

CONDUCTION AND UTILIZATION OF RESEARCH: THE RELATIONSHIP
BETWEEN AIR FORCE NURSES' ATTITUDES, LEVELS OF EDUCATION,
AND RANK

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ABSTRACT

The purpose of this study was to examine the attitudes of Air Force nurse toward research. The study used a descriptive-correlational design to examine these attitudes, and the results were correlated with level of education and rank. The study used a convenience sample and the site was a Midwestern Air Force medical center. Almost 100% of Air Force nurses surveyed had at least a Bachelor's degree, 97% had a minimum of a Bachelor's degree in nursing. Air Force nurses had an overall good attitude toward nursing research. Air Force nurses at the Diploma, BSN, and MSN education levels in nursing had the most research experience in the past five years. Rank and highest total level of education (nursing and non-nursing combined) were not found to be statistically significant predictors of research experience or attitude. Highest level of education in nursing was found to be a statistically significant predictor of research experience and attitude in the Air Force nurses studied.

Key Words: Research, Nursing Research, Military Nursing, Questionnaires, Role, Attitude of Health Personnel, Descriptive Studies, Correlational Studies, Research Process, Attitudes, Military, Air Force

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LEVELS OF EDUCATION, AND RANK**

by

HEATHER L. MOLEDOR, BSN, RN

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PREFACE

This research was conducted in an effort to understand Air Force nurses' attitudes toward research. It was completed in an attempt to improve Air Force nurses' participation in research, and use of research in practice.

DEDICATION

To my family, I dedicate this paper. I thank you for your love and support, without which attainment of this goal would not have been possible. Your encouragement to always reach higher, and be the best that I can be has not been ignored.

I would also like to thank the faculty of this program. Your hours of hard work and dedication to our success are truly appreciated.

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CHAPTER I - INTRODUCTION

Background

Every day nurses utilize knowledge learned in school and at continuing education courses to make decisions and solve problems related to patient care. Much of this knowledge is based on tradition (Burns & Grove, 1993). How do nurses know that their choices will help their patients achieve the best outcomes? Wilson (1989) states that "the scientific approach as reflected in nursing research offers you important resources for answering difficult clinical and health-related questions" (p.8). Renner (1989) believes that nurses, regardless of level of education, should use research findings to improve patient care.

Staff nurses are in an excellent position to identify research problems, to work with researchers from nursing and other disciplines, and to change clinical practice based on research findings to have a positive effect on the quality, efficiency, and cost of health care (Alcock, Carroll, & Goodman, 1990). The American Nurses' Association (1989) indicates that nurses at all levels of education have a role in nursing research. Nurses' attitudes toward research are an important factor in the conduction and utilization of nursing research (Alcock, et al., 1990; Bostrom, Malnight, MacDougall, & Hargis, 1989; Rempusheski, 1991; Renner, 1989; Rizzuto, Bostrom, Suter, & Chenitz, 1994; Walczak, McGuire, Haisfield, & Beezley, 1994). Research provides a theoretical base, increased accountability for practice, and increased knowledge for nursing (Burns & Grove, 1993).

While nurses have steadily increased the quality and amount of research accomplished, experts believe that findings of the research are not effectively applied in practice (Briones & Bruya, 1990; Edwards-Beckett, 1990). There is not widespread

implementation of findings despite evidence that research-based nursing practice improves patient outcomes (Heater, Becker, & Olson, 1988). However, Brett (1987) reported wider adoption of research innovations than in previously reported studies (Ketefian, 1975; Kirchhoff, 1982).

It has been difficult to enlist nurses to conduct research (Bostrom, et al., 1989, Rizzuto, et al., & Chenitz, 1994). One of the first steps in attempting to improve participation in the conduction and utilization of nursing research in the Air Force was to determine the nurses' attitudes, and how the educational level and military rank affect these attitudes. The purpose of this study was to make such a determination in a population not yet examined.

It was important to study the population of Air Force nurses for multiple reasons. First, they have never been formally studied with regards to attitudes toward, and participation in, nursing research. Second, the demographics of Air Force nurses are slightly different than that of the civilian population. The minimum educational requirement for becoming an Air Force nurse is a Bachelor's degree. The age range tends to be younger nurses (22-50) with most nurses tending toward the younger side of the range. Third, the focus of Air Force medicine in general is geared toward health promotion and disease prevention. Finally, the mission of the Air Force and it's nurses is to be prepared for contingencies in peacetime and war. Therefore, a study of this nature could give a unique perspective concerning research participation and utilization, and could be a precursor to potential development of a program to improve utilization and conduction of research in this population.

Purpose of the Study/Problem

A nurse's past experience with research can leave a lasting impression about what research should be (Rempusheski, 1991). Recognition of nursing as a profession has been impaired due to the lack of a theoretical basis for practice (Bostrom, et al., 1989). While nurses recognize the usefulness of research findings in practice, a number of barriers to utilization have been identified that contribute to the problem of research conduction and utilization (Funk, Champagne, Weise, & Tornquist, 1991).

Despite a high stated value for using research findings in practice, as few as 48% of nurses in one study had changed their practice based on research findings, and only 12% had participated as a co-investigator of a research project (Robichaud-Ekstrand & Sherrard, 1994). In order to develop effective clinical research programs, identifying influences that facilitate or impede nurses participation in research is necessary (Rizzuto, et al., 1994).

Although it is commonly acknowledged that nursing research is essential for guiding practice, personal experience has shown that developing enthusiasm among Air Force nurses to participate in research activities has been difficult. The attitudes of the staff nurse toward nursing research are important in the development of a successful research program (Egan, McElmurry, & Jameson, 1981; Noble, 1980; Oberst, 1985; Sterling & Owens, 1986). Personal discussions with staff nurses has revealed a common theme that while nurses value research and utilize research in practice, many believe that participating in research is too time consuming and difficult, and therefore not rewarding. This study adds to the nursing knowledge base by describing and correlating the attitudes of Air Force nurses toward nursing research with their levels of education and rank. This

provides a basis for further investigation into techniques to improve attitudes, research education, and participation in research projects.

Purpose Statement

The purpose of this study was to examine the relationship between the attitudes of Air Force nurses toward nursing research and their level of education and rank at a Midwestern Air Force medical center.

Research Questions

The questions for this study were:

1. What are the attitudes of Air Force nurses toward nursing research?
2. What are the levels of education and ranks of Air Force nurses participating in research activities in the past five years?
3. Is there a relationship between attitudes of Air Force nurses toward nursing research and their levels of education and rank?

Theoretical Framework

Theorists have described behavior and their beliefs about why people consistently act in a particular manner. Fishbein (1967) described attitudes and how they relate to behavior and attempted to demonstrate the reasoning behind one's actions. Fishbein concluded that prior theories failed to provide adequate support for attitude being a predictor of behavior, so he suggested a revision to prior theories. He defined attitude as "a learned predisposition to respond to any object in a consistently favorable or unfavorable way" (p.483). He suggested that attitude may be a single score evaluated by a measurement instrument, and that this score could be placed along a continuum ranging from favorable to unfavorable.

The theory presented by Fishbein (1967) is an adaptation of Dulany's theory of propositional control. This theory, applied to social behavior, was related to an individual's intention to perform a specific act, with respect to a given stimulus, as a function of:

1. his beliefs about the consequences of behaving in a given way in a given situation,
2. the subject's evaluation of the consequences,
3. the subject's belief about the norm of what he should do in this situation,
4. and his motivation or desire to comply with the norm.

Fishbein believed that an individual's behavior is approximately the same as his intentions to perform the behavior, which is a combination of the subjects attitudes, and personal and social norms about what the individual should do and their motivation to comply.

In order to test or make assumptions about a whole theory, it is possible to test parts of the theory (Chinn & Kramer, 1991). The instrument developed by Alcock, Carroll, and Goodman (1990) measured the attitudes discussed by Fishbein. Personal and social norms were not directly measured in this study. Personal discussions by this investigator with nurse leaders revealed that those with advanced degrees in nursing were expected to perform more research studies and activities. As most higher ranking Air Force nurses (Major and above) have advanced degrees in nursing, it was assumed that they were expected to perform the bulk of the research.

Several researchers have studied nurses' attitudes and concluded that nurses value nursing research (Alcock, et al., 1990, Bostrom, et al., 1989, Robichaud-Eckstrand &

Sherrard, 1994). Two studies, described in the next chapter, have investigated predictors of, and barriers to, research (Rizzuto, et al., 1994, Walczak, et al., 1994). While these studies found that attitude and level of education were predictors of research, they do not focus on how strong the relationship is between the concepts, and do not relate attitudes to military rank. More research needed to be accomplished in the area of attitude, level of education, and rank before the study of prediction is possible.

Multiple factors have an effect on an individual's attitude towards an object. Some of these factors are concrete and measurable, while others are more abstract and difficult to measure. It was theorized that some of the factors that influence nurse's attitudes were level of education, rank, age, nursing experience, research experience, peer attitudes, and education related to research. This study describes and correlates nurses attitudes with their level of education and rank (refer to Appendix A for schematic of the conceptual framework utilized for this study).

The schematic in Appendix A refers to the concepts that affect attitude. The broken line around the concept of attitude indicates a two way influence. One way arrows indicate that the factor may only influence attitude. Two way arrows indicate that the factor influences attitude, and vice versa. For example, level of education may have an effect on attitudes of an individual toward research, and since nursing research is a fundamental part of most baccalaureate and graduate programs, attitude may influence the pursuit of higher level of education, the same applies to Air Force rank. For the purposes of this study, the focus will be on attitudes, level of education, and rank. Fishbein's theory provides a strong foundation for the framework of this study.

Definitions

The major concepts associated with this study were attitudes, nursing research, level of education, and rank.

Attitudes

Webster's Dictionary (1986) defines attitude as "posture of a person; pose; or mental or moral disposition" (p. 29). For the purposes of this study, attitude was defined as feelings of a nurse toward nursing research and research activities, as measured by an instrument developed by Alcock, Carroll, and Goodman (1990) "Survey questionnaire: Staff nurses and research activities." The section of the questionnaire entitled "perceived value of nursing research" measured attitude.

Nursing Research

Webster's Dictionary (1986) defines research as a "diligent search or inquiry, scientific investigation and study to discover facts" (p. 314). For this study, nursing research was defined as "a scientific process that validates and refines existing knowledge and generates new knowledge that directly and indirectly influences nursing practice" (Burns & Grove, 1993, p. 4). Participation in research activities was defined as conduction, or assisting in the conduction of a research study in the past five years. Utilization of research in practice was defined as reading a publication of, or listening to a presentation of the findings of, a research study and implementing the findings in clinical practice as appropriate within the past five years. The portion of the questionnaire by Alcock, Carroll, and Goodman (1990) entitled "research experience" measured these areas.

Level of Education

Level of education was defined as the individual's highest earned degree within nursing and the highest earned degree held outside the field of nursing. For example, Associate Degree in Nursing, Bachelor of Arts, Master's Degree in Education, R.N. Diploma, etc.

Rank

Webster's Dictionary (1986) defines rank as "grade in the armed services" (p. 304). For the purposes of this study, rank was defined as the current highest achieved Air Force rank. For example, Second Lieutenant (2LT), First Lieutenant (1LT), Captain (Capt), Major (Maj), Lieutenant Colonel (Lt Col), and Colonel (Col) etc. This rank can also be described as grade O-1, O-2, O-3, O-4, O-5, O-6, the O stands for officer, and the number stands for the grade of officer. In the Air Force an O-1 is the same as a Second Lieutenant, and an O-6 is the same as an Air Force Colonel.

Second Lieutenant's (O-1) are generally new graduates, who remain this grade for approximately two years. They are then promoted to First Lieutenant (O-2) and remain this rank for another 2 years. The next grade is Captain (O-3) which most nurses remain for 4 to 8 years. Majors, Lieutenant Colonels, and Colonels vary in the amount of time spent in each rank.

Assumptions

1. Nurses want to provide the best possible care to their patients.
2. Nursing research improves patient care.
3. Nurses will answer the questionnaire honestly.

Limitations

1. Use of a convenience sample limits generalizability, due to using a non-representative sample.
2. Use of Air Force nurses as the study population limits generalizability to other types of nurses. All Air Force Nurses are required to have a bachelor's degree.
3. Nurses may answer in an expected manner.
4. Forced choice Likert scales may result in unanswered questions.
5. Lack of power analysis is a limitation of this study.
6. Reserve nurses work the majority of their professional time in a civilian setting. Their attitudes may reflect the civilian experience.

We assume that since nurses are in a nurturing profession, that they desire to provide the best care to their patients. Personal discussions with professors and nurses reveal that most believe that nursing research can lead to improved patient care. It is also assumed that nurses would not desire to sabotage the study, and therefore they will answer the survey honestly.

Convenience samples are not representative of the entire population, and therefore are not completely generalizable to the population (Burns & Grove, 1997). Because most Bachelor's prepared nurses have received education in the research process that they may answer in an expected manner. Finally, a four point Likert scale forces a choice without an option for undecided. In the past, this has been found to occasionally annoy survey takers who will not answer the question rather than being forced to make a choice.

Summary

The need for nursing research is well defined (Burns & Grove, 1993). However, encouraging nurses to conduct research continues to be difficult. In order to progress, it was essential to determine the attitudes and levels of education of nurses in clinical settings. This study utilized a descriptive/correlational design to make these determinations. The next chapter will review the literature related to the concept of attitudes.

CHAPTER II – REVIEW OF LITERATURE

Rempusheski (1991) states that one's feelings about research will influence participation in and utilization of nursing research. She also states that past experience and education may leave a lasting impression, positive or negative, about what research is supposed to be. The purpose of this chapter is to review the literature relevant to studying nurses' attitudes toward nursing research and the nurse's level of education and rank.

The schematic in Appendix A provides an overall picture of the concepts that could affect a nurse's attitudes toward nursing research. Most of these relationships are logically associated. However, a preliminary review of theoretical and empirical literature provides the basis for many of the relationships. The relationships discussed include attitudes, level of education, age, organizational climate, nursing experience, research experience, peer attitudes, and research related education.

The main variables in this study were the attitudes toward research, level of education and rank. An overview of the theoretical and empirical classic works are presented with information relevant to the concepts included in the schematic.

Review of Theoretical Literature

Discussion about attitudes of nurses toward research has been varied, and Renner (1989) stated that there are two areas of nursing research that deserve attention, utilization of findings in practice, and the development of positive attitudes toward research. Renner agreed that nurses at all levels of education should utilize research findings to improve patient care. She believed that improving nurse's awareness of research is not enough, developing positive attitudes is critical to expansion in the area of nursing research. She suggested a strategy she believed aided in improving attitudes and

utilization, a course designed to help students to find, evaluate, and apply research, as well as present and publish findings.

Renner (1989) attempted to improve attitudes toward, and utilization of nursing research. One of the first steps was identification of a problem. The next step was to critically analyze the literature for inclusion or exclusion. Her students then wrote reviews of the studies including recommendations for application to practice. The critiques were compiled into a booklet and disseminated in two different ways: seminar presentations and a regional research program presentation. The students were also encouraged to engage themselves in discussions with nurses actively involved in research. This technique succeeded in developing research minded nurses. It also fostered a more positive attitude toward the research process. Renner recommended this method to increase nurses' ability to incorporate research into practice and improve attitudes.

Rettig (1980) identified that nurses "attitudes about various research roles may be positive or negative" (p. 1251). She noted that prior to 1970, research education was not typically included in most nursing education programs, and that it was possible that older nurses may already have predefined ideas about what nursing practice should be. This confirmed the hypothesis that age and nursing experience may be positive or negative factors influencing the attitudes of nurses toward research. One important problem was that nurse researchers and bedside nurses had different ideas about what are important foci for research. For example, the bedside nurse felt that research should only focus on methods to improve patient care, while the nurse researcher felt that the focus should be on building a strong theoretical base for the nursing profession.

Frustration with the research process occurred when research projects were tedious

and the results provided no definitive answer to the problem. This fostered a negative attitude toward research. Rettig (1980) found that with earlier exposure to the research process, nurses were less reluctant to participate in research activities. This positive attitude was fostered when a facility had an organized nursing research department that focused on improving patient care. Her belief was focused on the idea that nurses at all levels of education should be involved in research on some level.

Liehr and Houston (1993) explored some of the road blocks that critical care nurses met in applying research to practice. They noted that it was difficult even for the baccalaureate nurse to transfer research education to clinical practice. Before nurses could use research findings and guide future research, they must be able to read and critique research observations. Liehr and Houston suggested that the method provided to learn to critique should help to develop the nursing research base, and instill a spirit of inquiry.

Empirical Literature

Bostrom, Malnight, MacDougall, and Hargis (1989) conducted the classic work associated with the study of attitudes. They studied nurses' attitudes toward nursing research in a 464 bed Midwestern hospital.

In the area of interest and environment the study found that nurses expressed the most agreement with the statements that they thought their peers would assist in conducting research, that their facility would provide consultative support, and that they were interested in conducting research. The nurses also stated that their jobs did not provide adequate time for research activities, and that they did not understand the statistical procedures used for analyzing research findings.

In the area of payoff and benefits, the nurses agreed that: research that improved patient care could be implemented in their workplace, research provided a theoretical base for practice, research findings should be implemented by nurses in the clinical area, and nurses would participate in research if given the time. The participants did not agree that nurses conducted research to get promoted or that their peers criticized nurses who conducted research.

In the area of barriers to conducting research, the authors found that nurses agree that nurses working in education should initiate research, but not by those with a baccalaureate or doctorate degree, which is contradictory. The authors also found that those with a Bachelor's degree would be more likely to conduct research if they had the time, and that they thought they had the skills necessary to conduct research. This study confirmed that positive attitudes, positive peer attitudes, positive organizational climate and higher levels of education were factors that increased the likelihood that a nurse would conduct or use research in practice. Lack of research knowledge and experience were factors that impeded the use of and conduction of research in practice.

Alcock, Carroll, and Goodman (1990) performed a second study about nurses' attitudes. These researchers investigated nurses' perceptions of factors that influence their role in research. The questionnaire was developed by the researchers for this study and had six sections that addressed demographics, perceived value of nursing research, perceived role in research, interest in research, experience in research, and perception of research climate in the workplace.

The demographics of the population included that 74% had less than a baccalaureate in nursing, and that 2% had a master's degree. The results indicated that

92% of nurses found research useful in solving patient care problems, and 82% thought that research helps them make clinical practice decisions. The vast majority of participants felt that they had a role in identifying patient care problems, in solving problems, in suggesting ways to improve care, and in applying findings to practice. Eighty-two percent of those surveyed thought they should help collect data, while little more than half thought staff nurses should be involved in research.

Participants were interested in finding answers to problems, participating in workplace studies, and changing practice based on research findings. Experience in research was low, only 10% had been a principal investigator and 10% had been a co-investigator. Only 3% of respondents had published results of a study. Nurses thought that administrators were supportive of nurses conducting research, that nurses were supportive (64%), and that nurses were encouraged to question their practice.

They found that level of education was a significant factor in the areas of value, role, interest, and experience. Baccalaureate nurses rated higher in these areas than non-baccalaureate nurses. In addition, this study confirmed the idea that positive organizational climate, past research experience, research related education, and positive peer attitudes were factors encouraging use and conduction of research. These findings were similar to those of other researchers analyzed in this chapter.

A similar study by Rizzuto, Bostrom, Suter, and Chenitz (1994) involved predictors of nurses' involvement in research activities. The authors studied 4000 nurses in nine California health care agencies.

Over half (52%) of the respondents held Bachelor's degrees, and 15% held Master's degrees. The study showed that personal factors were the best predictors of

nurses' involvement in research activities. Knowledge gained from research courses along with awareness of research supports, and positive research attitudes predicted past and present participation in research. Situational and environmental factors were not significant predictors of research activities. Lack of time for research activities was the most important barrier to conducting research. The findings of this study agree with the findings of Alcock, et al. (1990) and Walczak, et al. (1994).

In another related study, Walczak, McGuire, Haisfield, and Beezley (1994) conducted a survey of research related activities, knowledge of research utilization, and perceived barriers to using research in practice among 164 nurses at a mid-Atlantic National Cancer Institute facility.

The results showed that at least 2/3 of the respondents held a Bachelor's degree, 17% had an advanced degree in nursing, and 10% were in graduate school at that time. The researchers found that 73% of nurses were familiar with the concept of research utilization, 62% had it taught at the undergraduate level, and 92% placed a value on using research in their practice. Barriers to research included lack of time, lack of skills to evaluate research, lack of access to findings, and lack of emphasis by the facility on nursing research. The researchers found a low participation in research related activities, and that advanced practice nurses participated in research activities more frequently than others did. This study supported the findings of other studies reviewed in this chapter, but has a number of limitations, including low response rate, lack of generalizability, and the possible difference between reported behavior and actual behavior.

Robichaud-Ekstrand, and Sherrard (1994) conducted a recent analysis in the area of attitudes. They studied 313 cardiac nurses' perceptions of value, role, interest, and

experience in nursing research along with the effects of level of education, and age on the nurses' perceptions. The survey utilized Alcock, Carroll, and Goodman's questionnaire (1990) which focused on the above areas.

In this study, the vast majority of nurses: agreed that research assists in solving patient care problems, believed that findings provide the base for clinical practice decisions, stated that research promotes nursing practice, and said that research is cost effective. Overwhelmingly, nurses agreed that their main role was to: identify patient care problems, solve nursing care problems, suggest ways to improve patient care, apply findings to practice, and be aware of research taking place in their workplace. Seventy-seven percent of nurses thought they should collect data for research, but only 55% agreed that they should conduct research. Less than half of the nurses stated that they had changed their practice based on research findings, and few have participated in the conduction of research.

Nurses believed that their institution supported research activities, but they felt that advisors and nurse researchers were not available to assist in the research process. The participants were also unaware of services available in the facility to aid with research.

Their findings were different from the others discussed in this chapter. Analysis revealed that diploma nurses held a higher perceived value and role, and perceived greater support for research than did baccalaureate nurses. These results were similar in many ways except in the area of education. The other four studies discussed in this section found that higher levels of education were associated with higher perceived role, value, and use of research findings (Alcock, et al., 1990, Bostrom, et al., 1989, Rizzuto,

et al., 1994, Robichaud-Ekstrand & Sherrard, 1994, Walczak, et al., 1994). These findings disagreed with other research findings, which indicates a need for more research in this area to determine the attitudes and level of education of nurses related to nursing research.

Summary

Several researchers have studied nurses attitudes toward nursing research with many similar findings. However, little research has been conducted examining attitudes as it relates to level of education. There has been disparity in the findings of these studies. Only one of these studies utilized a theoretical framework to guide their research. While many of these articles have been more classic (more than five years old), recent studies have focused more on improving attitudes in undergraduate nursing students. The aim of this study is to examine the research attitudes of practicing Air Force nurses.

This study will add to the knowledge base by clarifying the concepts that affect the conduction and utilization of research in practice. It will potentially allow research to proceed to the next level, specifically, to research ways to improve nurses' attitudes toward research, and to develop programs that would improve participation in research programs. The next chapter will discuss the instrument and methods for this study.

CHAPTER III. METHODS

This study used a descriptive-correlational design to examine the relationship between nurses' attitudes about nursing research, and their level of education and rank. This chapter discusses the instruments, sample, procedures and methods used for this research project.

Research Design and Procedures

The site for this study was a 212 bed Midwestern Air Force Medical Center. The medical center has a full range of capabilities including medical and surgical wards, ICU, CCU, and outpatient services. The nurses working at this institution have varied experiences and many have worked at other Air Force and/or civilian facilities. Experience ranges from new graduates to Ph.D. prepared nurses, with many nurses having less than 4 years experience. Most of the nurses are Lieutenants and Captains, but the range of ranks is Second Lieutenant to Colonel. A requirement to become a nurse in the U.S. Air Force is that you have a Bachelor's degree, which may or may not be in nursing. Many nurses have Master's degrees, as this is highly desired for promotion to Major.

The investigator had the questionnaires distributed to the nurses' mailboxes in their work area. Questionnaires were distributed to all Air Force nurses, nurse practitioners, nurse midwives, nurse anesthetists, and nurse administrators employed at the facility. After completion, nurses placed the questionnaire in the enclosed self-addressed stamped envelope and placed it in the US Postal Service mail system. Return of the questionnaire implied consent for inclusion in the study. The first page of the consent form made a statement to this effect (see Appendix D). The data collection phase

of this study occurred in the Fall/Winter of 1998/1999.

Sample

Questionnaires were distributed to the 240 Air Force nurses within the facility. There were 133 (55%) questionnaires returned. Three questionnaires were eliminated from the study. Of the eliminated questionnaires: one was eliminated due to the respondent not being an Air Force nurse, one did not mark any rank, and one did not mark the values questions. The remaining 130 questionnaires were used for the study. Table 1 contains the ages of respondents.

Table 1.

Ages of the Air Force Nurse Respondents by Number and Percent

Age	#	%
20-25	4	3
26-30	28	22
31-35	22	17
36-40	32	25
41-45	33	25
46+	11	8
Total	130	100

There were 34 male respondents in the study (26%), and 96 female respondents (74%). Of the 130 Air Force nurses, 124 were active duty (95%), 6 were reservists (5%). Seventy two (55%) of the respondents were certified in a nursing specialty. Two (1.5%) of the respondents were enrolled in a Post-Master's certification completion program, one

of them wrote that the program was a Family Nurse Practitioner program, the other did not specify. Table 2 shows the number of years since completion of registered nurse (RN) education.

Table 2.

Number of Years Since the Air Force Nurse Respondents Completed their Registered Nurse (RN) Education

Years Since Completion	#	%
Less than 1	2	1.5
1-3	12	9.2
4-6	34	26.2
7-9	14	10.8
10-12	19	14.6
13-15	10	7.7
>15	39	30
Total	130	100

Ranks of the respondents ranged from Second Lieutenant to Colonel. Table 3 shows the ranks of the respondents by number and percentage.

Table 3.

Ranks of the Air Force Nurse Respondents

Rank	#	%
Second Lieutenant (O-1)	10	7.7
First Lieutenant (O-2)	16	12.3
Captain (O-3)	68	52.3
Major (O-4)	26	20.0
Lieutenant Colonel (O-5)	8	6.2
Colonel (O-6)	2	1.5

Table 4 demonstrates the highest level of education in nursing of the respondents. Ninety three percent of the nurses had a Bachelor's Degree or better as their highest level of education within nursing. Twelve nurses marked that they were currently enrolled in a nursing degree program. Ten of those nurses were enrolled in MSN degree programs (FNP-1, Education-1, and Nurse Anesthesia-2). The remaining two nurses were enrolled in BSN degree programs.

Table 4.

Highest Level of Nursing Education of the Air Force Nurse Respondents

Degree	#	%
Diploma	3	2.3
Associate Degree (ADN)	6	4.6
Bachelor's Degree (BSN)	89	68.5
Master's Degree (MSN)	32	24.6

Table 5 displays the highest non-nursing degree specified by the respondents.

Nine of the respondents marked that they were enrolled in a non-nursing degree program.

Of those nine, seven were enrolled in Master of Science programs (MSA-1, Health Admin-4, Human Resources-1), one was enrolled in an Associate in Business degree program. Table 6 demonstrates the highest total level of education (nursing or non-nursing). One person's highest combined level of education was Associate degree, which may have been a mistake because the minimum level of education for becoming an officer in the U.S. Air Force is a Bachelor's degree.

Table 5.

Highest Level of Non-Nursing Education of the Air Force Nurse Respondents

Non-Nursing Degree	#	%
None	77	59.7
Certificate/Diploma	3	2.3
Associate's Degree	11	8.5
Bachelor's Degree	23	17.8
Master's Degree	15	11.6

Table 6.

Overall Highest Level of Education (Nursing and Non-Nursing Combined) of the Air
Force Nurse Respondents

Degree	#	%
Bachelor's	85	65.4
Master's	44	33.8
Associate's	1	0.8

Table 7 contains the positions of the respondents at the time of the study.

Table 7.

Positions of the Air Force Nurse Respondents at the Time of the Study

Position	#	%
Staff Nurse	63	48.5
Nurse Manager	15	11.5
Assistant Nurse Manager	10	7.7
Nurse Administrator	8	6.2
Clinical Nurse Specialist	1	0.8
Nurse Practitioner	2	1.5
Nurse Anesthetist	12	9.2
Current Position Not in Nursing	4	3.1
Nursing Education	5	3.8
Utilization Management	2	1.5
Employee Health	1	0.8
NA Student	1	0.8
Infection Control	1	0.8
Operations Officer	1	0.8
Clinical Informatics	1	0.8
Resident	1	0.8
Other	2	1.5

Instrument

The instrument for this study was an adapted version of the tool developed by Alcock, Carroll, and Goodman (1990), (see Appendix B). This questionnaire has been utilized in two different studies of nurses with similar findings in the area of attitude, but dissimilar findings in the area of level of education in relationship to attitudes (Alcock, et al., 1990, Robichaud-Eckstrand & Sherrard, 1994).

The instrument had six sections that addressed demographics, perceived value of nursing research, perceived role in research, interest in research, experience in research, and perception of research climate in the workplace. The research climate in the workplace section was not used for this study. The demographic section was adapted and asked questions such as age, level of education, years experience in nursing, etc. The instrument used a 4 point Likert scale, with a range of strongly agree to strongly disagree.

Two questions were added to the tool. One question in the experience section queried presentation of research results at a research conference. The second question asked nurses at what level of education they believed nurses should perform nursing research.

In the original study, the research climate section asked specific questions about the research department at the facilities where the nurses worked and the support of research in that facility. This section did not specifically apply to this study and was deleted because the information did not relate directly to the information desired .

This instrument had content validity as established by a panel of experts, and previously established reliability. Reliability established in the study by Alcock, Carroll, and Goodman (1990) had coefficient alphas for the areas of value, role, interest,

experience, and support climate of 0.81, 0.71, 0.87, 0.79, and 0.78 respectively. The study by Robichaud-Eckstrand and Sherrard (1994) had Cronbach reliability coefficients of 0.82 for value after one question was deleted, 0.82 for role when one item was deleted, 0.88 for interest, 0.83 for experience, 0.72 for research climate. Written permission for using this tool had been obtained from Denise Alcock, Ph.D. (see Appendix C).

Since adaptations were made to this tool, content validity was re-established by two experts in the field of nursing research. A test-retest pilot study was accomplished utilizing nine graduate level nursing students. The initial test had an alpha reliability for the interval data as .93. The standardized item alpha was .93. The minimum inter-item correlation was -.58, maximum was 1.000, with a mean of .35. Table 8 includes the Pearson's Correlations from the test-retest for each interval item. Statistical agreement for each section was: 97% agreement for the demographic data, 62% agreement in perceived value, 64% agreement for perceived role, 69% for interest in research, and 90% agreement for research experience. Many of the graduate nurses were in the process of having their research proposals reviewed for approval, which could account for the discrepancy. One question in the demographic area was changed when it was found that the question was confusing regarding post-master's certification. The question was reworded for the main study. Attitude is difficult to re-assess with accuracy as attitudes may change from day to day, especially for those currently conducting research. When adjusted for agreement being either positive (answer strongly agree or agree) or negative (disagree or strongly disagree), the percent agreement for the perceived value category was 93%, and 91% for perceived role. For the interest in research section, 98.6% of the answers were within one answer of the one previously given.

Table 8.

Pearson's Correlations for Pre and Post-test for Questions 13-32

Question #	Pearson	Significance
13	.632	.068
14	.289	.451
15	.395	.292
16	.316	.407
17	.614	.079
18	.316	.407
19	.229	.553
20	.316	.407
21	.614	.078
22	-.286	.456
23	.661	.052
24	.677	.045 (0.05 sig level)
25	-.268	.485
26	Constant variable	
27	.459	.214
28	.282	.462
29	.000	1.000
30	.803	.009 (0.01 level)
31	.803	.009 (0.01 level)
32	.909	.001 (0.01 level)
33	.598	.089
34	.889	.001 (0.01 level)
35	.750	.020 (0.05 level)

Data Analysis

The analysis of results included descriptive statistics of the levels of education and ranks of those participating in the study. Descriptive statistics were used in the analysis of sections C, D, and E; perceived role in research, interest in research, and research experience. Attitude was measured by section B of the questionnaire; perceived value of nursing research. Values obtained for questions 14 and 17 (which were written in the negative) were reversed so the data was consistent with the other questions.

Pearson Chi-Square correlational statistics were performed between level of education, rank, and attitudes. In addition, level of education and rank were correlated with the section entitled research experience. Descriptive information is given regarding demographics. Statistical Package for the Social Sciences 8.0 for Windows was used to conduct the analysis of data.

Protection of Human Rights

Return of the completed questionnaire was assumed to imply permission for inclusion in the study. The questionnaires were not marked in any way that they could be traced back to an individual, thereby protecting privacy and anonymity. Therefore, there were no apparent risks for participating in the study. Nurses could have withdrawn from the study by not completing, or not returning the questionnaire, without risk of reprisal. A statement to this effect was included in the consent form (see Appendix D).

The Uniformed Services University of the Health Sciences Institutional Review Board accepted and approved this study as an exempt human study and assigned a research protocol number of T06183 (see Appendix F). The Survey Branch of the Air Force Personnel Center assigned a survey control number of USAF SCN 98-55 (see

Appendix E). As directed by the Survey Branch, the survey control number was placed in the lower right hand corner of the first page of the survey. In addition, approval was received from the proposed site, and the appropriate changes were made as proposed by the Nursing Research Committee at the site (see Appendices G and H).

Conclusion

The instrument developed by Alcock, Carroll, and Goodman (1990) had established reliability and validity and inquired into the areas the investigator was interested in researching. It was useful in determining the attitudes and levels of education of the population chosen. The 4 point Likert scale forced a choice, preventing excessive middle range choices, which could mean "I don't know" or could be a true reflection of the participants feelings about the item.

Utilizing this questionnaire aided in confirming or negating the results of the previous studies. The next chapter will present the analysis of the data from the study.

CHAPTER IV. DATA ANALYSIS

The purpose of this study was to study the attitudes of Air Force nurses. Statistical analyses are presented in this chapter as pertain to the following research questions:

1. What are the attitudes of Air Force nurses toward nursing research?
2. What are the levels of education and ranks of Air Force nurses participating in research activities in the past five years?
3. Is there a relationship between attitudes of Air Force nurses toward nursing research and their levels of education and rank?

Descriptive statistics are presented related to each of the above topics, as well as perceived role in research, interest in research, and at what level of education nurses should begin conducting research. Pearson Chi-Square correlations are presented for the relationship between attitudes of Air Force nurses, level of education, and rank.

Attitudes of Air Force Nurses Toward Nursing Research

Air Force Nurses had an overall good attitude toward nursing research. Ninety two percent of respondents (n=120) marked strongly agree or agree to the statement: research based knowledge assists nurses to solve patient care problems. Sixteen percent (n=21) marked strongly agree or agree to the statement: research does not promote accountability for practice. Eighty nine percent (n=116) marked strongly agree or agree to the statement: research findings provide the facts needed to make clinical practice decisions. Ninety six percent marked strongly agree or agree to the statement: research helps improve nursing practice. Eleven percent marked agree or strongly agree to the statement: research is not cost effective.

Questions 14 and 17 were written in the reverse, and the questions were recoded

in the positive for the following analysis. Questions 13 through 17 were the values questions used for the attitudes section of this survey. The scores of each question were combined to give a sum total score of interest. A score of five was the best score one could achieve, and 20 was the worst score one could obtain. A score of five through ten was defined as being a good attitude, eleven through twenty defined as a bad attitude. The minimum score was a 5.0, the maximum was 18.0, and the mean was 8.8692. The following figure (Figure 1) shows the percentage of Air Force nurses falling into each category.

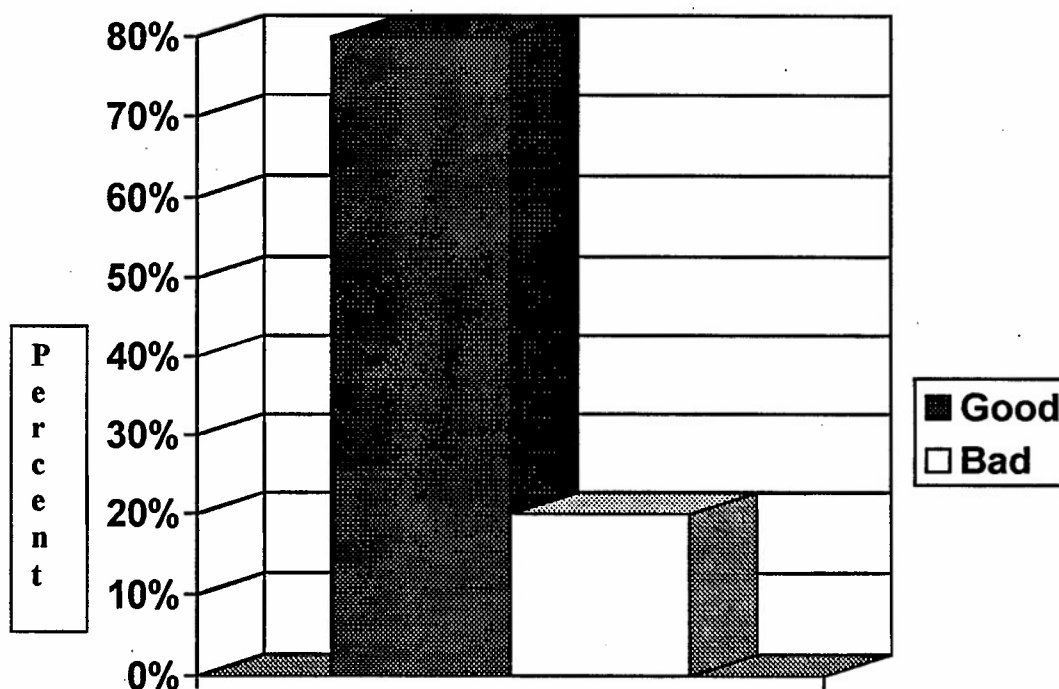


Figure 1.

Percentage of Air Force Nurse Respondents Whose Answers Fell into the Good Attitude (score of 5-10) vs. Bad Attitude (score of 11-20) Categories.

Levels of Education and Ranks of Nurses Participating in Research in the Past Five Years

Few Air Force Nurses have participated overall in research activities in the past five years. Ninety four percent (n=121) had taken a course in research methodology or statistics at any time in their life. The following table (Table 9) demonstrates the total percentage of nurses participating in the corresponding research activity in the past five years.

Table 9.

Percentage of Air Force Nurse Respondents Participating in
Nursing Research Activities in the Past Five Years (1994-1999)

Research Activity	
Identified a problem which led to a research study	39%
Completed questionnaires for a research project	90%
Conducted interviews for a research project	33%
Collected specimens for a research project	44%
Been a principal investigator of a research project	25%
Been a co-investigator of a research project	24%
Assisted with the writing of a grant proposal	7%
Written a grant proposal	2%
Received funds to conduct research	5%
Attended research conferences	47%
Published research results	9%
Changed nursing practice based on research findings	78%
Presented research findings at a research conference/ symposium	10%

Table 10 and Table 11 show the numbers and percentages of nurses participating in research activities in the past five years by level of education and rank.

Table 10.

Number and Percent of Air Force Nurse Respondents Performing Research Activities in the Past Five Years (1994-1999) by Highest Level of Education in Nursing

Question	Diploma	ADN	BSN	MSN
I have identified a problem which led to a research study	3 (100%)	2 (33%)	25 (28%)	20 (63%)
I have completed questionnaires for a research project	2 (67%)	6 (100%)	78 (88%)	31 (97%)
I have conducted interviews for a research project	2 (67%)	2 (33%)	21 (24%)	18 (56%)
I have collected specimens for a research project	3 (100%)	2 (33%)	37 (42%)	15 (47%)
I have been a principal investigator of a research project	3 (100%)	1 (17%)	13 (15%)	16 (50%)
I have been a co-investigator of a research project	3 (100%)	1 (17%)	17 (19%)	10 (31%)
I have assisted with the writing of a grant proposal	2 (67%)	0 (0%)	5 (6%)	2 (6%)
I have written a grant proposal	0 (0%)	0 (0%)	3 (3%)	0 (0%)
I have received funds to conduct research	1 (33%)	0 (0%)	3 (3%)	2 (6%)
I have attended research conferences	3 (100%)	0 (0%)	40 (45%)	18 (56%)
I have published research results	2 (67%)	0 (0%)	5 (6%)	5 (16%)
I have changed my nursing practice based on research findings	3 (100%)	5 (83%)	66 (74%)	27 (84%)
I have presented research findings at a research conference	2 (67%)	0 (0%)	5 (6%)	6 (19%)

Table 11.

Number and Percent of Air Force Nurse Respondents Performing Research Activities in
the Past Five Years (1994-1999) by Air Force Rank

Question	2LT	1LT	CAPT	MAJ	LTC	COL
Identified a problem which led to a research study	2 (20%)	8 (50%)	23 (34%)	11 (42%)	4 (50%)	2 (100%)
Completed questionnaires for a research project	9 (90%)	16 (100%)	58 (85%)	24 (92%)	8 (100%)	2 (100%)
Conducted interviews for a research project	2 (20%)	4 (25%)	20 (29%)	12 (46%)	3 (38%)	2 (100%)
Collected specimens for a research project	2 (20%)	5 (31%)	36 (53%)	11 (42%)	2 (25%)	1 (50%)
Been a principal investigator on a research project	3 (30%)	2 (13%)	13 (19%)	11 (42%)	2 (25%)	2 (100%)
Been a co-Investigator for a project	3 (30%)	3 (19%)	17 (25%)	7 (27%)	0 (0%)	1 (50%)
Assisted with writing a grant proposal	1 (10%)	1 (6%)	5 (7%)	1 (4%)	0 (0%)	1 (50%)
Written a grant proposal	1 (10%)	1 (6%)	0 (0%)	1 (4%)	0 (0%)	0 (0%)
Received funds to conduct research	1 (10%)	0 (0%)	4 (6%)	1 (4%)	0 (0%)	0 (0%)
Attended a research conference	1 (10%)	9 (56%)	28 (41%)	16 (62%)	6 (75%)	1 (50%)
Published research results	1 (10%)	0 (0%)	4 (6%)	5 (19%)	0 (0%)	2 (100%)
Changed my nursing practice based on research results	8 (80%)	10 (63%)	53 (78%)	22 (85%)	6 (75%)	2 (100%)
Presented research findings at a conference/ symposium	1 (10%)	1 (6%)	4 (6%)	6 (23%)	0 (0%)	1 (50%)

Thirteen questions on the survey dealt with research experience. The questions were yes/no questions and a score of one was assigned to a yes answer, two to a no answer. Scores from the thirteen were summed to give a total score, the best possible score was 13, the worst possible score was 26. The scores were assigned to a category; 13-17 Excellent, 18-21 Fair, 22-26 Poor. This score was then correlated with highest level of education in nursing and rank. The Pearson Chi-Square correlation of highest level of education in nursing with the experience categories was found to be statistically significant (value=41.991, df=6, sig=.000). The Pearson Chi-Square correlation of rank versus the categories of experience was not found to be statistically significant (value=16.776, df=10, sig=.079). Figure 2 shows the experience of nurses by level of education. Figure 3 shows the breakdown of each rank into the experience categories. Figure 4 shows the overall research experience of Air Force nurses in this study.

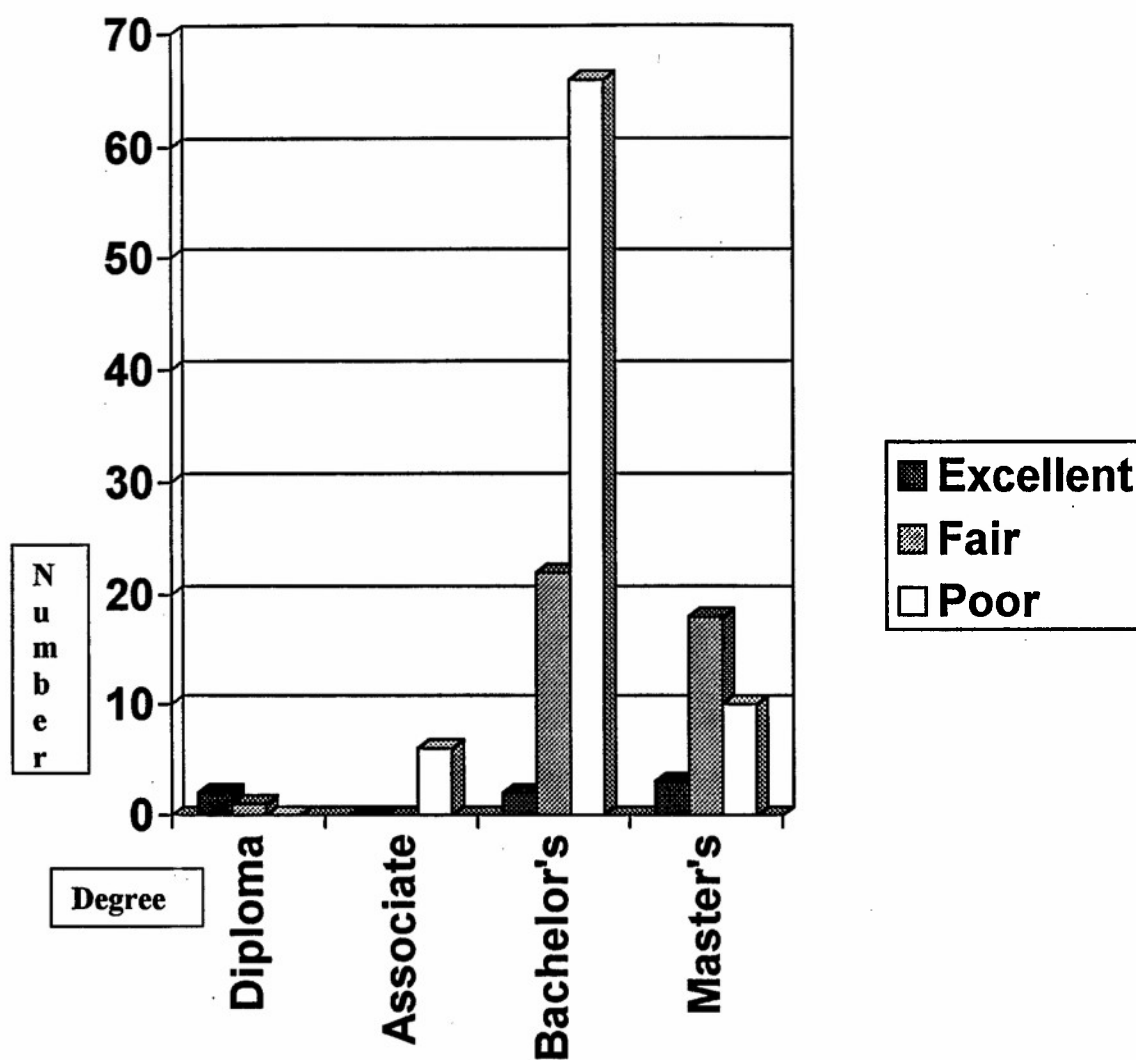


Figure2.

Research Experience of Air Force Nurse Respondents by Highest Level of Nursing

Education (Excellent, Fair or Poor Experience)

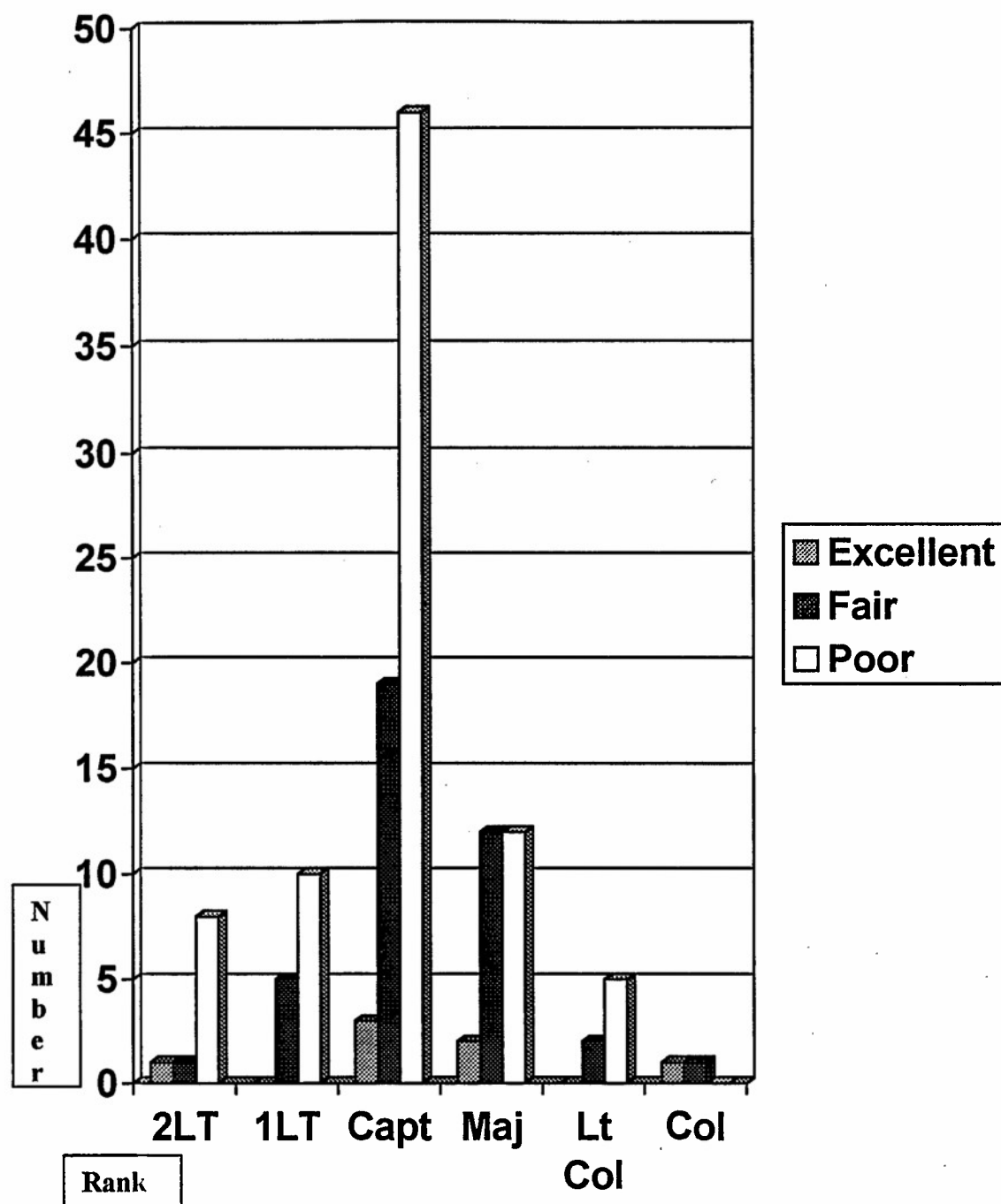


Figure 3.

Air Force Nurse Respondents Research Experience by Air Force Rank (Excellent, Fair or Poor Experience)

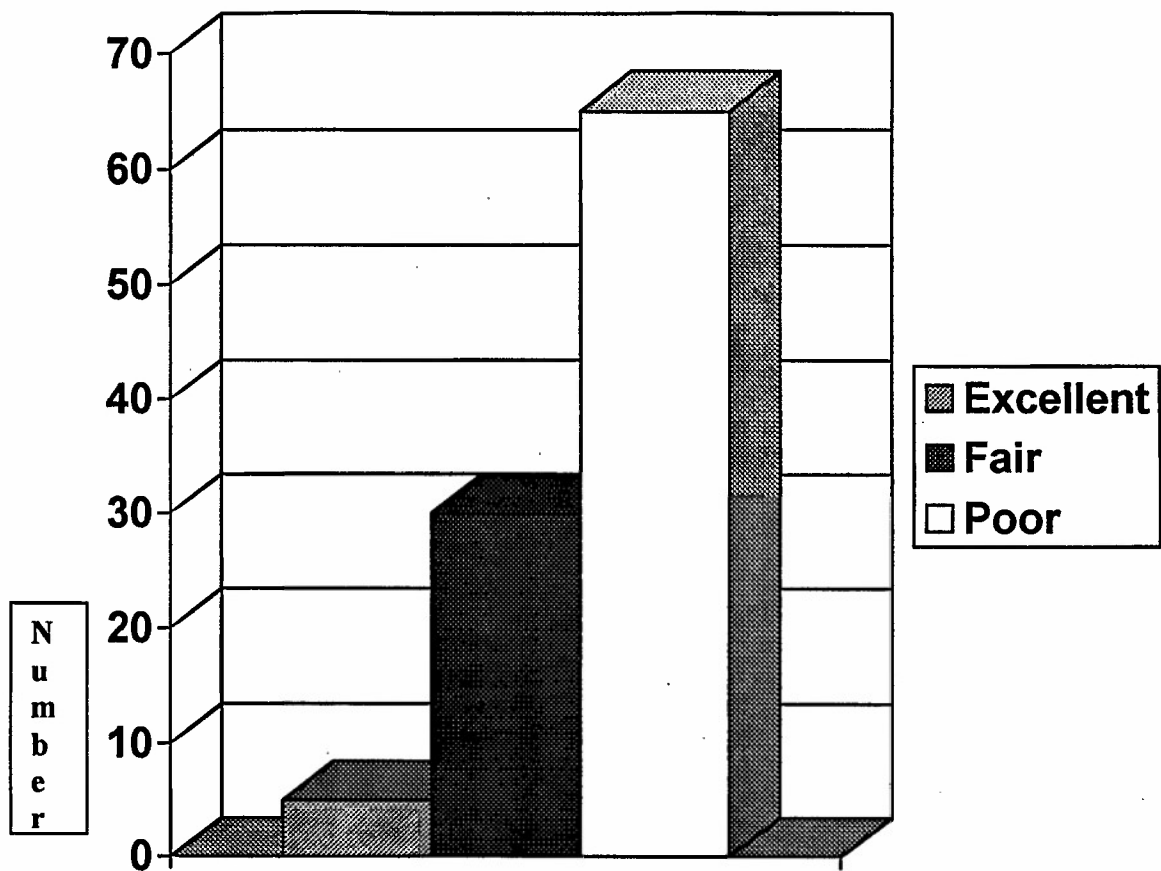


Figure 4.

Air Force Nurse Respondents' Overall Research Experience (Excellent, Fair or Poor Experience)

Relationship Between Attitudes of Air Force Nurses,
Levels of Education, and Rank

The sum of attitudes was correlated with the rank of the individual. The correlation was not found to be statistically significant (Pearson Chi-Square= 1.759, df=5, Sig.=.881). The following table (Table 12) demonstrates the rates and percentages of good attitude versus bad attitude by rank. Figure 5 displays the visual analysis of good attitude versus bad attitude by rank.

Table 12.

Sum of Air Force Nurse Respondents Attitudes by
Air Force Rank (Good vs Bad Attitude)

Rank	Good	Bad
Second Lieutenant	7 (70%)	3 (30%)
First Lieutenant	13 (81%)	3 (19%)
Captain	56 (82%)	12 (18%)
Major	22 (85%)	4 (15%)
Lieutenant Colonel	6 (75%)	2 (25%)
Colonel	2 (100%)	0 (0%)

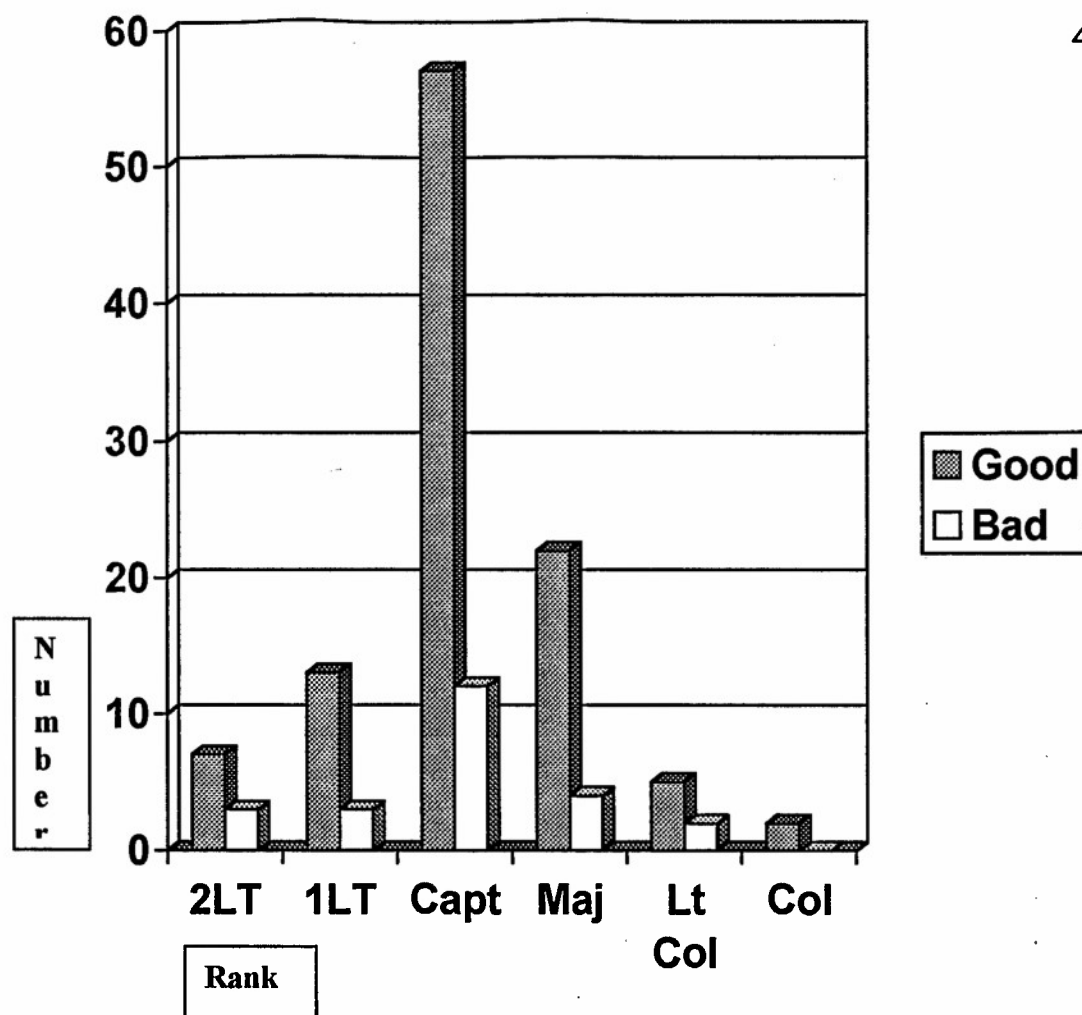


Figure 5.

Sum of Air Force Nurse Respondents' Attitudes by Rank (Good or Bad Attitude)

Rank was then subdivided into two separate categories. The first category was Company Grade Officers (CGO) which includes Second Lieutenants, First Lieutenants, and Captains. The second category was Field Grade Officers (FGO) which includes all Majors, Lieutenant Colonels, and Colonels. These were also correlated with the attitude sum. The correlation was not found to be statistically significant (Pearson Chi-Square=.107, df=1, sig=.744). The following figure (Figure 6) demonstrates the comparison of the two groups as related to attitude.

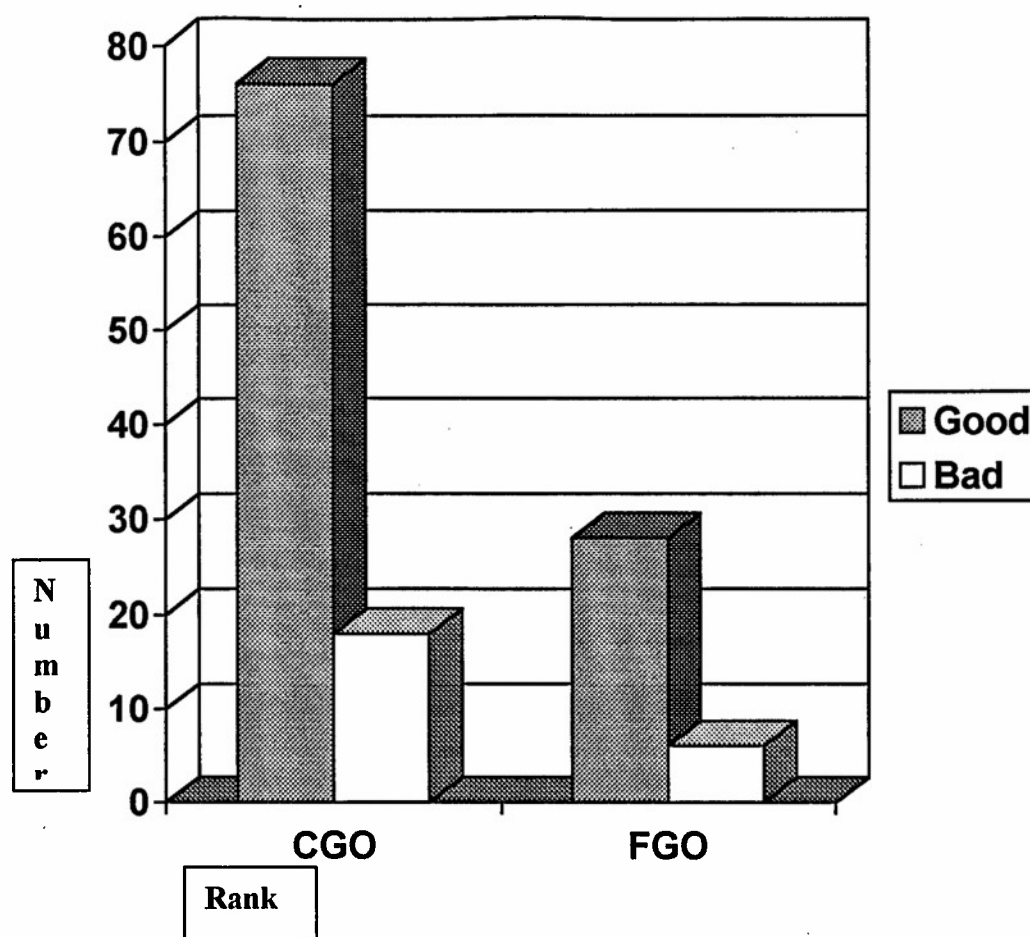


Figure 6.

Company Grade Officer (CGO) vs Field Grade Officer (FGO) Attitudes

Highest level of education in nursing was correlated with the sum score of the attitudes. The correlation was found to be statistically significant (Pearson Chi-Square=10.265, df=3, sig=.016). The following table (Table 13) shows the attitudes by highest level of education in nursing. Figure 7 shows the graph of attitudes by highest level of education in nursing.

Table 13.

Air Force Nurse Respondents' Attitudes by Highest Level of Nursing Education

Highest Level of Education in Nursing	Good	Bad
Diploma	3 (100%)	0 (0%)
Associate Degree	2 (33%)	4 (67%)
Bachelor's Degree	74 (83%)	15 (17%)
Master's Degree	27 (84%)	5 (16%)

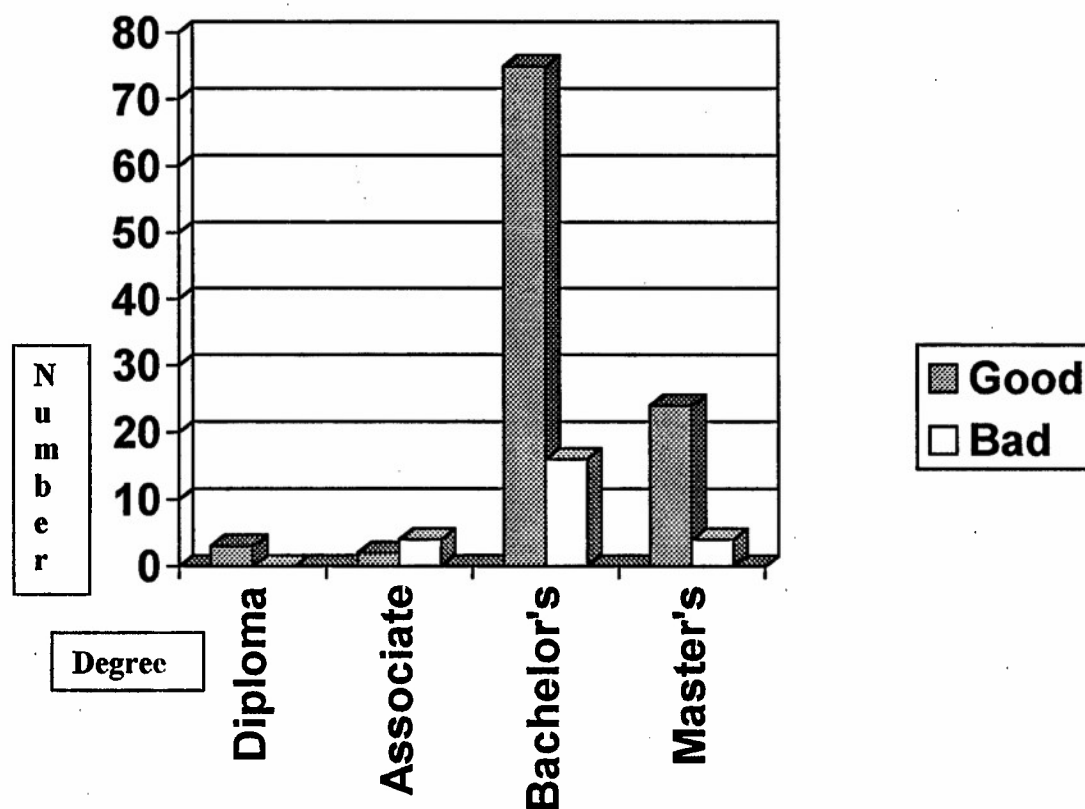


Figure 7.

Air Force Nurse Respondents' Attitudes by Highest Level of Nursing Education

Attitude was correlated with highest total level of education (nursing and non-nursing education combined). The correlation was not found to be statistically significant (Pearson Chi-Square=.236, df=2, sig=.889). The following table (Table 14) shows the relationship of attitude by highest total level of education. Figure 8 shows a graph of attitude by highest total level of education.

Table 14.

Air Force Nurse Respondents' Attitudes by Highest Total Level of Education (Nursing and Non-Nursing Combined)

Highest Total Level of Education	Good	Bad
Bachelor's Degree	69 (81%)	16 (19%)
Master's Degree	36 (82%)	8 (18%)
Associate Degree	1 (100%)	0 (0%)

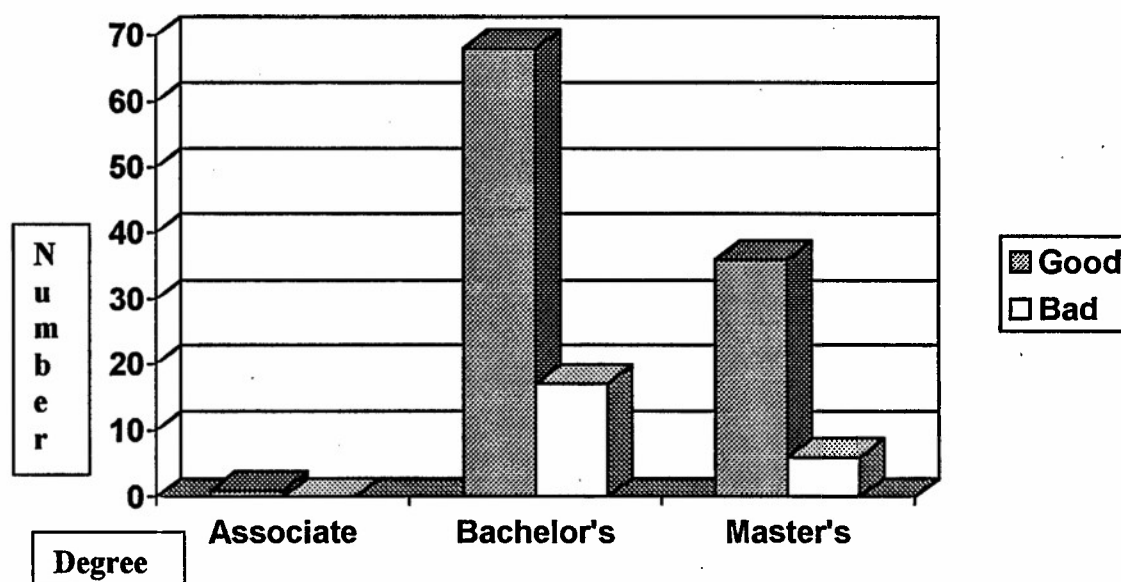


Figure 8.

Air Force Nurse Respondents' Attitudes by Highest Total Level of Education (Nursing and Non-Nursing Combined)

Perceived Role in Research

Air Force nurse's perceived role in research was measured using a four point Likert scale. The nurses had a high perceived role in research. One question had negative results. Sixty two percent of respondents disagreed or strongly disagreed that it was the staff nurses role to collect data only if it could be incorporated into the daily nursing routine. The following table (Table 15) gives the total percentage of respondents marking agree or strongly agree to the corresponding question.

Table 15.

Positive Responses (Strongly Agree or Agree) of Air Force Nurse Respondents to Perceived Role in Research Questions

Question:	Positive Responses
It is the staff nurses' role to:	
Identify nursing care problems	129 (99%)
Find ways to solve nursing care problems	124 (96%)
Suggest ways to improve patient care	129 (99%)
Be involved in research if it addresses ways to improve the quality of nursing care	126 (97%)
Be involved in collecting data for nursing research studies	116 (89%)
Be involved in collecting data for non-nursing studies	92 (72%)
Be involved in collecting data only if it can be incorporated into the daily nursing routine	49 (38%)
Conduct research studies	86 (66%)
Be aware of all research being conducted in the workplace	97 (75%)
Apply research findings to nursing practice	123 (95%)

The scores for each individual role question were summed and assigned to a category. A minimum score of 10 would be the best score, 40 would be the worst possible score. Scores of 10-20 were assigned to the strong perceived role category, 21-30 to the fair category, and all others to the poor perceived role category. Scores ranged from 10 to 32 with a mean of 18.7462. The following figure (Figure 9) shows a graph of the numbers of nurses falling into the above categories.

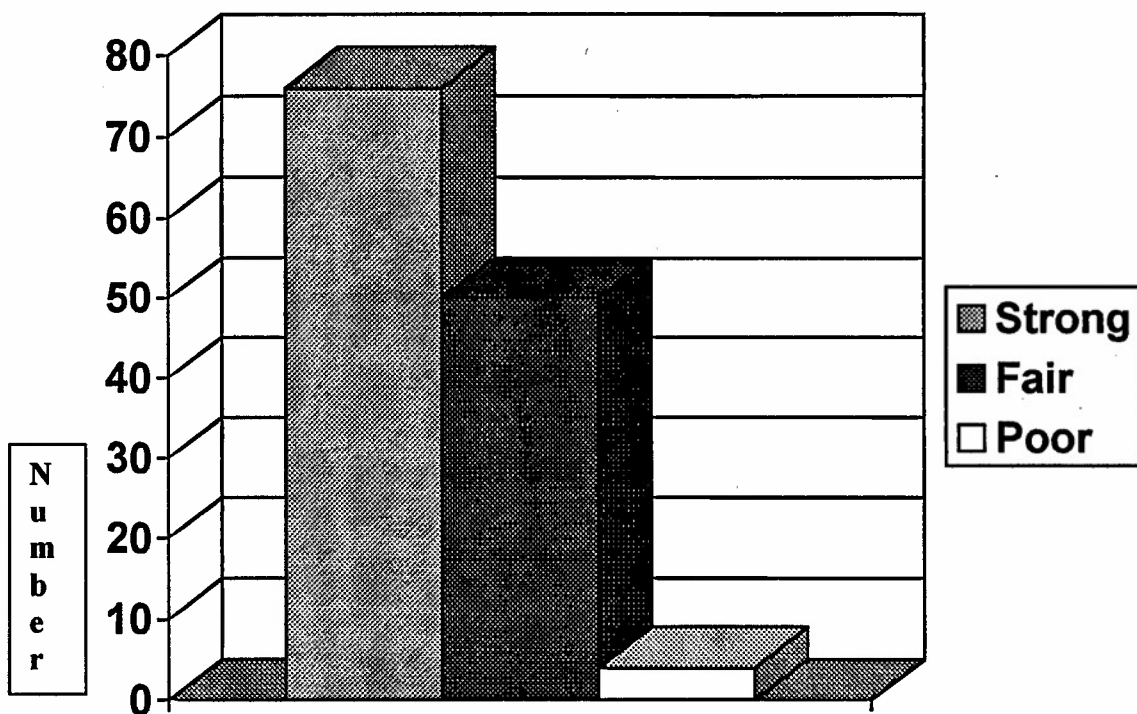


Figure 9.

Air Force Nurse Respondents' Strong, Fair, or Poor Perceived Role in Research

Interest in Research

Interest in research was measured using the eight questions in the section with this title. The questions used a 4 point Likert scale using very interested, interested, slightly

interested, and not interested. The following table (Table 16) demonstrates the frequencies of positive (very interested or interested) answers.

Table 16.

Air Force Nurse Respondents' Interest in Research (Very Interested or Interested)

Question	Positive Responses
Please circle the number that best reflects your interest in:	
Finding answers to specific nursing problems	116 (89%)
Reading about research studies	90 (69%)
Participating in research projects if they are carried out in your workplace	109 (84%)
Knowing the results of research projects which have been conducted in your workplace	121 (93%)
Being a member of a nursing research committee	70 (54%)
Change your nursing practice based on research findings	116 (90%)
Conducting research if it is part of the work assignment	108 (83%)
Conducting research even if it is not part of the work assignment	74 (57%)

The scores for each individual question were added together to give a sum of the nurses' interest score. The best possible score was 8, the worst possible score was 32. The scores were assigned to categories, 8-16 strong interest, 17-24 fair interest, 25-32 poor interest. The minimum score achieved was 8, the maximum 31 with a mean of 15.7308. The following figure (figure 10) graphs the number of nurses falling into each category.

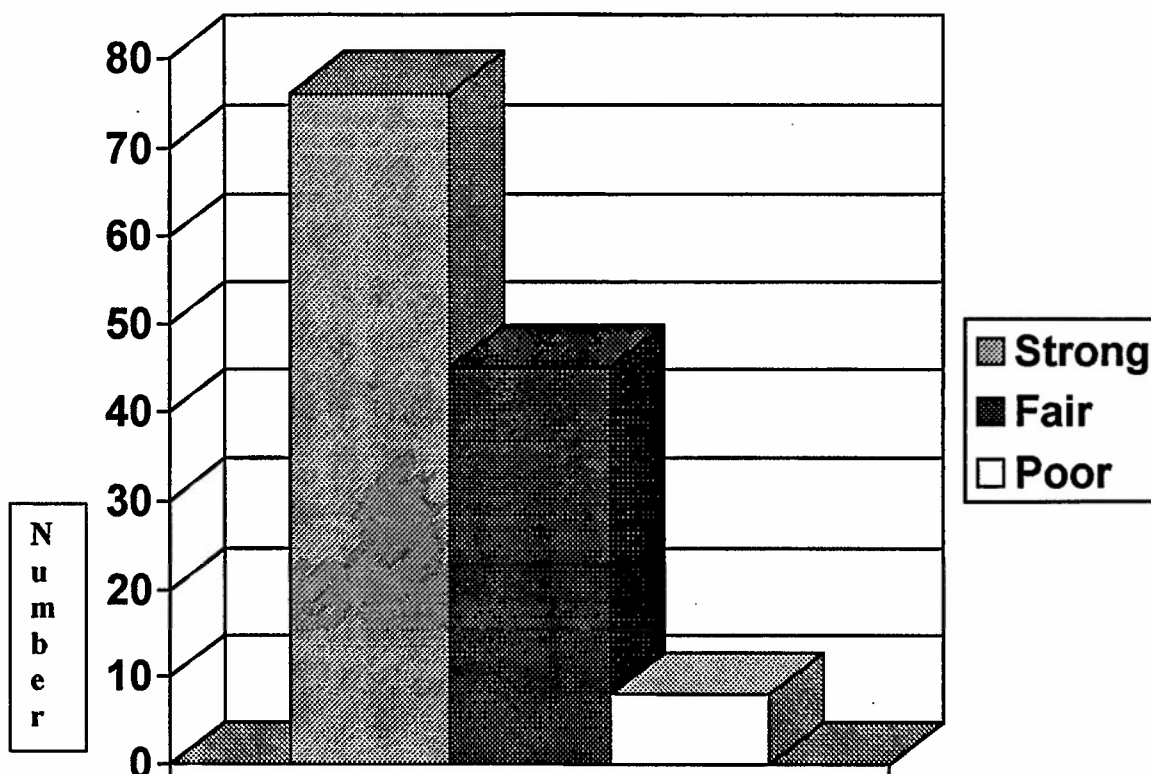


Figure 10.

Air Force Nurse Respondents' Strong, Fair, or Poor Interest in Research

Level of Education for Conducting Research

The final question on the survey inquired at what level of education should nurses begin conducting research. Many write-in answers are included with the tabulations below. Table 17 shows the frequencies at which Air Force Nurses stated nurses should begin conducting research.

Table 17.

Air Force Nurses' Responses to the Question: At Which Level of Education Should Nurses Begin Conducting Research?

Answer	N (%)
Diploma	9 (7%)
Associate Degree	8 (6%)
Bachelor's Degree	65 (50%)
Master's Degree	34 (26%)
Ph.D.	5 (4%)
Only when interested	1 (<1%)
Every level including students	2 (1%)
Any level	4 (3%)
Any level involved in patient care	1 (<1%)
None	1 (<1%)

Additional Comments

There were several comments written under the comments section. A different Air Force nurse respondent wrote each numbered comment. The comments are written verbatim:

1. Changing practices according to research finding would be great, but Dr.'s in charge don't usually allow it.
2. My undergrad degree was in biology and chemistry. I consider myself a scientist as well as a nurse. I myself mentor others in research and publication.

Knowledge for the sake of the betterment of mankind is #1, it is a shame politics stands in the way.

3. I had particularly good nursing research courses in my BSN program, and a strong foundation even from high school.

4. Interest in research is more important than educational level. But with increase in education you gain greater knowledge in the research process.

5. Very hard in clinical setting to do research. Process is slow and by the time you get funding it is almost time to PCS to another duty station. Should be able to have a research hold like an educational hold, that way you can stay and finish your project (of course you can't take 7 years to complete).

6. I am in full favor of nursing research if it is being conducted for the purpose of changing and improving nursing practice. It is not necessary to re-invent the wheel simply to fulfill requirements.

7. Nursing research means and provides nothing of value if results are never applied. Studies I have seen in the workplace thus far, have only created 'busy work'.

8. Many providers remain skeptical about the role of "nursing" research. They often feel our research is 'soft' and not backed up with "proof" from medicine/treatments/protocols. For example, a provider resisted being part of a NICU developmental care because nursing couldn't "prove" it decreased vent. days or improved outcomes! How do we change this perspective?

9. Diploma nurses could participate in the research process and encourage them to advance their education; e.g. return to school for a BSN.

10. Have done a thesis and research. Most nursing research is impractical i.e. testing theory of practice, etc. Clinical practical research is fine, but conducting research in order to “prove” ourselves as a profession is absurd. At the basic level (entry) of education (BSN)- recommend deleting research courses, etc. and focus on clinical issues-practical issues.
11. I am presently enrolled in a MSN program and will be doing research. For my thesis, I feel all Master prepared nurses should have research paper.
12. Many times active duty nurses are not allowed time to do research-they end up doing it all on their own time and this discourages them from beginning a project. Also- when we try to implement changes resistance is met with other staff members or physicians.
13. Unless research is part of patient care, it won't be incorporated in the workplace- no time!
14. Research is great to keep current on nursing practice.
15. Nursing lags behind many other healthcare professions in conducting research. BSN programs should include an intro to research course as part of required curriculum.
16. Research can be in the form of chart audits, statistics. We are involved in it every day. Many of us don't realize it and don't get the rest of the story. Give me sound tested rationale I'll change my practice.
17. On your research question beginning “it is a staff nurses” responsibility...I believe it is the responsibility of all nurses in all areas, not just staff nurses. So it

may have skewed my responses toward the negative side because I feel it is everyone's responsibility.

18. Research in nursing needs to be practical and useful in daily practice for nurse in the workplace to buy into it and want to participate.

19. I think it is important for all nurses to have some familiarization and education in research, however, conducting research is hard to do if already working as full time staff nurse. Primarily I see my role as one who applies research to practice and participates in studies by collecting data.

20. A lot of nursing research is done that would or could influence patient outcome, but is not recognized by the physician staff.

Conclusion

A total of 133 questionnaires were received in the time frame of the study. One hundred thirty of those questionnaires were included in the study. The nurses had an overall good attitude toward research, but not good research experience. The nurses also had a good perceived role in research, and good interest in research. Nurses with an Associate Degree (ADN) had the poorest attitude toward nursing. Those with a Diploma had the best overall attitude, however only 3 Diploma nurses were included in this study.

CHAPTER V. SUMMARY

The purpose of this study was to examine Air Force nurses' attitudes toward research. The demographics of the population, and the statistical analysis were presented in previous chapters. This chapter will present the conclusions concerning the study, provide a comparison with previous research, provide recommendations for implementation, and make recommendations for future research.

Conclusions

Air Force nurses in this study had very good overall attitudes, 80% scored a "good attitude" on the sum of attitude score. Attitude was highly correlated with highest level of education in nursing (Pearson Chi-Square=10.265, $df=3$, $sig=.016$), but not well correlated with rank, or highest total level of education (nursing and non-nursing education combined). Nurses with a diploma in nursing had the highest attitude toward nursing research, followed by those with a Master's degree, and Bachelor's degree. There were only 3 diploma nurses in the study, so these results may be skewed. Nurses with an Associate's degree in nursing ($N=6$) were found to have the worst attitude toward nursing research. Four of the six ADN nurses were found to have "bad attitudes" on the sum of attitudes scale.

The overall positive attitude can probably be explained by the higher overall education in nursing, almost 100% had at least a Bachelor's degree, 97% had a Bachelor's degree in nursing. Most BSN programs have an introduction to research course in their curriculum, and emphasize the importance of nursing research. The shorter nursing program length can probably explain the attitudes of the ADN nurses. With the shorter program, it is impossible to cover every topic covered in the BSN program. Some

ADN programs incorporate research into their curriculum, while some do not. Most ADN programs emphasize the importance of skills over research. In addition, nurses in these programs are not exposed to nurses who are in the process of actively conducting research. The mix of faculty may partially explain this disparity as well. Since most nursing research is conducted by those with a Master's degree or higher, the mix of BSN and MSN faculty in the ADN programs may have an effect on research attitudes. The good attitude of the diploma nurses can be explained by various factors. Diploma nurses spend more time in clinical, and are exposed to a lot of medical research. These programs also emphasize the importance of finding ways to improve patient care, logically through research.

The nurses in this study had very little research experience in terms of the following factors. While many had taken a course in research methodology and statistics (94%), and filled out questionnaires for research studies (94%), only about one-fourth had been a principal investigator or co-investigator for a study. While 78% had stated that they had changed their nursing practice based on research findings, one would expect this rate to be higher since more than 93% had a Bachelor's degree or Master's degree in nursing.

Highest level of education in nursing was highly correlated with research experience, while rank was not found to be statistically significant. The nurses who had excellent and fair research experience were Diploma, Bachelor's, and Master's prepared nurses. Associate degree nurses were all found to have negligible research experience. The lack of exposure to research, and the poorer attitude toward research can explain this

lack of research experience by the ADN nurses. If a nurse does not believe research to be important, why would they participate in it?

The nurses in the study had a very strong perceived role in research. Approximately two-thirds (66%) thought it was the nurse's role to conduct research studies. This can probably again be explained by the high education in nursing, and the nurses' exposure to research. This facility has an active research program, and many nurses with Master's degrees, and one Ph.D. nurse. If the administration has a perceived importance of research, this may filter down to the individual nurses.

The Air Force nurses had a strong interest in research as evidenced by the following factors. Over half (57%) thought they would be interested in conducting research even if it were not part of the work assignment, while 83% would be interested if it were part of the work assignment, and 84% would be interested in participating in research projects carried out in the workplace. Fifty four percent were interested in being a member of a research committee. Ninety percent were interested in changing their practice based on research. Again, education and facility support may be factors that can explain the strong interest in research.

Many comments received would lead one to believe that the nurses are interested in research, but meet resistance to implementing the findings by physicians and others who do not believe that nursing research is valid. "Changing practices according to research finding would be great, but Dr's in charge don't usually allow it." "Many providers remain skeptical about the role of 'nursing' research. They often feel our research is 'soft' and not backed up with proof from medicine/treatments/protocols."

Nurses were also interested in conducting research, but lacked the experience or

the time at work to participate in projects. Another common theme was that nursing research needs to be practical and useable by nurses at the clinical level.

Comparison of Results with Previous Research

Comparison with the two previous studies that used the same questionnaire (Alcock, et al., 1990, Robichaud-Ekstrand & Sherrard, 1994) revealed that nurses in this study had a higher level of education >99% bachelor's degree compared with 26% and <36% respectively. There were very similar findings in the areas of value, role, and interest in nursing research. One area of note involves the question concerning the nurse's role to conduct nursing research. In this study more nurses (66%) were interested in conducting research studies than in the other two studies (51% and 55% respectively).

Nurses had a much higher research experience in this study than in the other two studies. It must be mentioned that it was stipulated in this study that the research activities must have taken place in the last five years. This was not a stipulation in the other two studies. The results from this study may actually be higher without the five year stipulation. Table 18 demonstrates the percentages of nurses in each study performing the corresponding research activity.

Table 18.

Percent of Nurses Performing Research Activities in Three Separate Studies

	This Study (N=130)	Alcock (N=178)	Robichaud- Eckstrand (N=145)
Research Activity	%	%	%
Taken a research/statistics course	94	36	42
Identified a problem that led to a study	39	24	18
Completed questionnaires for a study	90	73	65
Conducted interviews for a study	33	27	21
Collected specimens for a study	44	39	N/A
Been a principal investigator	25	10	7
Been a co-investigator	24	10	12
Assisted with a grant proposal	7	11	10
Written a grant proposal	2	3	6
Received funds to conduct research	5	2	5
Attended a research conference	47	N/A	25
Published research results	9	3	3
Changed practice based on research	78	N/A	48

The higher level of experience is probably related to the higher levels of education of nurses in this study. Not only were there many more Baccalaureate nurses in this study, but there were many more Master's prepared nurses, 33.8% versus 2%.

Recommendation for Implementation

The results of this study are very important to the future of nursing research within the Air Force. These nurses have a very high value, role, and interest toward nursing research. They also have more research experience in comparison with nurses in other studies. The Air Force should find a way to include nurses who are interested in research in current research taking place at each institution. Not just include them in collecting data, etc., but include them in all of the steps of the research process including: problem generation, funding sources, project approval process, question formulation, and dissemination of findings. Perhaps mentoring in the research process, or providing funding and time for nurses to attend research conferences, or inviting them to research committee meetings would help involve novice researchers in the process of research.

Another implication of this study is to improve the attitudes of Associate degree nurses toward research by providing more education about the research process. Perhaps the results were due to the small sample size of ADN nurses participating in this study. Or maybe the shorter programs for Associate degree nurses does not allow enough time to fully cultivate a positive attitude toward the importance of research. Either way, with the large number of Associate degree programs in the United States, we need to improve those attitudes.

Recommendations for Future Research

Due to the small sample size and the use of a convenience sample, a larger survey of more geographically diverse Air Force nurses should be conducted. Since most studies have found that nurses tend to have a positive attitude toward research, perhaps future research should focus on providing opportunities for active participation in the research

process. This might occur by starting mentoring programs for novice researchers, or include them as members of research teams.

The process for having research approved took a long time in this study. It took about one month for approval by the USUHS IRB, less than a month for approval by the nursing research committee at the site of the study, but more than 2 months for the exempt approval status by the IRB at the site to grant approval. This could not have been anticipated, but future researchers should be aware that if they have a time constraint for conducting a study, they should submit their proposals early.

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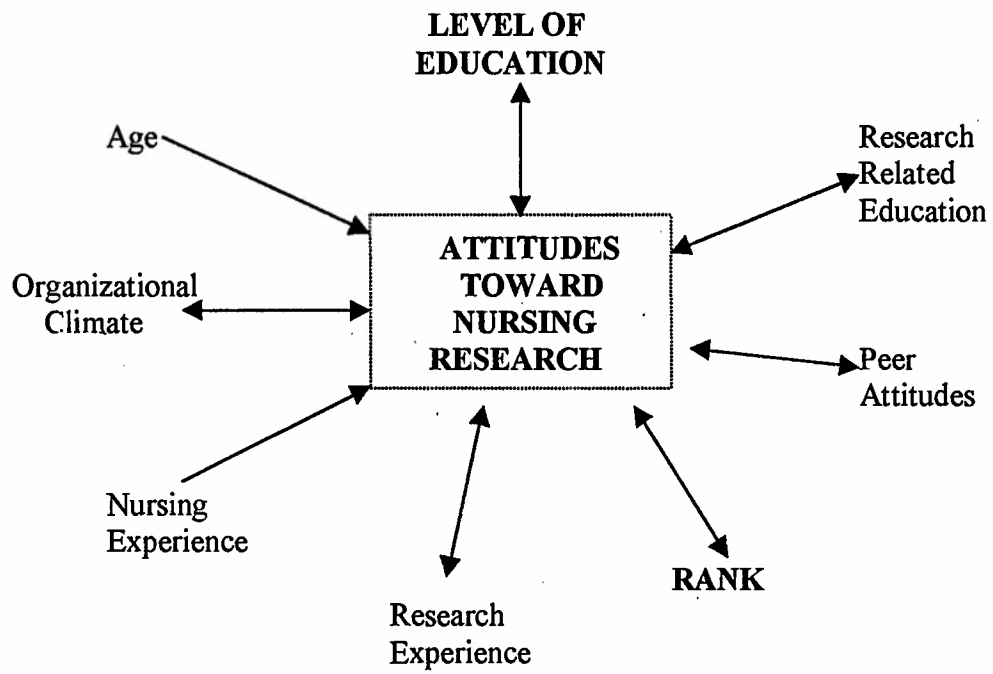
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APPENDICES

- Appendix A Schematic Representation of Factors Affecting Attitudes
Toward Nursing Research
- Appendix B Survey Questionnaire: Air Force Nurses and Research Activities
- Appendix C Permission for Utilization of Questionnaire
- Appendix D Consent Form
- Appendix E U.S. Air Force Survey Control Branch Approval of Study
- Appendix F USUHS IRB Exempt Human Study Approval of Study
- Appendix G Site Nursing Research Approval Form
- Appendix H Site IRB Approval

APPENDIX A

Schematic Representation of Factors Affecting Attitudes Toward Nursing Research



APPENDIX B

Survey Questionnaire: Air Force Nurses and Research Activities

The following information will be used only for the purpose of this study. Please do not put your name on the form. Thank you for your participation.

Section A: DEMOGRAPHIC DATA

1. Your age is (circle one):

1. <20
2. 20-25
3. 26-30
4. 31-35
5. 36-40
6. 41-45
7. 46+

2. Your gender is (circle one):

1. male
2. female

3. You completed your RN education (circle one):

1. <1 year ago
2. 1-3 years ago
3. 4-6 years ago
4. 7-9 years ago
5. 10-12 years ago
6. 13-15 years ago
7. > 15 years ago

4. Your HIGHEST level of education IN NURSING is (circle one):

1. Diploma
2. Associate's Degree
3. Baccalaureate
4. Master's Degree
5. Ph.D.
6. Other _____

5. Are you certified in a nursing specialty? (e.g. critical care, med/surg, oncology, etc.) (circle one):

1. Yes 2. No

6. If you already have a Master's degree, are you currently enrolled in a post-Master's certificate completion course?

1. Yes 2. No 3. Not applicable

6.1. If yes, please list:

7. Are you **CURRENTLY** enrolled in a **NURSING DEGREE** program?

1. Yes 2. No

7.1 If yes, please list the degree and type of program (e.g. BSN, MSN, nurse practitioner, nursing education, etc.):

8. Please identify the **HIGHEST** degree you hold in a **NON-NURSING** field (circle one):

1. None
2. Certificate/Diploma
3. Associate's degree
4. Bachelor's degree
5. Master's degree
6. Ph.D (Doctorate)
7. Other _____

9. Are you **CURRENTLY** enrolled in a **NON-NURSING** degree program?

1. Yes 2. No

9.1. If yes, please list the degree and type of program (e.g. bachelor of arts, master of science, biology, management, etc.):

10. Your rank is (circle one):

- | | |
|------------------------------------|----------------------------|
| 1. 2 nd Lieutenant/ O-1 | 4. Major/ O-4 |
| 2. 1 st Lieutenant/ O-2 | 5. Lieutenant Colonel/ O-5 |
| 3. Captain/ O-3 | 6. Colonel/ O-6 |

11. Your current position is (circle one):

- | | |
|--|---|
| 1. Staff Nurse | 7. Nurse Practitioner |
| 2. Nurse Manager | 8. Nurse Anesthetist |
| 3. Assistant Nurse Manager | 9. Nurse Midwife |
| 4. Nurse Administrator | 10. My current position is not in nursing |
| 5. Clinical Nurse Specialist | |
| 6. Other Nursing position (please specify) _____ | |

12. You are (circle one):

- a. Air Force Active Duty
- b. Air Force Reservist
- c. Other _____

Section B: PERCEIVED VALUE OF NURSING RESEARCH

On a scale of 1 to 4, please circle the number which best reflects your agreement with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
13. Research based knowledge assists nurses to solve patient care problems	1	2	3	4
14. Research does not promote accountability for practice	1	2	3	4
15. Research findings provide "the facts" needed to make clinical practice decisions	1	2	3	4
16. Research helps improve nursing practice	1	2	3	4
17. Research is not cost effective	1	2	3	4

Section C: PERCEIVED ROLE IN RESEARCH

On a scale of 1 to 4, please circle the number which best reflects your agreement with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
It is the staff nurses' role to:				
18. identify nursing care problems	1	2	3	4
19. find ways to solve nursing care problems	1	2	3	4
20. suggest ways to improve patient care	1	2	3	4

21. be involved in research if it addresses ways to improve the quality of nursing care	1	2	3	4
22. be involved in collecting data for nursing research studies	1	2	3	4
23. be involved in collecting data for non-nursing studies	1	2	3	4
24. be involved in collecting data only if it can be incorporated into the daily nursing routine	1	2	3	4
25. conduct research studies	1	2	3	4
26. be aware of all research being conducted in the workplace (e.g. unit)	1	2	3	4
27. apply research findings to nursing practice	1	2	3	4

Section D: INTEREST IN RESEARCH

On a scale of 1 to 4, please circle the number which best reflects your interest in:

	Very Interested	Interested	Slightly Interested	Not Interested
28. finding answers to specific nursing problems	1	2	3	4
29. reading about research studies	1	2	3	4
30. participating in research projects if they are carried out in your workplace (e.g. on your unit)	1	2	3	4
31. knowing the results of research projects which have been conducted in your workplace (e.g. on your unit)	1	2	3	4
32. being a member of a nursing research committee	1	2	3	4
33. change your nursing practice based on research findings	1	2	3	4
34. conducting research if it is part of the work assignment	1	2	3	4
35. conducting research even if it is not a part of the work assignment	1	2	3	4

Section E: RESEARCH EXPERIENCE

Please circle the appropriate answer.

36. I have taken a course in research methodology and/or statistics..... Yes No

For the following questions, answer only for the past five years.

In the past five years,

- | | | |
|---|-----|----|
| 37. I have identified a problem which led to a research study..... | Yes | No |
| 38. I have completed questionnaires for a research project..... | Yes | No |
| 39. I have conducted interviews for a research project..... | Yes | No |
| 40. I have collected specimens for a research project..... | Yes | No |
| 41. I have been a principal investigator of a research project..... | Yes | No |
| 42. I have been a co-investigator of a research project..... | Yes | No |
| 43. I have assisted with the writing of a grant
proposal..... | Yes | No |
| 44. I have written a grant
proposal..... | Yes | No |
| 45. I have received funds to conduct research..... | Yes | No |
| 46. I have attended research conferences..... | Yes | No |
| 47. I have published research results..... | Yes | No |
| 48. I have changed my nursing practice based on research findings..... | Yes | No |
| 49. I have presented research findings at a research conference/ symposium..... | Yes | No |

50. At which level of education do you think nurses should begin conducting research?

1. Diploma
2. Associate's Degree
3. Bachelor's Degree
4. Master's Degree
5. Ph.D.
6. Other _____

Any additional comments regarding nursing research may be written in the space below.

Thank you for your participation. Please place your completed questionnaire in the enclosed white envelope and place in the nearest US Postal Service mail box.

Questionnaire adapted from Alcock, Carroll, & Goodman. (1990) Survey Questionnaire: Staff Nurses and Research Activities. Revised and used with permission from the author.

APPENDIX C



Université d'Ottawa • University of Ottawa

Faculté des sciences de la santé
École des sciences infirmières

Faculty of Health Sciences
School of Nursing

December 17, 1997

Heather L. Moledor, Capt, USAF, NC

[Redacted]
[Redacted]
[Redacted]

PII Redacted

Dear Ms. Moledor,

Enclosed is a copy of the questionnaire you have requested plus a reliability analysis of the questionnaire prepared by Sylvie Robichaud-Ekstrand et al. Please identify the source of the tool in any future publications.

I would be pleased to receive a copy of your findings. The questionnaire has been requested by nurses from across North America and it would be interesting to compare results.

Good luck.

Sincerely,

Denise Alcock

Denise Alcock, R.N., Ph.D.
Professor and Dean,
Faculty of Health Sciences

APPENDIX D: Consent Form

Title of Research: The Relationship Between Air Force Nurses' Attitudes, Levels of Education, and Rank: Conduction and Utilization of Research

Investigator: Heather L. Moledor, Captain, US Air Force
Uniformed Services University of the Health Sciences (USUHS)
Graduate School of Nursing
4301 Jones Bridge Road
Bethesda, MD
(301)515-4523 (home) (301)295-1992 (office)

Purpose of Study: The purpose of this study will be to examine the relationship between the attitudes of Air Force nurses toward nursing research and their level of education and rank.

Condition for Participation: You must be an Active Duty or Reserve Air Force nurse officer working at Wright-Patterson AFB Medical Center during the survey period. Any nurse is eligible including, but not limited to: staff nurses, nurse managers, nurse administrators, advance practice nurses, and nurses working in non-nursing positions.

Procedure/Tasks: Each participant will be asked to complete the accompanying survey form and place it in the nearest U.S. Postal Service mail box.

Risk/Benefit: This study involves no physical risks or discomfort to you. While this study may not help you personally, it will help the Air Force and this institution to understand the research attitudes and experience of nurses to aid in the development of research programs. If you have any questions about your participation in this study, please contact the investigator or the Office of Research at USUHS at (301)295-3303.

Confidentiality: Any information obtained will be kept strictly confidential. You have the right to withdraw from the study at any time. You have the right not to answer any or all of the questions. Please do not write any identifying information such as name, phone number, address, or social security number on the survey.

Cost: There is no cost to you for your participation in this study nor will you receive any monetary reimbursements or rewards for your participation.

Information from the Investigator: The investigator will be happy to answer any questions regarding this study. The study is sponsored by USUHS, Bethesda, MD. The results of the study will be available through the Nursing Research Department at Wright-Patterson AFB hospital after the data has been collected and analyzed.

Consent: To maintain anonymity, completion and return of this survey implies consent for inclusion in the study.

APPENDIX E

22 July 1998

HQ AFPC/DPSAS
550 C Street West, Suite 35
Randolph AFB TX 78150-4737

Heather L. Moledor, Captain, USAF
Uniformed Services University of the Health Sciences
Graduate School of Nursing
4301 Jones Bridge Road
Bethesda MD

Dear Captain Moledor

Your proposed survey on Air Force Nurses and Research Activities has been reviewed and is approved contingent on: (1) excluding general officers from your data collection and (2) advising us of the actual number of nurses in your sample. Contingent on these two issues being met, your survey control number is USAF SCN 98-55 which expires on 31 Dec 98. Please make sure this control number is either in your cover letter to respondents or on the first page of the survey.

The only other consideration is the use of the 4-point scale versus a 5-point scale where there is a "neutral" response. Our preference is always to include a midpoint because being "neutral" is a valid response. However, because you've adapted your academic study from previous research that likely used the 4-point scale, you'll want to keep the same scale.

We wish you success in this study. You can e-mail me the survey sample size and I will annotate your file. Please don't hesitate to call me or my staff at (210) 652-5680 if you have questions about Air Force survey matters.

Sincerely

CHARLES H. HAMILTON
Chief, Survey Branch

cc:
HQ USAF/SGR

APPENDIX F



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799



July 29, 1998

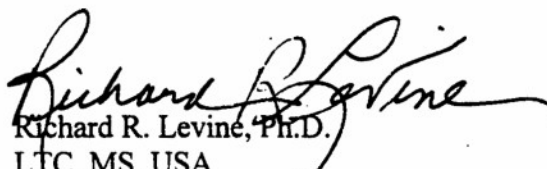
MEMORANDUM FOR CAPT HEATHER MOLEDOR, GRADUATE SCHOOL OF
NURSING

SUBJECT: IRB Review and Approval of Protocol T06183 for Human Subject Use

Your research protocol, entitled "*Conduction and Utilization of Research: The Relationship Between Air Forces Nurses' Attitudes, Levels of Education, and Rank*," was reviewed and approved for execution on **July 28, 1998** as an exempt human subject use study under the provisions of 32 CFR 219.101 (b)(2). This approval will be reported to the full IRB scheduled to meet on August 13, 1998.

The IRB understands that this study aims to trace the connections between nursing research and nursing practice among Air Force nurses, focusing on attitudes towards research and their relation to (1) recency of participation in research, (2) rank, and (3) level of education. Data will be reported only in aggregate form.

Please notify this office of any amendments or changes in the approved protocol that you might wish to make and of any untoward incidents that may occur in the conduct of this project. If you have any questions regarding human volunteers, please call me at 301-295-3303.


Richard R. Levine, Ph.D.
LTC, MS, USA
Director, Research Programs and
Executive Secretary, IRB

cc: Director, Grants Administration

APPENDIX G

23 October 1998

MEMORANDUM FOR CAPT HEATHER MOLEDOR

FROM: Major Hoffinan/Nursing Research Function

SUBJECT: Review of Research Proposal; Conduction and Utilization of Research: The Relationship Between Air Force Nurses' Attitudes, Levels of Education and Rank

1. The Nursing Research review group met 1 October 1998 to review your research proposal entitled "Conduction and Utilization of Research: The Relationship Between Air Force Nurses' Attitudes, Levels of Education and Rank". The Committee would like to commend you on all the work you have done in preparing this proposal. We have several recommendations to enhance your proposal.

2. The recommendations are as follows:

<i>Location in Proposal</i>	<i>Finding(s) and Recommendation(s)</i>
p. 5.	Restate question #3, to " Is there a relationship between attitudes of Air Force nurses toward nursing research and their levels of education and rank?" or " What is the attitude of Air Force nurses toward nursing research based on level of education and rank?" This study is not designed to prove what relationship exists.
p.8-9.	The variable "rank" could be better defined to include usual length of experience/time before attaining the specific ranks.
p. 8-9.	It should be stated that reservists work the majority of their professional time in the civilian setting. This may skew the results because their attitudes may represent the civilian experience not the military experience. Perhaps a third category could be used to analyze attitudes of reservists.
p. 9.	Please add lack of power analysis to the section on study limitations.
p. 21-22.	You may want to hand out the surveys rather than use the Internet. You can ensure the nurse actually received the survey if you physically hand them out. You can then calculate the response rate. Use of the Internet to distribute the survey may create a sample selection bias by eliminating those nurses that are not at ease with the computer and do not access the Internet.
p. 24.	The pilot study to validate your survey instrument should be completed prior to conducting your study. However, it will not prevent us from sending your proposal to the IRB for approval.
p. 24.	Acceptable levels of correlation and specific analysis methods need to be added to this section of the proposal. In addition, please clarify the computer rogram SPSS by spelling out the program name the first time it is used.
p. 27-33.	Please add at the bottom of the survey, " Revised and used with permission of the author".

p. 29.

Either eliminate the statement that results are not traceable or follow a procedure to protect identity. Nurses working in a one person position can be easily identified by question number 11.

3. I will serve as your contact person and can be reached at 257-3965, on beeper 327 or via e-mail at hoffmanp@medcenoa.wpafb.af.mil. Please don't hesitate to call if you need assistance. The Nursing Research function will review your proposal again and forward it the IRB for final approval.

PATTI V. HOFFMAN, Major, USAF, NC
Chair, Nursing Research Function

APPENDIX H

1 December 1998

MEMORANDUM FOR CAPT HEATHER L. MOLEDOR

PII Redacted

FROM: 74th MDOS/SGOA
Clinical Investigations
4881 Sugar Maple Drive
Wright-Patterson AFB OH 45433-5300

SUBJECT: Proposed Protocol

1. The protocol you submitted, "Conduction and Utilization of Research: The Relationship Between Air Force Nurses' Attitudes, Levels of Education, and Rank," was reviewed via expedited review and approved by the Chair of the Institutional Review Board (IRB) of Wright-Patterson Medical Center on 16 November 1998. The Commander of Wright-Patterson Medical Center has also reviewed the protocol. It was determined to be exempt and has been assigned file number FWP19990004E. You may now begin your study.
2. Progress reports will be due annually. You will receive a reminder 30 days in advance when your report is due. If you complete your study prior to December 1999 a final report may be completed.
3. Any changes to the study must be submitted to the Clinical Investigations office for approval prior to initiation.
4. Any unanticipated major adverse reactions or other medical misadventures must be reported immediately to the department chairperson, the Chief of Medical Staff, the Clinical Investigations Coordinator and ultimately the commander IAW AFI 40-403. Such events will also need to be summarized in the subsequent progress report.
5. If you anticipate separating from the Air Force or changing assignments before the protocol is completed, you must notify the Clinical Investigations Office as soon as this is known. You will be required to either formally close the protocol, or to have another investigator take over the study. The latter process requires nomination by the flight commander, submission of a curriculum vitae, and approval by the Institutional Review Board.
6. Please indorse below and return to Clinical Investigations. I hope that your study will prove to be a worthwhile experience for you. Let us know if there is any way we can assist you.

DEBBIE BACHMAN
Clinical Investigations Coordinator

1st IND

TO: SGOA/Clinical Investigations

Noted/Acknowledged

Principle Investigator Date