A	SA
4. I believe my place of employment would provide me with ample assistance during the research process.	SD	D	U	A	SA
5. I believe my place of employment would provide me with ample consultive assistance for conducting research.	SD	D	U	A	SA
6. My supervisor would allow time in my daily assignment to conduct research.	SD	D	U	A	SA
7. The process of submission of the research proposal to the hospital nursing research committee is too detailed.	SD	D	U	A	SA
8. I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	SD	D	U	A	SA
9. The informed consent necessary for employee participation in research prevents me from conducting research in my work areas.	SD	D	U	A	SA
10. The informed consent necessary for patient participation prevents me from conducting research in my work areas.	SD	D	U	A	SA
11. I am familiar with selected statistical procedures used for the analysis of research findings.	SD	D	U	A	SA
12. I believe my job provides the time necessary to conduct research.	SD	D	U	A	SA
13. My colleagues (other professionals) would encourage me to conduct research.	SD	D	U	A	SA

14. My peers in nursing would encourage conducting research.	SD	D	U	A	SA
15. I believe my peers in nursing would assist in conducting research.	SD	D	U	A	SA
16. My job provides ongoing educational programs in order to conduct research.	SD	D	U	A	SA
17. I have the skills and knowledge necessary for me to conduct research.	SD	D	U	A	SA
18. I believe my working environment provides ample opportunity to conduct research.	SD	D	U	A	SA
19. I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	SD	D	U	A	SA
20. I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	SD	D	U	A	SA
21. I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	SD	D	U	A	SA
22. I would conduct research if I had the time.	SD	D	U	A	SA
23. I would conduct research if I knew how to write the proposal, conduct and analyze the results and findings.	SD	D	U	A	SA
24. Research findings that are advantageous to good patient care can be implemented in my working environment.	SD	D	U	A	SA
25. Nursing research is the means whereby the theoretical basis for nursing practice is derived.	SD	D	U	A	SA
26. Members of the treatment team other than nurses should conduct research relative to patient care.	SD	D	U	A	SA
27. Nursing research requires more from me than I am willing to give to my job.	SD	D	U	A	SA
28. Nursing research should be conducted by nurses with a baccalaureate degree.	SD	D	U	A	SA
29. I would like to conduct a study of a problem in patient care.	SD	D	U	A	SA
30. I would conduct research if patient assignments were lightened.	SD	D	U	A	SA
31. Nursing research is more essential in the medical setting than in the psychiatric setting.	SD	D	U	A	SA
32. Nursing research should be initiated by nurses in the clinical area.	SD	D	U	A	SA
33. Nursing research should be initiated by nurses in education.	SD	D	U	A	SA
34. Nurses would conduct more research if more funds were available for them to use for this purpose.	SD	D	U	A	SA
35. Time spent giving patient care is more important than time spent conducting research.	SD	D	U	A	SA
36. I am interested in conducting research.	SD	D	U	A	SA

37. Nurses receive praise from their peers and colleagues when they conduct research.	SD	D	U	A	SA
38. Nurses would conduct research if they were provided time for research.	SD	D	U	A	SA
39. Nurses would conduct research if relief time were given to conduct research.	SD	D	U	A	SA
40. Nursing research should be conducted by nurses with a doctorate.	SD	D	U	A	SA
41. I would do research if I knew more about it.	SD	D	U	A	SA
42. Nurses are criticized too much by their peers when they conduct research.	SD	D	U	A	SA
43. Nursing research should be conducted by nurses with a master's degree.	SD	D	U	A	SA
44. I believe that I would conduct research if someone more knowledgeable would help me in the process.	SD	D	U	A	SA
45. Nursing research should be initiated by nurse researchers.	SD	D	U	A	SA
46. Patient participation in nursing research is difficult to obtain.	SD	D	U	A	SA

APPENDIX B

Boothe Attitudes on Nursing Research Scale: Items by Subscales

Subscale One-Interest and environmental support

1. I would like to conduct research.
2. I would like to put research high on my list of priorities.
4. I believe my place of employment would provide me with ample assistance during the research process.
5. I believe my place of employment would provide me with ample consultive assistance for conducting research.
6. My supervisor would allow time in my daily assignment to conduct research.
8. I know what is expected of me when submitting my research proposal to the hospital nursing research committee.
11. I am familiar with selected statistical procedures used for the analysis of research findings.
12. I believe my job provides the time necessary to conduct research.
13. My colleagues (other professionals) would encourage me to conduct research.
14. My peers in nursing would encourage conducting research.
15. I believe my peers in nursing would assist in conducting research.
16. My job provides ongoing educational programs in order to conduct research.
18. I believe my working environment provides ample opportunity to conduct research.

19. I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.
20. I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.
21. I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.
27. Nursing research requires more from me than I am willing to give to my job.
31. Nursing research is more essential in the medical setting than in the psychiatric setting.
35. Time spent giving patient care is more important than time spent conducting research.
36. I am interested in conducting research.
45. Nursing research should be initiated by nurse researchers.

Subscale Two-Payoff and benefits

3. Nursing research is conducted because it allows nurses to be promoted.
9. The informed consent necessary for employee participation in research prevents me from conducting research in my work areas.
22. I would conduct research if I had the time.
23. I would conduct research if I know how to write the proposal, conduct and analyze the results and findings.
24. Research findings that are advantageous to good patient care can be implemented in my working environment.
25. Nursing research is the means whereby the theoretical basis for nursing practice is derived.

26. Members of the treatment team other than nurses should conduct research relative to patient care.

29. I would like to conduct a study of a problem in patient care.

30. I would conduct research if patient assignments were lightened.

32. Nursing research should be initiated by nurses in the clinical area.

34. Nurses would conduct more research if more funds were available for them to use for this purpose.

37. Nurses receive praise from their peers and colleagues when they conduct research.

38. Nurses would conduct research if they were provided time for research.

39. Nurses would conduct research if relief time were given to conduct research.

41. I would do research if I knew more about it.

42. Nurses are criticized too much by their peers when they conduct research.

44. I believe that I would conduct research if someone more knowledgeable would help me in the process.

Subscale Three-Barriers to conducting research

7. The process of submission of the research proposal to the hospital nursing research committee is too detailed.

10. The informed consent necessary for patient participation prevents me from conducting research in my work areas.

17. I have the skills and knowledge necessary for me to conduct research.

28. Nursing research should be conducted by nurses with a baccalaureate degree.

33. Nursing research should be initiated by nurses in education.

40. Nursing research should be conducted by nurses with a doctorate.

43. Nursing research should be conducted by nurses with a master's degree.

46. Patient participation in nursing research is difficult to obtain.

APPENDIX C

Attitudes on Nursing Research Scale

Boothe's Approval

I give my permission to Andrea C. Bostrom, PhD, APRN, BC, to use and distribute the "Attitudes on Nursing Research Scale" that I developed in 1981. I understand that she made modifications in the scale items and renamed it the "Boothe Attitudes on Nursing Research Scale." I understand that she has had several requests for the use of the instrument and I am pleased that it can be used by others in their research.

Signed: [redacted]

Patricia S. Boothe

Date: 6/8/06

APPENDIX D

Attitudes on Nursing Research Scale

Bostrom Approval

I give permission to Nancee Hofmeister, BSN, RN to use and distribute the "Boothe Attitudes on Nursing Research Scale". I understand she has made a revision to the instrument that includes reversing the scale from strongly agree as the first choice to strongly disagree as the first choice.

Signed: 

Andrea C. Bostrom

Date: 9-15-06

APPENDIX E

Cover Letter to Expert Opinion Participants

Dear Nursing Colleague

As part of my master's thesis, I would like to apply the theoretical framework of Donebedian's structure, process and outcome to Boothe 's Attitudes on Nursing Research Scale. Much is known about nursing attitudes towards research but interventions to increase nursing research are lacking in the literature. This will allow the organization of interest to focus their improvement efforts on specific interventions related to these categories. Your expert opinion is being sought to determine if subscales can be obtained from the 46 items comprising the Boothe Attitudes on Nursing Research Scale.

Please complete this survey using the definitions provided for the concepts of structure, process and outcome as they relate to research. If the item does not apply, an option of neither is provided.

Please promptly return this survey in the pre-addressed envelope included in this packet to:

Nancee Hofmeister

Thank you for taking the time to complete this survey.

Nancee Hofmeister, BSN, RN

APPENDIX F

Expert Opinion Questionnaire

The following definitions should be used in determining if the items on the Boothe Attitudes on Nursing Research Scale fall into structure, process or outcome or neither.

Structure as defined by material resources are the facilities, equipment and money to do research. Human resources are included in the material resources category and include the number of qualified personnel who have been educated in the research process and can perform and assist in research. Organizational structure is included in the structure definition. This applies to research in terms of a nursing research committee, or nursing research program, and presence of an Institutional Review Board.

Process in terms of research is the day-to-day activities of doing research. This translates to nursing research by having time to conduct research. Analysis of the research findings, support from other members of the nursing team to engage in research and a clear outline of the procedure to develop a research proposal are included in process.

Outcome refers to an increase in the number of nurses who take part in research and/or implement research findings into practice. This may be through clinical pathways, procedures and protocols.

Items	**Theoretical Concept**			
1. I would like to conduct research.	Structure	Process	Outcome	Neither
2. I would like to put research high on my list of priorities.	Structure	Process	Outcome	Neither

3. Nursing research is conducted because it allows nurses to be promoted.	Structure	Process	Outcome	Neither
4. I believe my place of employment would provide me with ample assistance during the research process.	Structure	Process	Outcome	Neither
5. I believe my place of employment would provide me with ample consultive assistance for conducting research.	Structure	Process	Outcome	Neither
6. My supervisor would allow time in my daily assignment to conduct research.	Structure	Process	Outcome	Neither
7. The process of submission of the research proposal to the hospital nursing research committee is too detailed.	Structure	Process	Outcome	Neither
8. I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	Structure	Process	Outcome	Neither
9. The informed consent necessary for employee participation in research prevents me from conducting research in my work areas.	Structure	Process	Outcome	Neither
10. The informed consent necessary for patient participation prevents me from conducting research in my work areas.	Structure	Process	Outcome	Neither
11. I am familiar with selected statistical procedures used for the analysis of research findings.	Structure	Process	Outcome	Neither
12. I believe my job provides the time necessary to conduct research.	Structure	Process	Outcome	Neither
13. My colleagues (other professionals) would encourage me to conduct research.	Structure	Process	Outcome	Neither
14. My peers in nursing would encourage conducting research.	Structure	Process	Outcome	Neither
15. I believe my peers in nursing would assist in conducting research.	Structure	Process	Outcome	Neither
16. My job provides ongoing educational programs in order to conduct research.	Structure	Process	Outcome	Neither
17. I have the skills and knowledge necessary for me to conduct research.	Structure	Process	Outcome	Neither
18. I believe my working environment provides ample opportunity to conduct research.	Structure	Process	Outcome	Neither
19. I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	Structure	Process	Outcome	Neither

20. I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	Structure	Process	Outcome	Neither
21. I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	Structure	Process	Outcome	Neither
22. I would conduct research if I had the time.	Structure	Process	Outcome	Neither
23. I would conduct research if I knew how to write the proposal, conduct and analyze the results and findings.	Structure	Process	Outcome	Neither
24. Research findings that are advantageous to good patient care can be implemented in my working environment.	Structure	Process	Outcome	Neither
25. Nursing research is the means whereby the theoretical basis for nursing practice is derived.	Structure	Process	Outcome	Neither
26. Members of the treatment team other than nurses should conduct research relative to patient care.	Structure	Process	Outcome	Neither
27. Nursing research requires more from me than I am willing to give to my job.	Structure	Process	Outcome	Neither
28. Nursing research should be conducted by nurses with a baccalaureate degree.	Structure	Process	Outcome	Neither
29. I would like to conduct a study of a problem in patient care.	Structure	Process	Outcome	Neither
30. I would conduct research if patient assignments were lightened.	Structure	Process	Outcome	Neither
31. Nursing research is more essential in the medical setting than in the psychiatric setting.	Structure	Process	Outcome	Neither
32. Nursing research should be initiated by nurses in the clinical area.	Structure	Process	Outcome	Neither
33. Nursing research should be initiated by nurses in education.	Structure	Process	Outcome	Neither
34. Nurses would conduct more research if more funds were available for them to use for this purpose.	Structure	Process	Outcome	Neither
35. Time spent giving patient care is more important than time spent conducting research.	Structure	Process	Outcome	Neither
36. I am interested in conducting research.	Structure	Process	Outcome	Neither
37. Nurses receive praise from their peers and colleagues when they conduct research.	Structure	Process	Outcome	Neither
38. Nurses would conduct research if they were provided time for research.	Structure	Process	Outcome	Neither

39. Nurses would conduct research if relief time were given to conduct research.	Structure	Process	Outcome	Neither
40. Nursing research should be conducted by nurses with a doctorate.	Structure	Process	Outcome	Neither
41. I would do research if I knew more about it.	Structure	Process	Outcome	Neither
42. Nurses are criticized too much by their peers when they conduct research.	Structure	Process	Outcome	Neither
43. Nursing research should be conducted by nurses with a master's degree.	Structure	Process	Outcome	Neither
44. I believe that I would conduct research if someone more knowledgeable would help me in the process.	Structure	Process	Outcome	Neither
45. Nursing research should be initiated by nurse researchers.	Structure	Process	Outcome	Neither
46. Patient participation in nursing research is difficult to obtain.	Structure	Process	Outcome	Neither

APPENDIX G

Email Invitation to Registered Nurses

Research is considered as one of the elements of professional nursing practice. It is therefore important to understand the attitudes nurses hold in regards to research. The purpose of this study is to determine what is the relationship between nursing attitudes towards research and the supporting infrastructure. Participation in this study is voluntary and will involve one 20 minute survey via online. Completion of the survey indicates your consent to participate. You are free to decide not to participate at any time without adversely affecting your relationship with the investigator, _____or Grand Valley State University.

The computer survey provides anonymity and results cannot be traced back to individuals. The link to the survey is provided in this email. If you wish to participate, click on the link. The first section is the informed consent followed by the survey. This research study is being conducted as partial fulfillment of a master's thesis by Nancee Hofmeister, BSN, RN

APPENDIX H

Reminder Email

Thank you to those of you who have completed the on line survey assessing nursing attitudes toward research. For those of you who have not completed the survey, it is not too late. Below is the link to the survey. Participation will involve approximately 20 minutes of your time. Please complete the survey only once.

APPENDIX I

Grand Valley State University IRB Approval

November 28, 2006
Proposal No.: 07-81-H
Approval Date: 11/27/2006
Title: *Attitudes of Nurses toward Research*
Category: Expedited
Expiration Date: 11/26/2007

Dear Ms. Hofmeister:

Grand Valley State University, Human Research Review Committee (HRRC), has completed its review of this proposal. The HRRC serves as the Institutional Review Board (IRB) for Grand Valley State University. The rights and welfare of the human subjects appear to be adequately protected and the methods used to obtain informed consent are appropriate. Your project has been **APPROVED.** Please include your proposal number in all future correspondence. The first principal investigator will be sent all correspondence from the University unless otherwise requested.

Revisions: The HRRC must review and approve any change in protocol procedures involving human subjects, prior to the initiation of the change. To revise an approved protocol including a protocol that was initially exempt from the federal regulations, send a written request along with both the original and revised protocols including the subject consent form, to the Chair of the HRRC. When requesting approval of revisions both the project's HRRC number and title must be referenced.
Problems/Changes: The HRRC must be informed promptly if any of the following arises during the course of your project. 1) Problems (unexpected side effects, complaints, etc.) involving the subjects. 2) Changes in the research environment or new information that indicates greater risk to the subjects than existed when the protocol was previously reviewed and approved. 3) Changes in personnel listed on the initial protocol, e.g. principal investigator, co-investigator(s) or secondary personnel.
Renewals: The HRRC approval is valid until the expiration date listed above. Any project that continues beyond the expiration date must be renewed with a continuing review form that can be found at http://www.gvsu.edu/forms/research_dev/FORMS. A maximum of 4 renewals are possible. If you need to continue a proposal beyond that time, you are required to submit a new protocol application for a complete review.
Closed: When your project is completed or if you do not anticipate the study to extend past the one year approval, please complete and submit a closed protocol form. You can find this document at http://www.gvsu.edu/forms/research_dev/FORMS.

If I can be of further assistance, please contact me at 616-331-3417 or via e-mail: reitemep@gvsu.edu. You can also contact the Graduate Assistant in Faculty Research and Development Office at 616-331-3197.

Sincerely,

[redacted]

Paul J. Reitemeier, Ph.D.
Human Research Review Committee Chair
301C DeVos Center
Grand Rapids, MI 49504

APPENDIX J

Organizational IRB Approval

INSTITUTIONAL REVIEW BOARD (IRB)

PROTOCOL EXPEDITED REVIEW
CERTIFICATE OF APPROVAL

DATE OF SUBMISSION: November 23, 2006

PROTOCOL NUMBER:	2006-0221
PROTOCOL TITLE:	"Attitudes of Nurses Toward Research""
PROTOCOL DATE/VERSION:	November 21, 2006
PRIMARY INVESTIGATOR:	Nancee Hofmeister, BSN

James W. Carter, MD FACP, Chair of the Institutional Review Board (IRB) has approved the above referenced protocol through **Expedited Review** and determined the continuing review interval for this study to be set at:

__ 1 month __ 2 months __ 3 months __ 6 months X 12 months

Determined Risk: Less than Minimal **Approval will expire:** November 22, 2007

A Protocol Continuing Review will be required before the expiration date to continue this study.

➢Research must be conducted according to the protocol version approved. ➢The clinical investigator is required to receive approval from the IRB before initiating any changes in the approved protocol or its related informed consent (if applicable) during the period for which it was approved. ➢Adverse events must be reported promptly to the IRB. ➢Each study participant should receive a copy of the informed consent document (if applicable). ➢Records must be retained for a minimum of three years. ➢Future correspondence should include the identification/protocol number provided and the study title.

Assurance: FWA00002688

[redacted]

James W. Carter, MD, FACP
Chair, Expedited Review Committee
Institutional Review Board

11-29-2006
Date

APPENDIX K

Informed Consent

Grand Valley State University

Research is considered as one of the elements of professional nursing practice. It is therefore important to understand the attitudes nurses hold in regards to research. You are invited to share your attitudes toward research in this study. The purpose of this study is to determine what is the relationship between nursing attitudes towards research and the supporting infrastructure.

Participation in this study is voluntary and will involve one 20 minute survey via online. Completion of the survey indicates your consent to participate. All registered nurses working at _____ have been invited to participate. You are free to decide not to participate in this study at any time without adversely affecting your relationship with the investigator, _____ or Grand Valley State University (GVSU). Your decision will not result in any loss of benefit to which you are otherwise entitled.

There are no direct benefits to you responding, however your responses may be used to make changes to nursing research at _____. The risk of participating in this research has been minimized by strictly protecting the confidentiality of the participants, but as in all research, there may be unforeseen risks to the participants and you are free to stop participation at any time before completing the survey.

The information provided will be kept strictly confidential. Completion of the survey does not provide any individual specific data that can be linked to any participant. Therefore identification of individual participants is not possible. You may refuse or stop your participation at any time before submitting your survey. Summary of the results will be made available to you upon request.

This research study is being conducted as partial fulfillment of a master's thesis by Nancee Hofmeister, BSN, RN The GVSU Human Subjects Institutional Review Board (HSIRB) and _____ Institutional Review Board (IRB) have approved this study. If you have questions, please contact Nancee Hofmeister at 341-6057. Concerns or questions about the study can also be directed to _____ Chairman, ___ IRB at (269) 341-7898. Participants may also contact the chair of the GVSU HSIRB, Paul Reitemeier PhD at (616) 331-3197.

If you agree to participate, please continue to section two of the survey.

APPENDIX L

Online/Computerized Survey

Section 1-Informed Consent language here

Section 2
Part I. Boothe Attitude on Nursing Research Scale

This inventory consists of a number of statements designed to determine attitudes related to nursing research. Read each item carefully and determine the extent to which you agree or disagree with the statement. Click on the circle that indicates the degree to which you agree or disagree with that statement about nursing research. Click on circle SA if you strongly agree, A if you agree, U if you are uncertain, D if you disagree, and SD if you strongly disagree.

Item	1	2	3	4	5
1. I would like to conduct research.	SD	D	U	A	SA
2. I would like to put research high on my list of priorities.	SD	D	U	A	SA
3. Nursing research is conducted because it allows nurses to be promoted.	SD	D	U	A	SA
4. I believe my place of employment would provide me with ample assistance during the research process.	SD	D	U	A	SA
5. I believe my place of employment would provide me with ample consultive assistance for conducting research.	SD	D	U	A	SA
6. My supervisor would allow time in my daily assignment to conduct research.	SD	D	U	A	SA
7. The process of submission of the research proposal to the hospital nursing research committee is too detailed.	SD	D	U	A	SA
8. I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	SD	D	U	A	SA
9. The informed consent necessary for employee participation in research prevents me from conducting research in my work areas.	SD	D	U	A	SA
10. The informed consent necessary for patient participation prevents me from conducting research in my work areas.	SD	D	U	A	SA
11. I am familiar with selected statistical procedures used for the analysis of research findings.	SD	D	U	A	SA

12. I believe my job provides the time necessary to conduct research.	SD	D	U	A	SA
13. My colleagues (other professionals) would encourage me to conduct research.	SD	D	U	A	SA
14. My peers in nursing would encourage conducting research.	SD	D	U	A	SA
15. I believe my peers in nursing would assist in conducting research.	SD	D	U	A	SA
16. My job provides ongoing educational programs in order to conduct research.	SD	D	U	A	SA
17. I have the skills and knowledge necessary for me to conduct research.	SD	D	U	A	SA
18. I believe my working environment provides ample opportunity to conduct research.	SD	D	U	A	SA
19. I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	SD	D	U	A	SA
20. I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	SD	D	U	A	SA
21. I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	SD	D	U	A	SA
22. I would conduct research if I had the time.	SD	D	U	A	SA
23. I would conduct research if I knew how to write the proposal, conduct and analyze the results and findings.	SD	D	U	A	SA
24. Research findings that are advantageous to good patient care can be implemented in my working environment.	SD	D	U	A	SA
25. Nursing research is the means whereby the theoretical basis for nursing practice is derived.	SD	D	U	A	SA
26. Members of the treatment team other than nurses should conduct research relative to patient care.	SD	D	U	A	SA
27. Nursing research requires more from me than I am willing to give to my job.	SD	D	U	A	SA
28. Nursing research should be conducted by nurses with a baccalaureate degree.	SD	D	U	A	SA
29. I would like to conduct a study of a problem in patient care.	SD	D	U	A	SA
30. I would conduct research if patient assignments were lightened.	SD	D	U	A	SA
31. Nursing research is more essential in the medical setting than in the psychiatric setting.	SD	D	U	A	SA
32. Nursing research should be initiated by nurses in the clinical area.	SD	D	U	A	SA
33. Nursing research should be initiated by nurses in education.	SD	D	U	A	SA
34. Nurses would conduct more research if more funds were available for them to use for this purpose.	SD	D	U	A	SA

35. Time spent giving patient care is more important than time spent conducting research.	SD D U A SA
36. I am interested in conducting research.	SD D U A SA
37. Nurses receive praise from their peers and colleagues when they conduct research.	SD D U A SA
38. Nurses would conduct research if they were provided time for research.	SD D U A SA
39. Nurses would conduct research if relief time were given to conduct research.	SD D U A SA
40. Nursing research should be conducted by nurses with a doctorate.	SD D U A SA
41. I would do research if I knew more about it.	SD D U A SA
42. Nurses are criticized too much by their peers when they conduct research.	SD D U A SA
43. Nursing research should be conducted by nurses with a master's degree.	SD D U A SA
44. I believe that I would conduct research if someone more knowledgeable would help me in the process.	SD D U A SA
45. Nursing research should be initiated by nurse researchers.	SD D U A SA
46. Patient participation in nursing research is difficult to obtain.	SD D U A SA

47. What would you consider to be your basic preparation for conducting research?
    - Basic research course
    - Attended workshops and/or inservices
    - No preparation
    - Master's prepared
    - Doctorally prepared.

48. If you were in a position to participate in a research study, what information and support would you need to fulfill this activity?

Below are listed several descriptions of statistical and design methods. Click the circle beside each description that corresponds with your level of familiarity.

1= Unfamiliar
2= Have heard of it
3= Have used it
4= Have working knowledge

49. Measures of central tendency (mean, mode, median)	1 2 3 4
50. Probability	1 2 3 4
51. T-test	1 2 3 4
52. Interview schedule	1 2 3 4
53. Ratio scale	1 2 3 4

54. Placebo control	1 2 3 4
55. Validity	1 2 3 4
56. Correlations	1 2 3 4
57. Measures of variability (standard deviation, variance)	1 2 3 4
58. Chi square	1 2 3 4
59. Ordinal scale	1 2 3 4
60. Interrater reliability	1 2 3 4
61. Random sample	1 2 3 4
62. Regression analysis	1 2 3 4
63. Randomization	1 2 3 4
64. Informed consent	1 2 3 4
65. Questionnaire development	1 2 3 4
66. Convenience sample	1 2 3 4

Part II

We would like to ask a few questions about yourself to help interpret the results.

67. How old were you on your last birthday? _____

68. Are you Male
Female

69. Are you Single
Married
Divorced
Separated
Widowed

70. What type of basic nursing program did you attend (the program which entitled you to write R.N. state board examinations)?
- Associate Degree
- Diploma
- Baccalaureate

71. In what year did you graduate from your basic program (the program which entitled you to write R.N. state board examinations)? _____

72. Have you pursued further education since graduating from your basic program? (if no, go to question 75) Yes, No

73. What type of education have your pursued beyond your basis program? Baccalaureate-Nursing, Baccalaureate-Non-Nursing, Masters-Nursing, Masters-Non-Nursing, PhD-nursing, PhD.-non-nursing, classes for credit/non-degree

74. In what year did you complete your highest level of education or last attended classes toward a higher degree? _____

75. Please indicate how you would rate your self-motivation to seek continuing nursing education, both formal and informal

1= not motivated
2= somewhat motivated
3= quite motivated
4= extremely motivated

76. What year did you begin working at the institution that now employs you? _____

77. Do you presently work....
Part time ___
Full time ___
On-call ___

78. Would you classify your present job responsibilities as those of a .....
Staff nurse
Charge nurse
Unit coordinator
Manager
Director
Other (outcomes coordinator, CNS, educator, etc)

79. Please indicate the average numbers of hours per week spent in the following activities

Direct patient contact _____
Non-contact patient related activities (rounds, physician orders, charting, etc) _____
Administrative duties (scheduling, meeting, shared governance activities, etc) _____

80. Please indicate the place of employment that best describes your nursing practice.
a. Medical/Surgical _____
b. Pediatric _____
c. Obstetrics _____
d. Critical Care _____
e. Emergency Center _____
f. Surgery _____
g. Ambulatory Services _____
h. Other _____

81. How many nursing journals do you regularly read? _____

82. Comments:

APPENDIX M

Scale Results

Item #	Scale One-Interest and Environmental Support	Mean	Median
1	I would like to conduct research.	3.47	4.00
2	I would like to put research high on my list of priorities.	2.99	3.00
4	I believe my place of employment would provide me with ample assistance during the research process.	3.43	4.00
5	I believe my place of employment would provide me with ample consultive assistance for conducting research.	3.50	4.00
6	My supervisor would allow time in my daily assignment to conduct research.	2.92	3.00
8	I know what is expected of me when submitting my research proposal to the hospital nursing research committee.	2.48	2.00
11	I am familiar with selected statistical procedures used for the analysis of research findings.	3.06	3.50
12	I believe my job provides the time necessary to conduct research.	2.19	2.00
13	My colleagues (other professionals) would encourage me to conduct research.	3.29	4.00
14	My peers in nursing would encourage conducting research.	3.27	3.00
15	I believe my peers in nursing would assist in conducting research.	3.31	3.50
16	My job provides ongoing educational programs in order to conduct research.	2.90	3.00
18	I believe my working environment provides ample opportunity to conduct research.	2.82	3.00
19	I believe my place of employment has ample secretarial assistance for anyone wishing to conduct research.	2.39	2.00
20	I believe my place of employment has ample statistical assistance for anyone wishing to conduct research.	2.94	3.00
21	I believe my place of employment has ample assistance for anyone for the analysis of results and findings of the research that is conducted.	2.86	3.00

27	Nursing research requires more from me than I am willing to give to my job.	2.47	2.00
31	Nursing research is more essential in the medical setting than in the psychiatric setting.	2.19	2.00
35	Time spent giving patient care is more important than time spent conducting research.	3.11	3.00
36	I am interested in conducting research.	3.53	4.00
45	Nursing research should be initiated by nurse researchers.	3.09	3.00
Item #	Scale Two-Payoff and Benefits	Mean	Median
3	Nursing research is conducted because it allows nurses to be promoted.	2.29	2.00
9	The informed consent necessary for employee participation in research prevents me from conducting research in my work areas.	2.56	2.00
22	I would conduct research if I had the time.	3.49	4.00
23	I would conduct research if I know how to write the proposal, conduct and analyze the results and findings.	3.48	4.00
24	Research findings that are advantageous to good patient care can be implemented in my working environment.	4.09	4.00
25	Nursing research is the means whereby the theoretical basis for nursing practice is derived.	3.92	4.00
26	Members of the treatment team other than nurses should conduct research relative to patient care.	3.31	4.00
29	I would like to conduct a study of a problem in patient care.	3.42	4.00
30	I would conduct research if patient assignments were lightened.	3.31	3.00
32	Nursing research should be initiated by nurses in the clinical area.	3.86	4.00
34	Nurses would conduct more research if more funds were available for them to use for this purpose.	3.61	4.00
37	Nurses receive praise from their peers and colleagues when they conduct research.	2.86	3.00
38	Nurses would conduct research if they were provided time for research.	3.62	4.00
39	Nurses would conduct research if relief time were given to conduct research.	3.67	4.00
41	I would do research if I knew more about it.	3.45	4.00
42	Nurses are criticized too much by their peers when they conduct research.	2.63	2.50

44	I believe that I would conduct research if someone more knowledgeable would help me in the process	3.69	4.00
Item #	Scale Three-Barriers to Conducting Research	Mean	Median
7	The process of submission of the research proposal to the hospital nursing research committee is too detailed.	3.34	3.00
10	The informed consent necessary for patient participation prevents me from conducting research in my work areas.	2.62	2.00
17	I have the skills and knowledge necessary for me to conduct research.	3.10	3.00
28	Nursing research should be conducted by nurses with a baccalaureate degree.	2.47	2.00
33	Nursing research should be initiated by nurses in education.	3.37	4.00
40	Nursing research should be conducted by nurses with a doctorate.	3.11	3.00
43	Nursing research should be conducted by nurses with a master's degree.	3.09	3.00
46	Patient participation in nursing research is difficult to obtain.	2.66	3.00

LIST OF REFERENCES

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American Nurses Association. (2004). *Nursing: Scope and standards of practice.* Washington DC: author.

American Nurses Credentialing Center. (2005). *The Magnet Recognition Program ®, Recognizing excellence in nursing service, Application manual.* Silver Springs: author.

American Nurses Credentialing Center. (2006). *Magnet Facilities: Health care organizations with magnet-designated nursing services.* Retrieved January 22, 2006, from http://nursingworld.org/ancc/magnet/facilities.html.

Boothe, P. A. (1981). *A study to determine the attitude of professional nurses toward nursing research.* Unpublished doctoral dissertation, University of Alabama, Tuscaloosa.

Bostrom, A., Malnight, M., MacDougall, J., & Hargis, D. (1989). Staff nurses' attitudes toward nursing research: A descriptive survey. *Journal of Advanced Nursing, 14,* 915-922.

Donabedian, A. (1988) The quality of care: How can it be assessed? *Journal of American Medical Association, 260,* 1743-1748.

Donabedian, A. (1992) The role of outcomes in quality assessment and assurance. *Quality Review Bulletin, 18,* 356-360.

Dunn, V., Crichton, N., Roe, B., Seers, K., Williams, K. (1998). Using research for practice: A UK experience of the BARRIERS scale. *Journal of Advanced Nursing, 27,* 1203-1210.

Estabrooks, C., Floyd, J., Scott-Findlay, S., O'Leary, K., & Gushta, M. (2003). Individual determinants of research utilization: A systematic review. *Journal of Advanced Nursing, 43,* 506-520.

Funk, S., Champagne, M., Wiese, R., & Tornquist, E. (1991). Barriers to using research findings in practice: The clinician's perspective. *Applied Nursing Research, 4,* 90-95.

Hutchinson, A., & Johnston, L. (2004). Bridging the divide: A survey of nurses' opinions regarding barriers to, and facilitators of, research utilization in the practice setting. *Journal of Clinical Nursing, 13*, 304-315.

Hutchinson, A., & Johnston, L. (2006). Beyond the BARRIERS Scale: Commonly reported barriers to research use. *The Journal of Nursing Adminstration, 36,* 189-199.

Institute of Medicine, Committee on Quality of Health Care in America. (2001). *Crossing the quality chasm: A new health care system for the 21st century*. Washington, D.C.: National Academy Press.

Kajermo, K., Nordstrom, G., Krusebrant, A., & Bjorvell, H. (1998). Barriers to and facilitators of research utilization, as perceived by a group of registered nurses in Sweden. *Journal of Advanced Nursing, 27,* 198-807.

Kajermo, K., Nordstrom, G., Krusebrant, A., & Bjorvell, H. (2000). Perceptions of research utilization: Comparisons between health care professionals, nursing students and reference group of nurse clinicians. *Journal of Advanced Nursing, 31,* 99-109.

Kyei, M. (1993). Nurses' knowledge and opinions about the nursing research process in the Netherlands. *Journal of Advanced Nursing, 18,* 1640-1644.

Lacey, E. (1994). Research utilization in nursing practice-a pilot study. *Journal of Advanced Nursing, 19,* 987-995.

McKenna, H., Ashton, S., & Keeney, S. (2004). Barriers to evidence-based practice in primary care. *Journal of Advanced Nursing, 45,* 178-189.

Melnyk, B., Fineout-Overholt, E., Feinstein, N., Li, H., Small,L., Wilcox, L., & Kraus, K. (2004). Nurses' perceived knowledge, beliefs, skills, and needs regarding evidence-based practice: Implications for accelerating the paradigm shift. *Worldview on Evidence-Based Nursing, 3,* 185-193.

Mott, B., Nolan, J., Zarb, N., Arnison, V., Chan, R., Codner, T., Casey, T., Jenkins, B., Ulrych, G., Blackburn, C., & Ganfield, L. (2005). Clinical nurses' knowledge of evidence-based practice: Constructing a framework to evaluate multifaceted interventions for implementing evidence based practice. *Contemporary Nurse, 19,* 98-104.

Newhouse, R., Dearholt, S., Poe, S., Pugh, L., & White, K. (2005). Evidence-based practice: A practical approach to implementation. *Journal of Nursing Administration, 35*, 35-40.

Polit, D., & Beck, C. (2004). *Nursing research: Principles and methods* (7th edition) Philadelphia: Lippincott Williams & Wilkins.

Pravikoff, D., Tanner, A., & Pierce, S. (2005). Readiness of U.S. nurses for evidence-based practice. *American Journal of Nursing, 105,* 40-51.

Redfearn, M., Lacey, L., Cox, K., & Teasley, S. (2004). An infrastructure for organizational support for research. *Journal of Nursing Administration, 34*, 346-353.

Turkel, M., Reidinger, G., Ferket, K., & Reno, K. (2005). An essential component of the magnet journey: Fostering an environment for evidence-based practice and nursing research. *Nursing Administration Quarterly, 29*, 254-262.