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VARIABLES WHICH AFFECT THE ATTITUDE OF ARMY NURSES TOWARD THE NURSING PROCESS

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION IN EDUCATIONAL ADMINISTRATION

DECEMBER 1984

by

Susan Ann McMarlin

Dissertation Committee:

John A. Thompson, Chairman
Lucius A. Butler
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Robert E. Potter
Daniel W. Tuttle
ACKNOWLEDGEMENTS

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ABSTRACT

This study focused on the problem that some Army nurses are not using and documenting the nursing process even though professional requirements have directed that the model be used as a basis for the practice of nursing. Administrators in both the civilian sector and the Army are concerned about the problem because the standards of the profession are largely built upon the concepts of the model. The nursing process was defined as the name of a specific series of steps designed to result in professional nursing care. The four basic steps of the nursing process are called assessment, planning, implementation, and evaluation. The nursing process implies using intellectual, interpersonal, and technical skills for the problem solving and critical thinking necessary to implement the nursing process. The concept has been identified as a system to assist the nurse in combining nursing knowledge, intuition, science, and spontaneity into a systematic and deliberative plan for nursing actions. The purpose of this study was to identify variables which affected the attitude of Army nurses toward the nursing process.

The theoretical framework used in this study was based upon general systems theory and human needs and motivation theory. General systems theory provided a broad foundation
for viewing the nurse and the patient as social subsystems, and the nursing process as the interpersonal activity in which the behaviors of one affect the other. The human needs and motivation theory provided a useful framework for a study in which the attitudes of nurses toward the nursing process were being studied. The type of nursing care administered and the interactive behaviors of the participants could better be understood if it were known which of the basic needs of the nurse and the patient were most urgent at a given time.

The population to which the findings of the study were to be generalized are all Army nurses who provide direct patient care to hospitalized patients. Approximately 1,887 nurses in the Army were determined to be in those roles. To be able to generalize to a population of that size with a permissible error at the 0.05 level, a sample of 229 subjects was needed to assure a ninety percent confidence level.

The sample was selected from six sites which were thought to be representative of the hospitals in the Army system. The sites were located in North Carolina, Virginia, Maryland, Texas, and the District of Columbia. Of the 811 Army nurses assigned to the six hospitals, approximately 511 were identified as being in direct patient care positions. Since the nurses were assigned to duty shifts on a random
basis, the selection of the three shifts during the data collection time produced a pool of 292 nurses which had characteristics that approached randomization. Each of these nurses was provided a research packet and asked to complete the survey. A return rate of seventy-eight percent or 225 completed packets were obtained.

Since an extensive review of the literature did not yield an instrument which would measure variance in attitude toward the nursing process attitude, a major task of the study was to develop and test an instrument which would meet this need. The outcome was an attitude inventory which was titled the Nursing Process Attitude Scale.

The attitude instrument was developed and normed for use in the study by using Likert as the methodology reference. Initially, a test pool of 150-items designed to measure attitudes was presented to a panel of experts to review for specific criteria. This professional appraisal of what appears to be valid for the content of the test is a form of content validity known as face validity. The five nursing process experts examined the items for clarity, style, and relevance to the nursing process. As a result of their evaluation, fifty of the items were deleted and other items were revised.

An alpha roster containing the names of every nurse in the Army was used to select a random sample of 500 nurses to
receive the first pretest of the Nursing Process Attitude Scale (NPAS). The results of this mailed survey were subjected to a factor analysis with a varimax rotation in which fifty-six items which factored at the 0.45 level were retained. The second pilot test was mailed to 280 nurses, and those results were subjected to the second factor analysis with a varimax rotation. Forty-five items which factored at the 0.45 level were retained for use in the study. The forty-five items clustered into five factors which became the subscales of the NPAS. These subscales were labeled—value of the nursing process, benefits, techniques, long range outcome, and administrative responsibilities for implementing the nursing process. Using a factor analysis to establish internal consistency is a form of construct validity called factorial validity. Only those items which are related to each other and form separate traits or factors are clustered together and tend to be highly correlated with one another.

Two other instruments were developed to assist in determining the predictive validity of the NPAS. The Nurse Manager's Rating Form was used to ascertain a measure of the manager's perception of the use of the nursing process by the research subjects. The second instrument, the Nursing Process Audit Instrument, contained criteria for evaluating the documentation of the subject's use of the nursing
process. In addition, a personal data form was attached to the NPAS to identify the nineteen personal and professional independent variables tested in this study.

Descriptive statistics were used to describe the values of the dependent and independent variables. The majority of the nurses were females (seventy-seven percent), married (fifty-percent), and between twenty-seven and thirty-three years of age (forty-three percent). Most of the sample were lieutenants (forty-nine percent) and had worked as nurses for six or less years (fifty-seven percent). Only twenty-six nurses held a master's degree (twelve percent); forty had served in a research role (eighteen percent); twenty-three had published in the nursing literature (ten percent); and 117 nurses were members of a professional organization (fifty-two percent). The majority of the subjects functioned as staff nurses or team leaders (seventy-eight percent) on a medical/surgical unit (sixty-one percent), and practiced team nursing (forty-eight percent) while being assigned direct care for more than nine patients per shift (forty-one percent).

The first hypothesis examined whether there were any significant differences between the four personal variables and the score on the NPAS. An analysis of variance (ANOVA) did not show that the four personal variables, gender, age, marital status, or military rank significantly affected the
scores on the Nursing Process Attitude Scale. The null hypothesis was rejected.

Hypothesis Two examined whether there was a significant difference on any of the five subscales of the NPAS and the four personal variables tested in the first hypothesis. The variables, marital status and gender, were found to significantly affect the scores of the first subscale (value) of the NPAS. The mean of the females and the married nurses were higher on Subscale One of the NPAS. The Scheffe test showed that the difference between the means of the married nurses and the single nurses were significant. Their scores contributed more to the variance of the scores of the subscale than the other groups. Since only two of the possible twenty combinations of the variables were significant, these results led to a failure to reject the null hypothesis.

Hypothesis Three tested whether there were any significant differences between the NPAS scores and fifteen professional variables. Four of the variables which were clustered under the grouping called education and experience, were found to significantly differ with the scores on the NPAS. These four variables were the basic nursing program attended, years since graduation from the program, years since obtaining the highest nursing degree, and total years of nursing experience. The findings
provided additional support that attitudes are molded by events and people. The Scheffe test failed to categorize any of the sub-groups in each variable as being different from the others. Since only four of the fifteen professional variables were found to significantly affect the scores on the NPAS, the decision was made to fail to reject the null hypothesis.

The purpose of Hypothesis Four was to test whether there was a significant difference between the five subscale scores on the NPAS and the fifteen professional variables. The results of the ANOVA showed that two of the variables significantly affected the scores on Subscale Three (techniques). These variables were the highest nursing degree earned and the number of patients usually assigned during a shift. The Scheffe test was not significant for any of the sub-groups within the variables. Because only two of a possible seventy-five combinations of variables resulted in being significant, there was a failure to reject the null hypothesis.

The findings for Hypothesis Five which addressed whether the scores on the NPAS were affected by those on the Nursing Manager's Rating Form showed there were significant differences between the two instruments. The findings implied that the ratings by the nurse managers were closely related to the scores on the attitude instrument, and
provided evidence that the managers were able to accurately assess their staff's use of the nursing process. Multiple regression analysis was used to test whether there was a relationship between the two instruments. The results indicated that the scores from the Manager's Form were related to the NPAS and were predictive of the scores received by the subjects on the NPAS.

Hypothesis Six was accepted because the analysis of variance did not result in a significant difference being documented between the scores on the NPAS and those on the Nursing Process Audit Instrument. Findings from the ANOVA used to test Hypothesis Seven showed that a significant difference existed between one of the subscales of the NPAS (value of the nursing process) and the Audit Instrument. Because only one of five subscales was significant, the decision was made to fail to reject the null hypothesis.

The results of a stepwise regression and multiple regression analysis used in the testing of the two ancillary questions showed that the Nurse Manager's Rating Form and three of the personal and professional variables were predictive of the scores on the NPAS. The three variables were the basic nursing program attended, the military rank, and the research roles assumed by the respondents. In response to the second ancillary question, these four variables plus the variable, nursing position, accounted for
twenty-five percent of the variance of the dependent model, the Nursing Process Attitude Scale.

In conclusion, a nursing process research instrument was developed which appears to have wide applicability for use in the Army Nurse Corps. The instrument was field-tested through three separate iterations and has demonstrated a significant amount of variance. The instrument, the Nursing Process Attitude Scale, has established content and construct validity. In addition, external validity was determined on the basis of personal data and the observations made by significant others. Recommendations are that the instrument be used by nursing administrators, educators and researchers in the Army to ascertain information about the attitude of nurses toward the nursing process. There is ample documentation in the literature of the association between attitude and behaviors. Other recommendations are that additional research be conducted to obtain additional data about those personal and professional variables which were determined to have affected the scores on the NPAS. The findings from this study and the availability of the research instrument for future research studies have potential for further refining the nursing process and for contributing to the body of nursing science.
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CHAPTER 1
Introduction and Statement of the Problem

The first chapter contains information identifying and documenting the problem that is the focus of the study. Background information about the profession of nursing is provided for better understanding the problem. An overview of general systems theory, human needs and motivation theory, and the constructs of the nursing process is presented as a theoretical and empirical framework. Included in the chapter are the research questions and the hypotheses to be studied. Finally, the assumptions, scope, and the limitations are delineated and discussed.

Introduction

A variety of changes have occurred in the nursing profession in the past few decades. Within a single generation, nurses have seen their roles change as they endeavor to stay abreast of technological and professional advances. Responsibilities have been analyzed, broadened, delimited, and reorganized. Out of the state of flux, a
framework for nursing practice, the nursing process, has emerged.¹

The nursing process is the name or the title given to a discrete series of acts or operations designed to result in professional nursing care. There is an element of confusion in the use of the term because the nursing care itself is not the the nursing process, but it is the result of the systematic way of planning the activities.² The term has come to mean a systematic approach to the identification of the nursing care problems of the patient, and the utilization of nursing actions that effectively alleviate, minimize, or prevent the specific problems being presented or likely to develop.³ The nursing process begins with an assessment of the patient to obtain data on which to base a nursing diagnosis and is completed only after the plans based upon the assessment have been implemented and evaluated for effectiveness. It is a tool or a model that provides direction for a logical, problem-solving approach to patient care.

While the nursing process has been widely endorsed by the theorists, it has not achieved universal acceptance by practitioners in the field. Attempting to assess the reasons for this discrepancy between theory and practice is the purpose of this study.
Identification and Documentation of the Problem

This study planned to identify personal and professional variables that affect the attitudes of Army nurses toward the nursing process. The reason for conducting a study on the topic is because there is a major concern among many administrators in the Army Nurse Corps that the nursing process is either not being used and/or documented by all Army nurses. As identified earlier, the evidence indicates that although the nursing process has been accepted by the profession as the framework for nursing practice, many nurses are not in full compliance with its implementation. 4 Eight of the fourteen standards of care published in the Army Medical Department Standards of Nursing Practice are based upon the components of the nursing process. 5 These written standards provide the authoritative source for the role function of Army nurses. The standards also provide the guidelines used by accrediting agencies to measure the quality of nursing in that institution. Cumulative findings reported from the 1983 Inspector General surveys conducted at all military hospitals reported that none of the eight standards are being adequately met. 6 Nurses who do not use and document
the nursing process create problems that may have to be explained by management which has the responsibility to assure that the standards of the profession are being upheld.\footnote{7}

Harris wrote that although the nursing process has come to be recognized as the core of nursing practice, too often the process is not understood or used successfully by the nurses themselves.\footnote{8} The problem confronts both military and civilian nurses. While the military may have some commitments and responsibilities other than those of civilian nurses, their nursing practice is controlled by the same professional directives.

The Army Nurse Corps has made substantial effort to insure that the nursing process is implemented in all patient care facilities. Published standards of care, philosophies of nursing, standardized nursing record forms, and orientation programs have been developed specifically to increase the use and documentation of the nursing process. In addition to these administrative controls, the nurse is assumed to have a strong theoretical foundation in nursing knowledge because a baccalaureate degree in nursing and licensure as a registered nurse are prerequisites to being accepted into the Army. Stevens described the typical curriculum model in the current nursing program as a
cross-gridding of several organizational themes of which the steps of the nursing process are considered the thread or the interweaving theme. Yura and Walsh reported that the nursing process is considered essential content in the baccalaureate nursing curriculum and that evidence of the value placed on the nursing process by the profession is seen in the current decision to make the nursing process the test framework for all nurses seeking licensure. Any nurse without adequate knowledge of the nursing process would have difficulty passing current State Board Examinations.

In an attempt to remedy the nursing process problem, the former Chief of the Army Nurse Corps, General Hazel Johnson, published her concerns about the problem in a directive to all Army nurses. She reported that there continue to be notations of failure to comply with the requirements of the Joint Commission for the Accreditation of Hospitals (JCAH) in their reports about the nursing process activities. The nurses were urged to increase their emphasis on complying with the JCAH requirements and the Army Nurse Corps Standards of Nursing Practice. More recently, the current Chief, Brigadier General Connie Slewitzke, asked the Health Care Studies at Health Service Command, Fort Sam Houston, Texas, to examine all forms used for the documentation of the nursing process. This review
began in January 1984, and represented the concern of the Chief that the nursing process be used and documented in all Army hospitals.

More specific information to support the idea that there are problems relative to the nursing process is provided by findings from the 1983 Inspector General survey at Walter Reed Army Medical Center. Eleven negative findings were related to the failure to adequately document the nursing process. Although the nurses were able to identify patient problems, there were no nursing orders or nursing notes written to address these identified problems. In addition, the nursing notes contained little or no evidence of the effectiveness of the nursing interventions. As a result of the inspection findings, the Chief Nurse of the medical center directed that a task force be formed to analyze the practice of the nursing process at the institution. The committee asked was to examine the extent of the problem and to prepare a report that would include recommendations for making the nursing process more viable at the medical center.

While most nurse leaders and educators have advocated the nursing process as a replacement for the traditional, task-oriented method of nursing, Harris indicated that in reality, most nurses do not use this approach to nursing
Even though there has been phenomenal acceptance by the profession, it appears that the nursing process is not being implemented as expected by theoretical prescriptions. The literature indicates that the main reasons for the problem vary, but include educational, philosophical, and organizational deficiencies. Administrators in the military and civilian sectors have to face the issue because they are responsible for the quality of nursing care delivered in the medical treatment facilities.

Many concepts and theories from different disciplines are closely related to the nursing process and help explain the bases for the concept. For example, the nursing process is a series of actions or steps that resemble those of the scientific process. The theoretical and conceptual framework used in this study is based upon general systems theory, human need and motivation theory, and the constructs underlying the nursing process. The next three sections of this chapter provide an overview of these concepts.

**General Systems Theory**

General systems theory is one of the theoretical constructs used as a framework for this study. General systems theory is a continually evolving body of ideas that
has become increasingly useful to large numbers of persons in diverse scientific disciplines. The ideas are not new as they appear to have originated in ancient times and are associated with Galileo. A biologist-philosopher, Ludwig von Bertalanffy, is considered the founder of the modern conceptualization of the idea. Von Bertalanffy was disturbed by the increasing fragmentation and specialization of knowledge in this country, and attempted to find a unifying framework for the separate scientific disciplines. The systems model which he developed for use in the biological and physical sciences was also discovered by the behavioral scientists. If there was agreement that the things that the scientific disciplines study—nuclear particles, atoms, molecules, organs, organisms, ecological communities—are all subsumable under a definition of system, then there is reason to accept the notion that the systems model provides an overall conceptual framework for a social system and its interrelated parts. Riehl and Roy pointed out that the system model is regarded by some system theorists as universally applicable to physical and social events, and to human relationships.

A system may be viewed as an organization of persons who are linked together, show signs of being interrelated, and are interdependent upon one another to achieve functions
and goals. Each person is important in contributing to the work of everyone else in the structure, and everyone is dependent upon the others in the organization. In essence, the system is made up of components or parts that serve as complex elements in mutual interaction. A systems approach is a way of looking at a social and technical system as a whole.

There are basically two types of systems—an open or a closed system. An open system is one with continuous interaction with the environment. There is an exchange of matter, energy, or information. Although boundaries exist in all systems, closed systems have rigid, impenetrable boundaries while open systems have more permeable boundaries. The composition of the system remains constant despite material being imported or exported. A closed system is the characteristic state when no material enters or leaves the system. A closed system must rely on internal information feedback to achieve control and reach equilibrium. This type of system is frequently used by the physical sciences and is most applicable to mechanistic systems.

The open system depends upon strategic considerations such as growth, technological advances, changes in leadership, and interactions to survive. The composition of
an open system remains constant even with material being exchanged. There are remarkable regulatory characteristics referred to by the principle of equifinality which is the tendency towards a characteristic final state based upon dynamic interaction in an open system attaining a steady state. This homeostatic maintenance of a characteristic state is assured by a process called feedback. This process monitors back information, and there is a determination whether the current state will be maintained or whether adaptation should occur. The system adapts when it comes into conflict with critical values of the environment, and certain step functions are tried until the behaviors adapt to achieve homeostasis.

Johnson, Kast, and Rosenzweig have reported that general system theory can provide a framework useful in the management field. The theory provides a reference for visualizing internal and external environmental factors as an integrated whole. Stevens differentiates a system from its environment by saying that an environment surrounds every system, and the system interacts with it. A systems approach looks at a phenomenon in terms of its components and their interrelations. The model is useful in explaining control phenomena because a system is a set of interrelated and interdependent parts designed to achieve goals, and is
comprised of purpose, process, and content. This framework allows for recognition of the functions of subsystems as well as complex suprasystems within which individuals must operate.

A hospital can be viewed as an open socio-technical system made up of interacting components or departments that work together for the objective of the whole—providing quality patient care. As a general system principle, the hospital must be in harmony with the outside environment and with the culture in which it functions even if it has to adapt to contend with a change in the environment. Some of the changes in the health service industry that require a hospital to adapt are increased governmental regulation, new technical advances, personnel licensure requirements, and increased unionization. In addition, the hospital's internal control system should be organized in order to provide meaningful feedback on the state of the subsystems. Management must consider the performance of the subsystems as they relate to each other and the pathways that feed back into the system, and each subsystem must be given attention in proportion to its significance to the organization.

Systems theory provides a method of feedback for the organization, and it also serves as a useful framework for assisting the nurse and other members of the health team.
within the hospital to be concerned with the patient's totality. The hospitalized patient is frequently treated as a complex of different parts as various specialists examine and treat the system that applies to their specialty areas. Using a systems approach to viewing the patient helps the team to integrate all the elements or parts, realizing that behavioral disturbances are a system of disturbances rather than a single malfunction. The nursing process with its components of assessing, planning, diagnosing, implementing, and evaluating is designed to serve as a unifying process to integrate otherwise unconnected parts, and fulfill the purposes of nursing. Daubenmeire and King summarized this idea when they wrote that the nursing process is a dynamic, and ongoing interpersonal activity in which the nurse and the patient are viewed as a system with each affecting the behavior of the other.

General systems theory offers a comprehensive and lucid formulation to better understand how nurses, their attitudes, and requirements for specific approaches to nursing care are all interrelated with the larger controlling system of a hospital or other health care agencies. Influencing factors related to nursing that have an impact on elements of the system include such factors as
role expectations, norms, traditions, values, educational preparation, and attitudes of the nurse. Nursing is not practiced in isolation, but functions as an integral part of the larger hospital system. Yura and Walsh have contended that the system is never in a state of true equilibrium, but maintains itself in a steady state, and is marked by ceaseless activity as it seeks to reach homeostasis. A system model assumes that organization, interdependency, and integration exist among its parts and that change is a derived consequence of how well the parts of the system fit together or with surrounding and interacting systems.

**Human Need and Motivation Theory**

According to Abraham Maslow, man is an integrated, organized living system who is motivated toward meeting his basic human needs. The nursing process was specifically designed to meet the human needs of the patient as they relate to health and nursing care. Yura and Walsh have written that the territory within which nursing actions or the nursing process take place is basic human needs and that the nurse interacting with a patient comprises that system of nursing whose goal it is to help meet the health care needs of society.
These needs are manifested as internal tensions which are expressed in goal-directed behavior of the person, and that drive continues until satisfaction or freedom from the feeling is achieved. Basic to the theory is the idea that the most basic needs must be reasonably satisfied before the person becomes interested in needs at the next highest level. Maslow believed that the gratification of needs becomes as important a concept as deprivation of satisfaction because the person is then released from the domination of a relatively more physiological need, and permits the emergence of other more social goals.

The holistic-dynamic theory of human motivation and needs is based upon the premise that there is a hierarchy of human needs ranging from physiological to higher sociological needs that dominate the organism to seek gratification. These needs are arranged in a five level, hierarchical order that are identified as physiological, safety and security, belongingness and affection, respect for self and others, and self-actualization. Physiological needs such as hunger and need for shelter are considered lower basic needs while a promotion or need for love are examples of higher order needs. If there is a deficiency in the gratification of any of the needs, the person will develop varying levels of personality dysfunction. These
dysfunctions range from simple dependency on others to actual neuroses. The signs of a healthy personality occur if the needs are gratified in the appropriate sequence, and self-achievement through goal setting has resulted in increased satisfaction and enjoyment from life.\textsuperscript{43}

Although the five levels of needs are well known, Maslow added several more to the list.\textsuperscript{44} He believed that the need to know and the need to understand were two more needs that are thought to be present along with the others, and allow the basic needs to be met more efficiently. There are also certain conditions that are prerequisites for needs satisfaction. Such conditions as the freedom to speak, freedom to express oneself, freedom to investigate and seek information, freedom to defend oneself, justice, fairness, honesty, and orderliness in the group are preconditions for satisfaction. Without these conditions, satisfaction may be severely endangered.\textsuperscript{45}

Human behavior stems from environmental factors that are meaningful to the individual. Arndt and Huckabay contend that most behavior can be traced to people's attitudes and their wishes to satisfy basic needs and attain personal goals.\textsuperscript{46} People who enter the health care field bring with them their values, needs, knowledge, and skills. Their behavior toward those that are dependent upon them for
care depends upon many environmental and situational conditions, but the needs of the nurse would appear to have an effect upon the treatment they provide to their patients. The amount of motivation that a nurse has for using the nursing process can easily be influenced by the perception of the patient as an individual with fundamental needs.

For the most part, it is fairly well accepted that most individuals in well-developed countries have satisfied their physiological and security needs. Thus the needs for love and belongingness begin to emerge. The need for affection and acceptance by fellow workers and patients could be very influential in controlling the nurse. Using Maslow's hierarchy of needs concept, the nurse must feel safe and a part of the group before worrying about esteem needs. If these belongingness needs are not met, the person will probably behave in ways that even impede the group goals.

Esteem needs such as respect, status, prestige, and a good reputation begin to emerge as other needs are satisfied. Yura and Walsh say that these needs are satisfied in the child when parents and significant others provide him with approval and regard him as a valuable child. The adult usually attempts to satisfy his needs for feelings of adequacy, competency, and mastery from the work
environment. The professional nurse needs to feel important and be accepted as a respected member of the group and community.

Frederick Herzberg's model is closely related to Maslow's need hierarchy. In the 1950's, Herzberg conducted motivational studies among workers in organizations and developed his two-factor theory. Herzberg reduced Maslow's five levels of needs to two levels that he called hygiene and motivational factors. Hygiene factors were considered dissatisfiers while motivational factors were called satisfiers. Needs that are satisfiers included recognition, achievement, work enjoyment, responsibility, advancement, and growth. Other factors such as organizational policy, supervision, work conditions, and wages contributed to work dissatisfaction. An improvement in one or more of these maintenance factors might remove some cause for dissatisfaction, however, the improvement of a maintenance factor was not considered contributory to job satisfaction.

The nursing process could be seen as a work satisfier by some nurses and as a dissatisfier by others. Requirements by administration that nurses document the nursing process could be viewed as an organizational policy that imposes an additional burden on the workload, and
compliance and motivation would probably be low. However, if a nurse viewed the nursing process as a means to obtain recognition and achievement among colleagues and received positive feedback from the patients, compliance and motivation would be higher. Nurses who have had success using the nursing process and who enjoy the systematic approach to solving patient problems would probably view the nursing process as a job satisfier.

Motivation is personal because people's needs vary tremendously. It is not possible to separate a person into all of his different social, cultural, emotional, and spiritual aspects because a person is a unified entity. Maslow believed that it is not the nature of man to ever be completely satisfied. When an individual has achieved recognition, competence, and status, he becomes restless for additional satisfaction at a higher level. When individuals achieve the highest level, Maslow calls this level, self-actualization. This is a level that most people rarely achieve. They are more successful in satisfying their lower level needs than their higher level ones even though these levels are interdependent upon each other.

The concepts of Maslow's human needs and motivation theory provide a useful framework for this study in which nurses' attitudes about the nursing process are being
studied. The attitude that a nurse displays toward the nursing process is a reflection of the entire socialization and educational process. The characteristics of a nurse and the methods used to administer patient care are influenced by the lifelong experiences of the individual. The type of nursing care rendered and the behavior of the nurse could better be understood if it were known which of the basic needs were most urgent at a given time.

The Nursing Process

The nursing process is a construct built from a theoretical basis. Many different theories such as general systems theory, information theory, communication theory, decision and problem-solving theories, theories of perception and human needs theories suggest a relationship to the nursing process. The nursing process is designed to be the application of scientific problem-solving, systems approach to patient care. The model proposes a method for identifying patient problems, planning and implementing nursing care, and evaluating the results of that care. The steps of the nursing process are classified as assessment, planning, nursing diagnosis, implementation, and evaluation. In reality, the steps or phases of the process
can not be separated. They are labeled in order to insure that nursing actions are carefully and deliberately pursued. The actions are dependent upon the nurse's knowledge of nursing. Although memorizing the steps and the content within each phase is important, interpersonal, intellectual, and technical skills are required for the decision-making necessary to use the nursing process effectively.

At the time of the first meeting with the patient, the nurse begins the observation or assessment phase of data collection. Assessment is the term applied to a wide variety of activities by which the nurse gathers the information about a patient. The assessment stage is initiated by greeting, orienting, and interviewing the patient and his family. This stage begins the nursing process and will continue throughout the nurse-patient relationship.  

Narrow and Buschle emphasize that assessment can be considered the foundation of the nursing process because the effectiveness of the total process depends on it. If the information is faulty or incomplete, the quality of nursing care can be no better than the quality of the assessment.

Before the nurse can plan for the care, the patient's problems or needs have to be appropriately identified.
Leatt defines the assessment phase as the systematic evaluation and determination of a set of attributes of a patient with particular reference to health characteristics. The phase begins with taking the nursing history and the performance of a health assessment and ends with the verification of the health status of the patient and the designation of the nursing diagnosis.

The nursing history is an important component of the assessment phase. Almost every hospital or agency has developed forms for use in taking the history. These forms range from complex checklists to simple outlines and include such things as the composition of the family unit, the presence or absence of dentures, eyesight and hearing problems, diet preferences, and the number of pillows used by the patient at night. There is a packet of standard care plan records used in the Army called the Nursing Assessment and Care Plan forms. These forms have checklists and blanks to be completed that pertain to the patient's demographic data, admission data, nursing history, physical condition, care plan, and discharge consideration. The nurse checks off specific answers and fills in the blanks with the information obtained from the patient and his family. There is space on the care plan for problem identification, goals, and the date the goals were
accomplished. In the final testing of the instrument developed for this study, a patient record from each subject will be audited to determine if specific criteria were present or not.

Information collected during the assessment phase of the nursing process has little value until it has been analyzed and interpreted. The final step in the assessment process is the formulation of the nursing diagnosis, defined as the conclusions reached about the data collected and analyzed. During the process of making a nursing diagnosis, the nurse may hypothesize several diagnoses that seem likely on the basis of the data. Each possible diagnosis must then be substantiated or rejected on the basis of additional data from the patient or other sources. The nursing diagnosis is a statement of the patient's problems. The problem expressed in the nursing diagnosis may be present or may be a potential problem, but it must be one that can be alleviated by nursing intervention. The nursing diagnosis forms the basis for writing the goals and planning the nursing care for the patient.

The next stage of the nursing process is called the planning phase. The planning phase is identified as the time when the nursing actions are determined to assist the patient toward the resolution of his problem. Pertinent
information obtained during the assessment phase is used to plan the nursing care needed to assist the patient toward the goal of optimal wellness. There are three steps to follow during the planning phase—setting priorities, writing goals, and planning nursing actions. The patient and his family should be included in the planning of his care. For the patients who are too ill to understand the present situation, the nurse must assume responsibility for planning and setting the priorities for the care. It is important that patients are involved as much as possible because they are more likely to participate in their care if they understand what is being planned.63

The written plan of care is called the nursing care plan. The nursing care plan states the problem, patient objectives, and the planned intervention. The care plan should clearly communicate the nature of the patient's problems. Yura and Walsh have stressed that the nursing care plan should contain complete information about the patient, the nursing diagnosis, and the priorities assigned to each, problems and complications to be prevented, and expected outcomes with prescribed nursing actions.64 Little and Carnevali insist that humans are open systems and are never static. Nursing care plans can not remain rigid
and be effective. The problems and priorities of the plan change as the patient's response or situation change.\textsuperscript{65}

In nursing, the time with the patient is limited, and the cost of health care is high. To achieve the most efficient outcomes from the time spent with the patient, objectives should be set before nursing actions take place.\textsuperscript{66} The objectives provide direction to the patient's activities and should be developed from data collected from the patient, his family, and other sources. Care must be taken to write goals that are measurable, attainable, reasonable, and representative of the patient's aspirations. Once the objectives are formulated, they should be ranked in order of priority. Planning in this detail enhances continuity of care, and provides direction for the staff to follow in helping to resolve the identified problems.

The planning phase ends when the nursing care plan has been developed and nursing orders have been written. Nursing orders are the activities that the nursing staff will be carrying out to meet the identified patient objectives. They are not the same as the physician's orders. Nursing orders are written directives identifying specific care and treatments which nurses have the authority to initiate for a patient. Nursing personnel are
accountable for implementation and documentation of nursing and physician orders. The implementation phase of the nursing process begins by using the nursing care plan as the blueprint. This stage is the initiation and completion of the nursing actions needed to accomplish the defined goals. Nursing intervention is another term used for this stage of the nursing process. Implementation or intervention implies the actual giving of the planned nursing care or treatment. During implementation, the viability of the nursing care plan is being tested. The nurse should remain goal-directed throughout the time spent with the patient. The phase includes the processing of new data which become available during this phase of the plan. The nursing actions that accompany the implementation phase include following the orders of the doctors, following the hospital policies, and carrying out the nursing orders.

The final phase of the nursing process is called evaluation. Evaluation is a continuous process as long as the patient remains hospitalized or under the nurse's care. The phase is underway when the nurse analyzes whether the intervention planned was effective or appropriate. Evaluation represents a critical analysis of the entire interaction. The nurse may discover that the assessment was
inappropriate or incomplete. Plans developed from inaccurate data are not relevant to the patient's situation, and the nurse may discover that the objectives were unrealistic and not attainable. The nurse is obliged to critically analyze the care planned and given in terms of its contribution to the patient's well-being. Evaluation in terms of how the patient responded to the nursing actions should be documented in the patient's records. By evaluating the nursing actions, the nurses demonstrates responsibility for the actions taken.

In summary, the nursing process is an orderly sequence of steps that organize the activities of nursing into a framework for nursing practice. The four steps, assessment, planning, implementation, and evaluation, are used to approach patient care in a systematic manner to prevent omission and duplication. The written product of the system is called the nursing care plan, and serves as a guide or blueprint for patient care. The use of the nursing process is reputed to assist the nurse in combining nursing knowledge, intuition, science, and spontaneity into a systematic and deliberative plan for nursing actions. Whether or not this process is implemented by the nurse is, in part, a matter of the attitude toward its use. Knowledge of this attitude is basic to programs for educating and
monitoring the performance of nurses in their professional care capacity.

Rationale for the Approach to Problem

This study was designed to focus on one special problem area, namely the attitude of Army nurses toward the nursing process. As noted in an earlier section, some Army nurses are not complying with their professional and military obligations with respect to the nursing process. Nursing practice takes place within a complex social and cultural system with the care facility as the focal point. In that sense, the hospital can be conceptualized as a complicated relationship among people, material resources, and work. The relationship is kept together in an appropriate structure which is dedicated to meeting the health needs of society. Achievements of the health care objectives depend upon the consumers of the services offered, the professionals who direct the services, and the individuals who supply the services. Each person is dependent upon others in the organization, and the system reflects that every one is important in contributing to the work effort. By examining the attitude of the nurses toward the nursing process, new knowledge about the internal system of the
organization will be generated. If the attitude toward the nursing process is known, it can be used in conjunction with other variables to explain and predict the reactions of the nurses toward the concept.

The product of a health care facility is patient care. Society has become more enlightened about what constitutes good care and is now demanding that those who provide the care are responsible. The high cost of health care results in the consumer wanting his money's worth. Professional health care providers have in the past been accountable for their actions, but today there is greater need than ever before to clearly define practice and evaluate the results. The nurse that uses and documents the nursing process is demonstrating accountability for the nursing actions taken.

**Research Questions to be Studied**

This study was an effort to create, test, and evaluate a method for systematically gathering and analysing the effects of personal, professional, and third party-generated variables upon the attitude scores of a sample of Army nurses. Since no instrument could be located to measure the attitudes, a major component of this study was the creation, testing, and norming of an instrument entitled, the Nursing
Process Attitude Scale. In addition, techniques to accomplish a validation of the instrument were developed and applied as part of the study. Two major research questions were generated: First, what effects did selected personal and professional variables of a sample of Army nurses have upon their attitudes toward the nursing process? Second, can external validity of the Nursing Process Attitude Scale be substantiated by outside measurement of the subjects' nursing process abilities by nurse managers, and by a chart review of the nurses' documentation of the nursing process?

**The Hypotheses**

The following null hypotheses which provided the foundation for the statistical analysis in this study were advanced.

1. There will be no significant difference (p<.05) between each of the identified personal variables of the subjects and their scores on the Nursing Process Attitude Scale (NPAS).

2. There will be no significant difference (p<.05) between each of the identified personal variables and the scores obtained on each of the five subscales of the NPAS.
3. There will be no significant difference (p < .05) between each of the identified professional variables of the subjects and their scores on the NPAS.

4. There will be no significant difference (p < .05) between each of the identified professional variables and the scores on the NPAS.

5. There will be no significant difference (p < .05) between two subscales of the Nurse Manager's Rating Form and the five subscales on the NPAS.

6. There will be no significant difference (p < .05) between the scores of the Nursing Process Audit Form and the scores on the NPAS.

7. There will be no significant difference (p < .05) between the scores of the Nursing Process Audit Form and the five subscale of the NPAS.

8. There will be no significant relationship (p < .05) among the scores of the NPAS, the Manager's Rating Form, and the Nursing Process Audit Instrument.

Ancillary Questions

The following ancillary questions were addressed by the data obtained from the study:
1. Is it possible to predict scores on the NPAS on the basis of personal data and observations by significant others?

2. What amount of variance in the responses on the NPAS is accounted for by personal and professional variables, by the Nurse Manager's Rating Form, and by the Nursing Process Audit Instrument?

Definition of Terms

For the purposes of this study, the following independent variables, dependent variables, and definitions have been identified and operationally defined.

Independent Variables

The independent variables in the study were those personal or professional characteristics identified by the use of the personal data form that was attached to the questionnaire. The following operational definitions are provided for those characteristics that are not obviously defined.

a. Basic nursing program: determined by the first level nursing school completed by the respondent. In this study, the answers could be a one-year, practical nursing
program (LPN/LVN), Associate Degree program (usually twenty six months), a baccalaureate nursing degree program (usually four years), or a graduate nursing school program or master's degree in nursing (usually two years beyond the baccalaureate program).

b. Highest nursing degree: the highest level nursing program completed by the nurse. In this study, all of the subjects will have completed a degree nursing program, or they would not be eligible to have come on active duty.

c. Military rank: the level or military grade of the nurse officer. Since the subjects in this study are staff nurses or first level managers, the ranks held by the subjects ranged from that of being a 2nd Lieutenant, 1st Lieutenant, Captain, or Major. Few senior grade officers met the criteria for being admitted to the study (see page 70.)

d. Clinical specialty: the nurses in the Army are categorized into their specialty or skill areas by an assigned number and an initial. For example, a 66D is a pediatric nurse, a 66G is an obstetric nurse, a 66J is a nurse new to the military that has not yet developed a specialty area, and a 66H is the skill identifier for a medical/surgical nurse.
e. Shift: the nurse is usually assigned to one of three shifts--days, evenings, or nights. Eight hours generally comprises the time in one shift.

f. Direct patient care: the nurse is responsible for administering the nursing care to a patient. The term implies that the nurse is responsible for administering the prescribed hospital procedures to the patient.

g. Primary nursing: the nurse is responsible for planning the care for the patient throughout his hospitalization. The primary nurse admits the patient, takes his history, and writes the nursing care plan. The nurses on the other shifts or on the primary nurse's days off, carefully follow the prescribed nursing orders. The patient is aware of who is his primary nurse, and communication is enhanced.

h. Functional nursing: each member of the nursing team has an assigned responsibility toward the patients. Someone is assigned to do the medications, another might administer the procedures, and others provide the basic care such as bathing and changing the linens. The patient may not know who his nurse is because the patient care is fragmented among a number of nurses.

i. Team nursing: teams of nurses are given a group of patients to care for during the shift. Different levels of
nursing expertise are usually represented on each team. The members report to the team leader, who knows all the patients and assumes responsibility for overseeing the team.

**Dependent Variables**

The dependent variables in this study were the scores obtained on the Nursing Process Attitude Scale, the Nursing Manager's Rating Form, and the Nursing Process Audit Instrument. These three instruments developed for use in the study are defined and discussed in Chapter three.

**Other Definitions**

The following terms are used throughout this study and are now operationally defined.

a. **Nursing process**: the planned actions or interactions between a nurse and a patient in a given setting. It is a systematic approach to patient care requiring deliberative, decision-making skills. The steps of the nursing process include assessment, planning, nursing diagnoses, implementation, and evaluation.

b. **Nursing care plan**: the central written source of information about the patient based upon the planning stage
of the nursing process. The nursing care plan includes the nursing diagnoses, the objectives, the nursing orders, and the indication of the progress toward the accomplishment of the goals.

c. Record audit: the written records are examined for evidence of documentation of specific criteria. The purpose is to provide evaluative feedback concerning the quality and quantity of the notations of required patient information. In this study, a thirty-six item audit instrument was used to check the nurses' records for criteria specific to the nursing process.

d. Nurse manager: refers to a nurse who has decision-making authority over other staff nurses. The terms, "nurse manager" and "nurse administrator" are used interchangeably in this study.

Assumptions, Scope, and Limitations

The following assumptions were identified for use in this study:

1. A reliable and valid scale was developed which measured the attitude of Army nurses toward the nursing process.
2. The items on the original instrument were an accurate representation in the universe of test items regarding the nursing process.

3. The sample of Army nurses was representative, and findings can be generalized to other Army nurses that are providing patient care.

4. The answers provided by the subjects were an accurate indication of their true feelings toward the nursing process.

5. An adequate sample was obtained in the six military hospitals selected as study sites.

6. Each subject agreed to provide the name of an assigned patient so that the record might be reviewed.

7. The nurse manager provided an objective evaluation of the use and documentation of the nursing process by the staff nurse.

8. Information on the nurses' records provided valid information about the level of nursing process practiced by the nurse.

**Scope**

The scope of the project was to test subjects who were part of the military establishment within the United States.
Sampling techniques were used to select the subjects needed from all Health Service Command hospitals excluding the six study sites, which are located at Fort Bragg, North Carolina, Fort Meade, Maryland, Fort Belvoir, Virginia, Walter Reed Army Medical Center, Washington, DC, Fort Sam Houston, Texas, and Fort Hood, Texas.

**Limitations**

A limitation of the study was that the subjects were asked to state their beliefs. What a person feels and what he says he feels may not be the same. This problem is inherent in the use of a questionnaire; however, studies among social scientists have tended to validate the techniques. The numbers needed to validate the testing of the hypotheses for the study precluded any other approach to obtaining the data. Every attempt was made to protect the confidentiality of the respondents to further assure that the answers given were true perceptions.

Another limitation was that only six sites were used for the study rather than the thirty-two medical treatment facilities assigned to Health Service Command, Fort Sam Houston, Texas. To help insure representativeness, the six sites were chosen because of the diversity of their sizes,
scope, and surrounding environment. The sites were geographically located in four states and Washington, DC.

Summary

This chapter has identified the problem to be studied as the lack of compliance among Army nurses with the Army's regulation that they use and document the nursing process. The purpose of this study was to identify variables that affected the attitude of Army Nurses toward the nursing process. The theoretical framework for the study was based upon the concepts of general systems theory, the human needs theory, and the theoretical underpinnings of the nursing process. The research questions and the testable hypotheses for the study were identified. The chapter also contained a review of the assumptions, scope, and limitations of the study. Chapter Two will be a review of the nursing literature in areas pertinent to the study. The sections of the chapter will focus on findings from the literature on attitudes and attitude scale development, nursing process studies, and instrument development studies conducted by nurses.
NOTES


5. Army Medical Department Standards of Nursing Practice (DA 40-5) Department of the Army, Washington, DC, 1 Nov 1981.


12. Brigadier General Connie Slewitzske, Military Letter to
Chief Nurse, Walter Reed Army Medical Center, 28 November 1983.

13. Findings from Health Science Command Inspector General Inspection Tour, Walter Reed Army Medical Center, 19-30 September 1983.

14. Task Force for the Analysis of the Nursing Process in Practice, Walter Reed Army Medical Center, Washington, DC, October 1983.

15. Harris, op. cit.


25. Arndt, op. cit., p. 36.


28. Ibid.


33. Yura and Walsh, op. cit. p.74.


38. Yura and Walsh, op. cit., p.85.

39. Yura and Walsh, op. cit., p.76.


44. Maslow, \textit{op. cit.}, pp. 35-36.

45. Maslow, \textit{Ibid.}

46. Arndt and Huchabay, \textit{op. cit.}, p.287.


48. \textit{Ibid.}

49. Yura and Walsh, \textit{op. cit.}, p.97.


51. Alexander, (\textit{op. cit.}), p.100.


53. Maslow, \textit{op. cit.}


55. Yura and Walsh, \textit{op. cit.}, p 42.


60. Narrow And Buschle, \textit{op. cit.}, p.112.

61. Yura and Walsh, \textit{op. cit.}, p.25.
63. Mariner, op. cit., p. 129.
64. Yura and Walsh, op. cit., p. 177.
66. Narrow and Buschle, op. cit., p. 117.
69. Yura and Walsh, op. cit., p. 23.
CHAPTER 2

Review of the Literature

This chapter contains the literature review of the following topics: studies relative to the nursing process, attitude, attitude scale development, and nursing studies focusing on instrument development. The nursing process is a subject in this chapter because the ideas are central to the entire project, and the information provided a background for better understanding the problems identified for conducting this study. The section about the concept, attitude, and methods for developing an attitude scale contributed to the creation of the research instrument, as well as planning the research design for this study. Nursing studies that focused on instrument development further contributed to the formation of the Nursing Process Attitude Scale.

Nursing Process Research in the Army

The demand for high quality health services for the military community is receiving a great deal of emphasis in the Army today. As an important provider of those health services, Army nurses are being challenged and held accountable for their professional practice. Since the
mid-1970s, the nursing process has been recommended by the American Nurses' Association to achieve quality nursing practice. A discussion of nursing process studies conducted by Army nurses will be the focus of this section.

One of the first Army Nurse Corps research projects for evaluating the outcome of the nursing process was conducted by Carson, Smith, Sadler, and Weathington at Fort Meade, Maryland. Several years earlier, the nursing staff at the hospital had developed and implemented a set of Standards of Nursing Practice based upon the American Nurses Association Standards of Nursing Practice. The purpose of the study was to evaluate the effects of those standards on the quality of patient care. The nurse researchers used Wandelt and Ager's Quality Patient Care Scale (Qual PaCS) instrument to measure the effects of the new directives on the quality of patient care. Four Army community hospitals in the Eastern region of the United States were chosen as the test sites. The data as measured by the Qual PaCS substantiated the hypothesis that the quality of patient care would be higher in the hospitals which had implemented the Standards of Practice.

While assigned to the Health Care Studies and Clinical Activities at Fort Sam Houston, Texas, Frelin and Misener designed a study to obtain opinions from Army nurses about
job satisfaction and retention issues in the Army Nurse Corps. They replicated a study completed in 1972 by the Technical Analysis Division, Institute of Applied Technology, National Bureau of Standards. Questionnaires were distributed to every Army nurse. Project officers in each medical treatment facility with assigned Army nurses were given the responsibility of distributing and collecting the questionnaires. Ninety one percent of the Army Nurses Corps or 3,284 subjects responded to the questionnaire.

The Frelin and Misener study was divided into four sections. The section relative to this study discussed the nurse's perception of the status of professional nursing practiced in the Army. The nurses rated their status as compared with civilian nurses as being high. Of those surveyed, 2,233 subjects or sixty-eight percent of the Army Nurse Corps rated their opportunity to practice professional nursing as being more advanced than their civilian counterparts. Forty-six percent or 1,150 nurses rated the Army's quality assurance policies and standards of nursing practice as being more advanced than those in civilian practice. The findings imply there are significant opportunities for the practice of the nursing process in their work. The two areas the nurses chose as being reasons for remaining in the military were the autonomy in their
nursing practice and the role development opportunities present in the Army Nurse Corps.\textsuperscript{5}

In another study conducted by an Army nurse, Kennedy reported that there was a limited amount of role conflict and role ambiguity among head nurses assigned to an Army medical center in Colorado.\textsuperscript{6} She believed the findings supported some of those described by Getzels and Guba. Getzels and Guba reported that the study of role theory in a military setting was close to a contrived setting because roles and role expectations are clearly defined.\textsuperscript{7} The head nurses described by Kennedy indicated that they were aware of limitations and responsibilities because their roles were guided by Department of Nursing Administrative Policies and Procedures, Army Regulations, and Standard Operating Procedures. The results also revealed that if the Army nurses were more aware of Army regulations concerning the nursing process, there would be more compliance with the requirements.

A study by Moss and Schiffner of a group of Army nurses attending the Head Nurse Course at the Academy of Health Sciences, Fort Sam Houston, Texas, identified the dominant leadership style as being both high task and high interpersonal relationship.\textsuperscript{8} The instrument used to determine this classification was Hersey and Blanchard's
Leader Effectiveness and Adaptability Description of Self, which was developed from situational leadership theory. Moss and Schiffner reported that the subjects in their study chose LEAD-Self responses which placed them in the leadership profile that assured them of safe, no-risk decisions, while still maintaining an above normal degree of effectiveness as leaders. They suggested that nurses have been conditioned to the safe leadership styles because of educational preparation and environmental traditions. This style is not conducive to the autonomy and decision-making inherent in the use of the nursing process. The researchers believed that wide leadership style flexibility is vital to professional autonomy, and recommended that future programs include content to increase leadership flexibility of the head nurses.

The investigation by Corcoran of the decision-making and managerial ability of head nurses in the Army Nurse Corps provided useful information for nursing administrators. She used the Miner Sentence Completion Scale for her data collection. The sample consisted of ninety-seven head nurses in military installations in the United States. The authority figure (MSCSI) was the highest subscale for the nurses in the study. The Competitive Game subscale was also positive. The subscale with the lowest
scores was the assertive subscale. The author suggested that the organizational climate and rank structure may account for some of the low assertive scores. Subscales fluctuated depending upon the managerial styles of the subjects.10

One of the implications from Corcoran's study concerned educational preparation of nurses for leadership roles. She postulated that creative and reasoning aspects of educational concentration are critical for the nursing profession. Educational programs that adhere to rigid traditions discourage the growth of creative thinkers. An example used to make her point was about the requirement in the Army to perform assessments on patients, document the problems, and write nursing orders. She believed that if this goal were to be accomplished then nurses would have to have the specific skills to accomplish the task. Nurses would require classes, programs, and additional information to give them the knowledge needed to maximize their present skills. An important conclusion was that nursing educational systems that produce good technicians but who lack the analytical and evaluative skills necessary for effective decision-making behavior should be changed to meet the needs of nursing. 11
In a recent nursing process study, McMarlin reported that planned efforts to increase the nurse manager's involvement with the nursing process resulted in more documentation of the nursing process by the staff nurses. Approximately sixty nurse managers from a military medical center were released to attend a workshop that emphasized the role of the nurse manager in the nursing process. An analysis of the variance determined that a significant difference between scores obtained on the pretest and post test research instrument had occurred.

Prior to the workshop, a concurrent chart audit of the record of every patient in the hospital was conducted on a designated day (N=602). The members of the audit committee checked each record to determine if specific information was documented. The information was comprised of items selected from the components of the nursing process that are required to be charted on patients. Examples of the specific items or audit criteria were the following: completed nursing histories, nursing assessments, nursing diagnosis and goals, nursing orders, and updated care plans. On a specified day, two months after the workshop, the same criteria were used to audit the second set of patients' records (N=624). Increased percentages of compliance were found on all of the criteria. One of a number of recommendations by the
workshop attendees on methods to help solve some of the nursing process problems was that more effort be made toward the development of nursing research instruments. This recommendation was among some of the reasons leading to the selection of the topic for this study. They also recommended that other workshops or seminars be conducted to further strengthen and alert nurses to their role in implementing the nursing process.  

In response to the plan of the Army Nurse Corps to examine the inpatient nursing documentation system, the nursing staff at a medical center in Georgia were surveyed to determine their views on the subject. Of those surveyed, one hundred seven nurses or fifty-nine percent of the total staff returned their surveys. Allanach reported that there were statistical differences between the staff nurses and the non-staff nurses perception of the nursing process as a tool. The staff nurses indicated that the nursing care plans did not help them in planning or in implementing nursing care, and the use of the nursing care plans was not realistic. The administrative or non-staff nurse group's responses were in opposition to those of the staff nurses. Allanach reported that the current nursing forms are dictating the nurse's actions instead of allowing for the thoughtful analysis implied by the nursing process.
Most important, the perceptual differences between the nursing groups have created problems that affect the entire nursing process system.

**Nursing Process Studies**

Prior to the 1970s, the term, nursing process, was rarely seen in the nursing literature. *The Dynamic Nurse-Patient Relationship* is credited as being among one of the first nursing books to contain the term. In 1967, Helen Yura and Mary Walsh published the first nursing book with nursing process in the title. By the time their fourth edition appeared in 1983, many other nursing process publications had appeared before the public. Almost all nursing tests now use the nursing process as the foundation, the introduction, or as the framework for outlining the content. Carmen de la Cuesta noted in her historical study of the nursing process that the concept gained rapid acceptance by the nursing profession, and much of what is known about the concept was developed and published in the 1970s. Her conclusions were that the nursing process is more than a theoretical concept; it is an ideology in the technical sense as well. She pointed out that because the nursing process as a method of practice had not been widely
implemented, the theoretical benefits have not been realized. Despite this, she concluded that the nursing process represents an important step forward in building valid knowledge about the effective course of nursing actions.

A study conducted by the nursing administration of a 280-bed private, psychiatric facility focused on the outcome of the use of the nursing diagnosis in nursing practice.19 The pilot project began on one unit which was selected because of the strong leadership characteristics and high morale associated with the staff. The project was divided into two phases: educational preparation and skill development. The first phase lasted one month and was comprised of weekly inservice classes about writing nursing diagnoses and other aspects of the nursing process. Written handouts were distributed to the nurses for reading. The second phase began by having the nurses develop patient care plans that used the nursing diagnosis as a means of problem identification. The pilot program lasted for one year. The results indicated that the nursing staff experienced increased satisfaction in patient care delivery. The use of the nursing diagnosis appeared to have improved both the quality of the nursing process, and enhanced the clarity of verbal and written communications.
In another project, a nurse internship program based upon nursing process was developed for graduate nurses during their first work experience. The nursing department at the hospital was interested in having their nurses being process-oriented rather than technical skills-oriented. Miner and Thompson reported that the program provided the hospital with professional nurses who not only had adequate clinical preparation for competent nursing practice, but they were comfortable using the nursing process.

Orleck described a project that assisted nurse managers in facilitating the transition of the graduate nurse from the role of student to nursing practitioner. Her contention was that by using the steps of the nursing process in making management decisions, the nurse manager could assist an inexperienced nurse in gaining clinical competence. The steps of the nursing process were used to identify and accomplish tasks that helped the new graduate to gain confidence. Weekly evaluations by the nurse manager of the progress made by the new graduates provided them with greater insight into their strengths and weaknesses.

A number of nursing process studies in the literature attempted to demonstrate that the use of the nursing process improves the quality of health care. For example, McKenna and Hales, two Army community health nurses stationed in
Germany, applied the nursing process to their practice in order to improve the quality of services to expectant parents. They used the steps of the nursing process to assess the problem of a paucity of childbirth and parent education classes in Europe. Their plan was to train twenty-five other nurse volunteers to teach childbirth classes. By teaching these nurses, the community health nurses could increase the number of available childbirth classes significantly. Upon completion of their coursework, the nurse's scores on the post tests were significantly higher than those on the pretest. This effect convinced the community health nurses that the nursing process was credited with solving a problem which resulted in a positive impact on military community life.

The research activities of Haussmann and Hegyvary were much more extensive. They were part of the Rush-Presbyterian, St. Luke's Medical Center, and the Medicus Systems Corporation Investigation. The study was conducted in 102 patient care units in nineteen hospitals in various parts of the United States. The purpose was to investigate the relationship between nursing process and patient outcomes based on the quality-monitoring methodology developed and tested during earlier phases of the study. The project came about because of recent emphasis on
accountability of the individual practitioner as third party payors have assumed greater responsibility for financing health care. A major goal of the study was to delineate variables that were subject to manipulation for improving the quality of patient care.24

In the sample of nineteen hospitals, five contextual variables were found to affect the quality of the nursing process. The variables were the unit organizational structure, leadership styles, staff attitudes and perceptions, supervisory attitudes and expectations, and the education of the nursing staff. The data indicated that many of the influences on the nursing process are at the unit level and are manipulable by nursing management. A major need identified by the study concerned the leadership group. Suggestions were that management have a well-defined concept of the patient care system as well as a highly clinical orientation toward the nursing role and the full scope of the nursing process. Hausmann and Hegyvary also recommended that education and practice have shared responsibilities at the staff level. Nurses must be prepared in programs that address the full scope of the nursing process. The research determined that such comprehensive educational experience is not being done. Nursing educators and practitioners should be working
closely together. If education is to have a significant impact on care, nursing leaders must have the educational preparation for the complex tasks of management.25

Kissinger and Munjas conducted a study for the Southern Regional Education Board (SREB) with the purpose of determining predictors of success in a nursing program.26 They identified four characteristics that can predict a student's success in using the nursing process. These are verbal ability, vocabulary knowledge, thinking ability, and field independent perceptual style. These characteristics could be determined by the use of a battery of tests. The authors recommended administering the tests to groups of students wishing to enter a nursing program because they believed that successful completion of a nursing program is dependent upon the ability to use the nursing process. The tests would yield information on student attributes that can predict success in the program.

In summary, research has and will continue to play a vital role in further development and refinement of the nursing process. The nursing process is based on a strong theoretical basis, but many problems need solving before conflict between the ideological and practical aspects of the concept will be settled.27
Attitude and Attitude Scale Development

A review of the literature on attitude development and the definition of the term is provided because this study concerns attitudes of Army nurses toward the nursing process. Since a Likert-type attitude scale was developed for use in this study, this section includes a discussion of attitude scales and methodologies by which attitudes are measured.

Attitudes are formed as the person develops from childhood. An infant is not born with formed attitudes because they are molded by people and events. Hein points out that as experiences increase, unconsciously the individual absorbs additional philosophies, social expectations, and traditions. These conditioned emotions do not remain static. Instead, they spread to people, objects, and situations similar to those with which they have become associated. Hurlock says that, in time, the generalized emotional responses of the child, resulting from the spread of conditioned emotions, are the basis of preferences, or likes and dislikes. In time, these responses may become organized into patterns of emotional preference, or attitudes. Therefore, attitudes are viewed
as an enduring system of evaluations, feelings, and action
tendencies with respect to a social object. Nunnally reported that the feature that distinguishes
attitudes from interests and values is that an attitude
always concerns a particular target or object. Attitudes
constitute the core of a person's makeup and are reflected
in opinions about issues, ideas, people, and events.
Interests and values concern numerous activities and can
change with relative ease. An attitude is static or
enduring and is always directed toward some object. It is a
state of mind of the individual toward a value. For
example, love of money and desire for fame are typical
attitudes, but money and fame would be considered a value
rather than an attitude.

Thurstone defined an attitude as the degree of positive
or negative affect that is associated with some
psychological object. A psychological object could mean a
symbol, phrase, slogan, person, institution, ideal, or an
idea toward which people may differ with respect to positive
or negative affect. The nursing process would meet his
criteria for being a psychological object. Thurstone's law
of comparative judgment (1927) explains that for a given
stimulus, there is an associated modal discriminial process
on a psychological continuum. This theory made possible the
quantitative investigation of all kinds of values and subjective experiences. Although there have been new methods for the scaling of stimuli, Thurstone has remained an important contributor to these methods.

There are conflicting positions in the literature about the relationship of expressed attitudes and behavior. Not all authors agree with the concept that attitudes control behavior. Keiser and Bickle reported from several studies, the inconsistent relationship of the attitude-behavior linkage. These studies concluded that what a person said and what he eventually did were not always consistent. Edwards explained that sometimes feelings about a psychological object are so mixed and confused that it is difficult to evaluate the feelings by introspective methods. There can be positive and negative feelings associated with the same psychological object. Such evaluations may demand more objectivity and insight than some people are able to give. The responses are limited to what the individual knows about his attitudes and is willing to relate. Fear of responses being socially unacceptable could cause a response bias as well the respondent wanting to provide answers that would please the test giver.

Other theorists contend that altered attitudes can effectively change behavior. Festinger's cognitive
dissonance model can be used to explain the corresponding linkage between attitude change resulting in changed behavior.\textsuperscript{38} He maintained that two elements of knowledge that are in a dissonant relationship produce an uncomfortable state for the individual. The person will be motivated to reduce the dissonance and achieve consonance. Although there is considerable variability in the amount of inconsistency that people can tolerate, the set of beliefs that are held about an object determine the affective reactions regarding that object. Shaw and Wright claim that an attitude entails an existing predisposition to respond to social objects which, in interaction with situational and other dispositional variables, guides and directs the overt behavior of an individual.\textsuperscript{39}

There are different methods available for finding out a person's feelings about some particular psychological object. Direct questioning, observing the individual, or using an attitude scale are the most obvious methods. There are problems with all three methods--people may be reluctant to give public expression to their feelings on controversial issues; it may not be feasible to have the time or the opportunity to observe the behavior of a number of individuals in relation to the attitude; and self-reporting techniques on a scale may not be reflective of the true
attitude. There are advantages and disadvantages to all of the methods, but attitude scales can be administered to large groups of individuals and can provide quick and convenient measures of the attitude. Edwards advocated that a well-constructed attitude scale, administered under controlled conditions, can provide a means of obtaining an assessment of the degree of feelings that individuals associated with some psychological object.

The construction of a Likert-type scale relies on a pool of statements in which there are neither too many extreme answers nor too many neutral ones. The statements are chosen for their ability to discriminate between favorable and unfavorable stances toward a particular psychological object. The first step in the scale construction is to obtain the items that are believed to cover the entire range of the affective scale of interest toward the particular object. Statements may come from experience, literature on the topic, and by asking experts in the area to write descriptions of their attitudes toward the object of interest. Care must be taken to avoid statements that are likely to be endorsed by almost everyone or almost no one.

A major assumption in the construction of attitude scales is that there will be differences in the belief
system of the respondents toward some psychological object. Statements are chosen for their ability to discriminate among favorable, unfavorable, or neutral stances. Likert stressed that each statement should be an expression of desired behavior and not a statement of fact. People with different attitudes would have to agree on questions of fact whether they endorsed the idea or not. Likert recommended that the statements deal with present attitudes and that each proposition should be interpreted in only one way. The language of the statements should be simple, short, relevant to the subject, and should contain only one complete thought.

A large test pool of statements is desirable because after trying the statements upon a group, a number will be found unsatisfactory for the intended purpose and deleted. Nunnally suggested that as a rule of thumb somewhere between twenty and thirty dichotomous items are required on the final attitude scale for respectable internal consistency. And since it is usually easy to obtain a homogeneous scale for the measurement of attitudes, seldom are more than forty items needed for the final item pool.

The usual suggestion for constructing a Likert scale is to leave a space after the statement for a scale that rates the amount of agreement or disagreement the respondent feels
about the items. For purposes of tabulation and scoring, a numerical value of one to five is assigned to the five alternatives. The five points are awarded to the most favorable response if the attitude statement is positive to the object being measured. If the statement is negative, the scores are reversed with the five being awarded to the most unfavorable responses. For each subject, a total score is obtained by summing the scores for the individual items. The higher the score, the more positive the attitude toward the object is rated. This method of scale construction is called the method of summed ratings.

The usefulness of the attitude scale depends upon the reliability and validity of the statements. The reliability of summed ratings is directly related to the correlation among the items. Nunnally reported that reliabilities of summed scales tend to be higher than those of abilities and self-inventory measures of personality because the items tend to correlate with one another, but the validity of a scale depends upon the particular scale under construction. Shaw and Wright warn that Likert-type scales are often reliable, but they should be treated as ordinal scales. The interpretation should be based upon the distribution of sample scores earned by others in the
distribution, and it is important that the scale be standardized on a sample drawn from the target population.\footnote{47}{Another social scientist credited with developing methods for constructing attitude scales was Thurstone. His judgmental procedure reputedly has been more widely used than any other method of scale construction.\footnote{48}{The procedure requires that a large number of nonmonotone items concerning the attitude be formulated. Then a panel of judges are drawn from a sample of people with characteristics like those that will be in the study. The judges are asked to sort the items that have been written on cards into a fixed number of categories spaced along a favorable continuum. There are usually eleven piles or categories which appear to the judges to be equally spaced in terms of the degree to which the item reflects the underlying attitude. The final scale items are selected from each of the piles so that they are spread more or less evenly along the attitude continuum. Items in which there is disagreement among the judges are discarded. When the scale is given to the respondents, they are asked to check each item with which they agree. A median of the scale values of all the items checked is the individual attitude score.}}

Another type of attitude scale is known as the Guttman scalogram method.\footnote{49}{This nonmetric, cumulative scale leads}
to an ordinal scaling of people with respect to attitudes. This method is based upon the thinking that items can be arranged in an order such that an individual who responds positively to any particular item also responds positively to all other items having a lower rank. Unlike the Thurstone and Likert scales, the statements are administered to the respondents before they are ranked. Nunnally called the Guttman scale "the deterministic model" because each item is assumed to have a perfect relationship with a hypothetical trait. The principle of the scale lies in the specific choice and ordering of statements in such a way to imply progressively stronger or weaker attitudes to the same stimulus. The scalogram method usually yields scales that are reliable and valid, but scalability always must be checked before Guttman scales can be used with another population since there is no attempt to ensure equality of units.

Another method of attitude scale construction that is a synthesis of Thurstone, Likert, and Guttman procedures was developed by Edwards and Kilpatrick. Their scale discrimination technique uses Thurstone's equal-appearing intervals to select a set of acceptable items. These items are administered to a sample drawn from the target population, following the Likert method of item analysis.
Thurstone's method of plotting item discriminatory power against the scale values allow for the selection of two or three items with the greatest discriminatory power from each scale interval. Finally, the items are subjected to a scalogram analysis. Shaw and Wright indicated that this method has not been used extensively, and its strong and weak points have not been clearly established.52

This section of the literature review was directed towards identifying what is meant by the term, attitude. The rationale for differentiating between the terms, attitude and opinion was discussed. A discussion on different methods of measuring or identifying attitudes were explored. Finally, the methodology for constructing an attitude scale based upon Likert, Thurstone, and Guttman's work was reviewed. The next section of the literature review will be a documentation of nursing studies relative to instrument development.

**Nursing Studies on Instrument Development**

Nursing research studies that have focused upon instrument development to measure and evaluate the nursing process and standards of nursing care is the focus of this section. This subject is included because the content
provides a basis for this study. By establishing what has been done in the past, it becomes more clear what needs to be done in current studies. Ventura, Hinshaw, and Atwood stressed that the ultimate goal in nursing research is to develop instruments that are precise and sensitive enough to foster the pursuit of questions and investigations within nursing science. 53

In 1974, John Bond wrote that a number of studies claiming to be about nurses' attitudes had been published. These studies were actually opinion studies because little or no attempt had been made to actually measure attitudes. 54 Bond's study described the development of a scale to measure the attitudes of nurses toward part-time nurse employees. The development of his scale fell into four distinct stages. In the prepilot study, a list of forty Likert-type statements were tested on a sample of forty-eight nurses. The purpose was to reduce the number of statements without weakening the usefulness of the scale. Inter-item analysis was carried out on the nurses' responses, and the instrument was prepared for the next study phase.

During the first pilot study, Bond administered the revised scale to seventy-six randomly chosen nurses from several hospitals. Some changes were made based upon the alpha scores from the first testing, and some of the
statements were reworded. Based upon the results of this phase, the second pilot study was conducted using one hundred nurses who were randomly chosen from a general hospital. Inter-item analysis resulted in the revision of the scale to include twelve items. The study was undertaken in four hospitals. Three samples of nurses were randomly selected from nursing administrators, hospital nurses, and community nurses. Inter-item analysis was carried out on the results from 1,042 subjects before the final scale was completed. Bond's study represents an example of the planning and testing required in the development of a valid and reliable attitude instrument.

Bradley's study about nursing behavior contained another example of the construction of an attitude scale. The major task of the investigation was to develop an instrument by using end program objectives obtained from all of the accredited schools in Connecticut. A total of 148 objectives represented the expected behaviors of a nurse upon graduation from a school of nursing. Judges were given the items on three-by-five cards and asked to eliminate repetitive or redundant items. This process eliminated forty-two of the original items. Next a panel of ten expert judges was sent a list of the remaining objectives to categorize into the type of nursing program the objective
were most appropriately suited. The judges responses
eliminated an additional thirty-nine of the objectives. Six
more judges were asked to sort the remaining items into six
categories of practice: skills, nursing process, research,
leadership, health care, and other activities. Objectives
were retained if four of the six judges placed the objective
in the same category. Only fifty-four items from the
original list were retained.

The revised instrument was mailed to fifty-three nurses
for their responses. Their data were subjected to a
principle components analysis followed by oblique rotation.
The criteria for retention of an item were that the factor
must have a loading of 0.4 or above, and the factor must be
represented by two or more items. Coefficients of
reliability were generated for each factor to provide
evidence of internal consistency. The final instrument
which consisted of twenty-eight constructs was administered
to a sample of 196 nurses. The results of Bradley's
investigation indicated that there are six meaningful
dimensions of nursing behaviors. Factor analysis of the
instrument yielded seven factors, of which the first factor
was labeled nursing process and health care. This factor
accounted for 28.9 percent of the variance. Bradley
concluded that the findings contributed to a better
understanding of nurses' perceptions of the importance of several identified components of the nursing role. 56

Another instrument was developed by Lillesand and Korff to evaluate the nursing process. 57 The four steps of the nursing process were assigned a specific point value. Nursing audits were performed by the quality assurance committee at the hospital. Nurses that made above a seventy percent on the audit were rewarded. At the time of reporting, the instrument had been in use for three years and had served the purposes for which it was designed. The instrument had not been analyzed for reliability or validity, and is mentioned in this review because it was one of the few nursing studies focusing on developing research instruments to evaluate the nursing process.

The Rush-Medicus Nursing Process Instrument was designed to measure the quality of nursing care in so far as it can be measured by an assessment of the nursing process. 58 The items for the instrument were based on an in-depth examination of studies and instruments that addressed measurement of the quality of nursing care. An initial set of 900 items was developed and examined for measurability and redundancy. A set of two hundred twenty criteria was tested in two hospitals. Based upon the results of the study, the criteria were revised and field
nineteen hospitals throughout the United States. The data collected during a period of eighteen months were statistically analysed with resulting changes being made in the criteria. The data were submitted to item-analysis, redundancy analysis, cluster analysis, and polytomous-item analysis.

A methodology for evaluating the quality of nursing care in a hospital resulted from Haussmann and Hegyvary study. The final scale for evaluating the care consists of 257 criteria. As one of the most widely tested and analyzed methods available for measuring the quality of nursing care, it is also considered the most expensive in terms of resources. A two or three day training period is needed for the observers. The number of observers depends upon the size of the hospital, but all units must be evaluated a number of times per quarter. These evaluations must continue because comparisons among the quarters are performed. The completed worksheets must be keypunched and entered into a computer program. The second computer program then produces quality indexes for each of the twenty-eight subobjectives. Several full-time quality assurance nurses are recommended for implementing the system.
Yurchuck's study in which an instrument was developed to measure attitudes toward nursing care plans is the last example provided in this section. An instrument was designed to determine student nurses' attitudes toward planning nursing care. A pool of sixty items was pilot tested using senior student nurses from four baccalaureate degree programs in New Jersey. Of the 159 potential respondents, usable data were obtained from seventy students. Flanagan's r was used for the item analysis, and thirty items that best discriminated between the upper and lower scoring groups were retained for the final version of the instrument. There were no significant relationships between the personal variables and the score on the attitude test. Data concerning the internal consistency would have to be done before the instrument would be of use to other researchers.

A presentation of selected nursing studies on instrument development was the task of the last section in this chapter. There are few studies in the nursing literature about this topic. Because of the professional emphasis on the use of the nursing process, there is a need for further development of research instruments to measure and evaluate all areas of the nursing process.
**Summary**

Chapter two reviewed the literature and research pertaining to information about Army nurses, the nursing process, attitude and attitude scale construction, and examples from the nursing literature on instrument development. All of these topics are basic to the evolution of this study about Army nurses, their attitudes, and the nursing process.

A review of studies conducted about Army nurses indicated that some of the problems with the implementation of the nursing process occur because the nurse does not use the autonomy or creativeness inherent in the nursing process due to having been socialized into a role that is concrete and task-oriented. The military structure and guidelines further define the role and responsibilities of the nurses. The studies give reason to believe that despite fairly rigid role limitations, the nurses can be taught to use the approach without changing the structure of the system. If nurses and the other members of the health team were better informed about the role of professional nursing and the nursing process, perhaps, they would better be able to recognize the approach as being a nursing strategy directed
at improving nursing accountability and responsibility toward the patient.

Other studies from nursing literature demonstrated that research has played a role in the development, application, and refinement of the nursing process. Some of the studies were very positive about the outcomes of using the nursing process while others were more cautious. Their results implied that although the nursing process is based upon a strong theoretical basis, there are many problems that need solving before conflict between the ideological and practical aspects of the concept will be settled.

Considerable effort was devoted to defining the concept, describing how an attitude is formed, and pointing out the association between an attitude and behavior. This discussion provided more credibility for the importance of identifying attitudes and variables which affect the attitudes of nurses toward the nursing process. An overview of different methodologies which measure attitudes was reviewed to provide documentation for the selection of the approach taken in this study. And finally, the review of nursing studies that have focused on the development of instruments for use in nursing process related studies was reviewed in order to provide a foundation for the approach taken in this study.
Chapter Three contains the description of the design of this research project and the methodology that was planned to analyze the data. The population, sample, and sampling techniques are identified as well as the specific statistical measures that were used to test the hypotheses of the study.
NOTES

1. Mary K. McKenna and Priscilla W. Hales, "Application of the Nursing Process to Improve the Quality of Nursing Service Provided to a Military Community in Germany," Military Medicine, 147 (1982), p. 558.

2. Amelia J. Carson, Mary Smith, Freda Sadler, and Elizabeth Weathington, "Evaluation of the Effects of Nursing Practice Standards on the Quality of Nursing Care," (unpublished study, Kimbrough Army Community Hospital, Fort Meade, Maryland, May 1980.)


4. Ibid.

5. Ibid.


10. Ibid.

11. Ibid.


13. Ibid.


17. Yura and Walsh, op. cit.


22. McKenna and Hales, op. cit., p.558.


24. Ibid.
25. Ibid.


27. de la Cuesta, op. cit., p.370.


42. Likert, op. cit., p. 90.
43. Nunnally, op. cit., p. 605.
44. Likert, op. cit., p. 90.
47. Shaw and Wright, op. cit., pp. 24-25.
48. Shaw and Wright, op. cit., p. 21-22.
50. Nunnally, op. cit.
54. Bond, op. cit.
58. Haussmann and Hegvary, op. cit.
59. Ibid.
60. Elizabeth R. Yurchuck, "Planning Nursing Care: Competence and Attitudes of Senior Students in Selected Baccaalaureate Nursing Programs" (Unpublished doctoral

CHAPTER 3
Methodology

This chapter described the plan used to accomplish the purpose and test the hypotheses of the study. The population to which the findings of the study are to be generalized was identified. The sample and the sampling techniques are discussed. The first section identifies how the variables were measured. The following section concerns instrumentation and introduced the methodology used to develop the attitude scale. The third section provides an overview of the research design and the statistical analysis planned for analyzing the data.

Population and Sample

The population to which the findings of this study were generalized is all of the Army Nurse Corps officers assigned to United States Army Health Service Command, Fort Sam Houston, Texas, and occupying positions requiring use and documentation of the nursing process. The data obtained from the sample can be generalized to other Army nurses because they are part of a fluid population that moves from assignment to assignment throughout their military careers. Duty assignments are approximately three years in duration.
and can be anywhere on the globe where there are Army medical treatment facilities. Nursing administrative personnel are transferred or rotated as often as the clinical staff. Although the environment may change, Army hospitals have the same organizational structure. The personalities of the personnel may differ, but Army policy dictates a uniform structure for all nurses to follow.

All Army nurses are required to have graduated from an accredited civilian university, and all are subjected to the same admission criteria prior to being admitted to active duty. They must meet the weight standard, be physically fit, and have the appropriate references and credentials. An oath of allegiance to the Constitution of the United States is part of the commissioning ceremony. Upon being commissioned into the Army, nurses come under the jurisdiction of the Uniform Code of Military Justice. All Army nurses are subject to the same written standards, regulations, and basic military training. In addition, every nurse officer has an annual, formal evaluation that is maintained in permanent files, and becomes a valuable portion of the criteria used for promotion and position selection. Promotions occur in predictable patterns,
and the salary structures are the same for everyone with the same rank and time in the service.

The Chief of the Army Nurse Corps, a Brigadier General, is assigned to the Pentagon where she communicates with all of the Chief Nurses of the medical treatment facilities through meetings, site visits, written communiques, and frequent telephone calls. The Army Nurse Corps is one of the branches in the Army, and closely adheres to the rank structure for communication purposes. These formal echelons provide the structure desired in a military society where the mission is to be prepared for any national crisis. Its members must be prepared to mobilize and deploy on demand. During peacetime, most Army nurses work in hospitals taking care of service members and their dependents, but during any national crisis, the nurses must go where they are needed. They have to be prepared to nurse under adverse and maybe even unpopular and primitive conditions. The military environment and discipline enables the control that is needed when the nurse must fulfill roles that may be needed to support a military campaign.

In summary, data obtained from a sample of Army nurses could be generalized to other Army nurses in similar positions because their nursing and military educational preparation and their work environment are very similar.
Although each nurse is an individual, the consistency among training programs and assignments tends to assure that there is near uniformity among personnel. The settings may change, but an Army nurse is prepared to acquire, maintain, and use the supplies, equipment, and documentation forms in any military treatment facility. The nurses are more alike than not because of the direction and guidance provided by established standards, regulations, and other military guidelines.

**Sampling Method**

The current strength of the Army Nurse Corps is 4,072 nurses. Of these, there are 2,996 nurses assigned to Health Service Command in the United States. Frelin and Misener reported that forty-three percent of the Army nurses in medical centers or community hospitals are staff nurses (N=1,288), while twenty percent are first line supervisors (N=599). These 1,887 staff nurses and first line supervisors constituted the population from which the sample was selected. To be able to generalize to the population of 1,887 nurses with a permissible error at the 0.05 level, a sample of 229 was needed to assure a ninety percent confidence level. In addition, Kerlinger and Pedhazur
stressed that any multiple regression analyses, and especially those with numerous independent variables, should have at least 100 subjects, and preferably 200 or more.  

An important task was to select the study sites from which the data would be collected. The sites were not selected randomly from the Army medical treatment facilities located across the United States because the expense and time necessary to travel to the areas would have been unrealistic. The next choice was to select sites which differed as widely as possible from each other. The method used to select the sites was purposive or judgmental sampling, which is a form of sampling based upon the researcher's knowledge about the population. The six sites were chosen to represent the Army health establishment. There were differences in size, geographic location, and the types of patients treated at the facilities, and there was considerable contrast in the environment and communities surrounding the hospitals. The location of the sites in four states and the District of Columbia met Kerlinger and Pedhazur's suggestion to collect data in different states or in places at least 100 miles apart. 

There are eight medical centers in the Army and approximately thirty smaller community hospitals. Two of the study sites were chosen because they represented the
larger medical centers, and the other four hospitals were selected because of their community hospital status. The hospital centers are located in more metropolitan areas, are more specialized, and service a much larger and diverse population than the community hospitals. Walter Reed Army Medical Center in Washington, DC, is the largest medical center in the Army. Although patients are sent to Walter Reed from all over the world for numerous problems, the hospital is best known for its oncology services, research activities, and teaching programs. Brooke Army Medical Center is located at Fort Sam Houston, Texas, and is known worldwide for its "burn center", the Academy of Health Sciences, and its many teaching and training courses and programs. Womack Army Community Hospital, Fort Bragg, North Carolina, medically supports the 82nd Airborne unit, and is considered a troop training post. Kimbrough Army Community Hospital, Fort Meade, Maryland, is known as the United States Army Reserves headquarters and houses the Army intelligence school. The Army engineering and mapping schools are located at another study site, Dewitt Army Community Hospital, Fort Belvoir, Virginia. The final study site, Darnall Community Hospital, Fort Hood, Texas, is a very large and remote training post that supports an armored division.
Eight hundred and eleven Army nurses were assigned to the six hospitals. By using the percentages in Frelin and Misener's study, which showed sixty-three percent of Army nurses are staff nurses or first line supervisors, there were approximately 511 nurses assigned to the patient wards. The nurses who were working during one of the three shifts during the time that the researcher was at the hospital were part of the selection pool of subjects for the study. Thus the nurses who were actually working during the shifts when the data were being collected comprised a group with characteristics that did not differ from the others who were not assigned. In that sense the subjects had characteristics of a randomly selected group. These nurses worked shifts as they were needed, and normally rotated duty times and days off throughout the seven-day work week. In addition, the nurses might have been on leave status or assigned to duty in other capacities.

A two-day data collection time was allocated to be spent at the community hospitals while three days were used to collect the data at the larger medical centers. The researcher was present during parts of all three shifts--days, evenings, and nights. The dates for the site visits had to be selected or approved by the Chief Nurses at each study site.
The sample consisted of every Army nurse who had a patient assignment at the one of the six study sites on the date that the researcher collected data at the hospital. All Army nurses on duty during the designated study times were given a packet which contained a letter explaining the study, the Nursing Process Attitude Scale, the Personal Data Form, and an envelope for the completed instruments.

Because there were only 292 Army nurses who were assigned to patient care during the time of the study, everyone was provided with an instrument packet and an invitation to join the study. From the total, 225 responded, which provided a response rate of seventy-eight percent. While the useable sample fell slightly short of the number necessary for a ninety percent confidence level, the effect of four responses fewer does not seriously affect the level of confidence. Since it was impossible to revisit the sites and since the confidence level would have changed by less than one percent, the sample was deemed adequate to generalize to the population.

The method used to obtain the subjects for the study was partially purposive (site selection) and partially randomized (subjects selected). The total number of 225 nurses represented nearly one-half of the potential sample (510) at the six hospitals. It was not feasible to randomly
select the study sites because of the sizes and the distance across the United States. The sites were selected because of their differences in geographic location, size and scope, and the environment surrounding the hospitals. A form of randomization was used to obtain the sample because the nurse had to be on duty during one of the shifts when the researcher was scheduled to be at the institution, and the dates for data collection were either suggested or approved by the Chief Nurse of each hospital.

**Instrumentation**

A review of the nursing literature revealed that no instrument was available that measured the attitude of nurses toward the nursing process. Using the methodology suggested by Likert, an instrument was developed.  

Initially, a test pool of 150 items was constructed. The nursing process content for the statements came from the nursing literature, personal experience, and interviews on the topic with nursing colleagues. Additional information was acquired from a nursing process workshop conducted for the nursing managers at the largest medical center in the Army.
The 150 items were presented to a panel of five nursing process experts to review for specific criteria. This professional appraisal of what appears to be valid for the content of the test is a form of content validity known as face validity. The determination of whether or not the instrument has an acceptable degree of content validity for use in a situation can only be determined by having individuals who are knowledgeable about that particular content evaluate the items. The panel was given the instrument and the rating scales, a personal data form, and an envelope for returning the completed package. The five nurses examined the items for clarity, style, and relevance to the nursing process. To provide information to assist the panel members to make their decisions, a copy of Likert's article on how to construct an attitude scale was also included in their packets.

Three of the expert panel members were nursing faculty at The Catholic University of America, Washington, DC. They teach content on the subject to student nurses, conduct nursing process workshops, and have published on the topic. One of the faculty members has co-authored four nursing textbooks on the nursing process and is credited with the first publication a nursing process textbook. The other two panel members were Army nurses stationed at the
nearby medical center. Both had extensive experience teaching and using the nursing process. One of the Army nurses was the Chief of Education and Training at his last duty station where he was responsible for the implementation of the Army Medical Department Standards of Nursing Practice. The other panel member has his doctorate in nursing and is assigned as a nurse researcher. Coupled with his experience as a teacher and a user of the nursing process, his expertise qualified him to serve as a panel member.

Using the established criteria, the panel used a Likert scale to rate each of the statements. Many of the items were revised or deleted based upon the recommendations of the panel. Fifty items were eliminated from the original instrument, and 100 items were retained for further testing. The preliminary instrument, which was titled the Nursing Process Attitude Scale, was ready for administration to a sample of Army nurses. Nunnally recommended that the number of subjects needed to test an attitude scale should be ten times the number of test items unless there are more than seventy items on the scale. If there are many items, the rule becomes impractical, and five subjects per item would be considered the minimum that could be tolerated.
Using Nunnally's rule, a sample of 500 nurses would be needed to test the instrument.

In June, an alpha roster of all the names and duty addresses of every nurse in the Army was used to draw the sample for the first pilot test of the instrument. A random sample of 500 nurses were selected. Randomization was accomplished by having a person draw the pages from the stack of papers in the roster until the sample was obtained. The person doing the drawing could not see the names since the stack was turned upside down. Names were omitted if they were assigned to one of the six proposed study sites. A copy of the Health Service Command's approval for the study, an explanation of the study, and the instrument were mailed to the nurses. Their answers were anonymous because no personal data was required to be placed on the returned packet. The instrument had been reduced in size and folded into a booklet form to improve the physical appearance. A stamped and addressed envelope was provided for returning the completed attitude scale.

Answers from the returned 292 questionnaires were entered into the computer. Post marks on the envelopes were from twenty five states including Alaska and Hawaii. Seven instruments were returned to the sender as undeliverable, and three were received after the cutoff time. Subtracting
the ten from the original 500 subjects, a return rate of sixty percent was calculated. A factor analysis with a varimax rotation of the items was conducted. This multivariate procedure was a method useful in reducing the number of variables in the scale, and also, identified unities or fundamental properties underlying the tests.\textsuperscript{17} A factor is a linear combination of the variables in the matrix, and the factor loadings are the indices of the amount of variance each factor contributed to the estimation of the variables.\textsuperscript{18} The varimax rotation caused the factors to be repositioned in such a way as to give them more interpretability.

During this part of the instrument development, a factor analysis was performed using a Statistical Analysis System (SAS) program.\textsuperscript{19} The program produced a factor matrix or a table of coefficients that expressed the relationship between the items and the underlying factors. The entries in the tables were referred to as factor loadings. Kerlinger noted that factor loadings are not difficult to interpret because they range from -1.00 to +1.00 like a correlation coefficient.\textsuperscript{20} From the original 100 items, fifty-six items with an a priori set criterion of 0.45 or greater were retained for inclusion in a revised instrument. Waltz and Bausell reported that a factor
loading of 0.30 is the minimum loading that can be considered significant. Table 1 identifies the variance accounted for by each of the factors. The communality of a variable is the variance it shares with other variables.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Variance explained by each of the factors</th>
<th>Factors retained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>13.56</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>8.20</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>5.81</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>5.77</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>5.17</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>2.30</td>
<td>2</td>
</tr>
</tbody>
</table>

final communality estimates: total = 40.84

The revised fifty-six item Nursing Process Attitude Scale was mailed to the second random sample of Army nurses during August, 1984. Names drawn for the first pilot test and those that were assigned to the six study sites were eliminated from the prospective test pool before drawing the sample for the second pilot test. Using Nunnally's formula of multiplying the number of items on the instrument times
five to obtain the sample size, 280 names were drawn from the Army Nurse Corps roster.\textsuperscript{22} Once again, the instrument was reduced in size, folded into a booklet, and mailed to the subjects. An approval letter for the study to be conducted, a letter explaining the study, and a stamped envelope to return the completed questionnaire were attached to the questionnaire.

Of the 280 questionnaires mailed, 152 were returned and the answers were entered into the computer. The postmarks on the envelopes were from twenty-eight states including Hawaii and Alaska. Three were returned undeliverable, and twelve were returned too late to be included in the results. The fifteen were subtracted from the original number, and a return rate of fifty-seven percent for the second pilot test was calculated. A factor analysis with a varimax rotation resulted in forty-five items being retained for the final Nursing Process Attitude Scale that would be used in the study. Table 2 identifies the variance of each of the factors and final communality estimates of the total.

Only one item factored at 0.45 or greater in factor 6. Since the items in each of the factorial clusters were to become the subscales of the instrument, this item was combined with the other items in factor 5. The factor
clusters or the five subscales contained seventeen, eleven, seven, five, and five items respectively. These five subscales of the Nursing Process Attitude Scale were used to test the internal consistency of the instrument. Using the results obtained during the study, another factor analysis on the 45 item instrument showed the final communality estimate to be 22.60.

Table 2
Results of Factor Analysis of the NPAS Pilot Test 2 (56 items)

<table>
<thead>
<tr>
<th>factor</th>
<th>variance explained by each factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17.86</td>
</tr>
<tr>
<td>2</td>
<td>2.80</td>
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<tr>
<td>3</td>
<td>2.67</td>
</tr>
<tr>
<td>4</td>
<td>2.06</td>
</tr>
<tr>
<td>5</td>
<td>1.93</td>
</tr>
<tr>
<td>6</td>
<td>1.53</td>
</tr>
</tbody>
</table>

final communality estimates: total = 28.90

The procedure used in the development of the Nursing Process Attitude Scale resulted in an instrument which has factorial validity. Moore described factorial validity as a form of construct validity which is developed by using a statistical technique called factor analysis to validate
hypothesized constructs. The procedure is designed to identify those items which tend to be related to each other and which then forms separate traits or factors. The procedure clustered the items together that measured the same dimensions and were highly correlated with one another. The statements or items which did not relate significantly with the rest of the scale were eliminated from the instrument.

The Nursing Process Attitude Scale was scored using summated rated methods. A Likert scale with five terms—strongly agree, agree, uncertain, disagree, and strongly disagree was used to measure the amount of agreement or disagreement the respondent held toward each of the test items. To numerically scale the responses to the items for analysis purposes, values from one to five points were assigned. Negative responses toward the nursing process were awarded the smaller values while positive statements were received the higher values. The possible scores which could be obtained on the NPAS ranged from a minimum of forty-five to a maximum of 224 points depending upon the values selected by the subjects. The premise of the final score is that the higher the value, the more positive is the attitude of the individual toward the nursing process.
Nurse Manager's Rating Form

The Nurse Manager's Rating Form was developed for use in this study to ascertain a measure of the nurse manager's perception of the research subject's use and documentation of the nursing process. A structured interview was conducted with the nurse managers, and the Rating Form was used to record the scores they awarded the research subjects on each category. The Manager's Rating Form consisted of six statements. Three of the six statements formed Subscale One and were designed to evaluate the subject's value of the nursing process. The other three statements formed Subscale Two, and evaluated the subject's documentation of the nursing process. A five-point Likert scale was assigned to each of the six statements to measure the degree of agreement or disagreement with each of the items. The scores which could be obtained on the Manager's Rating Form ranged from six to thirty. Assumptions were that the higher scores were associated with those nurses which were high nursing process users.

The purpose of this external evaluation was to assist in determining the predictive validity properties of the Nursing Process Attitude Scale. Two assumptions underlaid
the purpose for the development of the scale. First, the nurse managers or first level supervisors on the units or wards would be aware of the staff nurse’s ability to use and document the nursing process. Second, the attitude of the respondents toward the nursing process would be reflected in their actions and practice. Nurses who have a better attitude would probably be using and documenting the nursing process more consistently than nurses with an unfavorable attitude toward the nursing process. Scores on the Manager’s Rating Form were to be statistically analyzed with the scores on the attitude instrument to determine if there were a significant relationship.

Nursing Process Audit Instrument

The Nursing Process Audit Instrument used in this study was adapted from an instrument developed by the Rush-Medicus nursing process study.24 The Rush-Medicus methodology for monitoring the quality of nursing care was developed and tested by the Division of Nursing, Health Resources Administration, under contract by the Rush-Presbyterian-St. Luke’s Medical Center and the Medicus Corporation. Data for the study were collected in 102 patient units in nineteen hospitals located in various parts of the United States.
Numerous variables were tested to determine those which may potentially affect the quality of care. The project resulted in an extensive set of 257 criteria for evaluating the quality of patient care. From this master list, thirty-six criteria for evaluating the documentation of the nursing process were selected for inclusion in the Nursing Process Audit Instrument.

The criteria on the Audit Instrument were designed to measure the elements of nursing documentation which were determined to be essential content on every patient's record. The instrument was used to evaluate a nursing care plan from each of the research subjects. The records were examined for evidence of the documentation criteria. Examples of some of the criteria used to evaluate the records were statements asking whether documentation was present concerning specific components of the nursing history, nursing orders, patient objectives, and discharge teaching plans. If the item was not found in the chart, no credit was given on the form. If there was partial documentation found on the record, one point was given. Two points were awarded to the fully documented item. The possible range of scores which could be obtained on the instrument was between zero and seventy-two. The scores from the Audit Instrument were to be used as one of the
independent predictor variables which tested whether there was a relationship to the scores on the Nursing Process Attitude Scale.

**Personal Data Form**

Nineteen personal and professional characteristics about the subjects were identified by the use of the Personal Data Form. Examples of information requested from the nurses were their age, gender, military rank, marital status, nursing position held, educational level, and years of nursing experience. The data form was attached to the Nursing Process Attitude Scale, and the respondent was asked to check the answers by the items that matched his characteristics. The items were categorized and numbered to facilitate computerization. To increase the response rate and to assure the anonymity of the subjects, the name or other identifying information was not requested on the form. The results from the Personal Data Form became the personal and professional independent variables which were used to statistically evaluate whether they had an effect upon the scores on the Nursing Process Attitude Scale.
Data Gathering Procedures

During August, 1984, the Chief Nurses of the six sites were mailed information about the nursing process study. They also received a copy of the research protocol and the approval form from Health Science Command to conduct the study. Included in their packets was a request from the researcher to be present at their institutions for the purpose of data collection. A follow-up phone call was made to the Chief Nurses to obtain the dates for the site visits. The researcher had to be present for the data collection because interviews with the nurse managers of each of the subjects had to be conducted, and a record audit was to be performed on a record from each respondent.

During the site visit, the researcher obtained a duty roster with the names of every Army nurse on duty during the designated study times. The researcher went to the wards or units where the nurses were assigned, explained the study to the potential subjects, and asked each nurse to join the study. The researcher established a time when she could return and collect the completed questionnaires. A cover letter on the instrument explained the reason the study was being conducted, the design of the study, and the guarantee of confidentiality of the responses. A coding system was
used on each of the instruments to avoid having to use the subject's name.

During the time the researcher was on the unit, an explanation of the study was provided to the nurse manager. The assistance of the nurse manager was requested, and the interview was granted at that time or during a scheduled appointment. The interview was conducted in privacy, and confidentiality of the nurse manager's responses was guaranteed. The Nurse Manager's Rating Form was used to document the results from the interview.

In addition, a patient's record was obtained from the subject to collect the data needed on the Nursing Process Audit Form. The subject was informed that the record would be audited for nursing process criteria, and was assured that the information was confidential and would be used for the purposes of the study. The record audits were usually performed on the shift following the one the subject had worked.

A total of 225 packets were collected at the six sites. The instruments had been structured to simplify inputting data into the computer. No further coding had to be done, and the numerical responses from the three instruments and the Personal Data Form were entered into a SAS data set.
Design of Study

The major objective of the study was to identify the effects of selected personal and professional variables upon the attitude of Army nurses toward the nursing process. The research design used to test the hypotheses was a combination of a survey and a documentary approach to research and was an ex post facto co-relational design. Data were gathered from a group of Army nurses by using an attitude instrument, a manager's rating form, an audit instrument, and a personal data form. The subjects were asked to rate the degree to which they agreed or disagreed with the statements contained on the NPAS. Attached to the attitude instrument was the Personal Data Form. Information for the nineteen personal and professional variables were obtained from this record (see figure 1). In addition, a patient's chart was audited for specific nursing process criteria, and the data were recorded on the Nursing Process Audit Form. A structured interview about each subject was obtained from the nurse managers. The purpose of the interview was to collect data on the degree to which each subject adhered to the techniques, and documentation specified for the nursing process. The results of the interview were recorded on the Manager's Rating Form.
### Figure 1.

**Identification of Dependent and Independent Variables for the First Four Hypotheses**

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Independent Variables</th>
</tr>
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<tbody>
<tr>
<td>NPAS Scores</td>
<td>Gender</td>
</tr>
<tr>
<td></td>
<td>Basic program</td>
</tr>
<tr>
<td>NPAS Subscores</td>
<td>Marital Status</td>
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<tr>
<td></td>
<td>Highest degree</td>
</tr>
<tr>
<td></td>
<td>Age</td>
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<tr>
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<td>Years completed</td>
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<td></td>
<td>Rank</td>
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<td></td>
<td>Years experience</td>
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<td></td>
<td>Membership</td>
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<td></td>
<td>Research roles</td>
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<td>Publications</td>
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<td>Clinical specialty</td>
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<td>Position</td>
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<td></td>
<td>Shift worked</td>
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<tr>
<td></td>
<td>Number of Patients</td>
</tr>
<tr>
<td></td>
<td>Type nursing</td>
</tr>
<tr>
<td></td>
<td>Months on unit</td>
</tr>
<tr>
<td></td>
<td>Ratio RN/patients</td>
</tr>
</tbody>
</table>

Eight hypotheses and two ancillary questions were proposed to test the effect of the independent variables on the scores of the Nursing Process Attitude Scale. Null Hypotheses One and Three examined whether significant differences existed between the personal and professional variables and the attitude of the sample of Army nurses. Null Hypotheses Two and Four examined whether significant differences existed between the personal and
professional variables and the five identified subscales on the NPAS.

Null Hypothesis Five examined whether there was a significant difference between the score on the NPAS and the two subscales on the Manager's Rating Form. The two subscales of the Manager's Rating Form were each comprised of the scores from three statements. The first subscale was the manager's perception of the value which the subject places upon the nursing process. The second subscale contained the scores of the three statements that were the manager's evaluation of the ability and consistency of the subject to document the steps of the nursing process. The two subscales were independent predictor variables, and the score on the NPAS was the dependent variable.

Null Hypothesis Six examined whether there was a significant difference between the scores on the audit instrument and the NPAS. Null Hypothesis Seven tested whether there was a difference between the audit scores and the six subscales on the NPAS. The NPAS scores were identified as dependent variables, and the audit score was an independent predictor variable.

Null Hypothesis Eight examined whether there was a relationship among the NPAS scores and the scores on the Nursing Process Audit Form and the Manager's Rating Form.
Closely related to Hypothesis Eight were two ancillary questions. The ancillary questions asked which of the independent variables served as predictors of the scores on the NPAS and how much of the variance on the NPAS was accounted for by the independent variables. The ancillary questions were designed to obtain additional information for documenting external validity of the Nursing Process Attitude Scale. If the scores from external sources like the Manager's Rating Form, the Nursing Process Audit Form, and personal and professional data were found to be related to the scores on the NPAS, the utility of the instrument would be further strengthened.

**Statistical Analysis**

All statistical tests were performed using the Statistical Analysis System (SAS) programs. To analyse the data, four statistical procedures, descriptive statistics, analysis of variance (ANOVA), Scheffe procedures, and multiple regression analysis were utilized. The ninety-five percent confidence level (p<.05) was chosen as the level at which the null hypotheses was to be rejected. The first seven hypotheses were analysed using analyses of variance procedures, and regression analysis was used for the eighth
hypothesis. A stepwise regression procedure determined which of the personal and professional variables were to be retained for testing in the regression analysis model.

The SAS frequency procedure produced results which were used on the tables to show the distribution of the values of the variables. The frequencies, cumulative frequencies, percentages, and cumulative percentages were determined for each of the reponses on the NPAS, the Personal Data Form, the Manager's Rating Form, and the Nursing Process Audit Form.

The SAS General Linear Model (GLM) procedure was used in performing the ANOVAs and the multiple regression analyses in testing each of the first eight hypotheses. 26 The GLM procedure uses the principle of least squares to fit linear models, and was recommended to be used if there was unbalanced data. The F-Maximum Test for Homogeneity of variance was used to determine that the population variances were relatively equal. 27 The Scheffé procedure was used to provide a post hoc comparison of the observed mean difference between each of the pairs in the groups. 28 This procedure is an a posteriori contrast test for comparing all possible linear combinations of group means and is used when sample sizes are uneven.
The analysis of variance is a parametric procedure that tests the significance of differences between means. The statistical technique arrives at a ratio called the F-ratio. The term "variance" refers to the square of the standard deviation, and the ANOVA procedure uses variance estimates to measure variability between and within groups. In ANOVA, the denominator term of a variance estimate contains the degrees of freedom, or the number of deviations in the numerator that are free to vary. The first step in computing an ANOVA is to calculate the variance estimate which consists of the sum of squares divided by its degrees of freedom to produce the mean square (MS = SS/df).

The next procedure in an ANOVA is to compute the different sources of variance making up the total. The first step is to determine the between group variance:

\[ SS_{(BG)} = \bar{X} - \frac{(\bar{X})^2}{n} \]

The next variation is to determine the different scores within each group:

\[ SS_{(WG)} = \bar{X} - \frac{(\bar{X})^2}{n} \]
Having obtained the (SS) terms and their degrees of freedom, the next step is to compute the values of the mean squares for variability between groups and within groups:

\[
\begin{align*}
MS_{(BG)} &= \frac{SS_{between}}{df_{between}} \\
MS_{(WG)} &= \frac{SS_{within}}{df_{within}}
\end{align*}
\]

The formula for \( F \) can be written:

\[
F = \frac{MS_{between}}{MS_{within}}
\]

The Scheffe test was used with unequal sample sizes to supply a critical value for evaluating the observed mean difference between each pair of groups. If the mean difference is either more positive or more negative than Scheffé's critical value, the null hypothesis for that comparison can be rejected. The formula to determine the critical value for groups with zero and two confederates is the following:

\[
(X - X)_{crit} = \pm \sqrt{\left(\frac{df}{MS_{between}}\right) \left(\frac{F}{MS_{within}}\right) \left(\frac{\pi_0}{\pi_z}\right)}
\]

Multiple regression analysis was used to test Null Hypothesis Eight to determine if any of the independent predictor variables or combinations of variables served as
predictors of the attitude scores. Polit and Hungler identify a simple regression equation as a formula for making predictions about the numerical values of one variable based upon scores of another variable. The formula for the basic linear regression equation is:

\[ Y' = a + bX \]

- \( Y' \): a predicted value on variable \( Y \)
- \( a \): the intercept constant
- \( b \): the regression coefficient, or slope or the line
- \( X \): the score on variable \( X \)

The basic multiple regression equation is:

\[ Y' = a + b_1X_1 + b_2X_2 + \ldots + b_kX_k \]

- \( Y' \): predicted value for variable \( Y \)
- \( a \): intercept
- \( k \): number of predictor variables
- \( X_1 \) to \( X_k \): the scores on the \( k \) variables

Regression analysis was a multivariate procedure where all of the predictor variables were entered together and the average correlation between the criterion variable and all predictor variables was obtained to give the \( R \). The \( R \) was then squared and subtracted from one to determine how much variance was left unexplained by the set of predictor variables. A matrix of intercorrelations was then formed to determine the correlation of the variables.
Summary

This chapter described the methodology used to test the hypotheses of this study. The population and sample, the sampling procedures, and the data gathering procedures were identified. The chapter also described the research design, the methodology for measuring the variables, and the statistical methods that were used to test the hypotheses.

The population from which the sample was drawn were all Army nurses occupying positions where they were administering nursing care to patients. The sample was selected from the nurses on the duty roster during the designated study dates at six different Army hospitals. A sample of 225 subjects was obtained, which met the number necessary to meet the assumptions of ninety percent confidence level with an error ratio of .05 or less.

An attitude instrument, the Nursing Process Attitude Scale (NPAS), was developed, tested, and normed for use in the study. The results from two separate random samples of Army nurses excluding those at the six study sites were entered into the computer. The initial instrument contained 100 items. Responses from 292 subjects, a sixty percent return rate, were factor analyzed, and fifty-six items which factored at the 0.45 level or higher were retained. The
revised instrument was mailed to the second sample.

Responses from 152 subjects, a return rate of fifty-seven percent, were subjected to another factor analysis with a varimax rotation, and forty-five items which factored at the 0.45 or greater level were retained for use in the NPAS.

The design was identified as being a combination of survey and documentary research and was an ex post facto co-relational design. The subjects were asked to identify the amount they agreed or disagreed with the items on the Nursing Process Attitude Scale. Three other instruments were used to gather data on the independent variables of the study. Information about nineteen personal and professional variables was identified on the Personal Data Form. Information was gathered on the degree to which each subject adhered to the nursing process requirements established by the Army by the use of the Nurse Manager's Rating Form and the Nursing Process Audit Form. The data on the two instruments were collected from structured interviews with the nurse managers and from chart audits conducted on the records of the subjects.

A sample of 225 subjects was obtained from the six study sites which were located in North Carolina, Virginia, Maryland, Texas and the District of Columbia. The data from the four instruments were entered into a mainframe computer,
and Statistical Analysis System (SAS) programs were used to obtain descriptive statistics, analyses of the variances, and multiple regression analyses to test the hypotheses.

Chapter four contains the report of the findings of the statistical measures described in Chapter three. There will be a discussion of the testing of the eight hypotheses and the two ancillary questions.
NOTES


7. Kerlinger and Pedhazur, Ibid.

8. Frelin and Misener, op. cit.


15. Army Medical Department Standards of Nursing Practice, (PA 40-5) Headquarters, Department of the Army, Washington, DC, 1 Nov 1981.


26. Ibid, p.237.)


32. *Ibid*.

CHAPTER 4

Findings

This chapter is a presentation of the findings of the statistical analysis performed on the data collected during this study. Descriptive statistics are used for rendering quantitative information about the dependent and independent variables. The sample was examined and evaluated for acceptability as being representative of the population. The results of the statistical analysis of each of the hypotheses and ancillary questions are presented.

Descriptive Statistics

The six sites from which the sample of the study was selected were hospitals at Fort Bragg, North Carolina, Fort Belvoir, Virginia, Walter Reed Army Medical Center, Washington, DC, Fort Meade, Maryland, Fort Sam Houston, Texas, and Fort Hood, Texas. These sites were chosen because they were thought to be representative of the hospitals in the Army health system. These six hospitals contained 487 nurses which represented twenty-six percent of the population of 1,887 nurses in the Army who are assigned to staff nurse or first line supervisor positions. These
nurses were part of a fluid population of 2,996 nurses who rotated among hospitals in Health Service Command as they are needed. Using a table designed to provide the confidence levels for response rates, it was determined that 229 subjects were needed to meet a ninety percent confidence level.¹ Two hundred and twenty-five nurses completed the questionnaires which represented a return rate of seventy-eight percent from among the 292 nurses who were selected as potential subjects for being in the study.

Frequency distributions were run on the personal and professional variables using Statistical Analysis System (SAS) programs to assist with grouping the data to clarify the general characteristics of the sample.² Witte referred to a frequency distribution as the organization of observations according to their frequencies of occurrence.³ The frequencies of the nineteen variables and the results of the three instruments are provided to show the distribution of the variable values. Tables are used to further illustrate the number of subjects attaining each score.

The term "personal variable" is used as a general descriptor and includes the variables, gender, marital status, age, and the rank of the respondents. Table 3 contains the report of the frequencies and percentages of the personal variables from the nurses. Of the subjects who
completed the Nursing Process Attitude Scale, there were fifty-one males and 174 females. The ages of one hundred and thirteen subjects (fifty percent) were twenty to thirty, 175 (forty-seven percent) were thirty-one to forty, and only seven were older than forty years of age (three percent). Eighty-two (thirty-six percent) of the sample were single, 114 were married (fifty-one percent), and the other twenty-nine (thirteen percent) were separated or divorced. There were 110 (forty-nine percent) lieutenants, eighty-one captains (thirty-six percent), and thirty-four majors (fifteen percent).

The term "professional variable" was used as a general descriptor and included the variables grouped under the headings called nursing education and experience, professional activities, specialty and position, and work environment of the respondents. Specific information about the descriptive statistics of these variables are presented in table 4. When asked to identify their basic nursing program, or the one from which they acquired their primary academic nursing preparation, almost ninety-one percent of the respondents identified a baccalaureate program. The average number of years since the nurses had graduated from their basic nursing program was 6.18 years earlier. One hundred and thirty of the nurses (fifty-eight percent)
reported having graduated less than six years earlier, seventy-one (thirty-two percent) reported they had graduated between six to twelve years ago, and twenty-four (eleven percent) noted it had been more than twelve years since completing their basic nursing program.

Table 3

Personal Independent Variables
Frequency and Percentage of the Total (N=225)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Mean</th>
<th>% Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>male</td>
<td>51</td>
<td>22.67</td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>174</td>
<td>77.33</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-26 years</td>
<td>66</td>
<td>30.5 yr</td>
<td>29.33</td>
</tr>
<tr>
<td>27-33</td>
<td>97</td>
<td></td>
<td>43.11</td>
</tr>
<tr>
<td>34-40</td>
<td>55</td>
<td></td>
<td>24.44</td>
</tr>
<tr>
<td>41 or older</td>
<td>7</td>
<td></td>
<td>3.11</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>single</td>
<td>82</td>
<td></td>
<td>36.44</td>
</tr>
<tr>
<td>married</td>
<td>114</td>
<td></td>
<td>50.68</td>
</tr>
<tr>
<td>other</td>
<td>29</td>
<td></td>
<td>12.89</td>
</tr>
<tr>
<td>Rank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2LT</td>
<td>58</td>
<td></td>
<td>25.78</td>
</tr>
<tr>
<td>1LT</td>
<td>110</td>
<td></td>
<td>23.11</td>
</tr>
<tr>
<td>CPT</td>
<td>81</td>
<td></td>
<td>36.00</td>
</tr>
<tr>
<td>MAJ</td>
<td>34</td>
<td></td>
<td>15.11</td>
</tr>
</tbody>
</table>
Table 4

Professional Independent Variables
Frequency and Percentage (Nursing Education & Experience)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Mean</th>
<th>% Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic nursing program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPN/LVN diploma</td>
<td>3</td>
<td>1.333</td>
<td></td>
</tr>
<tr>
<td>ADN</td>
<td>6</td>
<td>2.667</td>
<td></td>
</tr>
<tr>
<td>BSN</td>
<td>203</td>
<td>90.222</td>
<td></td>
</tr>
<tr>
<td>Years since program</td>
<td></td>
<td>6.18 years</td>
<td></td>
</tr>
<tr>
<td>less 1 year</td>
<td>18</td>
<td>8.000</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>50</td>
<td>22.222</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>28</td>
<td>12.444</td>
<td></td>
</tr>
<tr>
<td>5-6</td>
<td>34</td>
<td>15.111</td>
<td></td>
</tr>
<tr>
<td>7-9</td>
<td>41</td>
<td>18.222</td>
<td></td>
</tr>
<tr>
<td>10-12</td>
<td>30</td>
<td>13.333</td>
<td></td>
</tr>
<tr>
<td>13-15</td>
<td>10</td>
<td>4.444</td>
<td></td>
</tr>
<tr>
<td>16+</td>
<td>14</td>
<td>6.222</td>
<td></td>
</tr>
<tr>
<td>Highest degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSN</td>
<td>198</td>
<td>88.000</td>
<td></td>
</tr>
<tr>
<td>MSN</td>
<td>26</td>
<td>11.556</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>1</td>
<td>0.444</td>
<td></td>
</tr>
<tr>
<td>Years in Nursing</td>
<td></td>
<td>5.75 years</td>
<td></td>
</tr>
<tr>
<td>less 1 year</td>
<td>18</td>
<td>8.000</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>51</td>
<td>22.667</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>29</td>
<td>12.889</td>
<td></td>
</tr>
<tr>
<td>5-6</td>
<td>31</td>
<td>13.778</td>
<td></td>
</tr>
<tr>
<td>7-9</td>
<td>42</td>
<td>18.667</td>
<td></td>
</tr>
<tr>
<td>10-12</td>
<td>29</td>
<td>12.889</td>
<td></td>
</tr>
<tr>
<td>13-15</td>
<td>13</td>
<td>5.778</td>
<td></td>
</tr>
<tr>
<td>16+</td>
<td>12</td>
<td>5.333</td>
<td></td>
</tr>
</tbody>
</table>
In response to the request to identify their highest nursing degree, only twenty-seven of the nurses (twelve percent) answered that they had earned more than a baccalaureate degree. The number of years the nurses had been employed averaged 5.75 years. Ninety-eight nurses (forty-four percent) indicated they had worked six years or less while seventy-three (thirty-two percent) had worked between seven and nine years. The other fifty-four nurses had completed more than ten years of employment (twenty-four percent).

The professional activities of the subjects were identified as membership in professional organizations, nursing research roles, and nursing publications. The frequencies and percentages for membership in these professional activities are shown in table 5. One hundred and eight (forty-eight percent) of the nurses indicated they did not belong to a professional organization. Among those who were members of organizations, forty-three (nineteen percent) belonged to the American Nurses' Association; thirty-four (fifteen percent) had been inducted into Sigma Theta Tau, the National Honor Society of Nurses; and the other forty (seventeen percent) had joined their clinical specialty organizations or to the National League of Nursing. When asked to identify their research activities or
their publications, one hundred and eighty-five of the respondents (eighty-two percent) had not been active in nursing research projects, and only twenty-three nurses (ten percent) had published in the nursing literature.

<table>
<thead>
<tr>
<th>Professional Variable</th>
<th>Frequency</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>108</td>
<td>48.000</td>
</tr>
<tr>
<td>ANA</td>
<td>43</td>
<td>19.111</td>
</tr>
<tr>
<td>NLN</td>
<td>7</td>
<td>3.111</td>
</tr>
<tr>
<td>Sigma Theta Tau</td>
<td>34</td>
<td>15.111</td>
</tr>
<tr>
<td>clinical specialty</td>
<td>33</td>
<td>14.666</td>
</tr>
<tr>
<td>Research roles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>none</td>
<td>185</td>
<td>82.222</td>
</tr>
<tr>
<td>research assistant</td>
<td>10</td>
<td>4.444</td>
</tr>
<tr>
<td>co-investigator</td>
<td>11</td>
<td>4.889</td>
</tr>
<tr>
<td>principle investigator</td>
<td>19</td>
<td>8.444</td>
</tr>
<tr>
<td>Publications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chapters/book</td>
<td>6</td>
<td>2.667</td>
</tr>
<tr>
<td>article(s)</td>
<td>11</td>
<td>4.889</td>
</tr>
<tr>
<td>media</td>
<td>6</td>
<td>2.667</td>
</tr>
</tbody>
</table>

Of the clinical specialties of the group, there were thirty-seven medical surgical (66H) nurses (sixty-one
percent), forty-nine nurses (twenty-two percent) with unclassified specialties (66J), and the other thirty-nine subjects were pediatric nurses (66D), obstetrical nurses (66G), or worked in other clinical specialties (seventeen percent). The frequencies and percentages of the represented specialties and positions are presented in Table 6. The group was comprised of 155 staff nurses (sixty-nine percent), twenty team leaders (nine percent), forty head nurses (eighteen percent), and ten administrative personnel (four percent).

Table 6
Professional Independent Variables
Frequency and Percentage (Specialty & Position)

<table>
<thead>
<tr>
<th>Professional Variable</th>
<th>Frequency</th>
<th>Percentage of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clinical Specialty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediatrics (66D)</td>
<td>21</td>
<td>9.333</td>
</tr>
<tr>
<td>Obstetrics (66G)</td>
<td>13</td>
<td>5.778</td>
</tr>
<tr>
<td>Unclassified (66J)</td>
<td>49</td>
<td>21.778</td>
</tr>
<tr>
<td>Med/surgical (66H)</td>
<td>137</td>
<td>60.889</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>2.222</td>
</tr>
<tr>
<td><strong>Present Position</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Nurse</td>
<td>155</td>
<td>68.889</td>
</tr>
<tr>
<td>Team Leader</td>
<td>20</td>
<td>8.889</td>
</tr>
<tr>
<td>Head Nurse</td>
<td>40</td>
<td>17.778</td>
</tr>
<tr>
<td>Supervisor</td>
<td>10</td>
<td>4.444</td>
</tr>
</tbody>
</table>
The five variables that were related to the work environment were months assigned to the unit, the type of nursing used to organize the work load, shift worked, nurse/patient ratio, and the number of patients assigned per shift. The distribution for the responses to these work environment variables are reported in figure 7. In response to the request to identify how many months the nurse had been assigned to the unit, one hundred and forty nurses (sixty-two percent) reported twelve months or less, forty (eighteen percent) said twelve to eighteen months, and the other forty-five (twenty percent) had been in their current assignment for more than eighteen months. When asked to identify the type of nursing used to organize the patient work load on their units, 109 respondents (forty-eight percent) identified team nursing, fifty-four (twenty four percent) reported they practiced primary nursing, forty-two (nineteen percent) used the functional approach, and twenty (nine percent) were unsure or believed they were using some other type of nursing.

Ninety-six nurses (forty-three percent) reported that the shift in which they had worked at least fifty percent of the time during the last month was days; fifty-eight (twenty-six percent) of the nurses answered they had worked
evenings; and thirty-nine (seventeen percent) reported they had worked nights. The other thirty-two (fourteen percent) nurses reported that they had worked an equal distribution among the shifts. They answered that the average ratio of registered nurses to the number of patients on each of their shifts was greater than one to six patients. Only ninety-eight nurses (forty-four percent) reported a ratio of one nurse to six or less patients. The average number of patients per shift was five to six patients; however, ninety-four nurses (forty-one percent) reported having been assigned more than nine patients per shift. Twenty-six respondents (twelve percent) indicated that they had not taken a patient assignment more than half of the time during the past month.

The scores from the three instruments, the Nursing Process Attitude Scale (NPAS), the Nursing Manager's Rating Form, and the Nursing Process Audit Instrument were also summarized by the use of descriptive statistics. A discussion of the findings from each of the instruments and the corresponding tables are provided to set the foundation for the statistical evaluations which will be used to test the hypotheses in the study.
## Table 7
### Professional Independent Variables
#### Frequency and Percentage (Work Environment)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Mean</th>
<th>% Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Months Assigned</td>
<td>9.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-2</td>
<td>50</td>
<td>22.222</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>26</td>
<td>11.556</td>
<td></td>
</tr>
<tr>
<td>5-6</td>
<td>13</td>
<td>5.778</td>
<td></td>
</tr>
<tr>
<td>7-12</td>
<td>51</td>
<td>22.667</td>
<td></td>
</tr>
<tr>
<td>13-18</td>
<td>40</td>
<td>17.778</td>
<td></td>
</tr>
<tr>
<td>19+</td>
<td>45</td>
<td>20.000</td>
<td></td>
</tr>
<tr>
<td>Type Nursing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>primary</td>
<td>54</td>
<td>24.000</td>
<td></td>
</tr>
<tr>
<td>functional</td>
<td>42</td>
<td>18.667</td>
<td></td>
</tr>
<tr>
<td>team</td>
<td>109</td>
<td>48.444</td>
<td></td>
</tr>
<tr>
<td>unsure</td>
<td>8</td>
<td>3.556</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>12</td>
<td>5.333</td>
<td></td>
</tr>
<tr>
<td>Shift 50% Time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>days</td>
<td>96</td>
<td>42.667</td>
<td></td>
</tr>
<tr>
<td>evenings</td>
<td>58</td>
<td>25.778</td>
<td></td>
</tr>
<tr>
<td>nights</td>
<td>39</td>
<td>17.333</td>
<td></td>
</tr>
<tr>
<td>combination</td>
<td>32</td>
<td>14.222</td>
<td></td>
</tr>
<tr>
<td>Ratio RN/patients</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:2 or 3</td>
<td>53</td>
<td>23.556</td>
<td></td>
</tr>
<tr>
<td>1:4 or 5</td>
<td>30</td>
<td>13.333</td>
<td></td>
</tr>
<tr>
<td>1:6</td>
<td>15</td>
<td>6.667</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>127</td>
<td>56.444</td>
<td></td>
</tr>
<tr>
<td>Patients per Shift</td>
<td>5.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>26</td>
<td>11.556</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>58</td>
<td>25.778</td>
<td></td>
</tr>
<tr>
<td>3-4</td>
<td>26</td>
<td>11.556</td>
<td></td>
</tr>
<tr>
<td>5-8</td>
<td>21</td>
<td>9.333</td>
<td></td>
</tr>
<tr>
<td>9+</td>
<td>94</td>
<td>41.333</td>
<td></td>
</tr>
</tbody>
</table>
The score, range, means and other descriptive statistics from the total scores on the NPAS and the six subscales are reported in Table 8. A five-point Likert scale followed each of the forty-five statements on the NPAS which meant that the range of possible scores could be from a minimum of forty-five to a maximum of 225-points. The mean of the NPAS was 175 with a range of 100 to 223-points.

Table 8
Scores, Ranges, Standard Deviation & Standard Error of Means for the NPAS and the Five Subscales

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible range</th>
<th>Min value</th>
<th>Max value</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std. Error of means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total NPAS</td>
<td>45-225</td>
<td>100</td>
<td>223</td>
<td>175</td>
<td>21.30</td>
<td>1.400</td>
</tr>
<tr>
<td>Sub(1)</td>
<td>17-85</td>
<td>34</td>
<td>82</td>
<td>65</td>
<td>9.68</td>
<td>0.645</td>
</tr>
<tr>
<td>Sub(2)</td>
<td>11-55</td>
<td>20</td>
<td>55</td>
<td>41</td>
<td>6.51</td>
<td>0.434</td>
</tr>
<tr>
<td>Sub(3)</td>
<td>7-35</td>
<td>17</td>
<td>35</td>
<td>28</td>
<td>3.05</td>
<td>0.203</td>
</tr>
<tr>
<td>Sub(4)</td>
<td>5-25</td>
<td>12</td>
<td>25</td>
<td>20</td>
<td>2.60</td>
<td>0.173</td>
</tr>
<tr>
<td>Sub(5)</td>
<td>5-25</td>
<td>8</td>
<td>25</td>
<td>17</td>
<td>3.43</td>
<td>0.228</td>
</tr>
</tbody>
</table>

The descriptive statistics from the scores on the Nursing Manager's Form are reported in Table 9. The scores were obtained from a structured interview with the nurse
managers of each of the respondents. A five-point Likert scale was used to measure the responses of the managers to each of the six items on the Nursing Manager's Rating Form. During the interview, the nurse manager was asked to rate the subject's nursing process abilities and documentation skills. The mean obtained from the sample of nurses was twenty four. The range of possible scores on the instrument was between six and thirty-points.

Table 9

Scores, Range, Std. Deviation & Standard Error of Means for the Nursing Manager's Rating Form and Subscales

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible range</th>
<th>Min value</th>
<th>Max value</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std Error of mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>6-30</td>
<td>9</td>
<td>30</td>
<td>24</td>
<td>4.29</td>
<td>0.286</td>
</tr>
<tr>
<td>Sub(1)</td>
<td>3-15</td>
<td>4</td>
<td>15</td>
<td>12</td>
<td>2.23</td>
<td>0.148</td>
</tr>
<tr>
<td>Sub(2)</td>
<td>3-15</td>
<td>5</td>
<td>15</td>
<td>11</td>
<td>2.26</td>
<td>0.150</td>
</tr>
</tbody>
</table>

Table 10 contains the descriptive statistics for the Nursing Process Audit Instrument. The thirty-six items on the instrument were selected from the two subscales of the Rush-Medicus methodology that pertained to the documentation of the nursing process. Their study determined that these were basic elements of the nursing process which should be
documented on every patient in a hospital. Points were awarded if the criteria were present on the patient's record. There were three possible values for each of the thirty-six items—zero, one, or two points. If the item was not found on the patient's record, no credit was given. One point was awarded for incomplete documentation, and two points were given if the item was fully documented. The range of possible scores was from zero to seventy-two, and the mean obtained from the subjects was fifty-four.

Table 10

Scores, Range, Std. Deviation & Standard Error of the Mean for the Nursing Process Audit Instrument

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible range</th>
<th>Min value</th>
<th>Max value</th>
<th>Mean</th>
<th>S.D.</th>
<th>Std Error of mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0-72</td>
<td>16</td>
<td>67</td>
<td>54</td>
<td>9.27</td>
<td>0.618</td>
</tr>
</tbody>
</table>

The use of descriptive statistics assisted with structuring a large amount of information into a systematic arrangement of numerical values, and provided the prerequisite for additional statistical procedures to test the hypotheses of this study. The purpose of the tables was to organize the data into frequencies, percentages, and other statistics to increase the visible organization of the
data. The average age of the research subject in this study was approximately thirty years old. The majority of the subjects were females who had graduated from a baccalaureate nursing program within the past six years. In addition, more of the subjects were married and held the military rank of lieutenant. The largest percentage of the nurses indicated they worked on a medical/surgical service, and they had been assigned to their units for one year or less. The majority of the nurses worked on the day shift. In general, most of the respondents practiced team nursing and were assigned an average of five or six patients.

**Findings for Hypothesis One**

This research sought to determine whether selected personal and professional characteristics of the subjects would have an effect upon the nursing process attitude scores. Hypothesis One stated that there would be no significant difference between each of the identified personal variables of the subjects and their scores on the Nursing Process Attitude Scale. The four personal variables that were identified by the use of a personal data form were gender, age, marital status, and military rank. The percentages and frequencies of each of the values of these
variables are found in Table 3. An analysis of variance was used to test this null hypothesis. The results of the statistical analysis of the NPAS scores and the four personal variables are presented in Table 11.

None of the personal variables were found to have a significant effect upon the scores on the NPAS although the significance probability for gender and rank were 0.0653 and 0.066 respectively. There were no significant differences at the $p<.05$ level found among the four personal variables. For this reason, the decision was made to fail to reject Hypothesis One. The selected personal variables did not significantly affect the scores on the NPAS.

| Table 11 |
| Results of ONEWAY ANOVA on the Scores of the NPAS by gender, age, marital status, and rank |
|-------------------------|------|-------|-------|---------|-------------|
| Gender                  | 1    | 1480.14 | 1480.14 | 3.43 | 0.065  |
| Marital status          | 3    | 2074.03 | 691.34 | 1.60 | 0.189 |
| Age                     | 7    | 2431.94 | 347.42 | 0.79 | 0.596 |
| Rank                    | 4    | 3816.05 | 954.01 | 2.24 | 0.066 |
Findings for Hypothesis Two

Hypothesis Two addressed the question whether the scores on each of the five subscales of the NPAS would be affected by the personal variables of the subjects. The hypothesis stated there would be no significant difference between the scores on the NPAS and the four personal variables (gender, age, marital status, and military rank). An analysis of variance was used to test the hypothesis. The subscales of the NPAS were assigned descriptive titles as follows: Subscale One (value statements), Subscale Two (direct benefits), Subscale Three (techniques), Subscale Four (long range outcome), and Subscale Five (administration).

Table 12 contains the results of a ONEWAY ANOVA between the NPAS scores and the gender of the respondents. The gender of the subject was found to be significantly different from the scores on Subscale One (the value of the nursing process). The mean scores of the fifty-one males were not as high as the scores for the 174 females. The mean on Subscore One for the males was 61.57, and it was 66.02 for the females. Although gender did not show a significant difference on the total NPAS score (0.06), there was a difference on the first subscale.
Table 12
Results of ONEWAY ANOVA on the Scores of NPAS Subscales (1-5) by Gender

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub(1)</td>
<td>1</td>
<td>377.88</td>
<td>4.85</td>
<td>0.0293 ***</td>
</tr>
<tr>
<td>Sub(2)</td>
<td>1</td>
<td>43.23</td>
<td>1.06</td>
<td>0.3050</td>
</tr>
<tr>
<td>Sub(3)</td>
<td>1</td>
<td>10.00</td>
<td>1.14</td>
<td>0.2874</td>
</tr>
<tr>
<td>Sub(4)</td>
<td>1</td>
<td>2.13</td>
<td>0.32</td>
<td>0.5709</td>
</tr>
<tr>
<td>Sub(5)</td>
<td>1</td>
<td>0.23</td>
<td>0.02</td>
<td>0.8936</td>
</tr>
</tbody>
</table>

*** p < 0.05

Table 13 contains the report of the results of an analysis of variance between the personal variable, marital status, and the five subscales of the NPAS. There were four values for marital status—single, married, divorced, and separated.

The only subscale that was significantly affected by marital status was Subscale One (value of the nursing process). Although the scores on the total NPAS were not significantly affected by the marital status of the subjects, whether the subject was single (82 nurses) or married (114 nurses) significantly affected the scores on the first subscale score (p < 0.045). The Scheffé a posteriori
test was used to measure the possible linear combinations of group means on the subscales that reached significance at the 0.05 level. Witte suggested that a Scheffe test be used to evaluate the difference between any pairs of group means should it appear that the overall null hypothesis may be rejected. The Scheffe test identified the difference made by the marital status as being significant at the 0.05 level for the single and married subjects.

Table 13

Results of ONEWAY ANOVA on the NPAS Subscales (1-5) by Personal Variable (Marital Status)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub(1)</td>
<td>3</td>
<td>638.76</td>
<td>2.73</td>
<td>0.045 ***</td>
</tr>
<tr>
<td>Sub(2)</td>
<td>3</td>
<td>53.87</td>
<td>0.44</td>
<td>0.728</td>
</tr>
<tr>
<td>Sub(3)</td>
<td>3</td>
<td>5.98</td>
<td>0.23</td>
<td>0.876</td>
</tr>
<tr>
<td>Sub(4)</td>
<td>3</td>
<td>27.91</td>
<td>1.41</td>
<td>0.242</td>
</tr>
<tr>
<td>Sub(5)</td>
<td>3</td>
<td>7.72</td>
<td>0.20</td>
<td>0.894</td>
</tr>
</tbody>
</table>

*** (p 0.05), Scheffe significant at 0.05 level

An analysis of variance was performed between each of the five subscales of the NPAS and the personal variable, age. Table 14 contains the results of the ONEWAY ANOVA.
Table 15 contains the report of the results of a ONEWAY ANOVA between each of the five subscales of the Nursing Process Attitude Scale and the military rank of the Army nurses. Forty-nine percent of the group were lieutenants, thirty-six percent were captains, and fifteen percent were majors.

Table 14
Results of ONEWAY ANOVA on the NPAS Subscales (1-5) by Personal Variable (Age)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub(1)</td>
<td>7</td>
<td>173.92</td>
<td>0.32</td>
<td>0.943</td>
</tr>
<tr>
<td>Sub(2)</td>
<td>7</td>
<td>304.63</td>
<td>1.07</td>
<td>0.388</td>
</tr>
<tr>
<td>Sub(3)</td>
<td>7</td>
<td>89.30</td>
<td>1.45</td>
<td>0.188</td>
</tr>
<tr>
<td>Sub(4)</td>
<td>7</td>
<td>93.45</td>
<td>2.02</td>
<td>0.056</td>
</tr>
<tr>
<td>Sub(5)</td>
<td>7</td>
<td>32.41</td>
<td>0.36</td>
<td>0.923</td>
</tr>
</tbody>
</table>

The age of the respondents did not produce significant differences on any of the subscales of the NPAS. The difference on Subscale Four (techniques) of the NPAS was 0.056, but failed to meet the preset 0.05 level of acceptance.
Table 15

Results of ONEWAY ANOVA on the NPAS Subscale (1-5) by Personal Variable (Rank)

<table>
<thead>
<tr>
<th>Subscale</th>
<th>D.F</th>
<th>S.S.</th>
<th>F value</th>
<th>Sign. Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub(1)</td>
<td>4</td>
<td>497.62</td>
<td>1.60</td>
<td>0.178</td>
</tr>
<tr>
<td>Sub(2)</td>
<td>4</td>
<td>283.17</td>
<td>1.74</td>
<td>0.145</td>
</tr>
<tr>
<td>Sub(3)</td>
<td>4</td>
<td>26.50</td>
<td>0.76</td>
<td>0.556</td>
</tr>
<tr>
<td>Sub(4)</td>
<td>4</td>
<td>61.91</td>
<td>2.34</td>
<td>0.058</td>
</tr>
<tr>
<td>Sub(5)</td>
<td>4</td>
<td>35.01</td>
<td>0.68</td>
<td>0.606</td>
</tr>
</tbody>
</table>

Whether a nurse were a lieutenant, captain, or a major did not significantly affect the scores of the responses to the statements on any of the subscales. Subscale Four (long range outcome of the nursing process) and military rank produced a probability score of 0.058.

Of the twenty possible combinations of variables in Hypothesis Two, only two of the personal variables were found to significantly affect the scores on the first subscale of the five subscales of the NPAS. There was a significant statistical difference between the gender of the respondent and the score obtained on Subscale One (value statements). A significant difference at the 0.05 level was also found between the personal variable, marital status and
Subscale One. A Scheffe procedure was used to evaluate all comparisons among the levels or choices of the marital status item, and a significant difference at the 0.05 was found for the responses of the single and the married nurses. The results of the testing of Hypothesis Two were mixed, but because of the overwhelming number of possible combinations of the variables which were not found to be significant, the decision led to a failure to reject Hypothesis Two.

Findings for Hypothesis Three

Hypothesis Three addressed the question of whether the selected professional variables had a significant effect upon the scores on the Nursing Process Attitude Instrument. The hypothesis stated that there will be no significant difference between the scores on the NPAS and a set of fifteen professional variables. These variables were categorized into four areas—nursing education and experience, professional activities, specialty and position, and work environment. An analysis of variance was used to test each of the fifteen professional variables contained within the four categories. A Scheffe test was employed whenever a significance occurred between any of the
variables. Table 16 contains the statistical results for the professional variables, education and experience.

Table 16

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Program</td>
<td>3</td>
<td>3463.52</td>
<td>1154.51</td>
<td>2.71</td>
<td>0.0453 ***</td>
</tr>
<tr>
<td>Years agoGraduated</td>
<td>7</td>
<td>8657.15</td>
<td>1236.73</td>
<td>3.01</td>
<td>0.0049 ***</td>
</tr>
<tr>
<td>Highest Degree</td>
<td>2</td>
<td>2180.32</td>
<td>1090.16</td>
<td>2.53</td>
<td>0.0816</td>
</tr>
<tr>
<td>Years since Highest Degree</td>
<td>7</td>
<td>6881.36</td>
<td>983.05</td>
<td>2.35</td>
<td>0.0248 ***</td>
</tr>
<tr>
<td>Years in Nursing</td>
<td>7</td>
<td>6325.26</td>
<td>903.60</td>
<td>2.15</td>
<td>0.0399 ***</td>
</tr>
</tbody>
</table>

*** p < 0.05, Scheffé not significant

There was a significant difference between the basic nursing program attended by the subjects and the scores on the NPAS. The Scheffé test did not reveal any comparisons for the values within the groups which varied significantly from the others.

The number of years since graduating from the basic nursing program significantly affected the scores on the Nursing Process Attitude Scale. The results of the Scheffé
test did not identify any of the specific years within the variable to be significant at the 0.05 level.

The highest degree earned by the subject did not significantly affect the total score on the Nursing Process Attitude Scale. Although the mean of those with a master's degree (N=27) was higher than those with a baccalaureate degree (N=198), the ONEWAY ANOVA did not show the difference to be statistically significant.

The years since earning their highest degree did have a significant effect upon the NPAS scores. While there appeared to be large mean differences among certain groups, the Scheffe test did not find the differences among the levels of the variable to be significant at the 0.05 level.

The variable, years of nursing experience, significantly affected the scores on the NPAS. Although the results indicated that there were considerable differences among the means of the different levels of the variable, the Scheffe did not find the differences to be significant at the 0.05 level.

The results of the effect of the professional activities of the subjects on the scores of the NPAS are shown in Table 17. These activities were identified as the subject's membership in nursing organizations, nursing research activities, and nursing publications.
Table 17

Results of ONEWAY ANOVA on the NPAS Score and Professional Variables (Professional Activity)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization</td>
<td>5</td>
<td>2519.54</td>
<td>503.90</td>
<td>1.16</td>
<td>0.3298</td>
</tr>
<tr>
<td>Research Roles</td>
<td>4</td>
<td>2956.98</td>
<td>739.24</td>
<td>1.72</td>
<td>0.1472</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>2237.80</td>
<td>745.93</td>
<td>1.73</td>
<td>0.1605</td>
</tr>
</tbody>
</table>

There were no differences found between the nurse's membership in professional organizations and the scores on the NPAS. Nor did the nurses' activities regarding research and publishing in the nursing literature have a significant effect on the NPAS scores.

The results of the ONEWAY ANOVA between the scores on the NPAS and the professional variables, specialty and position are reported in Table 18. Examples of the levels of the variable, clinical specialty, were pediatrics, obstetrics, and medical surgical nursing. Examples of nursing positions were head nurse, staff nurse, and supervisor.
Table 18
Results of ONEWAY ANOVA on the NPAS Score and Professional Variables (Specialty & Position)

<table>
<thead>
<tr>
<th>Variable</th>
<th>D.F</th>
<th>S.S.</th>
<th>M.S.</th>
<th>F value</th>
<th>Sign. Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialty</td>
<td>4</td>
<td>904.29</td>
<td>226.07</td>
<td>0.51</td>
<td>0.725</td>
</tr>
<tr>
<td>Positions</td>
<td>4</td>
<td>1589.38</td>
<td>397.34</td>
<td>0.91</td>
<td>0.459</td>
</tr>
</tbody>
</table>

The clinical specialty or the position occupied by the nurse in this study did not significantly affect the scores on the NPAS. Sixty-one percent of the sample were medical/surgical nurses (N=137). Seventy-eight percent of the nurses functioned in positions as staff nurses or team leaders (N=175).

A ONEWAY ANOVA was performed between the variables associated with the work environment and the scores on the NPAS. The results of the statistical analyses are reported in Table 19. These variables were the following: the months assigned to the unit, the type of nursing used to organize the patient work load, the shift worked by the subject fifty percent of the time during the last month, the ratio of registered nurses to patients, and the average number of patients assigned per shift.
Table 19

Results of ONEWAY ANOVA and the NPAS Score and Professional Variables (Work Environment)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Months assigned</td>
<td>5</td>
<td>1180.14</td>
<td>236.14</td>
<td>0.54</td>
<td>0.75</td>
</tr>
<tr>
<td>Type nursing</td>
<td>4</td>
<td>911.48</td>
<td>227.87</td>
<td>0.52</td>
<td>0.72</td>
</tr>
<tr>
<td>Shift 50% of time</td>
<td>3</td>
<td>2536.10</td>
<td>845.36</td>
<td>1.96</td>
<td>0.11</td>
</tr>
<tr>
<td>Ratio RN to patients</td>
<td>5</td>
<td>664.94</td>
<td>132.98</td>
<td>0.30</td>
<td>0.91</td>
</tr>
<tr>
<td>Patients per shift</td>
<td>6</td>
<td>3599.75</td>
<td>599.95</td>
<td>1.39</td>
<td>0.21</td>
</tr>
</tbody>
</table>

Table 19 contains the report from the analysis of variance of the scores on the NPAS and the variables clustered under the heading called work environment. None of the variables were found to have significantly affected the scores on the NPAS.

In summary, the results of the statistical analyses indicated there were differences among the scores on the NPAS and four variables from the cluster called education and experience—basic nursing program, years since completion of the basis program, years since obtaining the highest degree, and years of nursing experience. The other
professional variables—professional activities, specialty and position, and work environment did not significantly affect the attitude scores. The Scheffe analysis was not significant for any of the comparisons within the different levels of the education and experience variables and the scores on the NPAS. Of the fifteen possible combinations of variables in Hypothesis Three, only four variables were found to significantly affect the scores on the NPAS. Because the results were mixed, the decision was made to fail to reject Hypothesis Three. The results from the majority of the statistical combinations were not significantly different at the 0.05 level.

Findings for Hypothesis Four

Hypothesis Four addressed the question whether the fifteen professional variables had a significant effect on the scores of the five subscales of the Nursing Process Attitude Scale. The hypothesis stated that there will be no statistical difference between each of the identified professional variables and the scores on the subscales of the NPAS. An analysis of variance was used to test the hypothesis.
A ONEWAY ANOVA was used to test whether there was a significant difference between Subscale One and the fifteen professional variables earlier identified. Table 20 contains the results of the statistical analyses among these variables.

Table 20

Results of ONEWAY ANOVA on the Scores of the NPAS Subscale One (value) and Professional Variables

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic nursing</td>
<td>3</td>
<td>508.69</td>
<td>2.18</td>
<td>0.092</td>
</tr>
<tr>
<td>Years ago</td>
<td>7</td>
<td>427.44</td>
<td>0.78</td>
<td>0.603</td>
</tr>
<tr>
<td>Highest degree</td>
<td>2</td>
<td>658.36</td>
<td>4.23</td>
<td>0.016 ***</td>
</tr>
<tr>
<td>Years graduated</td>
<td>7</td>
<td>613.52</td>
<td>1.13</td>
<td>0.350</td>
</tr>
<tr>
<td>Years experience</td>
<td>7</td>
<td>468.43</td>
<td>0.86</td>
<td>0.541</td>
</tr>
<tr>
<td>Organizations</td>
<td>5</td>
<td>160.44</td>
<td>0.41</td>
<td>0.841</td>
</tr>
<tr>
<td>Research roles</td>
<td>3</td>
<td>112.13</td>
<td>0.48</td>
<td>0.700</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>378.00</td>
<td>1.62</td>
<td>0.186</td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>4</td>
<td>682.25</td>
<td>2.19</td>
<td>0.073</td>
</tr>
<tr>
<td>Position</td>
<td>3</td>
<td>297.78</td>
<td>1.27</td>
<td>0.285</td>
</tr>
<tr>
<td>Months assigned</td>
<td>3</td>
<td>549.26</td>
<td>2.35</td>
<td>0.073</td>
</tr>
<tr>
<td>Type nursing</td>
<td>4</td>
<td>594.65</td>
<td>1.91</td>
<td>0.112</td>
</tr>
<tr>
<td>Shift</td>
<td>3</td>
<td>549.26</td>
<td>2.35</td>
<td>0.073</td>
</tr>
<tr>
<td>Ratio RN/patients</td>
<td>5</td>
<td>393.05</td>
<td>1.01</td>
<td>0.415</td>
</tr>
<tr>
<td>Number patients</td>
<td>6</td>
<td>1464.01</td>
<td>3.13</td>
<td>0.006 ***</td>
</tr>
</tbody>
</table>

*** P < 0.05, Scheffé not significant

Table 20 contains the report of the results of a ONEWAY ANOVA with each of the subscales on the Nursing Process Attitude Scale and the professional variables determined.
that two of the professional variables differed significantly with Subscale One of the NPAS (value of the nursing process). One of the professional variables which significantly affected the scores on Subscale One of the NPAS was the highest nursing degree earned by the subject or whether the subject had a baccalaureate or a master's degree. The other professional variable which was determined to have significantly affected the scores on Subscale One was the average number of patients assigned to the nurse per shift during the past month. The Scheffe test did not determine that there were any significant differences within the values of each of the two variables.

An analysis of variance was performed to determine if there were any differences among the second subscale of the Nursing Process Attitude Scale (benefits of the nursing process) and the fifteen professional variables. The report of the statistical analysis between Subscale Two of the NPAS and the professional variables is documented on Table 21. Table 4 contains the report of the descriptive statistics for each of the values of the fifteen professional variables.

An analysis of variance was performed between all combinations of the scores on Subscale Three and the fifteen professional variables to determine if there were any
significant differences. Table 22 reports the results of the statistical analysis.

Table 21

Results of ONEWAY ANOVA of the scores on NPAS Subscale 2 (Benefits) and Professional Variables

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic nursing</td>
<td>3</td>
<td>202.35</td>
<td>1.65</td>
<td>0.178</td>
</tr>
<tr>
<td>Year ago</td>
<td>7</td>
<td>121.09</td>
<td>0.42</td>
<td>0.886</td>
</tr>
<tr>
<td>Highest degree</td>
<td>2</td>
<td>182.99</td>
<td>2.24</td>
<td>0.110</td>
</tr>
<tr>
<td>Years graduated</td>
<td>7</td>
<td>303.58</td>
<td>1.06</td>
<td>0.390</td>
</tr>
<tr>
<td>Years experience</td>
<td>7</td>
<td>166.89</td>
<td>0.58</td>
<td>0.769</td>
</tr>
<tr>
<td>Organizations</td>
<td>5</td>
<td>23.22</td>
<td>0.11</td>
<td>0.987</td>
</tr>
<tr>
<td>Research roles</td>
<td>3</td>
<td>67.20</td>
<td>0.55</td>
<td>0.653</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>216.08</td>
<td>1.77</td>
<td>0.154</td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>4</td>
<td>216.30</td>
<td>1.33</td>
<td>0.263</td>
</tr>
<tr>
<td>Position</td>
<td>3</td>
<td>174.12</td>
<td>1.42</td>
<td>0.237</td>
</tr>
<tr>
<td>Months assigned</td>
<td>3</td>
<td>69.26</td>
<td>0.57</td>
<td>0.642</td>
</tr>
<tr>
<td>Type nursing</td>
<td>4</td>
<td>178.15</td>
<td>1.09</td>
<td>0.363</td>
</tr>
<tr>
<td>Shift</td>
<td>3</td>
<td>69.26</td>
<td>0.57</td>
<td>0.642</td>
</tr>
<tr>
<td>Ratio RN/patients</td>
<td>5</td>
<td>247.14</td>
<td>1.21</td>
<td>0.306</td>
</tr>
<tr>
<td>Number patients</td>
<td>6</td>
<td>254.01</td>
<td>1.04</td>
<td>0.403</td>
</tr>
</tbody>
</table>

There were no significant differences found between the scores on Subscale Two of the NPAS (benefits) and the fifteen professional variables.
Table 22
Results of ONEWAY ANOVA on the Scores of NPAS Subscale 3 (Techniques) and Professional Variables

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic nursing</td>
<td>3</td>
<td>18.73</td>
<td>0.71</td>
<td>0.550</td>
</tr>
<tr>
<td>Year ago</td>
<td>7</td>
<td>39.00</td>
<td>0.64</td>
<td>0.727</td>
</tr>
<tr>
<td>Highest degree</td>
<td>2</td>
<td>51.17</td>
<td>2.92</td>
<td>0.057</td>
</tr>
<tr>
<td>Years graduated</td>
<td>7</td>
<td>28.95</td>
<td>0.47</td>
<td>0.854</td>
</tr>
<tr>
<td>Years experience</td>
<td>7</td>
<td>25.71</td>
<td>0.42</td>
<td>0.889</td>
</tr>
<tr>
<td>Organizations</td>
<td>5</td>
<td>37.65</td>
<td>0.86</td>
<td>0.512</td>
</tr>
<tr>
<td>Research roles</td>
<td>3</td>
<td>29.91</td>
<td>1.14</td>
<td>0.336</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>13.32</td>
<td>0.51</td>
<td>0.682</td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>4</td>
<td>26.93</td>
<td>0.77</td>
<td>0.548</td>
</tr>
<tr>
<td>Position</td>
<td>3</td>
<td>28.88</td>
<td>1.10</td>
<td>0.353</td>
</tr>
<tr>
<td>Months assigned</td>
<td>3</td>
<td>31.04</td>
<td>1.18</td>
<td>0.319</td>
</tr>
<tr>
<td>Type nursing</td>
<td>4</td>
<td>10.13</td>
<td>0.29</td>
<td>0.884</td>
</tr>
<tr>
<td>Shift</td>
<td>6</td>
<td>31.04</td>
<td>1.18</td>
<td>0.319</td>
</tr>
<tr>
<td>Ratio RN/patients</td>
<td>5</td>
<td>43.32</td>
<td>0.99</td>
<td>0.428</td>
</tr>
<tr>
<td>Number patients</td>
<td>6</td>
<td>-68.08</td>
<td>1.29</td>
<td>0.264</td>
</tr>
</tbody>
</table>

The results of the statistical analysis reported on Table 22 do not show that the scores of Subscale Three (techniques) of the NPAS were significantly affected by the fifteen professional variables. Whether the subject had a master's degree or not has a significance probability of 0.057, but that is greater than the preset 0.05 level for acceptance.
An analysis of variance was performed between Subscore Four (outcomes of the nursing process) and the fifteen professional variables. The results of the statistical analysis are reported in Table 23.

Table 23

Results of ONEWAY ANOVA on the Scores of NPAS Subscale 4 (Outcome) and Professional Variables

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic nursing</td>
<td>3</td>
<td>10.36</td>
<td>0.52</td>
<td>0.671</td>
</tr>
<tr>
<td>Year ago</td>
<td>7</td>
<td>28.59</td>
<td>0.62</td>
<td>0.742</td>
</tr>
<tr>
<td>Highest degree</td>
<td>2</td>
<td>1.16</td>
<td>0.09</td>
<td>0.915</td>
</tr>
<tr>
<td>Years graduated</td>
<td>7</td>
<td>38.85</td>
<td>0.84</td>
<td>0.558</td>
</tr>
<tr>
<td>Years experience</td>
<td>7</td>
<td>21.20</td>
<td>0.46</td>
<td>0.864</td>
</tr>
<tr>
<td>Organizations</td>
<td>5</td>
<td>18.10</td>
<td>0.55</td>
<td>0.742</td>
</tr>
<tr>
<td>Research roles</td>
<td>3</td>
<td>42.55</td>
<td>2.14</td>
<td>0.096</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>8.18</td>
<td>0.41</td>
<td>0.747</td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>4</td>
<td>42.80</td>
<td>1.62</td>
<td>0.173</td>
</tr>
<tr>
<td>Position</td>
<td>3</td>
<td>48.23</td>
<td>2.43</td>
<td>0.066</td>
</tr>
<tr>
<td>Months assigned</td>
<td>3</td>
<td>11.23</td>
<td>0.57</td>
<td>0.642</td>
</tr>
<tr>
<td>Type nursing</td>
<td>4</td>
<td>14.71</td>
<td>0.56</td>
<td>0.694</td>
</tr>
<tr>
<td>Shift</td>
<td>3</td>
<td>11.23</td>
<td>0.57</td>
<td>0.642</td>
</tr>
<tr>
<td>Ratio RN/patients</td>
<td>5</td>
<td>25.14</td>
<td>0.76</td>
<td>0.582</td>
</tr>
<tr>
<td>Number patients</td>
<td>6</td>
<td>22.52</td>
<td>0.57</td>
<td>0.755</td>
</tr>
</tbody>
</table>

None of the fifteen professional variables were found to significantly differ with the scores on the fourth subscale of the NPAS. However, the variable, position of the nurse, had a significance probability of 0.066.
An analysis of variance was used to determine whether there were any differences among the scores on NPAS Subscale Five (administrative responsibility) and the fifteen professional variables. Table 24 contains the report of the ONEWAY ANOVAs of the the Subscale Five of the NPAS and the fifteen professional variables.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic nursing</td>
<td>3</td>
<td>0.96</td>
<td>0.03</td>
<td>0.990</td>
</tr>
<tr>
<td>Year ago</td>
<td>7</td>
<td>60.60</td>
<td>0.67</td>
<td>0.695</td>
</tr>
<tr>
<td>Highest degree</td>
<td>2</td>
<td>4.87</td>
<td>0.19</td>
<td>0.827</td>
</tr>
<tr>
<td>Years graduated</td>
<td>7</td>
<td>56.35</td>
<td>0.63</td>
<td>0.734</td>
</tr>
<tr>
<td>Years experience</td>
<td>7</td>
<td>62.58</td>
<td>0.70</td>
<td>0.677</td>
</tr>
<tr>
<td>Organizations</td>
<td>5</td>
<td>7.74</td>
<td>0.12</td>
<td>0.985</td>
</tr>
<tr>
<td>Research Roles</td>
<td>3</td>
<td>27.05</td>
<td>0.70</td>
<td>0.555</td>
</tr>
<tr>
<td>Publications</td>
<td>3</td>
<td>24.38</td>
<td>0.63</td>
<td>0.599</td>
</tr>
<tr>
<td>Clinical specialty</td>
<td>4</td>
<td>100.19</td>
<td>1.95</td>
<td>0.105</td>
</tr>
<tr>
<td>Position</td>
<td>3</td>
<td>31.24</td>
<td>0.81</td>
<td>0.492</td>
</tr>
<tr>
<td>Months assigned</td>
<td>3</td>
<td>20.57</td>
<td>0.53</td>
<td>0.664</td>
</tr>
<tr>
<td>Type nursing</td>
<td>4</td>
<td>45.89</td>
<td>0.89</td>
<td>0.470</td>
</tr>
<tr>
<td>Shift</td>
<td>3</td>
<td>20.57</td>
<td>0.53</td>
<td>0.664</td>
</tr>
<tr>
<td>Ratio RN/patients</td>
<td>5</td>
<td>64.52</td>
<td>1.00</td>
<td>0.418</td>
</tr>
<tr>
<td>Number patients</td>
<td>6</td>
<td>75.15</td>
<td>0.98</td>
<td>0.444</td>
</tr>
</tbody>
</table>
There were no significant differences between the scores on Subscale Five of the NPAS and the fifteen professional variables.

The results of the ONEWAY ANOVAs with the five subscales of the NPAS and the fifteen professional variables resulted in there being only two of the variables to show a significant difference with one of the NPAS subscales. The variables were the highest degree earned and the average number of patients assigned per shift. These variables significantly affected the score on Subscale Three (techniques). A Scheffé test was performed, and the levels within each of the variables were not found to be significant. Because only two of the possible seventy-five combinations of the variables were found to be significant, the decision was made to fail to reject Hypothesis Four.

Findings for Hypothesis Five

Hypothesis Five was designed to answer the question whether there was a significant difference between the subscale scores on the NPAS and the two subscales of the Nurse Manager's Form. Table 25 contains the report of the data from the statistical analysis between the subscales of both instruments. The Nurse Manager's Rating Form contained
six evaluative statements concerning the subject and the nursing process. Three of the statements (Subscale One) evaluated the nurse's use of the nursing process, and three statements (Subscale Two) were about its documentation. The forty-five statements of the NPAS were clustered into the following five subscales: value of the nursing process, benefits of the nursing process, techniques, long range outcomes, and administration's responsibility toward the nursing process. An analysis of variance was employed to test the hypothesis which stated that there was no difference between the five subscales on the NPAS and the two subscales on the Nurse Manager's Rating Form.

Table 25

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total NPAS</td>
<td>1</td>
<td>13431.61</td>
<td>3.04</td>
<td>0.0001 ***</td>
</tr>
<tr>
<td>SubNPAS (1)</td>
<td>19</td>
<td>4892.29</td>
<td>3.28</td>
<td>0.0001 ***</td>
</tr>
<tr>
<td>SubNPAS (2)</td>
<td>19</td>
<td>1849.94</td>
<td>2.61</td>
<td>0.0005 ***</td>
</tr>
<tr>
<td>SubNPAS (3)</td>
<td>19</td>
<td>261.63</td>
<td>1.55</td>
<td>0.0725</td>
</tr>
<tr>
<td>SubNPAS (4)</td>
<td>19</td>
<td>201.24</td>
<td>1.66</td>
<td>0.0452 ***</td>
</tr>
<tr>
<td>SubNPAS (5)</td>
<td>19</td>
<td>390.44</td>
<td>1.87</td>
<td>0.0176 ***</td>
</tr>
</tbody>
</table>

*** P < 0.05

The results of the analysis of variance between the score on the NPAS and the means of the Manager's Rating Form
was significant at the 0.0001 level. In addition, the results showed there to be a significant difference on four of the five subscales. The only subscale that was not significant was Subscale Three (techniques).

An analysis of variance was used to determine if there was a difference between the five subscales of the NPAS and Subscale One of the Nursing Manager's Form. Subscale One concerned the manager's perception of the nurse's value of the nursing process. The results of the statistical analyses are reported in Table 26.

Table 26

Results of ONEWAY ANOVA on the Scores of NPAS Subscales by Subscale One of Manager's Rating Form

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SubNPAS (1)</td>
<td>10</td>
<td>3798.09</td>
<td>4.72</td>
<td>0.0001 ***</td>
</tr>
<tr>
<td>SubNPAS (2)</td>
<td>10</td>
<td>959.82</td>
<td>2.41</td>
<td>0.0099 ***</td>
</tr>
<tr>
<td>SubNPAS (3)</td>
<td>10</td>
<td>127.53</td>
<td>1.39</td>
<td>0.1846</td>
</tr>
<tr>
<td>SubNPAS (4)</td>
<td>10</td>
<td>155.87</td>
<td>2.47</td>
<td>0.0082 ***</td>
</tr>
<tr>
<td>SubNPAS (5)</td>
<td>10</td>
<td>139.09</td>
<td>1.19</td>
<td>0.2983</td>
</tr>
</tbody>
</table>

*** P<0.05

The results of the comparison between the means of the subscales of the NPAS and Subscale One of the Manager's Rating Form showed that the scores on the Manager's Subscale One significantly affected three of the NPAS subscales. The three NPAS subscales contained the statements clustered
under the headings entitled value of the nursing process, benefits, and long range outcomes of the nursing process.

An analysis of variance was performed to compare the subscale scores on the NPAS and Subscale Two of the Nursing Manager's Rating Form. The results of the analyses are reported in Table 27. The Manager's Subscale Two was comprised of three statements concerning the subject's documentation of the nursing process.

Table 27

Results of ONEWAY ANOVA on the Scores of the NPAS and Subscales (1-5) by Subscore (2) on Manager's Form

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SubNPAS (1)</td>
<td>10</td>
<td>3430.27</td>
<td>4.18</td>
<td>0.0001 ***</td>
</tr>
<tr>
<td>SubNPAS (2)</td>
<td>10</td>
<td>1229.27</td>
<td>3.18</td>
<td>0.0008 ***</td>
</tr>
<tr>
<td>SubNPAS (3)</td>
<td>10</td>
<td>206.61</td>
<td>2.35</td>
<td>0.0118 ***</td>
</tr>
<tr>
<td>SubNPAS (4)</td>
<td>10</td>
<td>150.89</td>
<td>2.38</td>
<td>0.0109 ***</td>
</tr>
<tr>
<td>SubNPAS (5)</td>
<td>10</td>
<td>214.03</td>
<td>1.89</td>
<td>0.0480 ***</td>
</tr>
</tbody>
</table>

*** P < 0.05

The analysis of variance was significant for the five subscales of the NPAS and Subscale Two of the Manager's Rating Form. The nurse manager's evaluation of the documentation of the nursing process by the subjects was significantly affected the scores on the five subscales of the NPAS.
In summary, there were significant differences for four of the five subscales on the NPAS and the total score on the Manager's Rating Scale. The results also showed there to be differences between three of the NPAS subscales and the first subscale on the Manager's Form, and all of the NPAS subscales and the second subscale of the Manager's Form. In addition, the results of a TWO-WAY ANOVA between the scores on the NPAS Subscale One and Subscale Two of the Nursing Manager's Rating Form showed a significance of 0.0227. Because of these results, Hypothesis Five which stated there were no significant differences, was rejected.

Findings For Hypothesis Six

Hypothesis Six addressed the question whether the scores on the NPAS differed significantly with scores on the Nursing Process Audit Instrument. The null hypothesis stated that there would be no significant difference between the scores of the Nursing Process Attitude Scale and the scores on the Nursing Process Audit Form. Table 28 contains the results of the analysis of variance used to determine whether there was a significant difference between the two instruments.
Table 28

Results of ONEWAY ANOVA on the Scores of the NPAS by the Scores of the Audit Instrument

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NPAS Score</td>
<td>1</td>
<td>1192.92</td>
<td>3.04</td>
<td>0.0825</td>
</tr>
</tbody>
</table>

The results of the analysis of variance did not show an acceptable level of significance between the NPAS scores and the scores on the Audit Instrument. Hypothesis Six was accepted because a significant difference between the two instruments was not found.

Findings for Hypothesis Seven

Hypothesis Seven addressed the question whether the scores on the five subscales of the NPAS differed significantly with the scores on the Nursing Process Audit Instrument. The hypothesis stated that there will be no difference between the scores of the NPAS subscales and the Audit Instrument. A ONEWAY ANOVA between the combination of the variables was used to test the hypothesis. The results of the comparisons are presented in Table 29.
Table 29

Results of ONEWAY ANOVA on the Scores of the NPAS Subscales (1-5) by Nursing Process Audit Scores

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SubNPAS (1)</td>
<td>39</td>
<td>5431.76</td>
<td>1.65</td>
<td>0.0147 ***</td>
</tr>
<tr>
<td>SubNPAS (2)</td>
<td>39</td>
<td>2145.07</td>
<td>1.38</td>
<td>0.0805</td>
</tr>
<tr>
<td>SubNPAS (3)</td>
<td>39</td>
<td>375.18</td>
<td>1.04</td>
<td>0.4155</td>
</tr>
<tr>
<td>SubNPAS (4)</td>
<td>39</td>
<td>235.84</td>
<td>0.88</td>
<td>0.6755</td>
</tr>
<tr>
<td>SubNPAS (5)</td>
<td>39</td>
<td>462.02</td>
<td>1.01</td>
<td>0.4671</td>
</tr>
</tbody>
</table>

*** p 0.05

The results of the analysis of variance were that the scores of the Subscale One of the NPAS (value of the nursing process) were significantly affected by the scores on the Audit Instrument. Since the results involved mixed data and a significant difference was found on only one of the five subscales, the decision was made to fail to reject Hypothesis Seven.

Findings for Hypothesis Eight

Hypothesis Eight addressed the question whether there was a significant relationship among the scores of the two predictor variables, the Manager's Rating Form and the Nursing Process Audit Instrument, and the criterion variable, the Nursing Process Attitude Scale. The contribution of each variable to the prediction model is reported in Table 30. Multiple regression analysis was used
to test the hypothesis that stated there was no relationship among the three instruments. The findings from the multiple regression analysis are used to describe or predict the values of the NPAS in terms of the two independent variables.

Table 30

Results of Multiple Regression Analysis on the NPAS by Manager's Rating Form and the Audit Instrument

<table>
<thead>
<tr>
<th>Dependent Variable: 5S</th>
<th>SS</th>
<th>F value</th>
<th>PR&gt;F</th>
<th>R-square</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPAS</td>
<td>14624.53</td>
<td>18.65</td>
<td>0.0001</td>
<td>0.143</td>
</tr>
</tbody>
</table>

Parameter: Estimate T for HO: PR< IT1 Parameter=0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>T for HO: PR&lt; IT1 Parameter=0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>123.262</td>
<td>13.71 0.0001</td>
</tr>
<tr>
<td>Manager's Score</td>
<td>1.545</td>
<td>4.53 0.0001</td>
</tr>
<tr>
<td>Audit Score</td>
<td>0.275</td>
<td>1.74 0.0825</td>
</tr>
</tbody>
</table>

The results of the multiple regression analysis identified that the Manager's scores contributed significantly to the prediction of the NPAS scores (0.0001). The F value of 18.65 was the ratio produced by dividing the mean square (model) by the mean square (error). The model includes both the dependent and independent variables. The F value tested how well the model accounted for the behavior of the dependent variables. The resulting probability was
significant at the 0.0001 level. The R-square of 0.1438 was a measure for how much variation was accounted for by the model. The R-square indicated that fourteen percent of the variance was accounted for by the Nurse Manager's Form and by the Audit Instrument.

The t-test for the Manager's Form was 0.0001 which allowed that it contributed significantly to the model. The t-test of the Audit Instrument was 0.825, and therefore, did not significantly contribute to the model. Because one of the predictor variables, Manager's Rating Form, was found to be significant, the decision was made to reject Hypothesis Eight.

Findings for Ancillary Question One

Ancillary Question One asked whether it was possible to predict the scores on the NPAS on the basis of personal data and observations by significant others. A regression model was used to determine the answer to this question.

The values of the dependent variable, the NPAS scores, were described or predicted in terms of the nineteen personal and professional independent values. The results of a stepwise regression procedure showed that five of the personal and professional variables should be included in
the collection of independent variables for the regression model. The stepwise procedure served the purpose of eliminating those variables which did not have an F-statistic significant at the 0.15 level.

The results of the linear regression analysis conducted on the scores of the Manager's Rating Form, the Audit Instrument, and the five personal and professional variables demonstrated that four variables were predictive of the scores on the NPAS. These four variables were the Manager's Rating Form (t = 0.0001), the basic nursing program of the respondent (t = 0.0006), the military rank (t = 0.0012), and the research activities of the respondents (t = 0.01). The prediction equation for the scores on the NPAS would be:

\[
Y' = Constant - B(\text{marital}) - B(\text{Basic}) - B(\text{rank}) + B(\text{Research}) + B(\text{Pos})
\]

Marital status, basic nursing program, and rank had an effect of lowering the NPAS scores, while research roles and the nursing position had an effect of raising them.

**Ancillary Question Two**

Ancillary Question Two asked what amount of variance in the responses on the NPAS was accounted for by personal and professional variables, by the Nurse Manager's Rating Form, and the Nursing Process Audit Instrument. The R-square value
is a measure of how much variation in the dependent variable can be accounted for the model. The cumulative R-square for the five personal and professional variables retained by the stepwise regression analysis was 0.107 or eleven percent.

The results of the regression analysis showed that the Nurse Manager's Rating Form and the Audit Instrument contributed fourteen percent of the variance for the responses on the NPAS (See Table 31). The Manager's Rating Form accounted for thirteen percent and one percent was accounted for by the Audit Instrument. The total amount of variance accounted for by the seven variables was twenty-five percent.

Summary of Chapter Four

Chapter four was a presentation of the findings from the statistical analyses used to test the hypotheses and ancillary questions. Descriptive statistics were used to identify the frequencies and percentages of the personal and professional variables identified by a personal data form completed by the subjects. The means, standard deviations, standard error of the mean, and other measures of central tendency were reported on the scores of the three instruments and their subscales.
Two hundred and twenty-five nurses at six military hospitals completed the nursing research instrument. Since the nurses were assigned to duty shifts on a random basis, the selection of the three shifts during the data collection time produced a pool of 292 nurses which had characteristics that approached randomization. The 225 completed instruments represented a return rate of seventy-eight percent of the Army nurses performing nursing care on the wards of the six hospitals during the time of the study. The 225 subjects fell short of the 229 needed to meet a ninety percent confidence level. The effect of the four fewer responses did not seriously affect the level of confidence since the difference would have been changed by less than one percent. The results of the sample were deemed adequate to generalize to the population.

The term "personal variable" was used as a general descriptor and included the variables gender, marital status, age, and the military rank of the respondents. The term "professional variable" was used as a general descriptor and included the fifteen variables clustered under four groupings called nursing education and experience, professional activities, specialty and position, and work environment. The variables classified as nursing education and experience were the following--basic nursing
program completed, years since finishing the program, highest degree earned, years since completing the highest degree, and years of nursing experience. The professional activities included three variables—membership in professional organizations, research roles, and nursing publications. The heading called specialty and position included two variables—the clinical specialty of the nurse and the present position occupied (staff nurse, team leader, head nurse, or supervisor). The work environment variables were the following—months assigned to the unit, type of nursing used to organize work load, shift worked, nurse/patient ratio, and number of patients assigned per shift.

Hypothesis One stated that there would be no significant difference between each of the identified personal variables of the subjects and their scores on the NPAS. None of the personal variables were found to differ significantly, and there was a failure to reject the first hypothesis.

Hypothesis Two addressed the question of whether the scores on each of the five subscales of the NPAS would be affected by the personal variables of the subjects. Two of the variables (gender and marital status) did significantly affect the scores on the Subscale One of the NPAS (value of
the nursing process). The Scheffe procedure identified there to be a statistical difference between the scores of the single and the married nurses. The scores of the married nurses were significantly higher than those of the single nurses. These results were from mixed data, and since only two of a combination of twenty variables were significant, there was a failure to reject the null hypothesis.

Hypothesis Three stated that there would be no significant difference between the scores on the NPAS and a set of fifteen professional variables which were categorized into four headings—nursing education and experience, professional activities, specialty and position, and work environment. The results of the analysis of variance indicated that four of the five variables under the grouping called nursing education and experience significantly affected the scores on the NPAS (see Table 17). The Scheffe tests failed to categorize any of the sub-groups within the four professional variables. None of the other professional variables were found to be significantly different. Because only four of the fifteen professional variables were found to be significant, there was a failure to reject the null hypothesis.
Hypothesis Four stated that there would be no significant difference among the scores of the five subscales of the NPAS and the scores of the fifteen professional variables. The results of the ONEWAY ANOVAs resulted in there being only two of the variables (highest degree and number of patients assigned per shift) which significantly affected Subscale Three (techniques) of the NPAS. The Scheffe did not categorize any of the sub-groups within the two professional variables. Since only two of a possible seventy-five combinations were significant, there was a failure to reject the null hypothesis.

Hypothesis Five was designed to answer whether there was a difference between the five subscale scores on the NPAS and the two subscales on the Nurse Manager's Rating Form. The results of the analysis of variance showed there was a significance difference on four of the NPAS subscales and Subscale One of the Manager's Rating Form (see Table 27). All five subscales of the NPAS were significantly affected by Subscale Two of the Manager's Form. Because nine of the ten combinations of variables were found to be statistically significant, Hypothesis Five was rejected.

Hypothesis Six addressed the question whether the scores on the NPAS differed significantly with scores on the Nursing Process Audit Instrument. Because the analysis did
not show an acceptable significance level, there was a failure to reject the null hypothesis.

Hypothesis Seven stated that there would be no significant difference between the five subscores of the NPAS and the Audit Instrument. The results were that the scores on the first subscale (value of the nursing process) were significantly affected by the scores on the Audit Instrument. Since only one of the five subscales was affected by the Audit scores, there was a failure to reject the hypothesis.

Hypothesis Eight was designed to answer the question whether there was a significant relationship among the scores of the two predictor variables, Manager's Rating Form and the Audit Instrument, and the criterion variable, the Nursing Process Attitude Scale. The results of a regression analysis indicated that the Manager's Rating Form was significantly related to the NPAS, but the Audit Instrument was not. Because one of the two instruments was significantly related to the scores on the NPAS, the null hypothesis was rejected.

Ancillary Question One asked if it were possible to predict the scores on the NPAS on the basis of personal data as well as observations by significant others. The regression analysis of the nineteen personal and
professional variables indicated that four of the independent variables were predictive of the NPAS scores. Those variables were the Manager's Rating Form \( (t=0.0001) \), the basic program from which the nurse graduated \( (t = 0.006) \), the military rank \( (t = 0.0012) \), and the research roles held by the respondents \( (t = 0.01) \). Marital status, the basic program, and rank had the effect of lowering the scores on the NPAS, while research roles and the nursing position had an effect of raising them.

Ancillary Question Two asked what amount of variance could be accounted for by the nineteen personal and professional variables, by the Nurse Manager's Rating Form, and by the Nursing Process Audit Form. The regression analysis identified that eleven percent of the variance was accounted for by the personal and professional variables, and fourteen percent was accounted for by the Manager's Rating Form and the Audit Instrument. The R Square for the interaction of all of the independent variables was 0.245 or twenty-five percent of the variance.

Chapter five is the last chapter of the report and serves to summarize the first three chapters of this study. The chapter also provides a discussion of the conclusions for the findings in chapter four and the recommendations which have resulted from this research endeavor.
Notes


7. McCall, op. cit.
Chapter 5
Summary, Conclusions, and Recommendations

A summary of the first three chapters is presented to provide an overview of the research problem within its situational setting and with its derivative hypotheses and ancillary questions. This chapter also summarizes the findings from the analyses of the data documented in chapter four. Conclusions from the results of the analyses are discussed and the recommendations from the findings are presented.

Summary

This study focused on the problem that some Army nurses are not using and documenting the nursing process. Because of the association between attitude and behavior, the purpose of the study was to identify personal and professional variables which may affect the attitude of Army nurse toward the nursing process. The nursing process was defined as the name of a specific series of steps designed to result in professional nursing care. The four basic steps of the nursing process are the following: assessment, planning, intervention, and evaluation. The term "nursing
process" has come to mean a tool or model which provides direction for a logical, problem-solving approach to administering nursing care. While the nursing process reputedly has been widely endorsed by the profession, it has not achieved universal acceptance by practitioners in the field. Administrators in both the civilian sector and the military are concerned about the problem because the standards for the profession have been, in large measure, based upon the concepts of the model. Accreditation for practice and other evaluative means of measuring the quality of patient care are derived from the professional standards.

There are several theories from other disciplines which suggest a relationship to the nursing process because of the decision making and communication activities needed in using a model which directs human interactions. The theoretical and conceptual framework used in this study was based upon general systems theory, human needs and motivation theory, and the constructs underlying the nursing process.

General systems theory provided a broad foundation for viewing the nurse and the patient as subsystems of the larger hospital system. This social system can be seen as an entity composed of interrelated parts linked together which has mutual purpose and interdependency. The theory is
a useful framework for assisting the nurse and other members of the health team to think of the patient as an individual rather than a complex of different parts treated by various specialist. The nursing process with its components of assessing, planning, implementing, and evaluating is designed to serve as a unifying process to integrate the otherwise unconnected parts of the individual.

The concepts of Maslow's human need and motivation theory provide a useful framework for this study in which nurses' attitude about the nursing process were being studied. Maslow viewed man as an integrated, organized living system who is motivated toward meeting basic human needs. These needs are manifested as internal tensions which are expressed in the goal-directed behavior of the person, and the drive continues until satisfaction or freedom from those feelings is achieved. Basic to the theory is the idea that most basic needs must be reasonably satisfied before the person becomes interested in needs at the next highest level. Using these theoretical concepts, the type of nursing care administered and the interactive behaviors of the participants could better be understood if it were known which of the basic needs of the nurse and the patient were most urgent at a given time.
The nursing process was included as part of the theoretical and conceptual framework of this study because the model was the subject of this investigation. It is a construct built from a theoretical bases and uses many principles from other theories. The nursing process proposes a method for identifying patient problems, planning appropriate actions, implementing the plan of care, and evaluating the results of those plans. The steps of the nursing process are labeled in order to insure that nursing actions are carefully and deliberately pursued, but in reality, the steps cannot be separated. This systematic approach to nursing is called a process because as information is being collected, plans are being implemented, new information is being processed, and evaluation of the outcome of other actions are being made.

The following eight hypotheses and two ancillary questions were tested in the study:

1. There will be no significant difference between each of the identified personal variables of the subjects and their scores on the Nursing Process Attitude Scale (NPAS).

2. There will be no significant difference between each of the identified personal variables and the scores obtained on each of the five subscales of the NPAS.
3. There will be no significant difference between each of the identified professional variables of the subjects and the scores on the NPAS.

4. There will be no significant difference between each of the identified professional variables and the scores on the NPAS.

5. There will be no significant difference between the scores on the NPAS and the two subscales on the Nurse Manager's Rating Form.

6. There will be no significant difference between the scores on the NPAS and the Nursing Process Audit Form.

7. There will be no significant difference between the scores of the five subscales of the NPAS and the Nursing Process Audit Form.

8. There will be no significant relationship among the scores of the NPAS, the Manager's Rating Form, and the Nursing Process Audit Instrument.

Ancillary Question One asked whether it was possible to predict scores on the NPAS on the bases of personal data and observations by significant others. Ancillary Question Two asked what amount of variance in the responses on the NPAS was accounted for by personal and professional variables, by the Nurse Manager's Rating Form, and by the Nursing Process Audit Form.
Chapter two contained a review of the literature on the following topics: studies relative to the nursing process, attitude and attitude scale development, and nursing studies focusing on instrument development. The content from nursing process studies provided a substantial background for understanding the problems that led to the conduction of this study. The results and conclusions from past research provided a foundation upon which this study could be built. For example, one of the instruments used in this study, the Nursing Process Audit Instrument, was developed from a list of outcome criteria developed by the Rush-Medicus Quality Monitoring Methodology. In addition, the literature review which focused on the topics, attitude and the development of attitude instruments, contributed to the creation of the attitude scale used in this research and assisted with planning the design for the study.

Chapter three described the plans for accomplishing the purpose and testing the hypotheses of the study. The population to which the findings were to be generalized were all Army nurses administering nursing care to patients on the wards of military hospitals. Army nurses were thought to be more alike than not because they are a part of a fluid population which moves from one assignment to another as they are needed. The nurses have a minimum of a
baccalaureate degree, attend the same basic military courses, and adhere to the policies and regulations of a uniformed service. Approximately 1,887 (sixty three percent) of the 2,996 nurses assigned to the US Health Service Command constituted the population. A recent military study determined that sixty-three percent of the Army Nurse Corps were in staff nursing or first line supervisor positions, and these are the nurses who are providing direct patient care on the military wards.

Since there are over thirty Army hospitals located throughout the United States, a purposive sample of six study sites were selected. The sites were chosen because they were believed to be representative of the hospitals in the system. Two of the sites were large medical centers and the other four were community hospitals. The sites were located in North Carolina, Virginia, Maryland, Washington, DC, and Texas. There was diversity in the six sites due to their geographic location, the scope of the institution, the number of staff and patients, and the environment surrounding the institution.

Eight hundred and eleven Army nurses were assigned to the six hospitals. Using the sixty-three percent estimate mentioned earlier in this chapter, approximately 511 nurses were included in the selection pool for research subjects.
Since the nurses were assigned to duty shifts on a random basis, the selection of the three shifts during the data collection time produced a pool of 292 nurses which had characteristics that approached randomization. Each nurse was provided with a research packet, and two hundred and twenty-five nurses (return rate of seventy-eight percent) completed their surveys. To be able to generalize to a population of 1,887 nurses with a permissible error at the 0.05 level, a sample of 229 subjects were needed to assure a ninety percent confidence level. Although the sample was short by four nurses, the size was deemed adequate because the effect of four fewer responses would have changed the confidence level by less than one percent.

An exhaustive review of the nursing literature revealed that there were no instruments available which could measure the attitude of nurses toward the nursing process. An important task of this study was to develop and test the Nursing Process Attitude Scale. A panel of experts was selected to review the original 150-items for content or face validity. This process eliminated fifty of the original test items. The revised instrument was mailed to a random sample of 500 nurses located at every hospital assigned to US Health Service Command except for the six study sites. The results were subjected to a factor
analysis and only the items which factored at the 0.45 or
greater level were retained. Based on the results of the
factor analysis, the instrument was reduced to fifty-six
items (final communality estimate = 40.84), and mailed to
the second random sample of 280 nurses. A second factor
analysis with a varimax rotation resulted in the retention
of forty-five items (final communality estimate = 28.90)
which clustered into five subscales. This type of construct
validity is called factorial validity because the use of a
factor analysis is designed to produce results which measure
the same dimensions and are highly correlated to each
other.9

Two other instruments were developed to assist in the
establishment of criterion-related validity of the
instrument. A six-item Nurse Manager's Rating Form was used
to ascertain the perception of the manager in regard to the
subject's value and documentation of the nursing process.
The second instrument was a thirty-six item, Nursing Process
Audit Instrument which contained criteria for evaluating the
subject's documentation of the nursing process. Both of the
instruments were used to assist in determining the
predictive validity properties of the Nursing Process
Attitude Scale. In addition, a personal data form was
attached to the attitude instrument in which the respondent
was to identify the nineteen personal and professional characteristics used as independent variables in the study.

The data gathering procedures included a site visit where the researcher obtained a duty roster of all the Army nurses on duty during the data collection period. The researcher went to each ward where the nurses were assigned and gave the potential subjects their research packets. A time was established for the researcher to return and collect the completed questionnaire and to perform a chart audit on one of the subject's patient care records. The nurse manager of each of the subject was also approached and asked to participate in a structured interview in which the subject's nursing process activities were to be evaluated.

The research design used to test the hypotheses was a combination of a survey and a documentary approach to research and was an ex post facto co-relational design. Eight hypotheses and two ancillary questions were proposed concerning the relationships expected from the design. The first four null hypotheses were designed to test whether there were any significant difference between the scores on the attitude instrument or its subscales and the personal and professional variables. The next three hypotheses were constructed to test the significance between the scores on the attitude instrument and the scores on the two predictor
variables and their subscales. The eighth hypothesis tested whether there was a relationship among the three instruments used in the study. The first ancillary question was used to determine the predictive qualities of the Manager's Rating Form and the Audit Instrument on the scores of the Nursing Process Attitude Scale. The second ancillary question asked what amount of variance in the responses on the NPAS was accounted for by the personal and professional variables, the Manager's Rating Form, and the Audit Instrument.

All of the statistical tests were performed using Statistical Analysis System (SAS) programs. Descriptive statistics were used to identify the values of the dependent and independent variables of the study. To analyze the data, four statistical measures were employed—analysis of variance, the Scheffe procedure, stepwise regression, and multiple regression analysis. The ninety-five percent confidence level was chosen as the level at which the null hypotheses would be rejected.

Findings

The findings for this research were divided into eleven sections. The various sections were a presentation of the descriptive statistics of the sample and survey results, the
findings for the eight null hypotheses, and the findings for the two ancillary questions.

The first section described the characteristics of the subjects. The majority of the subjects were females (seventy-seven percent) and were married (fifty-one percent). Lieutenants comprised the largest group of the respondents (forty-nine percent). The largest age group selected by the nurses was between twenty-seven and thirty-three years (forty-three percent). Most of the subjects had graduated from a nursing program within the past six years (fifty-seven percent). Forty-eight percent of the subjects were not members of any professional organization and had not participated in research (eighty-two percent) or published in the nursing literature (ninety percent). In addition, most of the nurses functioned as staff nurses or team leaders (seventy-eight percent) on a medical/surgical unit (sixty-one percent) and practiced team nursing (forty-eight percent) while taking care of more than nine patients (forty-one percent).

The scores on the three instruments were relatively high. The range of possible scores on the Nursing Process Attitude Scale was 45-225 points with a group mean of 175 points. The range of possible scores which could be obtained on the Nursing Manager's Rating Form was 6-30
points, and a group mean of twenty-four points was obtained from the nurse managers. The possible scores on the Nursing Process Audit Instrument was 0-72 points. A mean score of fifty-four points was obtained from scores from an audit of the patient records of the group.

The findings for Hypothesis One revealed there was not a significant difference among the four personal variables of the subjects and the scores on the Nursing Process Attitude Scale (NPAS). The four variables were gender, age, marital status, and military rank. These findings resulted in a failure to reject Hypothesis One.

Hypothesis Two addressed the question whether the scores on each of the five subscales of the NPAS were significantly affected by the four personal variables. Two variables, marital status and gender, were found to significantly affect the scores on the first subscale (value) of the NPAS. The means for the married nurses were higher than those of the single nurses. The Scheffe test identified that the difference between the means obtained by the married nurses and the single nurses was significant. Since only two of the possible twenty combinations of the variables were found to be significant, there was a failure to reject the null hypothesis.
The findings for Hypothesis Three which stated that there were no differences between the scores on the NPAS and each of the fifteen professional variables indicated that four of the variables were significantly different. These four variables were classified under the heading, Education and Experience. The four variables were the basic nursing program completed by the subject, the years since graduation, the years since obtaining the highest degree, and the number of years of nursing experience. The Scheffe test failed to extract particular categories from the variables which varied from one another. Since only four of fifteen combinations of variables were found to significantly affect the scores on the NPAS, there was a failure to reject Hypothesis Three.

Hypothesis Four stated there would be no significant difference between the five subscales on the NPAS and the fifteen professional variables. The scores on Subscale Three of the NPAS (techniques) were significantly affected by two of the fifteen variables. These variables were the highest degree earned by the respondent and the number of patients usually assigned per shift. Only two of the seventy-five combinations of five subscales and fifteen professional variables were found to be significant. However, the Scheffe failed to extract particular categories
within the variables which varied from one another. The results of the analysis of variance led to a failure to reject the null hypothesis.

Findings from Hypothesis Five answered the question whether or not there was a significant difference between the five subscale scores on the NPAS and the two subscales on the Nurse Manager's Rating Form. The results indicated that three of the five NPAS subscales were significantly affected by the first subscale of the Manager's Form. The first subscale was the quantitative rating of the nurse manager's perception of the subject's value of the nursing process. All of the subscales on the NPAS were significantly affected by the second subscale of the Manager's Rating Form. The second subscale was the measure obtained from the nurse manager's perception of the documentation of the nursing process by the research subject. Eight of ten possible combinations of the five subscales of the NPAS and the two subscales of the Manager's Rating Form were found to be significant at the critical level of acceptance. The results of the statistical analyses led to the rejection of Hypothesis Five.

Hypothesis Six addressed the question of whether the scores on the NPAS were affected by the scores on the Nursing Process Audit Instrument. The results of the
analysis of variance did not show an acceptable level of significance between the two instruments. These findings resulted in a failure to reject the null hypothesis.

Hypothesis Seven tested whether the five subscales of the NPAS were significantly affected by the scores on the Audit Instrument. The results of an analysis of variance indicated that Subscale One of the NPAS (value of the nursing process) was significantly affected by the scores on the Audit Instrument. Since only one of five combinations of variables was significant, there was a failure to reject the null hypothesis.

Hypothesis Eight addressed the question whether there was a relationship among the scores on the NPAS and the two other instruments in the study, the Manager's Rating Form and the Audit Instrument. The results of a multiple regression analysis demonstrated that only the Manager's Rating Form was significantly related to the NPAS. Since one of the two instruments was found to be significantly related to the scores on the NPAS, the decision was made to reject the null hypothesis.

The findings from Ancillary Question One which asked whether it was possible to predict scores on the NPAS on the basis of personal data and observations by others were determined by a regression analysis. The results
demonstrated that four of the independent variables were predictive of the scores on the NPAS. These four variables were the Manager's Rating Form (t=0.0001), the basic nursing program completed by the nurses (t=0.0006), the military rank (t=0.0012), and the research roles assumed by the respondents (t=0.0105). Only four of the twenty-one independent variables were found to be predictive of the scores on the NPAS.

Ancillary Question Two asked what amount of variance in the responses on the NPAS was accounted for by the personal and professional variables, the Manager's Rating Form, and the Audit Instrument. A stepwise regression procedure was used to determine which of the variables would be retained for inclusion in the regression model. The results of regression analysis identified that eleven percent of the variance was accounted for by five of the personal and professional variables (basic nursing program, marital status, military rank, research roles, and the nursing position held). Fourteen percent of the variance was accounted for by the Manager's Rating Form and the Audit Instrument. The results of a linear regression indicated that the R Square for the interaction of the variables was 0.245, or twenty-five percent of the variance on the NPAS was accounted for by the seven independent variables.
Conclusions

The first conclusion which can be drawn from the examination of the findings is that a nursing process attitude instrument was developed which appears to have wide applicability in the Army Nurse Corps. The Nursing Process Attitude Scale has been field-tested through three separate iterations, and has demonstrated a significant amount of variance. The instrument has established content and construct validity. In addition, external validity was determined on the basis of personal data and the observations made by significant others. Because of these reasons and the use of sampling techniques, the instrument has potential utility among nursing administrators, educators, and researchers in the Army.

The scores on the three instruments were relatively high. The Nursing Process Attitude Scale has a possible range of scores from 45 to 225 points. The mean of the scores for the respondents in this study was 175 points. The range for the Nurse Manager's Rating Form was 6-30 with a mean score in this study of 24 points. The possible ranges on the Nursing Process Audit Instrument was 0-72, and a mean score of 54 points was obtained from the
respondents. The relatively high means could be a reflection that as a whole, Army nurses are above average in their use of the nursing process.

Conclusions can be drawn from the examination of the findings of Hypothesis Two which demonstrated that marital status and gender significantly affected the scores on the first subscale of the NPAS. Subscale One was comprised of value statements concerning the nursing process. The scores of the married females were significantly higher on this subscale than the rest of the group. Although nursing is predominantly a female occupation, gender roles cover a wide variety of behaviors and distinctions in style and manner. The explanation of marriage being a factor could have occurred not so much from being married as being a result of maturity. Nurses who were married had more nursing experience than those who were not. Other findings in the study demonstrated that nursing experience strongly influenced the scores on the NPAS.

A number of conclusions may be drawn from the findings for Hypothesis Three which indicated that four professional variables affected the scores on the NPAS. The four variables were clustered under the title, education and experience. The findings provided support that attitudes are molded by events and people, and as experiences
increase, the individual absorbs additional philosophies, social expectations, and traditions. Nunnally reported that attitudes constitute the core of a person's makeup and are reflected in opinions about issues, ideas, and events.

The findings indicated that the nursing process attitude scores were influenced by the nursing education and experience variables. Since the Scheffe test failed to extract particular categories of the sub-groups within those variables, it was not possible to identify what aspects of nursing education or what amount of experience made a difference in the scores.

There was a significant difference between two of the professional variables and the scores obtained on Subscale Three on the NPAS. Subscale Three contained statements clustered under the title, techniques. The two professional variables were the highest degree earned by the respondent and the number of patients usually assigned to the nurse per shift. Conclusions cannot be made what educational level or what number of patients made the difference because the Scheffe test did not identify that any of the categories of the sub-groups were significant.

The findings for Hypothesis Five which addressed whether there were differences between the scores on the five subscales of the NPAS and the Nurse Manager's Rating
Form showed that there were significant differences between the two instruments. Three of the subscales of the NPAS were significantly affected by the first subscale of the Manager's Rating Form, and all of the NPAS subscales were significantly affected by the second subscale of the Manager's Rating Form. These findings imply that the ratings by the nurse managers were closely related to the attitude scores on the NPAS. The managers were often the head nurses and occupied positions where they could observe patient care and the documentation of the care administered. The results provided evidence that the managers were able to accurately assess the use of the nursing process by their staff. This evaluation also assisted in the establishment of external validity for the NPAS. The results of a regression analysis indicated that the scores from the Manager's Rating Form contributed significantly to the prediction of the scores on the NPAS.

Hypothesis Six was accepted because the analysis of variance identified there was not a significant difference between the NPAS scores and the Audit scores. Neither did the results of the regression analysis indicate that the Audit Instrument was predictive of the scores on the NPAS. A reason why an audit of the subject's record may not have been statistically related was because the record was not
totally the work of one subject. The nursing care plan often was a composite of the ideas of a number of nurses working with the patient. Some of the units had overprints of routine nursing care plans placed on the records of patients with similar diagnoses, and audit credit had to be given even if the documentation may not have been that of the subject. The scores may have been more indicative of a team of nurses rather than that of the respondent. Auditing several records instead of one may have produced scores more indicative of the nurse's usual documentation patterns.

There was a failure to reject Hypothesis Seven because only one of the five subscales of the NPAS was found to have significantly affected the scores on the Audit Instrument. The scores of Subscale One (value of the nursing process) of the NPAS was significantly affected by the scores on the audit instrument. In general, the scores on the attitude instrument were not affected by the audit scores. The results from this study tended to support the contention that the nursing process is more than a written exercise. It was possible that the subjects may have had positive attitudes toward the nursing process, but may not have documented the results of their activities. Two studies mentioned in chapter one pointed out there were problems with the current nursing documentation forms in the Army.14
The current military forms have been criticized for directing the nursing actions rather than allowing for the thoughtful analysis implied by the nursing process and as a result, new forms are being tested for use in the Army.

In summary, conclusions were made that a nursing process attitude instrument was developed which has established validity and a significant amount of variance. In addition, findings from testing the instrument identified that four of the nineteen personal and professional variables affected the nursing process attitude scores. The four variables which had the most effect were clustered under the heading called nursing education and experience. Personal variables such as the gender and marital status of the respondent affected the scores on Subscale One (value) of the NPAS. The number of patients assigned to the nurse per shift and the highest educational level also significantly affected the scores on Subscale Three (techniques). One of the two instruments used in the study as a predictor variable, the Nursing Manager's Rating Form, was found to be useful in predicting the scores on the NPAS. Also, the significance found between the attitude scores and the Manager's Rating Form indicated that the nursing managers were able to accurately evaluate specific nursing process criteria relative to their staff. The Nursing
Process Audit Instrument was not found to be a predictor of the attitude scores. Conclusions from these findings were made that the NPAS does measure attitudes toward the nursing process, and therefore, has potential for contributing to the knowledge base of the nursing process.

**Recommendations**

This research has resulted in a nursing process attitude instrument which appears to have value for use by nursing administrators, educators, and researchers in the assessment of their staff nurses. The study identified that there is a major concern among administrators both in the Army and the civilian sector that the nursing process is either not being used and/or documented by some nurses. One of the factors influencing or determining the behavior could be the nurse's attitude toward the nursing process. There is ample documentation in the literature of the association of behavior with a person's attitude toward a social object. It is recommended that nursing administrators use the NPAS to obtain information from their staff nurses about their attitudes toward the nursing process. Edwards reported that under many circumstances, verbalized attitudes provide a more accurate indication of the feelings of
individuals than observation of their non-verbal behavior.\textsuperscript{17} The results of the survey would also be of interest to the educators and the researchers. The educators could plan programs, courses, seminars, or inservices in response to the scores while the researchers could use the attitude instrument in conjunction with other research instruments to obtain new knowledge.

Another recommendation is that further research be conducted to determine the effect of specific educational and experiential variables on the attitude of nurses toward the nursing process. This study demonstrated that the variables clustered under the heading called nursing education and experience significantly affected the attitude scores, but was not able to identify what specific categories of these variables caused the differences to occur. An additional study should examine why the basic nursing program, the military rank, and the research roles assumed by the respondents served as predictors of the NPAS scores. The personal data form should be revised to test these variables more completely.

Additional ways to measure the behavior of the nurses in relation to the nursing process should be used instead of the audit approach taken in this study. Statistical significance might have been found had the instrument been
used on the updated military forms and on more than one record for each subject. Another recommendation is that a method be established for evaluating the nursing care plan of the subject instead of the team. In addition, the Audit Instrument should be revised or replaced by another instrument. There is a paucity of research audit instruments, and the development of additional tools for evaluating and measuring nursing process documentation clearly stands out as a professional need.

In summary, the nursing process has achieved professional recognition as the framework for the practice of nursing. While this logical, problem-solving approach to patient care has been widely endorsed by the profession, it has not achieved universal acceptance by practitioners in the field. This study was designed to focus on one special problem area, namely the attitude of Army nurses toward the nursing process. If more is known about the attitude toward the nursing process, this information can be used in conjunction with other variables to explain and predict the reactions of the nurses toward the concept. Since an attitude instrument was not located in the nursing literature, an important task of this study was to develop and test the Nursing Process Attitude Scale. Variables related to the nursing education and experience were
determined to affect the attitude scores of the nurses
toward the nursing process. The findings from this study
and the availability of a valid research instrument have
opened the way for future research which has a potential for
contributing to the refinement of the nursing process and
the body of nursing science.
Notes


16. from interview with Martha Bell, Project Officer for the Revision and Testing of the Nursing Documentation Forms in the Army Nurse Corps, Health Care Studies at Health Service Command, Fort Sam Houston, Texas, February 1985.

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