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A DELPHI SURVEY TO IDENTIFY ACTIVITIES OF NURSE PRACTITIONERS IN PRIMARY CARE

by

LYGIA OWEN HOLCOMB

A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Science in Nursing in the School of Nursing in the Graduate School, The University of Alabama at Birmingham

BIRMINGHAM, ALABAMA

1996

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ABSTRACT OF DISSERTATION
GRADUATE SCHOOL, UNIVERSITY OF ALABAMA AT BIRMINGHAM

Degree D.S.N. Major Subject Adult Health Nursing

Name of Candidate Lygia Owen Holcomb

Title A Delphi Survey to Identify Activities of Nurse Practitioners in Primary Care

The practice activities of nurse practitioners (NPs) in primary care are not well delineated. Primary care NPs (n = 139) in a Southern state participated in a Delphi design study to identify the activities of their practices. Round 1: NP participants in four panels, representing the practice areas of pediatric (n = 12), family (n = 75), adult (n = 15), and women's health (n = 37), were mailed a questionnaire containing 114 activities. Panelists were asked to select a response--"Yes, I do this in my current practice," "No, I do not do this in my current practice," or "Sometimes, I do this but not routinely"--for the various activities. A demographic data sheet (nurse practitioner, patient, and health care system variables) was included. Round 2: panelists completing Round 1 (n = 131) were mailed a summary of their panel's results and asked to respond to 112 additional activities added in Round 1. Round 3: panelists completing Round 2 (n = 119) were mailed a summary of their panel's Round 2 results and asked to respond to 12 new activities added in Round 2. Panelists completing Round 3 (n = 107) were sent their

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panel's results. Using frequency analysis, 83 activities common to all NPs' practices were identified. Activities of specialty NP practice (n = 57) were identified using chi square (p = .05). No panelists reported using two of the activities, so they were deleted. Remaining activities were listed as other NP activities. NPs' activities (n = 236) were divided into 13 categories. Using regression analysis (p < .05), NP, patient, and health care system variables were found to correlate with the number of activities of NP practice. This study resulted in the development of three lists of activities of NP practice and initial analyses of variables which may influence practice. The results of this study can be useful to health care consumers choosing providers, legislators considering laws that govern professional practice, educators teaching NPs, employers of NPs, other health care professionals working with NPs, payers reimbursing for services, nurse theorists, and researchers attempting to define the boundaries of nursing practice and variables that influence practice.

Abstract Approved by: **Committee Chairman** Jeanette A. Grauer

Program Director Carol Dashiff

Date 9/27/96 **Dean of Graduate School** Joan S. Lorden

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I am indebted to the nurse practitioners who were panelists in the study. They provided the information and exhibited continuing interest in the study results.

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CHAPTER I

Introduction

Nurse practitioners (NPs) are effective, competent providers of primary care (Feldman, Ventura, & Crosby, 1987; Office of Technology Assessment [OTA], 1986). In the past 30 years, since the inception of the NP, NP practice has expanded, use of technology has increased, and the skills needed to provide health care have multiplied and increased in complexity (Ford, 1992; McGivern, 1993; Reichgott, Pearson, & Hill, 1983). Several studies have verified that primary care delivered by NPs is equivalent or superior to physician primary care in safety, cost effectiveness, and outcomes (Hall et al., 1990; OTA; Sox, 1979). However, there is little knowledge or documentation of about what NPs do as primary care providers. The activities of NPs in providing primary care have not been well delineated. The evolution of practice has been rapidly outstripping the knowledge gained in research from the 1970s and early 1980s. Older research cannot be relied on to describe current practice. It is important, to educators of NPs, employers, payers, and patients, to know what activities NPs engage in when providing primary care.

NP practice has expanded in scope since its inception in 1965. The first NP program was begun as a demonstration

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project, by a public health nurse and a pediatrician, who were professors at the University of Colorado. The purpose of the project was to study the possibility that nurses could be educated for an expanded role in child health care (Ford, 1992). Before the results of the project were even analyzed, the popularity of NP education was established. By the early 1970s, over 500 programs to educate NPs had sprung up in the United States (Garland & Marchione, 1982). Over the next 30 years, NP practice expanded from an initial role of well child screening and early detection and referral of health problems to the provision of health care to people of all ages with health states ranging from wellness to imminent death.

Lack of clarity about the abilities of NPs could rob the health care system of an effective, efficient provider through underutilization of NPs in health care (Sirles, Leeper, Northrup, & O'Rear, 1986). NPs are not just physician substitutes, suitable only for clients who cannot afford a doctor. Research indicates that NPs do "something special" and effective in primary care that needs to be identified (Molde & Diers, 1985; Sullivan, 1982). That "something" leads to higher adherence to diet, exercise, and appointment keeping; better control of hypertension and diabetes; improved patient knowledge of diagnosis and management plans; and greater patient satisfaction (Powers, Jalowiec, & Reichelt, 1984; Ramsey, McKenzie, & Fish, 1982; Sullivan, 1982). Billingsley and Harper (1982) theorized that "health behaviors, short-term strategies for risk

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reduction, fitness, self-care, health maintenance and disease prevention" (p. 22) characterized NP practice. Billingsley and Harper further stated that NP practice contained both curing (medical) and caring (nursing) components. In their view, NPs attempt to decrease a client's need for cure by increasing the client's abilities to appropriately care for self. The complexity of individualized nursing health care is not understood by physicians who claim that an NP should be able "to see 5 sore throats in an hour" (Billingsley & Harper, p. 30).

Overregulation can result from not clearly understanding the practice of NPs. The mistaken notion that NPs are just like doctors only with fewer years of education can lead to the belief that there is a need for stringent control of NP practice (e.g., second state licensure) ("National Council of State Boards of Nursing," 1995). Other examples of overregulation are individual institutions adopting lengthy processes for granting and monitoring advanced practice privileges (Smith, 1991b) and stringent criteria for NP practice (Price et al., 1992).

NPs have been studied extensively. However, most of the research is normed on medical practice, is outdated, neglects to report the process or activities of care, or surveys only the graduates of one NP program and thus is potentially biased and not generalizable.

The process of care by NPs is not revealed in many of the studies that compare physician and NP care. In these studies, the physician is used as the standard or criteria

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against which NP practice is measured. A literature review of NP effectiveness reported several studies of this type (Feldman et al., 1987). Two flaws in this line of research are obvious. Physicians have not been shown to be the "perfect" primary care provider. In fact, many deficiencies have been found in physician ambulatory care (Prescott & Driscoll, 1980). Secondly, the caring component of nursing care cannot be measured when using physician curing activities as the standard. The question should no longer be: Are physician and NP care equivalent? but, How are they different (LaRochelle, 1987)? Two studies reported by Billingsley (1986) support the findings that NP practice is different from physician practice and that these practices are mutually supportive. In other words, NPs are not substitutes for physicians but are compliments of medical practice. Several studies have found that joint care by an NP and physician resulted in better quality than care by a physician alone (LeRoy, 1981; Reichgott et al., 1983; Sox, 1979). A British study of 210 patients seen by an NP in a joint practice concluded that the NP did not function as a physician substitute but provided an extra service of health promotion, prevention, and chronic illness management (Salisbury & Tettersell, 1988).

In recent years, there has been less research on NP practice. Research from the 1960s and 1970s was often done by those in disciplines other than nursing. Research data collected or reported more than 10 years ago may be useful

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for comparison but cannot be considered to accurately portray current practice due to the rapid changes occurring in health care and nursing practice. Researchers have identified a need for nurses to study the process of NP practice (LaRochelle, 1987; Molde & Diers, 1985; Shamansky, 1985; Sullivan, 1982). Such research is vital in the light of predictions that the role of the NP will become the basic nursing practice of the future.

Some studies that could have reported the process of care measure outcomes only. Pesznecker and Draye (1978) addressed only patient characteristics and presenting problems, not the processes of care used by NPs. A study of geriatric NPs in nursing homes found that they improved patient care and outcomes but did not address what the NP did to improve care (Kane et al., 1989). Another study compared patient outcomes when care was provided by an NP versus a physician in the emergency room (Powers et al., 1984) but did not reveal how the NP provided care. Surveys of graduates of a single NP program are possibly biased and are not generalizable (Brown & Waybrant, 1987; Elder & Bullough, 1990; Lawler & Valand, 1988; Lynaugh, Gerrity, & Hagopian, 1985).

Other recent studies of the process of NP care have been qualitative (Brykczynski, 1989). Qualitative research is done when very little is known about a phenomenon. The National Organization of NP Faculties (NONPF) used the results of qualitative studies by Brykczynski and others to compile the competencies for NP students in their 1990

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publication Advanced Nursing Practice: NP Curriculum Guidelines (Zimmer et al., 1990). The use of qualitative studies instead of quantitative data indicates that existing quantitative data are insufficient to describe NP practice.

One way to find out what activities NPs perform in their primary care practices is to ask them. The Delphi method offers a mechanism for polling expert opinion and allows feedback from other experts and modification of answers. The Delphi method has been shown to adequately measure the norms of current professional practice. Ashton and associates (1994) generated criteria for standards of practice for physicians from textbooks and current literature. A modified Delphi technique was then used to refine those standards of practice and insure that they were consistent with actual current physician practice. Duffield (1991) found that the competencies for nurse managers written in the literature had little relationship to the ones identified by experts in the field. Findings in literature need to be validated by experts in practice. That is one reason the Delphi method was chosen for this study. The intent is to find out what activities NPs perform in primary care.

Theoretical Perspective

Orem's (1991) self-care deficit theory of nursing practice, which includes the theory of self-care, self-care deficit, and nursing systems, provides the theoretical

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basis for this study. This theory "provides a way of looking at and investigating what nurses do" (Orem, p. 93).

The Theory of Self-Care

Most of the time adults act as their own primary health care providers. When people believe they are not functioning normally or note some health deviation, they treat themselves. The nursing theorist, Orem, describes this as a component of self-care (Orem, 1991). Self-care includes all the actions people take to maintain life, health, and well-being. Self-care is purposeful action to promote health and prevent disease (Chang, 1980). Self-care, by definition, must be done by persons for themselves. Each individual is the active decision maker in their own self-care.

Theory of Self-Care Deficit

When an individual is using less self-care ability than is needed to maintain health, a self-care deficit exists. When individuals judge that they are not effectively caring for themselves, they may seek assistance with their care from others. If the reason for not being able to adequately care for self is health related, then according to Orem's theory, it is appropriate for the individual to seek help from a nurse. The first contact with the health system can be defined as primary care. Therefore, nursing in primary care is provided to supplement or increase a person's self-care. Nurses do what individuals would do for themselves if they had sufficient knowledge and skill. Orem (1995) describes

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primary care as health promotion, health maintenance, and comprehensive disease prevention services that are accessible to individuals and families. The providers of primary care are nurses and physicians who assess health through periodic health assessment, risk determination, and observation for early signs of disease. They help individuals be responsible for their health and assist them in developing personal programs for health care. Primary care providers also refer individuals to physician specialists, nurses, and specialists in other fields.

The Theory of Nursing Systems

In Orem's theory of nursing systems, she states that nurses have a body of knowledge and skills unique to nursing practice (Orem, 1991). Nursing is deliberate action based on scientific knowledge and skills to help people meet their own requirements to promote health, prevent disease, cure disease, or regulate disease. Nurses are nursing abilities (or agency) to perform activities to help people meet their requirements for self-care. Nurses gather information to determine an individual's current status, estimate what needs to be done, design a plan of selected actions for accomplishing the required care, negotiate who will do what actions and how success will be measured, and follow up through evaluation and modification of this plan.

Nursing is person focused and cannot be defined by task lists but by what nurses are concerned about and "the activities in which nurses engage when they practice

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nursing" (Orem, 1991, p. 340). Nursing practice is influenced by nurse variables, such as age, gender, culture, race, health state, socioeconomic status, education, and practice experience; practice variables, such as location, populations served, resources available, nurse's position or role, and time available for patient encounters; and patient variables, such as needs of the patient, age (and developmental state), gender, residence, family system, sociocultural factors (education, occupation, life experiences [attitudes, perceptions, expectations]), race, socioeconomic status, patterns of living, and health care. Orem (1995) states that defining nursing's practice domain by task instead of activities and the variables that condition the activities has led to current disagreements over what is or is not nursing. Nurses often have multiple roles in a health care setting. Orem (1991) raises the question of whether NPs practice nursing or some other health profession (medicine). Just because a nurse does something does not make it within the domain of nursing. In the latest edition of Orem's theory (Orem, 1995), she writes that lack of knowledge about the activities of NPs and the factors that condition them has created confusion about whether they practice nursing or medicine. In her opinion, some NPs practice nursing in primary care settings whereas other NPs practice with medical protocols and a medical orientation as physician assistants instead of practicing nursing. The current question--What do NPs do to deliver primary care

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services?--must be answered before the question of whether their practice is within the domain of nursing can be addressed. Nurses need to clearly delineate what they do that contributes to health and what other professions do so that the public, policy makers, and others will recognize when nursing is needed and make provision for a sufficient number of nurses to be available to society (Orem, 1991). Nurses need to know what the legitimate roles are for professional nurses and what can be accomplished through nursing, so as not to unnecessarily limit or exceed their practice capabilities (Orem, 1991). The purpose of this study is to investigate the activities of NPs in designing primary care nursing systems and the practitioner, patient, and health care system variables that condition their activities.

Problem Statement

Nursing has failed to study and define the boundaries and scope of NP practice (Billingsley & Harper, 1982). Unfortunately, very little is known about what NPs do in the process of providing primary health care today. In fact, a meta analysis of studies of NPs in primary care reported that the care activities of NPs were infrequently reported and there was inadequate data to proceed with the planned analysis (Brown & Grimes, 1993). NPs are providing primary care health services to a variety of patients, but little is known about the activities of NPs or variables that influence practice.

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Significance

In today's rampantly restructuring health care market, survival may depend on being able to articulate one's role and value. Senator Daniel Inouye (1984) pointed out that "it has become quite evident to me . . . that most Americans, including most politicians, simply do not understand exactly what a NP can do" (p. 320). There is a need to educate the public about the ability of the NP to offer services to maintain and improve the health of people and communities (Edwards, 1991). This study may provide information about what NPs do in primary care that can be used to educate the public and policy makers.

A survey of nurse administrators (NAs), NPs, and physicians, to identify the need for and desire to hire NPs, found that all professions (NPs, 7%; NAs, 30.8%; physicians, 21%) needed more information about NPs' abilities and roles before deciding to hire an NP. This was true even of professionals who had worked with NPs (Louis & Sabo, 1994). Research is needed to determine the practice activities of NPs.

The results of this study may supply data about NP practice and variables influencing practice that can be used to market NPs in a highly competitive health care system (Price et al., 1992); increase support of NPs in nursing, and medicine (Garland & Marchione, 1982) and by the public; and negotiate for third party reimbursement (Billingsley, 1986; Jenkins & Sullivan-Marx, 1994), time (Backenstose, Berner, Fern, Spence, & Rempusheski, 1993),

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and care continuity that successful NPs need in practice. Results of this study may help educators identify primary care content that should be included in NP education (Billingsley & Harper, 1982; Price et al., 1992), explicate domains and boundaries of nursing (Edmunds, 1984), and provide information to identify criteria for quality assurance (Shamansky, 1985), and peer review (Brown, 1989).

Statement of the Purpose

The purpose of this study was to identify the activities of NPs in the provision of primary care. Patient, practitioner, and health care system variables were collected to describe the sample and to determine if these factors influence the activities of NPs.

Research Questions

1. What are the activities of NPs in the provision of primary care to patients in Alabama?

2. Is there a core of activities that is common to all NPs in primary care practice?

3. Do NP activities differ by NP specialty?

4. Do NP variables influence the activities of NP practice?

5. Do patient variables influence the activities of NPs in practice?

6. Do health care system variables influence the practice activities of nurse practitioners?

Definitions of Terms

For the purpose of this study, the following definitions apply.

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Nurse Practitioners (NPs)--"registered nurses who have advanced clinical knowledge and expertise and a wide range of clinical responsibilities including client assessment, the delivery of health care, and the follow-up of patients" (LaRochelle, 1987). They are certified by a national certifying agency and registered with the state board of nursing. Operationally, NPs are defined as registered nurses who were listed as certified NPs by the Alabama Board of Nursing, practiced in a primary care setting, and were willing to participate in this study.

Activities--the actions NPs take in assisting others to promote health, prevent disease, treat illness, or regulate or manage chronic disease. This includes technical procedures NPs perform. The activities reported in this study to be part of the panelist's practice are divided into core activities, activities of NP specialty practice, and other activities of NP practice. Core activities are activities commonly practiced in most primary care NP practices, regardless of specialty. Operationally, activities identified as being used in routine practice by more than 50% of the panelists on at least three specialty panels are core practices of NPs. Specialty activities are activities of practice that are significantly more likely to be used by one or two NP specialties. Four NP specialists are represented in this study--family, adult, pediatrics, and women's health. Operationally, activities performed significantly more frequently by one or two NP specialties are specialty

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activities. All activities not identified as core or specialty activities will be listed as Other activities of NP practice.

Primary Care--includes the "concepts of direct contact, comprehensive care, case management, prevention, health and wellness" (Price et al., 1992, p. 12). Primary care is first contact care usually delivered in ambulatory settings. Operationally, NPs who work in outpatient settings are considered to deliver primary care.

Patient Variables--the patient demographics as reported by NPs. Patient variables, in this study, include: (a) age range of patients most frequently seen, (b) gender of the majority of patients, (c) race of most patients, (d) reimbursement source for most patient visits, (e) socioeconomic class of most patients, and (f) the education level of most patients.

Nurse Practitioner (NP) Variables--the demographics NPs report about themselves. NP variables, in this study, are: (a) age, (b) year of graduation from a basic nursing program, (c) year of completion of an NP program, (d) the number of years worked as an NP, (e) the number of hours worked each week as an NP, (f) gender, (g) race, (h) area of certification as an NP, (i) type of NP program completed, and (j) the highest academic degree.

Health Care System Variables--the demographics NPs report about their practice sites and current practice. Health care system variables, in this study, are: (a) size of the community, (b) type of practice, (c) average number

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of patients seen in a clinic day, (d) number of hours in a clinic day, (e) amount of physician supervision of the NPs' practices, (f) cost of an average office visit, (g) fees less than the fees of the physician in the same practice (h) NP written protocols, (i) average number of minutes spent per patient, and (j) how the NP believes the patient views the practitioner.

Assumptions

The following assumptions were drawn: (a) the actions of NPs can be identified; (b) nationally certified, state licensed NPs possess knowledge of primary care practice in their area of specialty; (c) the actions NPs report using are the actual actions of their practice; and (d) NPs can reach convergence of opinion on actions of their practices.

Limitations

1. All NPs in the study were from Alabama; therefore, the results will be limited to practice in that state.

2. Only family, pediatric, adult, and women's health NPs were asked to participate in this study. Other areas of primary care practice may not be described by the actions of these practitioners.

Summary

NPs are providing primary health care services. The actions of NPs in providing primary health care services are not clearly defined. One way to find out what people do is to ask them. The Delphi technique provides a method of asking people to clearly define their opinions on a

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topic. In this study, NPs with current primary care practices were asked to identify the activities of their practices.

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CHAPTER II

Review of Literature

This chapter reviews the existing research concerning NP practice, Orem's theory of nursing systems, and use of the Delphi survey method. The first section discusses studies of the process and content of NP practice, limitations of these studies, and factors found to condition NP practice. The second section reviews studies using Orem's theory of nursing systems to study nursing activities or nursing practice. The third section reviews research of health professionals that incorporate Delphi survey methods. The third section reports two studies of nonnurse health professionals, important points about using the Delphi method in nursing research, and studies of the activities of advanced practice nurses.

NP Practice

Many outcome studies of NP practice were completed in the 1970s and early 1980s. After the OTA study in 1986, it was obvious that, in primary care, NP care was equivalent or superior to physician care. A meta analysis of 56 studies of NPs' effectiveness in primary care confirmed that physician and NP care were equivalent in effectiveness and that no harm was found in patients being cared for by NPs (Feldman et al., 1987). Researchers' efforts turned to

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studying the process and content of NP practice. Koehler (1981) studied the opinions of 6 administrators, 16 registered nurses, 11 NPs, and 8 physicians, in an attempt to define the NP role. Using structured interviews the researcher found little agreement between the different groups of professionals about the skills an NP should perform. Indeed when major categories were broken down, the variability of responses increased. Koehler concluded that there was an urgent need for a clear definition of NP practice.

Comparing NP Practice With Other Providers

A chart review was performed at a nurse managed hypertensive clinic to compare the process of care (measured as referral, consultation, and medication change) and patient outcomes of four physicians and an unspecified number of NPs (Reichgott et al., 1983). They concluded that NPs were successful at managing complex patients. The group of patients with NPs involved in their care (as provider or with physician team) had the greatest reduction in blood pressure. The researchers commented that this result could be due to some "soft process variable" (not measured in the study) such as sociobehavioral factors of NP care.

The development of the NP Rating Form (NPRF), a tool to identify and measure the practice of NPs, was reported by Prescott, Jacox, Collar, and Goodwin in 1981. Using this form, some aspects of care provided by a primary care provider could be measured. The tool was designed to

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measure the process of care by recording the percent of time spent in various activities during a patient's visit. The content of each activity was then classified as either somatic or psychosocial. To use the tool, a trained rater must complete the form by recording activity and content every 30 s, while observing a patient visit either in real time or on tape. Initial measures of reliability, interrater reliability, and validity of the NPRF were conducted and reported (Goodwin, Prescott, Jacox, & Collar, 1981). The researchers concluded that further evidence of reliability and validity were needed. Four studies using the NPRF have been reported. Three of these studies are reported in the manual that explains how to use the NPRF (Jacox, Prescott, Collar, & Goodwin, 1981). The first study undertaken during the Spring of 1979 included 65 visits of adults with hypertension and 87 well baby visits to NPs. The primary care processes were directly observed or audiotaped. Findings from this study indicated that pediatric NPs spent more time in wellness and teaching by discussion than adult NPs. Adult NPs spent more time out of the room. With the NPRF, there was no way to measure actual out of the room content. Both the pediatric NP and the adult NP were heavily focused on somatic rather than psychosocial problems. The second study, a master's thesis by Fisher in 1979 (Jacox et al., 1981), involved the practice of five NPs and five physicians at a venereal disease clinic. The teaching activities of the physicians and NPs were compared by using the NPRF. NPs showed a

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higher percent of time spent on patient teaching than did physicians. Both groups focused on somatic problems and devoted little time to psychosocial or health promotion concerns. The third study (cited in Jacox et al.) was by Prescott and Stanley. This study included six NPs, seven physicians, and seven medical residents practicing at primary care and medical clinics. Taped provider-patient interactions of 157 client visits were analyzed using NPRF. In this study, NPs were found to spend a greater percentage of time out of the room than did physicians (29.5% vs. 4.5%). Physicians and NPs used similar types of teaching and focused largely on somatic concerns. All providers spent less than $4 of the time on health promotion. The fourth study using the NPRF, by Bednash and Harper (date unknown), was discussed in an article by Billingsley (1986). A convenience sample of 9 NP and 10 physician interactions was observed and rated using the NPRF. The process of NP and physician care was found to be different. NPs spent more time teaching and dealing with psychosocial issues while physicians spent more time doing physical examinations and dealing with somatic problems. All of these studies are found only as referenced by other authors. They have not been published by the researchers. The NPRF is useful in comparing the practice process of different primary care providers. However, because there are no established standards, one cannot form any conclusions about the scope of practice activities of a single type of practitioner, such as the NPs. The NPRF was

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based on primary care practice of the 1970s and may now be outdated. The time study approach used by the NPRF cannot initiate new areas of practice and is restricted to activities occurring in the provider-patient interaction.

A study by Campbell, Mauksch, Neikirk, and Hosokawa (1990) of 276 visits to physicians and 136 visits to NPs found little difference between physician and NP patient interaction and communication styles, except NPs were more concerned with psychosocial issues than were physicians. The interaction style was defined as the activities of the clinician and was categorized as affiliation, control, somatic, psychosocial, and information indices. The researchers studied the style of provider interaction in primary care settings using content-based interactive analysis of video typed patient-provider interactions. The percentage of time in an interaction devoted to each activity was used to compare provider styles.

Davidson and Lauver (1984) studied perceived roles of practitioners in collaborative practice. Nine vignettes of typical patient encounters in ambulatory care settings were given to 15 physician and NP pairs who worked in collaborative practices. The participants were asked whether it was appropriate or inappropriate for the physician or NP to spend time with each patient. The report concluded that physicians and NPs perceive that they have separate, distinct, complimentary roles in the primary care setting with some role overlap in a joint practice. Psychosocial issues and patient education were judged by

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both practitioners to be better handled by NPs. Two vignettes lead to role conflict as each provider felt they were more appropriate providers of care for the patients. The authors noted that further study needed to be undertaken to better document the varying kinds of services rendered by physicians and NPs. Unclear scopes of practice can lead to role conflict or inefficient use of health care providers in the provision of primary care.

Willis and Egan (cited in Billingsley, 1986) observed 159 patient/physician/NP interactions in a nursing home setting. They reported NPs spent more time on patient and staff education about support and intervention than did physicians. Physicians spent more time involved in "technical care."

Activities occurring outside of the patient provider encounter were included in a study that compared the practice activities of clinical nurse specialists (CNSs) (n = 28) and NPs (n = 46) (Elder & Bullough, 1990). The researchers were interested in determining the activities of CNSs and NPs in current practice. A researcher-generated list of 25 activities believed to be common to both CNS and NP clinical practices was mailed to participants. The participants were asked to indicate activities that were part of their everyday role. The list included activities of consultation, teaching staff and students, assessing quality improvement, research, publishing, and administration as well as direct patient care. Differences between CNS and NP roles were found in

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only 8 of the 25 activities. However, findings of this study need further validation because the sample was very small and all of the participants were graduates of the same university.

Defining the Activities of NPs

A descriptive correlational study by Monninger (1988) analyzed the content of narratives of patient care incidents submitted by 83 FNPs (family nurse practitioner) practicing in primary care. A list of 26 family NP competencies was generated from the narratives. The findings supported the view that NPs practice with a nursing focus. This study represents an effort to allow a list of competencies to be generated from practice instead of literature. However, by limiting narratives to patient incidents, only activities occurring in the provider-patient interaction could be analyzed. Also, the response rate was poor and sample size was small (83 respondents representing 32 states), thus, the results are not generalizable.

The activities of 356 family NPs were studied using mailed questionnaires and daily logs of 8,905 patient visits recorded by FNPs (Draye & Pesznecker, 1979, 1980; Pesznecker & Draye, 1978). The logs contained information about the patient (age, sex, and race), diagnoses, whether these were new or old diagnoses, diagnostic certainty, nursing activities, and the patient's reason for the visit. NPs recorded logs for all the patients seen on two typical days (from February to the end of April 1977) in their

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practice. The study concluded that NPs performed an average of seven activities for each patient. Teaching was the most frequent activity. Most of the teaching focused on self-care, while one fourth related to prevention. Unlike the findings of Davidson and Lauver (1984), this study found little difference in the diagnoses seen by physicians and NPs. This study is almost 30 years old, but it does have results of a very limited researcher-derived list of NP activities which occur within a patient-provider encounter.

A nationwide survey by Repicky, Mendenhall, and Neville (1980) of 341 NPs in adult ambulatory care described the functions of an NP inpatient care and other activities. Using a diary of activities kept by each NP for 3 days as a research tool, the researchers determined that NPs spent most of their time in direct patient care but also spent time in consultations, telephone patient care, professional travel, administration, and other activities (e.g., lab, indirect teaching, committees, and continuing education). NPs not only emphasized patient teaching, counseling, and prevention of health problems but also provided continuity of care. In this study, asking NPs to record what they do in practice produced a wide variety of activities including activities of direct care with patients and other professional activities. Specific procedures performed and tests ordered by NPs were identified. The data of this study were collected in 1974-1976 and may not reflect current NP practice.

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Lawler and Valand (1988) surveyed 85 NP graduates from a specific certificate level NP program who worked in rural primary care. Mailed questionnaires were studied to determine the time spent in various components of primary care services. NPs spent the most time in well-health assessment. The second most frequent components of care were patient education and counseling and communicable disease follow-up.

Two recent studies of NP practice used qualitative methodologies. Ethnographic analysis was used to define the process of NP care during the provider-patient interaction in a study of 3 NPs and 22 women, who were their patients (Johnson, 1993). Using taped interviews and field notes of conversations between NPs and their patients, Johnson revealed that NPs function as translators between the specialized culture and language of medicine and the real lives of women. NPs were found to have a prevention and whole person focus that blended the medical management of patient care into the real world of the patient. Johnson concluded that this exhibits clear evidence of a nursing focus in NP practice. A qualitative study by Lewis and Brykczynski (1994) reported using interviews with 10 master's prepared NPs to determine the competencies used by NPs as healers. The researchers taped and transcribed interviews about the interventions and actions NPs used in their clinical practice. Examples of all of the skills used in holistic nursing care (Zimmer et al., 1990) were found and two additional NP skills were

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revealed: sensitive humor and risk taking. The findings of preliminary research, like these two studies, into the activities of specific roles of the NP are not generalizable to NP practice due to the small sample size and lack of controls in the studies.

A small study of graduates of two emergency NP programs (Hayden, Davies, & Clore, 1982) reported activities of the practitioners in practice (N = 29). In a researcher-generated, mailed questionnaire, NPs were asked to evaluate a list of 14 tasks as appropriate or not appropriate for NP practice and whether they performed these tasks or not. This list included activities involving direct patient care and other activities, such as participating in community education and providing nursing staff development, that were not patient related. NPs reported that they were not performing some tasks that they deemed appropriate to their role. Lack of clarity about the scope of activities of NP practice may contribute to underuse of NPs in practice.

Conditioners of NP Practice

Lynaugh et al. (1985) surveyed 103 NP graduates of a specific program who were practicing in primary care. The researchers designed and mailed a survey to determine the scope of practice of the NPs. They found that scope of practice was defined by patient population characteristics, medical diagnoses, and referral and consultation patterns.

Brown and Waybrant (1987) mailed a researcher-designed questionnaire to 164 NP graduates from the same university

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FNP program. They were studying the family NP's practice activities related to coordination of community resources for patients and health education and health promotion activities. They found that NPs in practice settings and HOMs less frequently coordinated resources for the patient than NPs in health departments. NPs who viewed themselves as less closely supervised and those without prescriptive authority reported engaging in more health promoting activities than did their peers. Thus, practice setting and supervision were found to condition practice activities.

Sirles et al. (1986) reported a 1982 survey to determine the practice activities of NPs (N = 110) in Alabama. Using a researcher-designed, mailed survey questionnaire, the researchers asked about the frequency of activities in five categories: (a) data collection, (b) technical, (c) out of office practice, (d) administrative, and (e) supervisory and educational. NPs were found to more frequently engage in patient assessment and intervention than in technical procedures. The researchers reported a need for better definition of the role of NPs to prevent potential underutilization of NP skills by the health care system. Although this study is 14 years old and may no longer be reflective of practice, it does contain demographic data from NPs in Alabama that could be useful for comparison. Once again, a single survey questionnaire with no opportunity for additions by the practitioner limited the possibility of compiling full

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scope of practice information. Lawler and Valand (1988) found that practice variables, such as practice setting, the number of patients in the caseload, the acceptance of the practitioner role, and availability of physician, influenced NP practice activities.

Nursing Activities Using Orem's Theory of Nursing Systems

Orem's general theory of nursing is often written about in the literature. Most studies using the theory deal with the theory components of self-care or self-care deficit. Little research has been done on the theory of nursing systems, the activities of nurses, or the variables that condition nurse activities. The use of Orem's theory in practice is reported to help nurses decide on their actions (McWilliams, Murphy, & Sobiski, 1988). The activities of nurses were not reported.

Denyes, Neuman, and Villarruel (1991) interviewed nurses considered to be especially effective in controlling a child's pain (N = 13) to discover what actions they use to try to prevent and alleviate pain in hospitalized children. Orem's nursing systems theory was used to derive the content areas for the interviews. One hundred and fifty-six actions were identified from the interviews, which were then categorized into patterns similar to four of Orem's five methods of helping. Examples of the method Orem labeled "supporting" were not identified from the interviews. In this research, the actions nurses reportedly used in practice were congruent with Orem's methods of helping.

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Interventions used by rehabilitation nurses when interacting with patients by phone after hospital discharge were studied (Closson, Mattingly, Finne, & Larson, 1994). Three hundred and sixty-one nursing interventions recorded in telephone interviews to 105 patients were categorized into Orem's five methods of helping. Analysis of frequency of using each method revealed that guiding and supporting were the most frequent interventions.

Delphi Survey Method

Defining the Process of Care of Health Professionals

Two studies report using Delphi designs to describe nonnurse health care practitioner practice. Thirty-nine programs for training physician assistants (PAs) were surveyed to predict the future practice roles of PAs (Shelton, Lyons, Allen, & Allensworth, 1984). One problem encountered in this study was that a higher than expected number of roles were identified for PAs. The study does not report how many roles were identified or whether an initial list or open-ended questions were used to generate the list of PA roles.

The purpose of the second study was to develop criteria for the diagnosis of congestive heart failure. Part of this process involved using a Delphi survey. Surveys were mailed to practicing physicians in a three round Delphi process to reach consensus on the criteria. The initial survey for Round 1 was created from review of the clinical literature. The researchers concluded that the Delphi technique was a useful method to measure the

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norms of current practice if the panelists are clinically active (Ashton et al., 1994).

Nursing Research Using the Delphi Method

Nurse researchers have used the Delphi method and reported some important insights regarding the method. Melnyk (1990) used the Delphi method to identify indicators of the concept of perceived barriers to health care. Melnyk found that a small panel of only 12 participants was able to derive a list of indicators of barriers. To facilitate completion of the list, in the last round, panelists could not add new items. A Delphi survey to identify and define critical activities for the effective use of three pain management techniques was reported by Mobily, Herr, and Kelley (1993). The researchers noted that, in the Delphi method, response rate is not as important as establishing the expertise of the panelists. They also stated that the number of rounds needed in a Delphi study depends on the importance of consensus to the study. Grant and Kinney (1990) and Grant, Kinney, and Guzzetta (1990) used the Delphi method to identify the defining characteristics of a nursing diagnosis. They concluded that nurses certified in a specialty can compose an expert panel and that researchers may start with a tool developed form the literature instead of using open-ended questions in the survey. The Delphi method was used to determine the subject areas to include in a curriculum for hospice nurses (Knight & Knight, 1992). The authors stated that using the Delphi method, a small number of panelists

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(n = 16) are able to produce reliable results if participants are concerned about the topic, have information to share, and are motivated to respond.

Delphi Studies to Identify Activities of Advanced Practice Nurses

In a three round Delphi study, Smith (1991a) identified attributes and clinical competency for BSN faculty. The survey questionnaire contained 138 items related to knowledge, skills, values, and attitudes. Nurse educators (N = 79) agreed to rate the items as most relevant to relevant (on a 4-point Likert scale) and add any competency they believed important for BSN faculty. In Round 2, panelists were asked to defend their responses that were out of range. In Round 3, panelists were asked to respond to a minority report. Smith concluded that the 4-point scale may have contributed to lack of consensus on several competencies. Only 46% of the original panelists completed the study. Consensus was reached on only 12 of the final 152 items in the survey. However, the researcher did not believe that the large number of competencies listed deterred responses because panelists added competencies in Round 1. Asking panelists to defend their ratings was either intimidating or too time consuming in Round 2. This resulted in panelists withdrawing from the study. Smith also found that panelists who did not have clinical expertise dropped out of the study, and she recommended that the Delphi survey would be more successful if the panelists had expertise in the area of study.

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Duffield (1991) developed a written questionnaire from the competencies of nurse managers found in the professional literature. Twenty of the most frequently mentioned competencies from the literature were listed in the questionnaire. The questionnaire was tested for clarity and face validity and mailed to 16 first line nurse managers in a two round Delphi method. In Round 1, a 5-point Likert scale was used for ranking whether the panelists rated these competencies as important for managers. In Round 2, panelists were given the opportunity to change their answers after viewing Round 1 results. Interestingly, Duffield reported that there was little relationship between the competencies written in the professional literature and the competencies identified by the expert panel. This would support the contention that merely compiling a list and sending it to participants as a single survey would not result in clear information about the scope of activities of current practice. Unfortunately, this study did not allow panelists to add competencies during the Delphi process.

Another study of role components involved the practice of maternal child health CNSs (Hawkins & Proust, 1990). Hawkins and Proust used a modified four round Delphi to identify role components of the clinical nurse specialist practice and to decide what topics to incorporate in a CNS curriculum they were designing. The initial survey document was developed in Round 1 by a face-to-face conference of the panel of 20 clinical nurse specialists

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and nurse administrators. The panel was given role components from the literature and asked to discuss them and define the skills involved in carrying out these roles. Rounds 2 and 3 were mailed to panelists. They had the opportunity, in these rounds, to add to the list of role components. Round 4 was again face-to-face. The final list of components included activities that occur in the provider-patient interaction and other professional activities of the maternal child CNS. Having face-to-face rounds sacrifices anonymity, which has been touted as one of the advantages of the Delphi method.

McGee, Powell, Broadwell, and Clark (1987) reported some of the problems that may occur if an initial list of competencies is not compiled for panelists. They attempted to identify the competencies of oncology clinical nurse specialists (OCNSs) using the Delphi method. In Round 1, 994 experts were sent definitions of "competency", "competence", and "oncology CNS". Panelists were asked to use these definitions and their knowledge of practice to derive the competencies needed in the practice of the OCNS and to categorize each competency into a subgroup of type of activity. Only 98 subjects responded (10%). One reason for the low response rate may have been that, without an initial list, participants had to invest a lot of time and thought to respond. However, those that did respond listed 363 competencies. Two further rounds to prioritize this large size of competencies continued to be plagued by low response rates. Researchers concluded that the list of

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competencies would require further refining before it would be useful.

An interesting problem arose in a study by Lester and Thomson (1989) to identify current and future roles of Certified Registered Nurse Anesthetists (CRNAs). A group consisting of five CRNAs and five anesthesiologists generated a survey instrument listing 26 current and 28 future broad activities roles for CRNAs. This survey was mailed to CRNAs and anesthesiologists in a three round Delphi. The data revealed significant differences between the two providers in their view of the current and future activities of CRNAs. It would appear that professionals who merely work with other providers of care may not be able to define the activities of the other provider.

No studies were found of the activities of NPs using the Delphi method. However, the Delphi method, with multiple rounds, feedback, and the opportunity to change and add items, should be a useful research method for determining activities of advanced practice nurses.

Summary

Most studies of NP practice are outdated and the findings may not be consistent with current NP practice activities. Often, only activities occurring during patient-provider encounters were considered to compose the scope of NP practice. However, other professional activities of NPs are part of the practice and influence the effectiveness of NPs. Some of the activities that comprise NP practice have been identified (e.g., teaching

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patients, counseling, conducting health assessments). Some factors have been identified as factors that condition NP practice. Lack of role clarity concerning the practice activities of NPs continues to be exhibited and can lead to inappropriate use of the NP in the health care system.

Only two research studies examining nursing activities or technologies using Orem's theory were found. These studies were of the activities of rehabilitation nurses and pediatric nurses working in hospital settings. No studies of the activities of NPs were found using Orem's theory. Orem has mentioned that this is an area of the theory where research is needed (Randell, 1992). However, she also stated that theory should develop from the actual practice of nursing. It seems appropriate to examine NP practice activities by asking NPs in practice what they actually do in their practice.

Previous studies support the proposition that the Delphi method, often used to gain consensus or predict the future, can be used to gather information about the scope of professional practice. When using this method, it is important to impanel a group of clinically active professionals who are interested in the study question. It is also important to provide the panel with an initial survey list and allow panelists to add to and refine this list in the Delphi rounds.

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CHAPTER III

Methodology

The purpose of this study was to identify the activities of NPs and examine the NP, patient, and health care system variables that may condition NP practice activities. NPs were asked to construct a list of activities that they currently used in their primary care practices. A Delphi survey technique was used to construct this list.

Design of the Study

The Delphi technique was developed to predict possible futures. An early use of the technique was to predict the winners of horse races. This technique can also be used as a method to elicit consensus of expert opinion through group process and has been shown to be a good method of measuring the norms of current professional practice (Ashton et al., 1994). The Delphi technique usually uses a mailed survey questionnaire designed to produce a group or collective response. Mailing questions to participants is less expensive and eliminates the scheduling difficulties of face-to-face discussions. Mailing also allows the participants to remain anonymous to other panelists, reducing the possibility of biased results due to the prestige or persuasive verbal styles of other participants.

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The method may begin with open-ended questions (Knight & Knight, 1992) or a prepared questionnaire (Lester & Thomson, 1989). Panelists may respond with "yes/no" response or a graded response, such as a Likert scale. Each time panelists are asked for responses, it is labeled a "round." Two to four rounds are usually needed to develop consensus of panelists' opinions on an issue. Mailing questionnaires allows time for thoughtful consideration, which can promote independent thought and considered opinion. Multiple rounds permit refinement of thought through feedback.

The content validity of a Delphi study is measured by the adequacy of the selection of panelists. The panelists should be knowledgeable about the content under study (Goodman, 1987) or at least interested in the topic under discussion and motivated to respond and share information. A small number of panelists (12 to 15) is sufficient for the survey (Knight & Knight, 1992; Melnyk, 1990). Random selection and response rates are not as important with this technique as in other survey methods (Mobily et al., 1993). The number of questions that should be addressed in one Delphi survey is not clear. Couper (1984) argued that 25 questions is a reasonable number for the prepared Round 1 questionnaire, although others argue there should be no more than 45 items identified by the researcher in Round 1 (Grant et al., 1990). McGee et al. (1987) had over 300 competencies and found that consensus could not be reached

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on all items. Another advantage of the Delphi method is the ability to statistically analyze the data.

Disadvantages of the Delphi method include lack of control of environmental factors and the length of time required to complete the process when there are multiple rounds. Not all panelists are willing to commit the time needed for three or four rounds of mailed questions. Researchers are encouraged not to allow too much time to elapse between rounds to avoid high attrition of participants and environmental changes.

Instruments

Two investigator-designed tools were used to begin this study. The first tool was the survey instrument, consisting of a list of activities and technologies derived from Standards of Practice for the Primary Health Care Nures Practitioner (American Nurses' Association [ANA], 1987), The Scope of Practice of the Primary Health Care Nurse Practitioner (ANA, 1985), literature concerning NP practice (Sirles et al., 1986; Zimmer et al., 1990), and the results of a pilot study reported later in this chapter. The instrument contained 79 items in a section labeled activities. These activities were organized to list all the activities that might occur during a patient visit. All activities not directly related to patient care were placed at the end of the activities items. Thirty-five items labeled technologies were also included in this questionnaire. Six items were placed throughout the survey for panelists to add new activities and technologies.

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These items were: (a) other referrals, (b) order medication by other methods, (c) other diagnostic procedures you order, (d) other nontraditional strategies you use, (e) other activities you do in your current practice, and (f) other technologies you use in practice. Three response columns were provided for each activity and technology. These columns were labeled: (a) "Yes, I do this in my current practice"; (b) "No, I do not do this in my current practice"; and (c) "Sometimes I do this, but not routinely". The third column was added to the instrument after the pilot study reported below. As the study progressed, it became obvious that technologies were just a category of activities. Therefore, often only the word activities is used to identify all categories of activities in the study.

The second tool, a demographic information sheet, gathered information about variables related to NP, patient, and health care system of each NP's practice. Information requested on the demographic data questionnaire related to the NP was: (a) age, (b) year of graduation from a basic nursing program, (c) year of completion of an NP program, (d) the number of years worked as an NP, (e) the number of hours worked each week as an NP, (f) gender, (g) race, (h) area of certification as an NP, (i) type of NP program completed, and (j) the highest academic degree. Information requested on the demographic data questionnaire related to the NP's patients was: (a) age range of patients most frequently seen, (b) gender of the majority

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of patients, (c) race of most patients, (d) reimbursement source for most patient visits, (e) socioeconomic class of most patients, and (f) the education level of most patients. Information requested on the demographic data questionnaire related to the health care system the NP practice was in: (a) size of the community, (b) type of practice, (c) average number of patients seen in a clinic day, (d) number of hours in a clinic day, (e) amount of physician supervision of the NP's practice, (e) cost of an average office visit, (f) is the fee less than the fee of the physician in the same practice, (g) does the NP have written protocols, (h) average number of minutes spent per patient, and (i) how the NP believes the patient views the practitioner.

Pilot Study

To test the readability, clarity, and usefulness of the instruments, three nurse educators certified as NPs and currently practicing in primary care in pediatric, family, or women's health specialty areas were asked to review the initial instruments. Each practitioner was given a copy of the survey questionnaire and demographic data form. They were asked to complete the survey form, review each item, and add any activities or technologies they use in their current practice. Additionally, they were asked to review the demographic data sheet for clarity and face validity. Guidelines for reviewing the instruments were given to each NP (Appendix A). They were asked to record the amount of time it took to complete the two instruments.

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Based upon the suggestions of these practitioners, a third column was added to the activities and technologies survey to allow the panelists to answer "Sometimes I do this, but not routinely." Other minor wording changes suggested by NPs in the pilot study were incorporated into the survey questionnaire and demographic data sheet. New items were also added to the list of activities. One item designed to answer the research question--Are NPs able to prioritize practice as they believe appropriate: health maintenance and promotion, disease prevention, treatment of acute self-limiting disease, and management of chronic illness?--was deleted because practitioners in the pilot study found the question difficult to answer, did not understand the intent of the question, and did not think it was congruent with the other questions. They reported that it took about 10 to 20 min to complete the questionnaire.

Protection of Human Subjects

To insure protection of human subjects, expedited review and approval of this study was obtained form the Institutional Review Board (IRB) of the University of Alabama at Birmingham (Appendix B). The return of a postcard agreeing to participate in the study and completion of the two study instruments constituted informed consent for the study participants. All data are reported as pooled data. All Delphi panelists were assigned a code number known only to the investigator to further ensure confidentiality of individual results.

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Panelists

A letter was sent to the Alabama Board of Nursing requesting a list of all NPs registered to practice in Alabama. State regulations require that all registered nurses using the title of NP should be certified by a national certifying agency and licensed as NPs with the state Board of Nursing. Therefore, NPs chosen from this list have "expert" knowledge of NP practice. The list of NPs used for this sample was run on January 25, 1996, and contained 490 names and addresses. The three NPs who had participated in the pilot study, one NP who was a member of the researcher's graduate committee, and all out of state residents were removed from the mailing list. Because the list did not identify which NPs were currently in practice or who practiced in primary care, all remaining NPs were sent a letter of invitation to participate in the study. A letter entitled "Opportunity Knocks" (Appendix C) was sent on February 22, 1996, to the 451 remaining NPs on the Alabama Board of Nursing list. The letter explained the purpose, method, and criteria of the study and invited eligible NPs to participate. Each letter contained a stamped, self-addressed postcard stating, "Yes, I am currently in primary care practice as a NP in Alabama and I would like to participate in this study." Practitioners were asked to place a checkmark by their area of specialty and return the card. A deadline date of March 6, 1996, was stated in the letter. Six letters were returned as undeliverable and no further effort was made to contact

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these practitioners. One hundred and forty postcards were returned. Each participant was assigned to a panel consistent with their specialty and given an identifying code number. However, one practitioner contacted the researcher and verbally withdrew, stating that she was not currently in practice. Twelve neonatal NPs (NNPs) responded. However, after consulting with two educators of neonatal practitioners, it was determined that NNPs in Alabama always practice in acute settings. Thus, the final panels consisted of 139 NPs, representing four specialty areas of practice including family, adult, pediatric, and women's health (Table 1).

Table 1

NP Panels By Specialty

Specialty	Number of panelists
Family NP	75
Pediatric NP	12
Adult NP	15
Women's health NP	36
Total	139

Note. NP = Nurse Practitioner.

Procedure

Round 1

The Round 1 survey instruments (Appendix D), containing 84 items of NP activities, 36 items listing technologies, and a demographic data questionnaire, were

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mailed to each of the 139 panelists on March 6, 1996. Six additional spaces were provided for panelists to add items. A cover note thanked the panelists for agreeing to participate and gave a deadline date of March 20, 1996, to have materials returned for continuation in the study. A stamped, self-addressed envelope was enclosed for returning the questionnaire. Identifying code numbers were placed on the questionnaires and return envelopes. On March 26, 1996, 43 postcards reminding panelists to complete their questionnaires were mailed to panelists who had not returned the Round 1 questionnaires. One hundred and thirty-one completed surveys comprised Round 1. Response rate was 94% (Table 2).

Table 2

Summary of Delphi Rounds

Round	Surveys mailed	Reminder cards	Total surveys received	Response rate	No. of items added (original = 114)
1	139	43	131	94%	112
2	131	29	119	91%	12
3	119	34	107	90%	0
				Total	238

Results of Round 1 were entered into the SPSS 6.1.2 (1995) data analysis program. Frequencies of the responses "yes," "no," or "sometimes" for each item in the survey were computed by a practitioner specialty. One hundred and

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twelve items were added by the panelists to the initial list of activities. These additional items listed 88 new activities and 24 new technologies.

Round 2

Each panelist who completed Round 1 was sent the Round 2 survey questionnaire on April 4, 1996. This questionnaire included Round 1 items with the results for their NP specialty panel. The percent of "yes," "no," and "sometimes" from Round 1 for their specialty was listed by each item. Next, the individual NP's previous response was listed and a column for changing their previous response was provided (Appendix E). In this manner, each panelist was able to view the cumulative responses of other NPs in their specialty and change their answer if desired. The 112 new activities were placed on a survey entitled New Activities and Technologies of NPs (Appendix F). This was copied on colored paper to emphasize that it was not the same questions they had already answered. Response columns of "yes," "no," and "sometimes" were listed for each item. A self-addressed, stamped envelope was included for questionnaire return. Instructions stated that Round 1 only needed to be returned if the panelist wished to change a previous response and the deadline date of April 20, 1996, for Round 2 was stated.

On April 24, 1996, 29 panelists who had not returned their Round 2 questionnaires were sent reminder postcards. A total of 119 panelists completed Round 2, for a response

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rate of 91%. The panelists added 12 new items to the activities and technologies list.

Round 3

Panelists who completed Round 2 were mailed Round 3 on May 13, 1996. The Round 2 results for their specialty were listed by each item. They were offered the opportunity to change each of their Round 2 responses after viewing the frequencies for each item and their own previous answers (Appendix G). If panelists changed their responses, they were asked to return Round 2. The 12 new items, which constituted Round 3, were placed on a different color paper and entitled Final Activities and Technologies of NPs (Appendix H), with the possible responses, "yes," "no," and "sometimes." No space was left to enter new items in this round. The deadline for returning Round 3 was May 24, 1996.

On May 28, 1996, postcards were sent to the 34 panelists whose Round 3 responses had not been received. A total of 107 Round 3 responses were received. The Round 3 response rate was 90%. Round 3 results indicating the panelists' responses within their specialties were mailed (Appendix I).

Data Analysis

Descriptive statistics were used to describe the characteristics of the panelists, their patients, and the health care systems of their practices. Frequencies of a "yes" response to each of the 238 activities were computed for the total group and each specialty panel of NPs

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(Appendix J). Using these frequencies, a common core of activities of NPs in primary care was compiled. For the purposes of statistical analysis, any item with a frequency of 50% or higher in three of the four panels was considered a core activity.

Cross tabulations were computed to identify activities, not in the common core list, that had a significantly different frequency of practice between the specialty panels. Activities more frequently used by only one *or* two specialties were determined to be specialty practice activities. Remaining activities were determined to be other activities of NP practice.

Regression analysis was used to find all variables that significantly influenced the activities of NP practice. The variables considered were the 10 NP variables, 6 patient variables, and 10 health care system variables reported on the demographic data sheet. The 238 activities identified in the survey were divided into 13 categories: (a) patient assessment, (b) diagnosis and management, (c) ordering medication, (d) referral, (e) ordering diagnostic procedures, (f) implementing nontraditional therapies, (g) teaching, (h) performing technologies, (i) clinic operation, (j) community involvement, (k) continuing education, (l) research, and (m) providing consultation (Appendix K). Each variable was analyzed to see if it significantly conditioned the activities in each category. Significance was set at a significant $p < .05$. Stepwise multiple regression analyses

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were also computed, combining all NP, patient, and health care system variables and correlating these variables with the 13 categories of practice activities.

Summary

Two questionnaires, a demographic information sheet and NP Activities and Technologies Survey questionnaire, were used to collect data from NPs practicing in Alabama. Using a Delphi survey technique, four NP specialty panels identified activities currently used in their practices. The activities identified as primary care NP activities by panelists in this study were divided into activities frequently used by all NPs, activities that significantly differed in frequency between specialty, and other activities of NPs. Activities were grouped into 13 categories to analyze the potential influence the practitioner, patient, or health care system variables have on the activities of NP practice (Appendix K).

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CHAPTER IV

Findings

Introduction

The findings of a Delphi survey to identify the activities of NPs and the NP, patient, and health care system variables that may condition those activities are reported in this chapter. The first section describes the sample characteristics. This section is divided into three parts: (a) characteristics of the NP panelists, (b) characteristics of the NP's patients, and (c) characteristics of the health care system in which the NP practices. The second section reports the findings related to the six research questions.

Sample

The demographic data sheet was completed by the 131 NPs completing Round 1 of the study. The NP, patient, and health care system information describing the sample is from those responses.

Description of the NP Panelists

The four NP specialty panels were composed of 131 NPs currently practicing in primary care practices in Alabama. The demographic characteristics of the panelists are found in Table 3. The majority of the panelists were Caucasian women who completed a master's degree program to become an

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NP and held a master's as their highest degree. The panelists ranged in age from 25 to 74 years, with a mean age of 43 years.

Table 3

Demographic Characteristics of the Panelists

Variable	N or Range	M	SD	%
Age (years)	25.0-74.0	42.95	8.94	
Year basic RN	47.0-92.0	76.62	8.98	
Year NP program	72.0-95.0	87.93	6.90	
Years worked as NP	1.0-31.0	7.47	6.95	
Clinic hr/wk	4.5-68.0	35.23	11.33	
Gender				
Male	2			1.5
Female	129			98.5
Race				
White	118			90.1
African American	13			9.9
Certification area				
Pediatrics	12			9.2
Women's health	32			24.4
Family	74			56.5
Adult	13			9.9
NP preparation				
Continuing education	5			3.8
Certification program	33			25.2
Master of Science	71			54.2
Post master's	22			16.8
Highest degree				
Associate	3			2.3
Nursing diploma	5			3.8
Bachelor's	23			17.6
Master's	91			69.5
Doctorate	9			6.9

Note. RN = Registered Nurse. NP = Nurse Practitioner.

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The average panelist graduated from a basic registered nurse (RN) program 20 years ago, had been an NP for over 7 years, and now worked 35 hr per week as an NP. Over one half (56.5%) of the panelists were certified as family practice NPs. Therefore, the largest panel in this study, containing 74 NPs, represented the family NP specialty. The second largest panel, representing the women's health NP specialty, had 32 panelists (24.4% of the total study participants). The two remaining panels were small, accounting for only 20% of the total panelists, and represented the pediatric NP specialty and the adult NP specialty.

Description of the NPs' Patients

The demographic characteristics of the NPs' patients are reported in Table 4. Practitioners were asked to select the age range of the majority of their patients. However, panelists frequently checked more than one age range. Therefore, the age of the patients was coded with overlap and the categories are not exclusive. The majority (57%) of the patients were between the ages of 21 and 60 years. "All ages" was also selected by 41% of the practitioners as the most frequently seen age range of their patients. The smallest number of patients were in the age group greater than 80 years (2%). Most patients were female (46.4%) or an equal number of male and female (45%). Only 7.6% of the practitioners replied that a majority of their patients were male. The race of the patients was reported as 44.3% White, 32.8% African

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American, and 22.9% other. The most popular specification of "other" for race was "equal numbers of African American and White."

Table 4

Patient Demographics

Variable	n	%
Age (years)		
0-10	19	14.5
11-20	15	11.5
21-60	57	43.5
61-80	12	9.2
> 80	2	1.5
all ages	41	31.3
adults	13	9.9
Gender		
Male	10	7.7
Female	61	46.9
Equal numbers	59	45.4
Race		
White	58	44.3
African American	43	32.8
Other	30	22.9
Reimbursement		
Private	19	14.5
Insurance	40	30.5
Medicare	29	22.1
Medicaid	58	44.3
Socioeconomic class		
Poor	76	58.0
Middle	62	47.3
Upper	5	3.8
Education level		
Grade school	23	18.1
High school	72	56.7
Some college	25	19.7
College graduate	7	5.5

The most likely reimbursement source was Medicaid (44.3%) and the least likely reimbursement source was

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private payment (14.5). Most patients were poor (58%) and had a high school education (55%).

Description of the Health Care System in Which the NP Practices

Variables related to the health care system in which NPs practice are listed in Table 5. Practices of the NPs in this study were nearly equally distributed between urban (47.4%) and rural (46.5%) communities. Only 2.3% of the practices were located in suburban areas. A wide range of practice settings were reported. The most likely practice setting was a rural health clinic (21.5%). Schools (2.3%) and homeless clinics (1.5%) were the least likely practice settings. On an average clinic day (7 to 8 hr long), the NP sees 17 patients. The NPs estimated that an average office visit was approximately 22 min long. Almost one half of the NPs (48.1%) reported that the supervising physicians were on site during clinic hours but seeing their own patients. Physicians who were only present on site part time averaged 10 hr per week on site. Some NPs (13.2%) never worked with a physician on site. Many NPs did not respond when asked the cost of an office visit. Some wrote that they did not know the cost or that a sliding fee scale was used. Of those who responded, an average office visit cost $46.39. A majority (56.5%) of the NPs reported that their fee was not less than the fee charged for a similar visit with their supervising physician. Most NPs (71.3%) had written protocols. In response to a question that asked how the NP believed the patient viewed them, 42.6% chose as "their primary health

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care provider," 34.9% chose as "a partner in their care," only 11.6% chose as "a substitute for their physician," and 10.1% chose a combination of these answers.

Table 5

Description of Health Care System

Variable	N or Range	M	SD	%
Community size				
Urban (> 70,000)	50			38.2
Small city	29			22.1
Urban inner city	12			9.2
Rural	32			24.4
Suburban	3			2.3
Other	2			1.6
Practice setting				
Community clinic	14			10.8
School	3			2.3
Group MD practice	22			16.9
Hospital outpatient	15			11.5
Homeless clinic	2			1.5
Solo MD practice	13			10.0
Health department	14			10.8
Rural health clinic	28			21.5
Other	19			14.6
Patient number/day	4-47.5	17.23	7.75	
Clinic hours/day	3-12	7.67	1.58	
Amount of MD supervision				
Always see patient with MD	6			4.7
MD sees some of my patients	15			11.6
MD sees own patients	62			48.1
Part time MD	19			22.5
		10.04	7.4	
MD never on site	17			13.2
Office visit cost	0-180	46.39	31.30	
Is NP fee < MD				
Yes	30			22.9
No	74			56.5
No answer	27			20.6

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Table 5 (Continued)

Variable	N or Range	Mean	SD	%
Protocols				
Yes	92			71.3
No	37			28.7
Time with patient	5-70	21.90	8.63	
Patient view of NP				
Primary care provider	55			42.6
MD substitute	15			11.6
Care partner	45			34.9
Some combination	13			10.1
The city nurse	1			.8

Note. MD = Physician. NP = Nurse Practitioner.

Findings Related to Research Questions 1, 2, and 3

Descriptive statistics were used to answer Research Questions 1 and 2. Cross-tabulations using chi square to determine significant differences (Pearson's chi square contingency value < .05) were used to answer Research Question 3.

Research Question 1

Research Question 1 asks: "What are the activities of NPs in the provision of primary care to patients in Alabama?" The 238 activities from this study are listed in Appendix J. Only 2 of the 114 activities and technologies in Round 1 of the Delphi survey were found not to be used by any of the panelists. These were performing the technologies of arthrocentesis and colonscopy. These two items were deleted from further analyses. Since Round 2 and 3 activities (124 items) were placed on the list of

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activities by the panelists, at least one NP considered them to be part of their practice. This study identified 236 activities and technologies used by NPs in primary care practice. These included 16 activities of patient assessment, 19 activities of diagnosis and management, 12 methods of ordering medication, 32 special services to which practitioners referred patients, 25 diagnostic procedures they ordered, 19 nontraditional therapies used, 22 activities of teaching, 63 technologies performed, 15 activities of clinic operations, 5 activities of community involvement, 2 activities of continuing education, 4 research activities, and 2 activities of providing consultation (Appendix K).

Research Question 2

Research Question 2 asks: "Is there a core of activities that is common to all NPs in primary care practice?" Only the frequency of the answer "Yes, I do this in my current practice," to identify routine activities of practice, was considered in findings related to this question (Appendix J). Activities identified as being used in routine practice by more than 50% of the panelists on at least three specialty panels were designated as core practices of NPs. The 83 core activities identified are listed in Table 6 and identified in Appendix J with a "C" in the result column.

Core activities of NPs include 10 activities of patient assessment, 12 activities of diagnosis and management, 7 methods of ordering medication, 15 special

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Table 6

Core Activities of NPs

Activity
Patient assessment:
Obtain a limited health history concentrating on the chief complaint
Obtain a complete health history for initial database
Obtain a health history focused on wellness and risk assessment
Assess patient's expectations of this visit
Perform physical examination
Perform breast examination
Perform pelvic examination
Perform male genital examination
Perform rectal examination
Do preemployment, sports, other specialized physical exams
Diagnosis and management:
Make an initial diagnosis
Make final diagnosis for visit
Initiate treatment
Consult with patients by telephone
Monitor health status of patients with chronic illness (hypertension, diabetes, chronic respiratory disease, etc.)
Adjust medications
Negotiate acceptable treatment plans with patient
Coach (support, counsel) patients as they move toward improved self-care
Telephone triage
Call patients for follow up, report lab/other results, or to schedule other services
Track patients with abnormal tests or for periodic visits
Write letters for patients regarding school and work activities
Order medication:
By phoning pharmacy
Distributing medication in clinic
Giving in clinic by injection, orally, or inhaling
Write script and then have physician sign or cosign
Give samples obtained from drug reps
Using standing orders, formulary, protocol, or verbal orders
Tell the patient OTC meds they can buy

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Table 6 (Continued)

Activity
Make referrals to:
Specialist physicians
Dieticians
Physical therapist
Service agencies and community resources
Nurse
Primary care physician
Mental health, substance abuse counselors, psychologists
Home health services
Dentists
Ophthalmology/optometry
Diagnostic testing services--ultrasound, mammography, etc.
Surgeons or surgical clinics
Emergency rooms
Social services, outreach workers
Special clinics for low income patients
Order diagnostic procedures:
Routine screening test (vision, hearing)
Lab
X-ray
Sonogram
ECG
Mammography
GI test--UGI, barium swallow
Targeted ultrasound
Nontraditional therapies:
Vitamin/nutritional supplements
Prayer, faith, spirituality
Exercise
Teaching:
Health promotion (safety, risk reduction, anticipatory guidance)
Disease prevention: immunizations
Smoking cessation
Weight loss or special diets
Skin self-assessment
Disease management: use of medications
Symptoms of worsening disease
Methods to control disease
Self-care
When to consult a health care provider
How to consult a health care provider
Counsel patients about high risk sexual activities, birth control, HIV testing
Precept NP students
Teach clinic staff

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Table 6 (Continued)

Activity
Perform technologies:
Obtain throat culture specimens
Obtain wound culture specimens
Obtain genital culture specimens
Administer medication (other than injections)
Give injections
Remove incision staples
Obtain PAP smears
Removal of cerumen
Clinic operations:
Talk with drug rep
Establish policies and procedures
Participate in peer review and quality assurance
Community involvement:
Serve as a member of community organizations
Speak to community groups, clubs
Continuing education:
Attend continuing education programs

services to which NPs refer patients, 8 diagnostic procedures NPs order, 3 nontraditional therapies used, 14 teaching activities, 8 technologies NPs perform, 3 activities of clinic operation, 2 activities of community involvement, and 1 continuing education activity. Six activities had notable exceptions, indicating that, although in three specialties over 50% of panelists did these activities routinely, in the other specialty 10% or less of panelists reported doing them. Only 85 of women's health NPs performed male genital examinations and only 9% removed cerumen from ears. Only 8% of pediatric NPs performed pelvic exams or obtained PAP smears, only 8% ordered mammography, and only 10% removed incision staples.

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Research Question 3

Research Question 3 asks: "Do NPs' activities differ by NP specialty?" Using chi-square to measure the differences between the groups in frequency of answer of "yes," "no," or "sometimes," a list of specialty activities was identified. Only the frequency of "Yes, I do this in my current practice" was considered to indicate that this was an activity of practice. The answer "No, I do not do this in my current practice" and the answer "Sometimes I do this, but not routinely" were considered together as not part of the practitioner's practice. Activities analyzed as performed significantly more often by one or two NP specialties were placed on the Activities of NP Specialty Practice. Thirteen specialty activities were identified for family NPs, 15 for pediatric NPs, 14 for adult NPs, and 15 for women's health NPs. These specialty activities are listed in Table 7.

Table 7

Activities of NP Specialty Practice

Activity
Family NPs (FNP:)
Diagnosis management:
care of home health patients
Make referrals to:
pain clinic
Order diagnostic procedures:
Thallium GXT
EMG
vascular-noninvasive
Perform technologies:
administer/interpret developmental screening tests and growth charts
interpret growth charts

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Table 7 (Continued)

Activity
administer breathing treatments
suture wounds
remove ingrown toenails
treat for dog, cat, and/or snake bite
perform ECGs
administer pulmo-aide treatments
Pediatric NPs (PNP)
Patient assessment:
EPSDT screening
Make referrals to:
developmental specialists
occupational therapists
medical genetics
programs such as healthy start, head start, early interventions
Order diagnostic procedures:
EEG
PH probe, ECD
Teaching:
CPR
Perform technologies:
administer/interpret developmental screening tests and growth charts
interpret growth charts
perform audiometry or tympanometry
administer pulmo-aide treatments
administer breathing treatments
ventilator management
perform femoral/arterial sticks
Adult NPs (ANP)
Make referrals to:
respiratory therapy
podiatry
hospice
pain clinic
Patient assessment:
help patients gown
Diagnosis management:
care of nursing home patients
care of home health patients
Order diagnostic procedures:
colonscopy
MRI
sigmoidoscopy
Perform technologies:
administer vision screening exams
perform bone marrow aspiration

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Table 7 (Continued)

Activity
perform anoscopy
Providing consultation:
act as consultant for wound care/chronic illness management/other
Women's Health NPs (WHNP)
Make referrals to:
medical genetics
Order diagnostic procedures:
colposcopy
nonstress tests
Teaching:
about prenatal care
Perform technologies:
insert/remove norplant
perform microscopic examination of urine
perform ultrasound-pelvic, abdominal, transvaginal
dopple fetal heart tones
perform endometrial biopsy
postcoital testing
perform nonstress tests
fit diaphragms
infertility management
insert/remove IUDs
Research:
recruit participants for research projects

Activities analyzed as significantly different, because one specialty did not do this activity, were moved to the other activities list. These activities, which were placed on the other activities list due to only negative differences between groups, are coded with N in Appendix J.

The remaining activities not designated core or specialty were placed on a list of other activities of NP practice. This list contains 103 activities and technologies and is located in Appendix L.

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Research Question 4

Research Question 4 asks: "Do NP variables influence the activities of NP practice?" The variability in the number of activities in the 13 categories (dependent variables) and the 10 NP variables (independent variables) were analyzed using simple regression analysis. The 10 NP variables are: (a) age, (b) year of graduation from a basic nursing program, (c) year of completion of a NP program, (d) the number of years worked as a NP, (e) the number of hours worked each week as a NP, (f) gender, (g) race, (h) area of certification as a NP, (i) type of NP program completed, and (j) the highest academic degree. Of the 13 categories of activities, only ordering diagnostic procedures was predicted by NP variables (Table 8).

Table 8

NP Variables as Predictors of NP Activities

Activity	*p*
Patient assessment	.606
Diagnosis and management	.484
Order medication	.220
Referrals	.347
Order diagnostic procedures	.038*
Nontraditional therapies	.966
Teaching	.707
Perform technologies	.375
Clinic operations	.661
Community involvement	.558
Continuing education	.640
Research	.609
Provide consultation	.195

Note. *significant $p < .05$.

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The NP variables which, significantly correlate with ordering a wider variety diagnostic procedures, are being a pediatric (b = -10.182, p = .016) or women's health NP (b = 8.34, p = .027) and higher levels of NP educational preparation (b = 5.93, p = .003). Having a higher degree level of education as the highest degree held (b = -3.53, p = .017) correlated with a smaller variety of activities of ordering diagnostic tests.

Research Question 5

Research Question 5 asks: "Do patient variables influence the activities of NPs in practice?" The variability in the number of activities in the 13 categories of activities (dependent variables) and the 6 patient variables (independent variables) were analyzed using simple regression analysis. The six patient variables are: (a) age range of patients most frequently seen, (b) gender of the majority of patients, (c) race of most patients, (d) reimbursement source for most patient visits, (e) socioeconomic class of most patients, and (e) the education level of most patients. Only continuing education activities were significantly predicted by patient variables (Table 9).

Patients ages 21 to 60 years correlated with increased variety of continuing education activities (b = .322, p = .019). However, seeing patients of "all ages" (b = -.078, p = .029), a majority of White race patients (b = -.413, p = .016) or patients with insurance (b = -.329, p = .036) or

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Medicaid (b = -.407, p = .022) reimbursement correlated with decreased variety of continuing education activities.

Table 9

Patient Variables as Predictors of NP Activities

Activity	p
Patient assessment	.190
Diagnosis and management	.160
Order medication	.386
Referrals	.624
Order diagnostic procedures	.384
Nontraditional therapies	.289
Teaching	.908
Perform technologies	.165
Clinic operations	.372
Community involvement	.432
Continuing education	.021*
Research	.530
Provide consultation	.345

Note. *significant p = .05.

Research Question 6

Research Question 6 asks: "Do health care system variables influence the practice activities of NPs?" The variability in the number of activities in the 13 categories of activities (dependent variables) and the 10 health care system variables (independent variables) were analyzed using simple regression analysis. The 10 health care system variables are: (a) size of the community, (b) type of practice, (c) average number of patients seen in a clinic day, (d) number of hours in a clinic day, (e) amount of physician supervision of the NP's practice, (f) cost of an average office visit, (g) is the fee less than the fee of the physician in the same practice (h) does the NP have

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written protocols, (i) average number of minutes spent per patient, and (j) how the NP believes the patient views the practitioner (Table 10).

Table 10

Health Care System Variables as Predictors of NP Activities

Activity	p
Patient assessment	.554
Diagnosis and management	.085
Order medication	.421
Referrals	.420
Order diagnostic procedures	.415
Nontraditional therapies	.595
Teaching	.689
Perform technologies	.342
Clinic operations	.008*
Community involvement	.027*
Continuing education	.553
Research	.109
Provide consultation	.642

Note. *significant p = .05

Two activities, clinic operations and community involvement, were found to be predicted by health care system variables. Having a visit fee that was not less than the physician's fee was correlated with a wider variety of activities of clinic operation (b = 3.750, p = .000) and more community involvement activities (b = 1.068, p = .032). Working in a community clinic setting (b = -5.149, p = .019) or group physician practice (b = -5.706, p = .007) or having a higher average office visit fee (b = -.047, p = .018) correlated with a smaller variety of clinic operation activities. Working in a group physician practice (b = -1.762, p = .070) or having a higher average

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visit fee (b = -.028, p = .002) correlated with a smaller variety of activities of community involvement.

Stepwise Multiple Regression Analyses of NP, Patient, and Health Care System Variables and NP Activities

Stepwise multiple regression analyses were computed to test the possibility that the NP, patient, and health care system variables combined to predict variability in the primary care practice activities of NPs. The number of NP activities identified in each of the 13 categories of activities was the dependent variable. The 10 NP variables, 6 patient variables, and 10 health care system variables were the independent variables. The level of significance for these calculations was set at p = .05. In this section, results for each category of activity are presented (Table 11).

Table 11

Significant NP, Patient, and Health Care System Variables Related to Categories of NP Activities

Variable	b	SE(b)	t	p
Patient assessment				
group MD practice	-3.39	1.67	-2.04	.05
Diagnosis and management				
Medicare	3.08	.94	3.26	.00
Urban	2.30	.92	2.50	.02
Small city	2.77	.89	3.11	.00
Hospital outpatient	2.92	1.36	2.14	.04
View as primary care provider	2.36	.92	2.56	.01
Order medication				
Year of completion of NP program	-.20	.05	-3.90	.00
Pediatric certification	-7.67	1.43	-5.38	.00
NP prep	1.77	3.41	3.41	.00

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Table 11 (Continued)

Variable	b	SE(b)	t	p
Patient age				
0-10 years	-4.62	1.08	-4.29	.00
11-20 years	-1.92	.93	-2.07	.04
61-80 years	2.53	1.04	2.44	.02
Male patients	2.60	1.15	2.26	.03
Community clinic	-2.68	.98	-2.72	.01
Health department	2.31	1.06	2.17	.03
Other setting	-3.73	1.11	-3.36	.00
Referrals				
Pediatric certification	-16.08	6.10	-2.64	.01
Adult certification	-11.64	3.22	-3.61	.00
Black race patients	7.52	2.60	2.89	.01
Group MD practice	8.95	3.03	2.95	.01
View NP as primary care provider	6.72	2.23	3.02	.00
view NP as a physician substitute	8.54	4.01	2.13	.04
Order diagnostic procedures				
NP age	.24	.10	2.51	.02
Adult certification	-6.09	2.92	-2.09	.04
NP preparation	5.04	1.51	3.34	.00
Highest degree	-2.70	1.19	-2.27	.03
Patient age = 0-10 yr	-5.39	2.26	-2.39	.02
No reimbursement	-4.27	2.09	-2.04	.05
Physician supervision	2.17	.95	2.29	.03
Nontraditional therapies				
Hours NP in clinic/week	.15	.07	2.19	.03
Black race NP	-5.72	2.55	-2.24	.03
Equal numbers male/ Female patients	4.44	1.73	2.57	.01
Medicare	5.73	1.99	2.87	.01
Upper income patients	-10.77	4.15	-2.60	.01
Other settings	-6.20	2.44	-2.55	.01
View = combination	-5.64	2.21	-2.56	.01
Teaching				
Family certification	3.70	1.34	2.76	.01
Patient education level	-2.14	.83	-2.58	.01
Community clinic	-4.61	2.02	-2.28	.03
Health department	7.33	2.06	3.56	.00
View of NP = combination	-3.60	1.64	-2.19	.03
Perform technologies				
Year of completion of NP program	-.85	.28	-3.04	.00
Patient education level	-4.92	1.73	-2.85	.01

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Table 11 (Continued)

Variable	b	SE(b)	t	p
Health care system				
rural	-6.98	2.68	-2.61	.01
other size community	27.74	12.51	2.22	.03
Time spent per patient	-.45	.20	-2.29	.03
Clinic operations				
Black race NP	-4.00	.97	-4.12	.00
Patient age 61-80 yr	3.78	1.24	3.06	.00
Male patients	-3.70	1.63	-2.27	.03
Urban inner city	-4.17	1.15	-3.62	.00
Hospital outpatient	3.61	1.32	2.73	.01
Solo MD practice	2.48	.98	2.54	.02
Health department	4.76	1.07	4.46	.00
Other	2.50	1.06	2.40	.02
Number of patients	-.17	.05	-3.45	.00
Cost of a visit	-.03	.01	-3.35	.00
Fee less than MD	2.82	.75	3.76	.00
Combination of views	-2.64	.94	-2.80	.01
Community involvement				
NP age	.08	.02	3.02	.00
Black race patient	1.96	.47	4.19	.00
Urban	1.58	.39	4.05	.00
Suburban	2.53	1.03	2.46	.02
Group MD practice	-1.12	.44	-2.53	.01
Health department	1.50	.66	2.29	.03
Continuing education				
Pediatric certification	-.63	.24	-2.60	.01
Patient age 21-60 years	1.12	.16	6.87	.00
All ages patients	.85	.17	4.90	.00
Male patients	.51	.23	2.20	.03
White race patients	-.46	.12	-3.78	.00
Insurance	-.38	.14	-2.68	.01
Medicare	.27	.12	2.29	.03
No reimbursement	-1.45	.16	-2.78	.01
Poor patient	.87	.24	3.63	.00
Middle income patient	.62	.24	2.55	.01
Urban	.24	.12	2.08	.04
Hours per clinic day	.08	.04	2.32	.02
Physician supervision	.19	.07	2.78	.01
Research				
Medicare	1.08	.35	3.12	.00
Patient education	-.55	.24	-2.34	.02
Urban	1.58	.43	3.67	.00
Urban inner city	3.66	1.20	3.05	.00
Group MD practice	-1.70	.42	-4.02	.00

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Table 11 (Continued)

Variable	b	SE(b)	t	p
Other practice	-1.10	.50	-2.21	.03
Hours per clinic day	.23	.11	2.08	.04
Provide consultation				
NP age	.05	.02	2.19	.03
Adult certification	-1.34	.34	-3.92	.00
NP preparation	.40	.18	2.21	.03
Patient age 61-80 years	1.72	.46	3.73	.00
Male patients	-1.81	.49	-3.73	.00
Patient education level	-.43	.19	-2.22	.03
Rural community	.66	.30	2.17	.04
Community clinic	-.93	.45	-2.07	.04
Homeless clinic	-2.65	.84	-3.17	.00
Rural health clinic	-1.17	.34	-3.45	.00
Other practice setting	-1.64	.42	-3.93	.00
Hours per clinic day	-.17	.08	-2.24	.03

Note. significant p = .05.

It is obvious that many more correlations between NP, patient, and health care system variables are significant at the alpha = .05 level, when the variables are considered together. Findings related to each activity category are discussed in this section.

Patient Assessment

The only predictor of patient assessment activities was NPs who worked in group physician practices. These NPs reported a smaller variety of activities of patient assessment.

Diagnosis and Management

The patient variable, Medicare reimbursement, and the health care system variables, community size, practice setting, and patient's view of the NP as their primary

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health care provider, were significant predictors of the activities of diagnosis and management. Patients having Medicare as a reimbursement source correlated with a wider variety of activities of diagnosis and management. The health care system variables correlated with an increased number of different activities of diagnosis and management.

Order Medication

The NP variables of year of completion of an NP program, area of certification, and the type of NP program completed by the NP were significant predictors of activities for ordering medication. More recent completion of an NP program and certification as a pediatric NP correlated with a smaller number of different methods of ordering medication. Higher educational levels of preparation as an NP correlated with more methods of ordering medication. Two patient variables, age and gender, were significant. Patients in the 0- to 10-year-old and 11- to 20-year-old groups correlated with a smaller variety of methods of ordering medications. Patients 60 to 80 years old and male patients correlated with more methods of ordering medications. The health system variable that describes the setting of the NP's practice was also found to be significantly correlated with the number of methods of ordering medications. Community clinics and the miscellaneous other settings correlated with decreased methods of ordering medication. Practitioners working in health departments reported a larger number of methods of ordering medications.

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Referral

One NP variable, area of certification, and one patient variable, patient race, were significant predictors of the activities of referral. Pediatric and adult certified NPs reported fewer different referral activities. Black patients were found to correlate with a wider variety of referral activities. Two health care system variables, practice setting and the patient's view of the NP, were also predictors of activities of referral. Practicing in a group physician practice correlated with a wider variety of referral activities. Patient's view of the NP as the patient's primary care provider and view of the NP as a physician substitute correlated with an increased number of different activities of referral.

Ordering Diagnostic Procedures

Four NP variables, two patient variables, and one health care system variable were significant predictors of activities of ordering diagnostic procedures. Older NPs and higher educational levels of preparation as an NP correlated with a wider variety of activities of ordering diagnostic procedures. Certification as an adult NP and holding a higher degree as the highest degree earned correlated with a smaller variety of activities of ordering diagnostic procedures. The patient variables of age between 0 and 10 years old and having no source of reimbursement correlated with a smaller variety of activities of ordering diagnostic tests. The health care system variable indicating less physician supervision of an

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NP's practice correlated with a wider variety of activities of ordering diagnostic procedures.

Nontraditional Therapies

Two NP variables, three patient variables, and two health care system variables were significant predictors of activities using nontraditional therapies. NPs who worked more hours in clinic each week reported using a wider variety of nontraditional therapies. African American NPs reported using a smaller number of different nontraditional therapies. Seeing equal numbers of male and female patients and having Medicare as a reimbursement source correlated with a wider variety of activities of using nontraditional therapies. Seeing a majority of patients from an upper income socioeconomic class correlated with fewer different activities of using nontraditional therapies. Being in other types of practice settings and having a combination of patient views of the practitioner correlated with fewer different activities of using nontraditional therapies.

Teaching

One NP variable, certification as a family NP, and one patient variable, level of patient education, were significant predictors of teaching activities of NPs. Family NPs reported a wider variety of teaching activities. Higher patient education levels correlated with a smaller number of different teaching activities. Two health care system variables were also predictors of activities of patient teaching. Practice settings of community clinics

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and being viewed by the patients in a combination of views correlated with a smaller number of different teaching activities. Working in a health department setting correlated with a wider variety of teaching activities.

Perform Technologies

More recent completion of an NP program correlated with a small variety of activities of performing technologies. Higher levels of patient education correlated with performing a smaller variety of technologies. Two health care system variables were also significant in predicting the number of activities of performing technologies. NPs in rural practices and NPs who spent more time with their patients reported performing a smaller variety of technologies.

Clinic Operation

One NP variable, two patient variables, and four health care system variables were significant predictors of the dependent variable. African American NPs reported a smaller number of activities of clinic operations. Seeing a majority of male patients correlated with a smaller variety of activities of clinic operation, but seeing a majority of patients aged 61 to 80 years old correlated with a larger number of different activities of clinic operation. NPs in urban inner city practices reported a smaller variety of activities of clinic operations. Working in hospital outpatient departments, solo physician practices, health departments, and other (the miscellaneous setting) all correlated with a wider variety of activities

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of clinic operation. Seeing more patients correlated with a smaller variety of activities of clinic operation. Not having a fee that was less than the physician's fee correlated with more activities of clinic operation; however, having a higher average visit cost correlated with a smaller variety of activities of clinic operation. A combination of patient views of the NP correlated with a smaller variety of clinic operations activities.

Community Involvement

The age of the NP, race of the majority of patients, and the community size and practice setting were significant predictors of the community involvement. Older NPs reported a wider variety of community involvement activities. Seeing more African American patients correlated with a wider variety of community involvement activities. Practicing in urban or suburban communities correlated with a wider variety of community involvement activities. NPs practicing in group physician practices reported a smaller variety of activities of community involvement. Working in health department settings correlated with a wider variety of activities of community involvement. Higher average office visit fees correlated with a smaller variety of activities and reporting that patients view the practitioner as a substitute for their physician correlated with a wider variety of activities of community involvement.

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Continuing Education

One NP variable, area of certification, and three health care system variables, the practice setting, hours spent per clinic day, and amount of physician supervision, were significant predictors of continuing education. Certification as a pediatric NP correlated with a smaller variety of activities of continuing education. Five patient variables were also significant. Patients aged between 20 and 60 years old and all ages correlated with a wider variety of continuing education activities. Seeing more male patients correlated with more continuing education, while seeing a majority of White race patients correlated with a smaller variety of continuing education activities. Having insurance or no reimbursement source correlated with a smaller variety of continuing education activities, but having Medicare as a reimbursement source correlated with a wider variety of continuing education activities; and seeing patients in poor or middle income socioeconomic classes correlated with a wider variety of continuing education activities. Health care system variables of practicing in an urban community, more clinic hours per day, and less physician supervision correlated with a wider variety of continuing education activities.

Research

Two patient variables, Medicare as a reimbursement source and level of patient education, and health care system variables, community size, practice setting, and hours spent in clinic per day were significant predictors

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of the research activities of the NP. Having Medicare as a reimbursement source, practicing in urban or urban inner city, and having more hours per clinic day correlated with a wider variety of research activities. Higher levels of patient education and working in a group physician practice or other practice settings correlated with a smaller variety of research activities.

Provide Consultation

Three NP variables--NP age, area of certification, and the type of NP program completed--and three patient variables--patient age 61 to 80 years, male gender, and level of education--correlated significantly with the dependent variable. Older NPs with higher levels of educational preparation as NPs reported engaging in a wider variety of activities of providing consultation. Adult certification, seeing mostly male patients, and higher levels of patient education correlated with a smaller variety of activities of providing consultation. Health care system variables--community size, practice settings, and hours per clinic day--were also significant predictors of the consultation activities of NPs. Working in a rural community correlated with a wider variety of activities of providing consultation. However, community clinics, homeless clinics, rural health clinics, and other correlated with a smaller variety of activities of providing consultation. Having more hours per clinic day also correlated with a smaller variety of activities of providing consultation.

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Summary

The findings of this study are reported in three lists of NP activities: Core Activities of NPs, Activities of NP Specialty Practice, and Other Activities of NPs. In the initial analysis of Questions 4, 5, and 6, simple regression revealed some ability of the individual variables to predict NP practice activities. However, considering all the variables together in stepwise regression proved to provide many more significant predictor variables of NP activities. NP, patient, and health care system variables were found to be significant predictors of variance in the activities of NPs.

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CHAPTER V

Conclusions, Discussion, Implications, and Recommendations

Introduction

The purpose of this study was to identify the activities used by NPs in the provision of primary care. Patient, NP, and health care system variables were used to describe the panelists and analyze to determine whether they conditioned the activities of NPs. Delphi survey techniques were used to identify the activities of NPs and the frequency of their use. NPs listed with the Alabama Board of Nursing and in current primary care practices in Alabama were invited to be panelists in the study. A total of 139 panelists in four NP specialities agreed to participate. They were divided into panels by certification specialty. The FNP panel had 75 panelists, the pediatric NP panel had 12 panelists, the adult NP panel had 15 panelists, and the women's health NP panel had 37 panelists. One hundred and seven panelists completed all rounds of the study.

The Round 1 questionnaire contained 114 activities identified by the investigator from Standards of Practice for the Primary Health Care Nurse Practitioner (ANA, 1987) and The Scope of Practice of the Primary Health Care Nurse Practitioner (ANA, 1985), literature related to primary

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care practice (Sirles et al., 1986; Zimmer et al., 1990), personal practice experience, and a pilot study of three NPs. Panelists added 112 activities during Round 1 and 12 activities during Round 2. No activities could be added in Round 3. Two technologies were deleted form the activities because none of the panelists reported using them. Therefore, 236 activities were identified as activities of NP practice in primary care in Alabama. The reported frequency of each activity by each specialty panel was analyzed to divide the activities into three lists: The Core Activities of NPs, Activities of NP Specialty Practice, and Other Activities of NP Practice.

To examine the possibility that NP variables, patient variables, or health care system variables might condition the practice activities of NPs, the activities were divided into 13 categories. Stepwise regression analyses revealed that NP, patient, and health care system variables were significant predictors of the number of different activities of NP practice.

The first section of this chapter contains conclusions drawn from the findings of this study related to each research question. The second section discusses potential significance of these findings to nursing theory, education, and practice. Assumptions and limitations of this study are examined in the third section. Recommendations for future studies are made in the final section of this chapter.

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Conclusions

Research Question 1

Research Question 1 asks: "What are the activities of NPs in the provision of primary care to patients in Alabama?" NPs in this study identified 236 activities of primary care practice. The investigator categorized these activities into 13 categories. Future studies may identify additional categories of practice activities. NP practice is always changing. In fact, in Round 3 of the study, when no new items could be added by participants, one panelist wrote, "Yesterday, I drained and injected cortisone into an effused bursae. I'm assuming this has already been covered (If not, forget it at this stage!)." Starting the survey with a list of investigator-created activities may have biased the answers. Six items were placed throughout the initial survey for panelists to add new activities. These items were: (a) other referrals, (b) order medication by other methods, (c) other diagnostic procedures you order, (d) other nontraditional strategies you use, (e) other activities you do in your current practice, and (f) other technologies you use in practice. The placement and headings of these six items triggered responses in those categories. New studies using the 13 categories derived from the data might more accurately reflect actual practice activities. However, starting the rounds with a well-developed list was intended to decrease the time panelists would have to invest in completing the questionnaire. The high response rates may reflect the fact that the survey

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instrument could be completed quickly. The Delphi method allows for changing previous responses and this made it possible for practitioners to answer quickly, knowing that they could change their answer if needed. Some panelists did change their previous answers. It is unclear whether changing previous answers meant they decided that they had been incorrect the first time or if during the weeks between rounds they had observed their practice activities and found that they needed to change their answer. It is also possible that, after seeing the answers of other practitioners in their specialty, they decided to go with the group answer. The results of this study are merely the opinions and self-reports of the practitioners. Further studies of the activities of NPs using different methods (e.g., direct observation) need to be done to validate these findings.

One interesting finding about the number of activities is in the area of methods to order medication. In Alabama, at the time of the study, NPs had no prescriptive authority; therefore, 12 methods of ordering medication were identified. A law allowing the prescription of legend drugs by NPs passed the Alabama Legislature in May 1995. By July 1996, regulations for prescriptive authority for NPs will be in place and NPs will begin prescribing drugs legally. It would be interesting in a future study to measure the change, if any, in ordering medication after prescriptive authority for NPs becomes legal.

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Some duplication of activities occurred. It would have been better to send all of the previous activities with each round. Only the last and current round activities were sent in this study. However, with the large number of activities and arranging them by their usual occurrence in a patient visit, it was difficult to look back and make sure an item a panelist added was not already in the survey.

Research Question 2

Research Question 2 asks: "Is there a core of activities that is common to all NPs in primary care practice?" NP panelists identified 83 core activities common to all primary care practice. Seventy-five activities identified by the panelists as core activities involve patient care. Ninety percent of the core activities of NPs involve direct care of their patients. Other studies have only examined the time spent with the patient in the practitioner-patient encounter. The results of this study support the contention that practitioners spend the majority of their practice time providing care to their patients.

Twelve of the 14 teaching activities involved patient teaching. Other studies have found that patient teaching is a hallmark of nursing care and is presumed to be one reason NP outcomes in primary care are superior to physician outcomes in dealing with certain patients with chronic illnesses. The majority of the patient teaching activities in the core practice concerned health promotion

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and illness prevention topics. This also is consistent with other reported findings in the literature that NPs are the health promotion and illness prevention specialists.

There are 15 core activities of referral to health care specialists, community resources and services, and diagnostic services. This is consistent with the gatekeeping function of primary care providers. It is unclear why some practitioners referred patients for diagnostic services instead of directly ordering these services, except that some reimbursement sources will not pay for services unless a physician orders the service. Referring adds cost and potential delay in diagnosis. Some practitioners noted ordering complex diagnostic testing but wrote on their survey form that they consulted with the physician first. Further study of the referral patterns of NPs and reasons for them are needed.

Only eight diagnostic tests of a possible 25 were core activities. One explanation for the low number of tests is that 10 diagnostic testing activities are listed in specialty practice. It seems reasonable that specialty populations, for example, pregnant women, would require tests that are not commonly done in other populations. The remaining seven diagnostic tests that were not selected as core activities involve more expensive and complex testing. Previous research has shown that NPs do not often order expensive diagnostic tests (Brown & Grimes, 1993; OTA, 1986).

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Variance in performing technologies may be related to the population needs of specialty practice. Only 8 of 65 technologies were identified as core activities and 3 of these had exceptions. More research of technologies that are core and those that differentiate specialty practice of NPs is needed to assist both educators, employers, and consumers to understand the special skills of different NPs.

Only three nontraditional therapies were core activities of NPs. These were the use of vitamin/ nutritional supplements; prayer, faith, or spirituality; and exercise. This was an unexpected finding. Nurses are presumed to be more receptive to the use of nontraditional therapies than are some other health care professionals, particularly when they do not have access to prescribing medication. However, the panelists reported little use of these therapies. The strong emphasis on the medical model and medical protocols in some NP education programs may be one reason for this finding. Ironically, medicine now appears to be gaining interest in what they call "alternative medicine." Medicine is offering college and continuing education courses on nontraditional therapies. Reports of marked increase in public interest in and use of these therapies is reflected in increased media coverage of nontraditional therapies. Further study seems warranted to examine the knowledge about and use of nontraditional therapies by NPs. NP educators need to examine current NP curriculums in the area of nontraditional therapies because

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these will apparently be sought by patients in the future and valued by the health care system.

NPs identified two core activities of community involvement. These were serving as a member of community organizations and speaking to community groups and clubs. Primary care should consist of care activities that meet the needs of the community. The NP should be an integral part of the community. However, in our current health care system, practitioners may not even live in the community where they practice. The medical model of primary care education has not emphasized community assessment or involvement. There is little research about how NPs or other primary care providers are involved in the practice community. This is a neglected area of NP research and would seem to be of increasing importance as managed care systems increase. A population focus of practice is believed to be important to successfully meet the needs of the nation. However, there does not seem to be much involvement of the practitioner with the community. Only 5 activities of 236 identified in this study addressed community involvement. Research is needed to determine if community involvement is taught in primary care practice programs and supported in the health care system.

Two of the three activities of clinic operation common to most practitioners deal with quality of care issues. These are establishing policies and procedures and participating in peer review and quality assurance. Previous studies reported that NPs provide high quality

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patient care and patients are well satisfied with the services they receive from NPs. This study indicates that maintaining standards and evaluating the quality of services are core activities of NPs.

Research Question 3

Research Question 3 asks: "Do NP activities differ by NP specialty?" The activities identified as specialty practice reflect the populations served by different specialty practitioners. Categories of activities that indicated some variance by specialty included referrals, diagnostic procedures, and technologies performed. Interestingly, two activities were found unexpectedly: (a) adult NPs were more likely to include acting as a consultant for wound care/chronic illness management/other in their activities, and (b) women's health NPs were more likely to recruit participants for research projects. Further study is needed to explain these findings. It could be reflective of the types of practices where these specialty practitioners work.

The FNP is a generalist and potentially sees a wide variety of patients. The family panel often had a percentage of panelists reporting practices that were designated as some other specialties' activities.

Statistical analysis sometimes indicated a significant difference when one or two specialties rarely identified an activity. However, the frequencies from other groups indicated that these were common activities of practitioners. These activities were placed on the list of

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other activities. Also, on the other activities list are those that did not meet the criteria for core activities but were not significantly different by specialty. The list of other activities became quite large, containing 103 activities. Future research, using methods other than Delphi, is needed to make this list more useful.

Other studies have not compared NP activities in one specialty to other NPs. Much more research is needed before an understanding of the differences between specialty practices are clear.

Research Question 4

Research Question 4 asks: "Do NP variables influence the activities of NP practice?" NPs with higher education levels of preparation as an NP reported a wider variety of methods of ordering medications, ordered a large number of different diagnostic procedures, and provided a wider variety of activities of consultation. However, having a doctorate as the highest degree earned correlated with fewer methods of ordering medication and ordering a smaller variety of diagnostic tests. Education appears to be an important factor in the number of different activities of NPs. NPs are now prepared at the master's level. The results of this study indicate that increased education levels may correlate with a wider variety of practice activities of NPs.

Older NPs reported a larger variety of activities of ordering diagnostic tests, community involvement, and providing consultation. In this study, it is unclear

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whether being older would indicate that the NP has been in practice for more years or is a more recently prepared NP with higher education level. Moving the entry level for NP practice to the master's level could potentially increase the average age of NPs. Will this change the activities of practice?

More recent graduates from NP programs reported fewer methods of ordering medication and performed a smaller variety of technologies. This seems reasonable. Performing a larger variety of technologies implies development of skills that increase with length of time in practice. More research is needed to identify the technologies NPs need to be able to perform in beginning practice in each specialty.

NPs who are African American indicated using a smaller number of different nontraditional therapies and were involved in fewer different activities of clinic operation. Only 10% of the panelists in this study are African American. African American people are believed to have a rich tradition of folk medicine and remedies. It is surprising that in this study African American NPs reported less use of various alternative therapies. The activities of clinic operation in this study included many activities that could be more efficiently performed by ancillary staff. Studies are needed to examine the appropriateness of NPs routinely participating in clinic operations.

Certification as an adult NP correlated with fewer different activities of ordering diagnostic procedures, providing consultation, and referral. Certification as a

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pediatric NP correlated with fewer different activities of ordering medication, continuing education, and referral. Certification as an FNP correlated with a wider variety of teaching activities. These findings may be reflective of the populations that these practitioners encounter in clinic. Teaching is an important intervention with all patients. The wide variety of patients seen by the family practitioner offers the opportunity for many different activities of patient teaching. The findings concerning referral raise the question of how an NP builds up a varied network of referral sources and how that process is influenced by specialty. How will increased managed care effect the referral activities of NPs? Managed care organizations partially control cost by controlling referral patterns. Referral is an important activity of effective primary care providers. Nursing scholars have not studied important issues surrounding referral. The regulations for prescriptive authority for NPs in Alabama will attempt to put the control of referral in the physician's hands. In primary care, nurses need to research the role of the referral and who should control the referral.

Research Question 5

Research Question 5 asks: "Do patient variables influence the activities of NPs in practice?" Patient age correlated with variance in activities of ordering diagnostic procedures, ordering medications, clinic operations, continuing education, and providing

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consultation. Obviously, the age of the patient does condition the activities of the NP. Practitioners who mostly saw children had fewer methods of ordering medication and ordered a smaller variety of diagnostic procedures. Children usually take fewer medications than adults. Many are seen for well visits. Therefore, due to characteristics of the population of children, it is possible that these practitioners need to use fewer methods of ordering medications. Those practitioners seeing patients 61 to 80 years old had more methods of ordering medications. This population may be covered by Medicare. Apparently, ordering by fax and reprints of monthly medications, and so on increase the methods of ordering medication in this population. It is unclear how the age of patients 61 to 80 years would increase the variety of activities of NPs related to clinic operations or consultation. Sex of patients also influenced practice activities. The influence of patient age and gender on NP activities needs further research and validation.

Reimbursement correlates with variance in the number of practitioner activities. It is unfortunate that, in our health care system, lack of ability to pay rations the activities of practitioners. However, it is true that, in practice, if one knows that a certain test or procedure is not financially feasible, the patient is treated without that test or procedure. Having insurance as the main reimbursement source also decreased the variety of continuing education activities of NPs. NPs in Alabama

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often are not reimbursed at all when they see patients who have insurance as a reimbursement source. This is certain to have some effect on their activities. Medicare as a reimbursement source correlated with an increased variety of continuing education activities, research activities, and nontraditional therapies. Medicare may be more likely to pay for nontraditional therapy. The program does not pay for medication. Research with adults is more common than with children. Adults are more likely to be Medicare recipients. Patients of upper income correlated with a smaller variety of nontraditional therapies. This might reflect that upper income patients were able to afford more traditional therapies or nontraditional therapies might not be reimbursable. In this study, NPs did not use many nontraditional therapies with any patients. The effect of reimbursement on continuing education is unclear. The influence of reimbursement on activities of the providers is a fruitful area of research.

Patients with higher levels of education correlated with the NP performing a smaller variety of technologies, teaching activities, research activities, and providing consultations. Is this because the practitioner refers those patients to other providers or are fewer different technologies performed for these patients? Other studies have shown that nurses who work in health departments and with disadvantaged populations do more patient teaching. Are better educated patients assumed to know more about

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health promotion and illness prevention or do they not require as much teaching for some other reason?

Research Question 6

Research Question 6 asks: "Do health care system variables influence the practice activities of NPs?" Practice setting correlated with variance in the number of practice activities. Some of the variance may be related to the populations served or types of reimbursement received. For example, NPs working in health departments provide a wider variety of consultation, teaching, and methods of ordering medications. These findings are consistent with the previous question's conclusions. Health departments serve poor and middle income patients and younger and older patients and have limited reimbursement sources.

Community size influenced NP activities. Practitioners in urban and suburban communities reported a wider variety of community involvement. Primary care services should meet the needs of the community and be integrated into the community. The ability to assess the health needs of communities and design and evaluate services to meet those needs is part of professional nursing practice. Smaller communities are frequently served by part-time clinics, which only staff a clinic a few hours a week, and practitioners who live in other communities. Therefore, NPs may be less likely to become involved in the community.

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Less supervision correlated with a wider variety of diagnostic procedures ordered and community involvement activities. This could be an important finding in a system that is trying to contain cost partly by decreasing procedures ordered. When practitioners have less opportunity for consulting, do they order more procedures? Or are the practitioners with less supervision ordering diagnostic procedures that practitioners with more supervision allow the physicians to order?

Being involved with more activities of clinic operation also correlates with seeing fewer patients per day. Activities of clinic operation increased with a fee that is not lower than the physician's fee. This may indicate that more independence in practice may have a price that results in added responsibilities and less time available for interacting with patients.

Community size and view of the practitioner correlated with activities of diagnosis and management. It is interesting and warrants further research that the way the NP perceives how the patient views the NP may influence the activities the NP performs.

Discussion

Sample

The panel of FNPs was quite large; however, the panels of pediatric and adult NPs were near the minimum size advised with the Delphi method. The smaller panels may indicate that the data for these panels are not as accurate

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a picture of scope of practice as that of the larger groups.

Twelve panelists were lost from the study in each round. It is possible that participants not familiar with the Delphi method did not realize that they would be asked to complete several rounds of questionnaires. The exact reason for lower response with each round is not known; however, it may indicate that the panelists were tiring from repeated rounds or it may mean NPs are very busy and time was not always available for research.

The large number of activities (238) forced dividing them into categories for data analysis of the variables that condition practice. Thus, each activity could not be examined alone.

Theory

Orem names five methods of helping that nurses use in practice: doing for, teaching, providing a developmental environment, supporting, and counseling. Denyes et al. (1991) studied the actions of nurses in effectively controlling a child's pain and they were able to categorize the actions into Orem's five methods of helping. Only some of the activities from this study fit into Orem's methods of helping. However, Orem's methods only apply to the direct interactions of nurses with patients. The helping methods are limited to the planning and implementation of nursing activities and do not include data gathering or assessment. Therefore, other categories were used in this study to describe all of the actions identified by NPs in

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practice. Teaching, one of Orem's methods of helping, was one of the categories identified in this study. Supporting and counseling were also identified as activities of NPs.

Some of the variables proposed by Orem (1991, 1995) to condition the actions of nurses were supported. In fact, NP variables, patient variables, and health care system variables were all found to correlate with changes in the number of activities of NP practice, supporting Orem's claim that these variables influence the practice activities of nurses.

Orem (1995) identified a need for NP activities to be identified to help resolve the boundary issues that exist between nursing and medicine concerning NP practice. The results of this study are a beginning step in accomplishing that goal. Further research is needed to validate the activities, verify the variables that condition the activities, and show how patients are helped through the activities of NPs.

Review of Research

The findings of this study may be useful in beginning to fill the gap in knowledge concerning what NPs do in practice that was identified in the literature (Davidson & Lauver, 1984; Hayden et al., 1982; Koehler, 1981; Orem, 1995; Sirles et al., 1986). Some of the activities NPs identified in this study support the findings of previous studies. Studies using the NPRF (Jacox et al., 1981) found that teaching activities were an important part of NP's practice. In this study, teaching was also found to be an

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activity of NPs, and many of the teaching activities reported in this study involve health promotion. One study done with the NPRF found only $4 of the teaching involved health promotion. Other researchers (Willis & Egan, cited in Billingsley, 1986; Draye & Pesznecker, 1979, 1980; Pesznecker & Draye, 1978) found that patient and staff education were common activities of NP practice. Even though those studies are now quite dated, the findings of this study suggest that teaching activities are still an important and extensive category of NP practice.

A previous study found that NPs in Alabama engaged in assessment and intervention more than technical procedures (Sirles et al., 1986). This study identified a wide variety of technical procedures that some NPs perform. Many of these procedures were not reported frequently enough to be core activities, but the large number and variety of procedures may indicate that NPs are incorporating more procedures into their practice.

Findings from this study supported previous findings that NPs use a nursing focus in practice and that it is possible to generate a list of the activities from practice (Draye & Pesznecker, 1979, 1980; Monninger, 1988; Pesznecker & Draye, 1978; Repicky et al., 1980). This study found that practitioner, patient, and health care system variables condition practice activities. Patient variables were found to influence an NP's scope of practice (Lynaugh et al., 1985). Health care system variables of supervision and clinic setting were found to influence NP activities in

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a study by Brown and Waybrant (1987). Lawler and Valand (1988) reported that health care system variables of practice setting, the number of patients in the caseload, the acceptance of the practitioner role, and availability of physician influenced practice activities. In this study, these and other variables were found to correlate with changes in the number of activities of NPs.

The Delphi method provided to be useful in identifying the scope of practice activities of NPs. Although, the method has not been commonly used for this purpose, the multiple rounds with the opportunity for additions and revisions proved to be effective for collecting practice information.

Analysis of the Panels

Four hundred and fifty-one NPs were invited to participate in this study. It is not possible to know why some people chose to participate in this study and others did not. The criteria for participation, having a current primary care NP practice in Alabama, were written in the invitation letter. Some potential participants may have decided that they did not fit this criteria. There is no reason to believe that the participants in the study are any different from other NPs in Alabama. However, the design of this study does not randomize or provide any controls for comparison with the population. Those who chose to participate exhibited interest by adding 124 activities to the original list of activities, continuing through all three rounds (giving a good response rate), and

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writing frequent notes of encouragement to the investigator on the questionnaires. One panelist even sent money for stamps to support the research and another wrote a long letter stating how she thought her practice was different from other NP's practices. Some suggested other questions they would like to see in a survey. The most popular other question was to find out the salary of NPs in Alabama.

The Delphi method served to make the NPs feel invested in the study. It takes more investigator time than one-time surveys, but it is very responsive to the panelists. If they missed answering questions, they got a second chance on the next round. No questionnaires needed to be discarded because they were incomplete. The panelists could see that we were building a description of practice activities in each round. Some practitioner, patient, and health care system variables can be compared to the Sirles et al. (1986) study done in Alabama with NPs in 1982. Both studies contained an overwhelming majority of White, female NPs. In fact, in each study, 98% were female and 90% were White. This may indicate that efforts to recruit more minorities and males into advanced practice nursing have not increased the percent of these practitioners practicing in Alabama in primary care. Levels of educational preparation of NPs in the two studies were different. In the 1982 study, 90% of the NPs completed a continuing education (certificate) program to become NPs. In this study, only 29% completed a continuing education or certificate program. Only 10% in the 1982 study completed

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a master's degree NP preparation program, whereas, 71% of the NPs in this study completed a master's or post-master's program to become NPs. This reflects the movement of NP education programs from continuing education programs to master's level preparation. The percent from each specialty in the 1982 study was very similar to this study. Family and women's health were large groups and the adult and pediatric were 10% and 8%, respectively. In this study, pediatric NPs are only 9% of the whole sample. Where are all the pediatric NPs? Does Alabama have so few of them or do they not register with the state board or participate in studies? In 1982, 80% of the practitioners reported having written protocols. In this study, 71% report having written protocols. Nationally, there has been discussion about the liability of written protocols and their inability to keep up with practice changes. However, in states that rigorously restrict NP practice, written protocols are one method of restriction. The new Alabama law for prescriptive authority mandates written protocols. Therefore, it would appear that, in Alabama, the percent of practitioners having written protocols may actually increase.

Surprisingly, 65% of the panelists in this study reported that a physician was always on site in their practice. This seems like a potentially inefficient care delivery system in a state with so many areas without health care providers. However, studies have shown that, without prescriptive authority and direct reimbursement, NPs are inhibited from practicing in manpower shortage

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areas. It will be interesting to see if the amount of physician supervision changes with prescriptive authority. However, the use of protocols, mandated physician supervision, and very limited reimbursement options in Alabama would lead one to predict that Alabama will continue to have many residents without access to primary health care providers. Most NPs will still be forced to practice in the same sites as physicians.

Assumptions

There were four assumptions of this study. The first assumption was that the activities of NPs can be identified. Two hundred and thirty-six activities of NPs were identified in this study. Two potential activities were deleted because no NP reported them as practice activities. The second assumption was that nationally certified, state licensed NPs possess knowledge of primary care practice in their area of specialty. In this study, four specialty panels were established from the Alabama State Board of Nursing's list of certified, licensed NPs. They represented the areas of pediatrics, family practice, women's health, and adult NP practice. The third assumption was that the activities NPs report using are the actual activities of their practice. Further studies would be needed to verify this assumption. The fourth assumption was that NPs can reach convergence of opinion on activities used in practice by NPs. Primary care practice activities common to all practitioners were identified and designated as core NP activities. Activities more frequently practiced

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by one specialty were identified by the panelists and designated specialty practice activities. Other activities that were not core or specialty acts were designated as other NP activities.

Limitations

The practice activities identified in this study may be reflective only of the activities of NPs in primary care and only in the specialty areas of pediatrics, family, women's health, and adult practice. Acute care NP practice and practice in other primary care specialties cannot be inferred from this study. A Delphi study only measures opinion. No effort was made in this study to view actual practice or validate that the opinions of the panelists are correct. The study is limited to the practice of NPs in primary care in Alabama. The practice activities of practitioners in other states could differ from those in Alabama. Adding the possibility of "Sometimes" as an option for answering was done due to pilot study recommendations. However, usually in analyzing the data, the "Sometimes" answer was counted as "No." No analysis of the possible implications of the "Sometimes" answer was undertaken in this study. Only correlational statements could be made about the potential influence of NP, patient, and health care system variables on the number of activities of NPs. Much more research is needed to make any analyses about causation or dependence.

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Implications

Research

The results of this study provide a beginning tool listing the activities of NPs that can be used to measure change over time and in varying situations. Since the studies in the 1970s and early 1980s, practice of NPs appears to have changed. NPs in this study performed more procedures and engaged in a wider variety of health promotion patient teaching activities than in previous studies.

Education

The list of activities can be used by NP educators in deciding the knowledge and skills needed in practice. Higher levels of education and NP preparation were shown to influence the number of practice activities. Educators need to address the issue of nontraditional therapies in NP education.

Practice

All NPs identified patient assessment using histories, physicals, and diagnostic tests; diagnosis; and management, including teaching, prescribing medication, performing procedures and therapies, and referral and follow up as core activities of primary care NP's practice. Administrators, legislators, other health care providers, payers, and consumers of health care need the information that an NP provides a full range of primary care services.

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Recommendations

Studies of NP Practice

Other types of studies that measure actual practice and not merely opinion about practice are needed now that this list, which was developed from the knowledge of practitioners, exists. Percentage of practice time devoted to various activities of NPs in primary care practice and how these activities influence patient outcomes should be studied. Broader populations of NPs, including those in other states, acute care, and other specialties, need to be studied. Studies are needed to measure the appropriateness, efficiency, and effectiveness of the activities identified in NP practice. Studies to answer the question--Are NPs able to practice to the full scope of their capabilities? are needed.

Studies of Variables That Condition Nursing Practice

Results of this study, previous studies, and Orem's nursing theory indicate that there is a relationship between the NP variables, patient variables, health care system variables, and the number of practice activities. Does this relationship indicate causation? Studies of the effects of altering variables and resultant changes in the activities of practice are needed. For example, will changes in Alabama law related to prescriptive authority change the practice activities of NPs? Does tight physician control of NP practice through supervision and protocol protect the public or compromise the care of the vulnerable groups NPs are most likely to encounter in practice? What

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are the variables that condition NP referral patterns? As we restructure our health care system, it is important to know how variables might be altered to meet the needs of patients.

Studies Using Delphi Survey Techniques to Identify Activities

The Delphi technique was very useful in this study. However, in similar Delphi studies in the future, researchers should decide on the meaning to panelists of "Sometimes, but not routinely" and explain how it will be analyzed before the study commences. Panelists sometimes altered their answers between "No" and "Sometimes," not knowing that it made no difference in the analyses. To decrease duplication, researchers can include all previous round answers in each round of the survey. Placing activities into categories in the design of the questionnaire or in some way organizing the activities so that they make some logical sense would aide panelists in assuring that they are not adding items that have already been identified. In this study, the panelists were never told that the researcher had initially organized the activities by patient encounter. Eventually, there were so many activities both within and outside of the patient encounter that this system of ordering made little sense.

Summary

The Delphi survey technique was used to identify the activities of NPs in primary care and to examine the NP variables, patient variables, and health system variables that influence practice activities. Conclusions related to

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the findings of this study were drawn for each of the six research questions. The results of this study in relationship to Orem's theory, previous research, and an analysis of the panels were discussed. The assumptions and limitations of this study were also discussed. Implications of this study and recommendations for future research were explored.

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APPENDIX A

Pilot Study: Guidelines for Reviewing the Survey Questionnaires

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Dear Nurse Practitioner Faculty Member:

Thanks for agreeing to review the data gathering forms I plan to use in my dissertation research study. I am interested in identifying the activities and technologies used by Nurse practitioners in Alabama in delivering primary care services. I am limiting my study to nurse practitioners certified in women's health, pediatric, or family practice. Using information from professional literature and my own practice, I have compiled an initial list of activities and technologies nurse practitioners may use in practice. I am asking you to review the list and demographic data gathering form that I plan to send to nurse practitioners. Please answer the questions as they relate to your current practice and record the amount of time it takes to complete the form in the blank below. Write any suggestions to change wording or improve clarity of the items in the list of nurse practitioner activities and technologies or the demographic data directly on the forms. Please answer the questions at the bottom of this letter and return the questionnaire and letter to me in the enclosed envelope.

If you have any questions, please call me at ___-____.

Thank you very much for your help with this research.

Sincerely,

Lygia Holcomb, MSN, CRNP
Doctoral Candidate

1. How long did it take for you to complete the form?
   _____ minutes
2. Are the instructions clear?
   _____ yes _____ no
3. Is the form easy to read?
   _____ yes _____ no
4. Would you fill it out if it came to you in the mail?
   _____ yes _____ no
5. Add any other comments or suggestions.

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APPENDIX B

IRB Approval

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UAB THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Office of the Institutional Review Board for Human Use

FORM 4: IDENTIFICATION AND CERTIFICATION OF RESEARCH PROJECTS INVOLVING HUMAN SUBJECTS

THE INSTITUTIONAL REVIEW BOARD (IRB) MUST COMPLETE THIS FORM FOR ALL APPLICATIONS FOR RESEARCH AND TRAINING GRANTS, PROGRAM PROJECT AND CENTER GRANTS, DEMONSTRATION GRANTS, FELLOWSHIPS, TRAINERSHIPS, AWARDS, AND OTHER PROPOSALS WHICH MIGHT INVOLVE THE USE OF HUMAN RESEARCH SUBJECTS INDEPENDENT OF SOURCE OF FUNDING.

THIS FORM DOES NOT APPLY TO APPLICATIONS FOR GRANTS LIMITED TO THE SUPPORT OF CONSTRUCTION, ALTERATIONS AND RENOVATIONS, OR RESEARCH RESOURCES.

PRINCIPAL INVESTIGATOR: Lygia Owen Holcomb, RN, MSN, CRNP

PROJECT TITLE: A Delphi Survey to Identify the Care Activities of Nurse Practioners

---

_____1. THIS IS A TRAINING GRANT. EACH RESEARCH PROJECT INVOLVING HUMAN SUBJECTS PROPOSED BY TRAINERS MUST RE REVIEWED SEPARATELY BY THE INSTITUTIONAL REVIEW BOARD (IRB).

__X__2. THIS APPLICATION INCLUDES RESEARCH INVOLVING HUMAN SUBJECTS. THE IRB HAS REVIEWED AND APPROVED THIS APPLICATION ON 1-23-96 IN ACCORDANCE WITH UAB'S ASSURANCE APPROVED BY THE UNITED STATES PUBLIC HEALTH SERVICE. THE PROJECT WILL BE SUBJECT TO ANNUAL CONTINUING REVIEW AS PROVIDED IN THAT ASSURANCE.

__X__ THIS PROJECT RECEIVED EXPEDITED REVIEW.

_____ THIS PROJECT RECEIVED FULL BOARD REVIEW.

_____3. THIS APPLICATION MAY INCLUDE RESEARCH INVOLVING HUMAN SUBJECTS. REVIEW IS PENDING BY THE IRB AS PROVIDED BY UAB'S ASSURANCE. COMPLETION OF REVIEW WILL BE CERTIFIED BY ISSUANCE OF ANOTHER FORM 4 AS SOON AS POSSIBLE.

_____4. EXEMPTION IS APPROVED BASED ON EXEMPTION CATEGORY NUMBER(S) _____.

DATE: 1-23-96

Marguerite S. Kinney

MARGUERITE KINNEY, DNSc
VICE CHAIR OF THE
INSTITUTIONAL REVIEW BOARD

The University of Alabama at Birmingham
1170R Administration Building • 701 South 20th Street
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APPENDIX C

Letter of Invitation to be a Panelist

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OPPORTUNITY KNOCKS

Dear Nurse Practitioner Colleague:

I am a graduate student in the School of Nursing at the University of Alabama at Birmingham. As part of my studies I am interested in identifying the activities of primary care nurse practitioners. We know that nurse practitioners are competent, effective, efficient primary care providers, but what do they really do? Apparently, no one knows for sure, or if they do know, they have not published the information. However, in today's rapidly changing health care system, I believe it is important that nurse practitioner practice be clearly understood. I am asking nurse practitioners to identify what they actually do in their practices. You are selected form the Alabama State Board of Nursing's list of nurse practitioners. This list was used because all nurse practitioners practicing in Alabama are required to be registered with the state board. However, the state board is not involved in this survey. If you are currently practicing as a nurse practitioner in a primary care site in Alabama, PLEASE return the enclosed postcard agreeing to participate in this survey.

ABOUT THE SURVEY: By returning the postcard, you are agreeing to let me mail you the survey questionnaire and practice information sheet. This study is designed as a Delphi survey. That means that you will have a chance to change or add to your answers after you see what other participants answer. The Delphi technique is a method of polling a sample of people to obtain a group response. It consists of completing a mailed questionnaire on two or three occasions. The questionnaire should take only 15 to 20 minutes to complete. Confidentiality will be maintained throughout the study. Questionnaires are coded with an identifying number for the purposes of data analysis only. All responses will be reported as group data (the groups or panels will consist of all participants in a practice specialty). No individual's responses can be identified. When you complete the survey and mail it back, you are giving consent to be a study participant.

WHAT DO YOU GET: At the completion of the study, all participants will receive a summary of their panel's results. You will know what other nurse practitioners in Alabama in your specialty area do in their practice.

Please return the stamped postcard to me by March 6, 1996 to be included in this study.

If you have questions or need more information, call me at (___) ___-____.

Thank you,

Lygia Holcomb, RN, MSN, CRNP

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APPENDIX D

Round 1 Survey Questionnaire--
Nurse Practitioner Activities and Technologies

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NURSE PRACTITIONERS ACTIVITIES AND TECHNOLOGIES

Check the appropriate response

YES, I do this in my current practice

NO, I not do this in my current practice

Sometimes but not routinuely

Activities	YES	NO	Sometimes
1. Escort patients to exam room			
2. Measure routinue vital signs			
3. Weigh patients			
4. Help patients gown			
5. Obtain patient records from files			
6. Obtain a limited health history concentrating on the chief complaint			
7. Obtain a complete health history for initial database			
8. Obtain a health history focused on wellness and risk assessment			
9. Assess patient's expectations of this visit			
10. Perform physical examination			
11. Perform breast examination			
12. Perform pelvic examination			
13. Perform male genital examination			
14. Perform rectal examination			
15. Make an initial diagnosis			
16. Make referrals to: specialist physicians			
17. dieticians			
18. physical therapist			

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Activities	YES	NO	Sometimes
19 service agencies and community resources			
20. nurses			
21. Other referrals (specify) _____ _____ _____			
22. Make final diagnosis for visit			
23. Initiate treatment			
24. Consult with patients by telephone			
25. Order medication by phoning pharmacy			
26. Order medication by using presigned script			
27. Distribute medication in clinic			
28. Order medication by other methods (Specify) _____ _____			
29. Provide care in the community (i.e. worksites, schools, other public sites)			
30. Order routine screening test (vision, hearing)			
31. Order diagnostic procedures: lab			
32. xray			
33. sonogram			
34. MRI			
35. CT scans			
36. ECG			
37. EMG			
38. EEG			
39. mammography			

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Activities	YES	NO	Sometimes
40. colposcopy			
41. colonoscopy			
42. sigmoidoscopy			
43. Other diagnostic procedures you order (specify) _____ _____ _____			
44. Use selected non- traditional strategies for health promotion: imagery			
45. visualization			
46. biofeedback			
47. therapeutic touch			
48. meditation			
49. home remedies			
50. acupressure			
51. other non-traditional strategies you use. (specify) _____ _____ _____			
52. Teach individual patients about health promotion (safety, risk reduction, anticipatory guidance)			
53. prenatal care			
54. disease prevention: immunizations			
55. smoking cessation			
56. weight loss or special diets			
57. skin self assessment			

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Activities	YES	NO	Sometimes
58. disease management: use of medications			
59. symptoms of worsening disease			
60. methods to control disease			
61. self care			
62. when to consult a health care provider			
63. how to consult a health care provider			
64. cost of health care			
65. Teach patients in groups			
66. Monitor health status of patients with chronic illness (hypertension, diabetes, chronic respiratory disease, etc)			
67. Adjust medications			
68. Negotiate acceptable treatment plans with patient			
69. Coach (support, counsel) patients as they move toward improved self care			
70. Schedule return appointments			
71. Precept NP students			
72. Complete clerical tasks			
73. Clean exam room to prepare for next patient			
74. Teach clinic staff			
75. Present community education programs			
76. Manage staff, budget, other clinical resources			
77. Participate in peer review and quality assurance			
78. Participate in research			
79. Design research			
80. Serve as a member of a hospital/clinic committee			
81. Serve as a member on a physician's committee			
82. Attend Continuing Education programs			

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83. Attend grand rounds			
84. Other activities you do in your current practice. (Specify)_____			

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Technologies: Do you perform the following technologies in your current practice? (please check the appropriate response column)	YES	NO	Sometimes
0. Arthrocentesis			
1. Obtain blood culture specimens			
2. Obtain throat culture specimens			
3. Obtain wound culture specimens			
4. Obtain genital culture specimens			
5. Administer medication (other than injections)			
6. Give injections			
7. Insert/remove Norplant			
8. Insert/remove IUDs			
9. Obtain PAP smears			
10. Administer nerve blocks			
11. Administer/interpret developmental screening tests and growth charts			
12. Interpret growth charts			
13. Draw blood			
14. Perform urinalysis (dip stick)			
15. Perform microscopic examination of urine			
16. Perform microscopic examination of vaginal discharge			
17. Perform microscopic examination of skin scraping			
18. Perform ECGs			
19. Perform wound care			
20. Suture wounds			
21. Perform xrays			
22. Administer vision screening exams			

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Technologies: Do you perform the following technologies in your current practice? (please check the appropriate response column)	YES	NO	Sometimes
23. Perform tonometry			
24. Perform audiometry or tympanometry			
25. Perform colonoscopy			
26. Perform colposcopy			
27. Perform lumbar puncture			
28. Perform bone marrow aspiration			
29. Perform electrocautery, chemical cautery			
30. Remove cerumen (ear wax)			
31. Perform incision and drainage			
32. Apply casts and splints			
33. Administer pulmonary function tests			
34. Perform anoscopy			
35. Other technologies you use in practice (Specify)			

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Please fill in the blanks
INFORMATION ABOUT YOU

1. What was your age on your last birthday? _____
2. What year did your graduate from your basic nursing program? _____
3. What year did you complete your nurse practitioner program? _____
4. How many years have you been working as a nurse practitioner? _____
5. How many hours do you work in clinical practice as a nurse practitioner/week? _____

Check the appropriate answer:

6. What is your gender?
_____male
_____female

7. What is your race?
_____Caucasian
_____ African American
_____ other. Specify_____

8. What is your area of certification as a nurse practitioner?
_____Pediatrics _____Family
_____Women's Health

9. What type of nurse practitioner preparation did your complete?
_____Continuing Education _____Master's degree program
_____Certificate program _____Post master's program

10. What is your highest level of educational preparation?
_____ Associate degree _____Master's degree
_____Diploma in nursing _____Doctorate
_____ Bachelor's degree

INFORMATION ABOUT YOUR PATIENTS (please check one answer for each question)
11. What is the age range of patient you most frequently see?
_____ 0-10 yr _____11-20 yr _____21-60 yr _____61-80yr _____>80 yr old ___all ages
_____ adults only

12. What is the gender of majority of patients?
_____male _____female _____equal numbers of each

13. What is the race of most of your patients?
_____white _____black _____other, specify_____

14. What is the reimbursement source for most visits?
_____private _____insurance _____Medicare _____Medicaid _____none

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15. Most frequent socioeconomic class of patients
_____poor _____middle income _____upper income

16. What would you estimate is the education level of most of your patients?
_____grade school ____high school _____some college _____college graduate

HEALTH CARE SYSTEM INFORMATION

17. What is the size of community in which your practice is located?
_____urban (>70,000) _____urban inner city _____ suburban
_____small city (5,000-40,000), _____ rural _____ other,specify(_____)

18. Check the setting that best describes your practice.
____community clinic ____hospital outpatient ____ health department,
____school ____homeless clinic ____ rural health clinic
____group MD practice ____solo MD practice ____ other (specify_____)

19. The usual average number of patients you see per clinic day? _____

20. How many hours are in your clinic day? _____

21. Which statement best describes the amount of MD supervision in your practice?
_____always see patient with MD _____ MD on site but does not see all my patients
_____ MD on site but sees own patients while I see mine. Available to consult.
_____ MD present on site only part time (specify amount_____)
_____ MD never on site.

22. What is the cost of an average office visit? _____

23. Is your office visit fee less than that of physicians in the same practice?
_____ yes _____ no

24. Do you have written protocols for your practice?
_____ yes _____ no

25. What is the average time you spend per patient? _____ minutes

26. Do you believe that your patients view you as
_____ their primary health care provider
_____ a substitute for their physician
_____ a partner in their care

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APPENDIX E

Example of Results From Round 1

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RESULTS OF ROUND ONE FOR **ADULT** NURSE PRACTITIONERS

The numbers in the first 3 columns represent the per cent (%) of adult nurse practitioners who recorded that answer. Column 4 is your previous answer and column 5 (?) is available to change your previous response if you desire. If you desire to change your previous answer, insert Y for Yes, N for NO or S for Sometimes in the column headed ?. If you make any changes please return this questionnaire.

Activities	YES	NO	Some times	Your answer	?
1. Escort patients to exam room	42	8	50		
2. Measure routinue vital signs	33	17	50		
3. Weigh patients	33	17	50		
4. Help patients gown	58	25	17		
5. Obtain patient records from files	8	50	42		
6. Obtain a limited health history concentrating on the chief complaint	92	—	8		
7. Obtain a complete health history for initial database	83	—	17		
8. Obtain a health history focused on wellness and risk assessment	75	—	25		
9. Assess patient's expectations of this visit	91	—	9		
10. Perform physical examination	100	—	—		
11. Perform breast examination	92	—	8		
12. Perform pelvic examination	75	17	8		
13. Perform male genital examination	59	8	33		
14. Perform rectal examination	92	—	8		
15. Make an initial diagnosis	100	—	—		
16. Make referrals to: specialist physicians	92	8	—		
17. dieticians	67	17	16		
18. physical therapist	75	—	25		

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Activities	YES	NO	Some times	Your answer	?
19 service agencies and community resources	67	17	16		
20. nurses	42	8	50		
21. Other referrals (specify)	*	*	*		
22. Make final diagnosis for visit	100	—	—		
23. Initiate treatment	100	—	—		
24. Consult with patients by telephone	92	—	8		
25. Order medication by phoning pharmacy	50	42	8		
26. Order medication by using presigned script	34	58	8		
27. Distribute medication in clinic	34	33	33		
28. Order medication by other methods (Specify)	*	*	*		
29. Provide care in the community (i.e. worksites, schools, other public sites)	33	42	25		
30. Order routine screening test (vision, hearing)	84	8	8		
31. Order diagnostic procedures: lab	100	—	—		
32. xray	92	8	—		
33. sonogram	73	9	18		
34. MRI	59	33	8		
35. CT scans	50	42	8		
36. ECG	75	25	—		
37. EMG	25	58	17		
38. EEG	33	50	17		
39. mammography	84	8	8		
40. colposcopy	8	67	25		
41. colonoscopy	33	50	17		
42. sigmoidoscopy	42	42	16		

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Activities	YES	NO	Some times	Your answer	?
43. Other diagnostic procedures you order (specify)	*	*	*		
44. Use selected non- traditional strategies for health promotion: imagery	8	42	50		
45. visualization	17	50	33		
46. biofeedback	9	83	8		
47. therapeutic touch	25	58	17		
48. meditation	17	58	25		
49. home remedies	25	42	33		
50. acupressure	—	92	8		
51. other non-traditional strategies you use.	*	*	*		
52. Teach individual patients about health promotion (safety, risk reduction, anticipatory guidance)	91	9	—		
53. prenatal care	33	67	—		
54. disease prevention: immunizations	92	—	8		
55. smoking cessation	100	—	000		
56. weight loss or special diets	92	—	8		
57. skin self assessment	84	8	8		
58. disease management: use of medications	100	—	—		
59. symptoms of worsening disease	100	—	—		
60. methods to control disease	100	—	—		
61. self care	100	—	—		
62. when to consult a health care provider	100	—	—		
63. how to consult a health care provider	84	8	8		
64. cost of health care	42	25	33		

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Activities	YES	NO	Some times	Your answer	?
65. Teach patients in groups	42	33	25		
66. Monitor health status of patients with chronic illness (hypertension, diabetes, chronic respiratory disease, etc)	92	—	8		
67. Adjust medications	92	—	8		
68. Negotiate acceptable treatment plans with patient	100	—	—		
69. Coach (support, counsel) patients as they move toward improved self care	92	—	8		
70. Schedule return appointments	75	8	17		
71. Precept NP students	75	17	8		
72. Complete clerical tasks	42	25	33		
73. Clean exam room to prepare for next patient	34	33	33		
74. Teach clinic staff	58	17	25		
75. Present community education programs	42	8	50		
76. Manage staff, budget, other clinical resources	17	75	8		
77. Participate in peer review and quality assurance	50	25	25		
78. Participate in research	25	50	25		
79. Design research	—	83	17		
80. Serve as a member of a hospital/clinic committee	58	42	—		
81. Serve as a member on a physician's committee	25	75	—		
82. Attend Continuing Education programs	100	—	—		
83. Attend grand rounds	17	58	25		
84. Other activities you do in your current practice.	*	*	*		

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Technologies: Do you perform the following technologies in your current practice? (please check the appropriate response column)	YES	NO	Some times	Your answer	?
36. Arthrocentesis	—	100	—		
37. Obtain blood culture specimens	27	64	9		
38. Obtain throat culture specimens	73	9	18		
39. Obtain wound culture specimens	55	18	27		
40. Obtain genital culture specimens	64	27	9		
41. Administer medication (other than injections)	64	9	27		
42. Give injections	64	9	27		
43. Insert/remove Norplant	—	100	—		
44. Insert/remove IUDs	—	100	—		
45. Obtain PAP smears	73	27	—		
46. Administer nerve blocks	—	100	—		
47. Administer/interpret developmental screening tests and growth charts	18	64	18		
48. Interpret growth charts	18	64	18		
49. Draw blood	46	36	18		
50. Perform urinalysis (dip stick)	27	37	36		
51. Perform microscopic examination of urine	20	70	10		
52. Perform microscopic examination of vaginal discharge	46	45	9		
53. Perform microscopic examination of skin scraping	18	73	9		
54. Perform ECGs	18	64	18		
55. Perform wound care	46	27	27		
56. Suture wounds	27	54	18		
57. Perform xrays	—	100	—		
58. Administer vision screening exams	64	18	18		

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Technologies: Do you perform the following technologies in your current practice? (please check the appropriate response column)	YES	NO	Some times	Your answer	?
59. Perform tonometry	8	92	—		
60. Perform audiometry or tympanometry	42	58	—		
61. Perform colonoscopy	—	100	—		
62. Perform colposcopy	—	100	—		
63. Perform lumbar puncture	—	100	—		
64. Perform bone marrow aspiration	8	92	—		
65. Perform electrocautery, chemical cautery	9	82	9		
66. Remove cerumen (ear wax)	67	25	8		
67. Perform incision and drainage	50	50	—		
68. Apply casts and splints	9	83	8		
69. Administer pulmonary function tests	17	67	16		
70. Perform anoscopy	25	75	—		
71. Other technologies you use in practice (Specify)	—	100	—		

* indicates that the answer to that question is still pending

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APPENDIX F

Round 2 Survey Questionnaire--
New Activities and Technologies of Nurse Practitioners

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NEW ACTIVITIES AND TECHNOLOGIES OF NURSE PRACTITIONERS

These new items were added to my original survey by nurse practitioners. Please check the appropriate response for your practice: YES, I do this in my current practice; NO, I do no do this in my current practice; Sometimes I do this, but not routinuely.

Activities	YES	NO	Sometimes
Make referrals to: 1. primary care physicians			
2. developmental specialists			
3. occupational therapists			
4. speech/ audiology			
5. mental health, substance abuse counselors, psychologists			
6. home health services			
7. dentists			
8. ophthalmology/ optometry			
9. chiropractor			
10. chaplain services			
11. hospice			
12. respiratory therapy			
13. support groups and classes related to illness			
14. other diagnostic test- ultrasound, mammography etc.			
15. nurse midwife			
16. medical genetics			
17. programs such as healthy start, head start, early interventions			
18. surgeons or surgical clinic			
19. durable medical equipment companies			
20. emergency rooms			

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Activities	YES	NO	Sometimes
21. exercise physiologist			
22. podiatry			
23. pain clinic			
24. social services, outreach worker			
25. special clinics for low income patients			
26. STD clinics			
Order medications by these other methods: 27. given in clinic by injection, oral, inhaled, etc.			
28. write script and then have physician sign or co-sign			
29. indigent drug program, heath dept. hypertension clinic			
30. give samples obtained from drug reps			
31. by fax machine			
32. through hospital orders			
33. using Medicare printout of needed renewals			
34. standing orders, formulary, protocol, verbal order			
35. tell patient OTC meds they can buy			
Additional diagnostic procedures you order: 36. bronchoscopy			
37. pulmonary function tests, pulse oxygen			
38. GI tests-UGI, barium swallow,			
39. PH probe, ECD,			
40. 24 hour Holter monitor			
41. thallium GXT			
42. targeted ultrasound			
43. bone density			
44. biopsies- skin, breast, endometrial			

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Activities	YES	NO	Sometimes
45. vascular- noninvasive			
46. bone marrow biopsy/aspiration			
47. non stress tests			
Other non-traditional strategies for health promotion: 48. vitamins / nutritional supplements			
49. herbs			
50. prayer, faith, spirituality			
51. music therapy			
52. rolfing, other massage therapy			
53. relaxation therapies			
54. journaling			
55. self exploration			
56. life patterning			
57. listening			
58. exercise			
59. self empowerment			
Other activities you do in your current practice: 60. EPSDT screening			
61. inpatient care, hospital rounds, discharge planning			
62. case management			
63. teach CPR			
64. serve as a member of community organizations			
65. care of nursing home patients			
66. care of home health patients			
67. team management, clinic supervision			
68. act as consultant for wound care / chronic illness management/ other			

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Activities	YES	NO	Sometimes
69. make house calls, home visits			
70. telephone triage			
71. call patients for follow up, report lab/other results or to schedule other services			
72. speak to community groups, clubs			
73. corporate entertaining, staff recruitment			
74. establish policies and procedures			
75. teach staff inservices			
76. precept other (not NP) nursing students			
77. precept medical or other health care professions students			
78. recruit participants for research projects			
79. take call			
80. admit patients to hospital			
81. publish clinical papers			
82. prepare clinic work schedule for staff			
83. write histories/physicals and discharge for hospitalized patients			
84. do preemployment, sports, other specialized physical exams			
85. track patients with abnormal tests or for periodic visits			
86. talk with drug reps			
87. negotiate for cost of clinic supplies & equipment			
88. write letters for patients regarding school and work activities			
Other technologies you perform in your current practice: 89. interpret pulmonary function tests			
90. ventilator management			

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Activities		YES	NO	Sometimes
91.	insert ET tubes			
92.	perform femoral/atrial sticks			
93.	insert subclavian lines			
94.	administer pulmo-aide treatments			
95.	perform ultrasounds-pelvic, abdominal, transvaginal			
96.	dopple fetal heart tones			
97.	remove ingrown toenails			
98.	use laser to remove skin lesions			
99.	administer breathing treatments			
100.	perform endometrial biopsy			
101.	assist with vasectomies and circumcision			
102.	fit diaphragms			
103.	remove incision staples			
104.	perform cryotherapy			
105.	use Wood's light			
106.	perform/instruct peak expiratory flow meter use			
107.	perform accuchek			
108.	access porta caths			
109.	perform caths (in & out, foley)			
110.	postcoital testing			
111.	perform non stress tests			
112.	administer questionnaires to measure depression, hyperactivity, etc			

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APPENDIX G

Example of the Results From Round 2

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Result of round two: Family Nurse Practitioners

ACTIVITIES AND TECHNOLOGIES OF NURSE PRACTITIONERS

Once again column 1-3 represent the percent of family nurse practitioners who recorded that answer. Column 4 is your previous answer. If you desire to change your previous answer put a Y for "Yes", N for "NO" and S for "Sometime" in the last column (the column headed ?). If you change your answers please return this questionnaire.

Activities	YES	NO	Some times	Your answer	?
Make referrals to: 1. primary care physicians	67	15	18		
2. developmental specialists	31	41	28		
3. occupational therapists	22	46	32		
4. speech/ audiology	38	30	32		
5. mental health, substance abuse counselors, psychologists	70	3	27		
6. home health services	52	32	16		
7. dentists	68	11	21		
8. ophthalmology/ optometry	71	9	20		
9. chiropractor	8	79	13		
10. chaplain services	15	60	25		
11. hospice	30	55	15		
12. respiratory therapy	26	51	23		
13. support groups and classes related to illness	52	18	30		
14. other diagnostic test- ultrasound, mammography	83	11	6		
15. nurse midwife	11	88	1		
16. medical genetics	8	83	9		
17. programs such as healthy start, head start, early interventions	35	44	19		
18. surgeons or surgical clinic	77	3	20		
19. durable medical equipment companies	46	28	26		

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Activities	YES	NO	Some times	Your answer	?
20. emergency rooms	67	14	19		
21. exercise physiologist	18	34	18		
22. podiatry	41	33	26		
23. pain clinic	43	39	18		
24. social services, outreach worker	61	15	24		
25. special clinics for low income patients	44	30	26		
26. STD clinics	38	50	12		
Order medications by these other methods: 27. given in clinic by injection, oral, inhaled, etc.	92	2	6		
28. write script and then have physician sign or co-sign	68	24	8		
29. indigent drug program, heath dept. hypertension clinic	58	33	9		
30. give samples obtained from drug reps	79	11	10		
31. by fax machine	25	66	9		
32. through hospital orders	19	71	10		
33. using Medicare printout of needed renewals	5	91	4		
34. standing orders, formulary, protocol, verbal order	74	11	15		
35. tell patient OTC meds they can buy	67	0	3		
Additional diagnostic procedures you order: 36. bronchoscopy	15	79	6		
37. pulmonary function tests, pulse oxygen	43	34	23		
38. GI tests-UGI, barium swallow,	58	25	17		
39. PH probe, ECD,	13	81	6		
40. 24 hour Holter monitor	45	46	9		
41. thallium GXT	30	58	12		

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Activities	YES	NO	Some times	Your answer	?
42. targeted ultrasound	51	34	15		
43. bone density	22	66	12		
44. biopsies- skin, breast, endometrial	39	54	7		
45. vascular- noninvasive	39	48	13		
46. bone marrow biopsy/aspiration	5	86	9		
47. non stress tests	18	74	8		
Other non-traditional strategies for health promotion: 48. vitamins / nutritional supplements	84	5	11		
49. herbs	14	64	22		
50. prayer, faith, spirituality	56	15	29		
51. music therapy	18	68	14		
52. rolfing, other massage therapy	14	76	10		
53. relaxation therapies	44	59	27		
54. journaling	26	64	10		
55. self exploration	21	59	20		
56. life patterning	14	75	1		
57. listening	64	23	13		
58. exercise	92	0	8		
59. self empowerment	59	29	12		
Other activities you do in your current practice: 60. EPSDT screening	49	43	8		
61. inpatient care, hospital rounds, discharge planning	8	83	9		
62. case management	23	70	7		
63. teach CPR	12	83	5		
64. serve as a member of community organizations	53	38	9		
65. care of nursing home patients	17	83	0		

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Activities		YES	NO	Some times	Your answer	?
66.	care of home health patients	30	61	9		
67.	team management, clinic supervision	42	52	6		
68.	act as consultant for wound care / chronic illness management/ other	32	58	10		
69.	make house calls, home visits	15	74	11		
70.	telephone triage	62	20	18		
71.	call patients for follow up, report lab/other results or to schedule other services	87	2	11		
72.	speak to community groups, clubs	45	33	22		
73.	corporate entertaining, staff recruitment	17	74	9		
74.	establish policies and procedures	56	27	17		
75.	teach staff inservices	42	31	27		
76.	precept other (not NP) nursing students	36	50	14		
77.	precept medical or other health care professions students	28	67	5		
78.	recruit participants for research projects	1	84	6		
79.	take call	13	83	4		
80.	admit patients to hospital	13	83	4		
81.	publish clinical papers	9	91	0		
82.	prepare clinic work schedule for staff	19	80	1		
83.	write histories/physicals and discharge for hospitalized patients	9	86	5		
84.	do preemployment, sports, other specialized physical exams	78	17	4		
85.	track patients with abnormal tests or for periodic visits	75	17	8		
86.	talk with drug reps	83	11	6		

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Activities	YES	NO	Some times	Your answer	?
87. negotiate for cost of clinic supplies & equipment	23	66	11		
88. write letters for patients regarding school and work activities	75	16	9		
Other technologies you perform in your current practice: 89. interpret pulmonary function tests	21	74	5		
90. ventilator management	0	98	2		
91. insert ET tubes	2	97	1		
92. perform femoral/atrial sticks	0	98	2		
93. insert subclavian lines	0	100	0		
94. administer pulmo-aide treatments	28	69	3		
95. perform ultrasounds-pelvic, abdominal, transvaginal	2	98	0		
96. dopple fetal heart tones	23	72	5		
97. remove ingrown toenails	25	72	3		
98. use laser to remove skin lesions	6	94	0		
99. administer breathing treatments	53	36	11		
100. perform endometrial biopsy	2	98	0		
101. assist with vasectomies and circumcision	3	97	0		
102. fit diaphragms	22	73	5		
103. remove incision staples	61	23	16		
104. perform cryotherapy	16	80	4		
105. use Wood's light	39	48	13		
106. perform/instruct peak expiratory flow meter use	33	58	9		
107. perform accuchek	56	28	16		
108. access porta caths	13	81	6		
109. perform caths (in & out, foley)	40	44	16		

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Activities		YES	NO	Some times	Your answer	?
110.	postcoital testing	0	100	0		
111.	perform non stress tests	2	98	0		
112.	administer questionnaires to measure depression, hyperactivity, etc	25	53	22		

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APPENDIX H

Round 3 Survey Questionnaire--
Final Activities and Technologies of Nurse Practitioners

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This is the end of this survey. Thank you for continuing in this study to the end. I know you have answered a lot of questions about your practice but there are just a few more listed below. You will also find the results of round 2 enclosed. If you change any answers, please return round 2 and this page to me. If you do not change any of the round 2 answers return only this sheet. Please return round 3 by May 24th. Thanks again.
Lygia

Round 3
Final ACTIVITIES AND TECHNOLOGIES OF NURSE PRACTITIONERS

These new items were added, by nurse practitioners in round 2 of this survey. Please check the appropriate response for your practice: YES, I do this in my current practice; NO, I do no do this in my current practice; Sometimes I do this, but not routinely.

Activities	YES	NO	Sometimes
1. Council patients about high risk sexual activity, birth control, HIV testing			
2. Manage charity donations: clothing, funds			
3. Write letters reporting clinic visits to referring physicians			
4. Prepare budget: operating, capital			
5. Hire, fire, evaluate, discipline employees			
6. Instruct patients in proper condom use			
Technologies 7. Treat for dog, cat, and/or snake bites			
8. Minor surgical procedures: skin lesion removal			
9. Assess psychological adjustment to procedures			
10. Artificial insemination			
11. Infertility management			
12. Preoperative dilator insertion			

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APPENDIX I

Example of Results From Round 3

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Women's Health

Activities	YES	NO	Some-times	Your Answer
1. Council patients about high risk sexual activity, birth control, HIV testing	95	5	0	
2. Manage charity donations: clothing, funds	13	75	12	
3. Write letters reporting clinic visits to referring physicians	29	43	28	
4. Prepare budget: operating, capital	10	90	0	
5. Hire, fire, evaluate, discipline employees	33	57	10	
6. Instruct patients in proper condom use	71	19	10	
Technologies 7. Treat for dog, cat, and/or snake bites	0	95	5	
8. Minor surgical procedures: skin lesion removal	19	71	10	
9. Assess psychological adjustment to procedures	38	43	19	
10. Artificial insemination	5	90	5	
11. Infertility management	29	52	19	
12. Preoperative dilator insertion	5	90	5	

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APPENDIX J

Frequency of "Yes" Response to 238 Activities and Final Results

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NURSE PRACTITIONERS ACTIVITIES AND TECHNOLOGIES
FINAL RESULTS

Activities	Percent of "YES" per certification total	F	P	A	W	R
A1. Escort patients to exam room	28	23	34	46	28	N
A2. Measure routinue vital signs	23	23	34	31	16	N
A3. Weigh patients	21	23	17	31	13	N
A4. Help patients gown	18	16	25	46	10	A
A5. Obtain patient records from files	16	19	17	15	10	N
A6. Obtain a limited health history concentrating on the chief complaint	87	88	92	92	81	C
A7. Obtain a complete health history for initial database	81	82	92	85	72	C
A8. Obtain a health history focused on wellness and risk assessment	79	84	92	77	66	C
A9. Assess patient's expectations of this visit	77	83	67	92	63	C
A10. Perform physical examination	98	97	100	100	97	C
A11. Perform breast examination	84	82	68	92	91	C
A12. Perform pelvic examination	78	81	8	69	100	C
A13. Perform male genital examination	56	76	58	54	9	C
A14. Perform rectal examination	71	77	33	92	65	C
A15. Make an initial diagnosis	96	95	100	92	100	C
Make referrals to:						
A16. specialist physicians	92	89	100	92	97	C
A17. dieticians	63	55	92	69	69	C

F= Family Nurse Practitioner P= Pediatric Nurse Practitioner
A= Adult Nurse Practioner W= Womens' Health Nurse Practitioner R= result
C=core N= not significant N= moved to not significant 0= none

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Activities		total	F	P	A	W	R
A18.	physical therapist	53	57	75	77	25	C
A19	service agencies and community resources	82	85	100	62	78	C
A20.	nurses	63	65	83	39	60	C
A21.	Other referrals (specify)	*	*	*	*	*	–
A22.	Make final diagnosis for visit	97	95	100	100	100	C
A23.	Initiate treatment	96	95	100	100	97	C
A24.	Consult with patients by telephone	90	89	100	92	84	C
A25.	Order medication by phoning pharmacy	75	80	100	46	69	C
A26.	Order medication by using presigned script	41	30	58	31	65	W P
A27.	Distribute medication in clinic	65	65	75	31	77	C
A28.	Order medication by other methods	*	*	*	*	*	–
A29.	Provide care in the community (i.e. worksites, schools, other public sites)	29	33	18	31	22	N
A30.	Order routine screening test (vision, hearing)	71	80	92	77	39	C
Order diagnostic procedures: A31.	lab	95	95	92	100	94	C
A32.	xray	81	85	92	92	63	C
A33.	sonogram	77	76	50	75	91	C
A34.	MRI	35	42	33	54	13	A
A35.	CT scans	39	46	50	46	16	N
A36.	ECG	56	69	58	77	16	C

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Activities		total	F	P	A	W	R
A37.	EMG	20	30	9	23	0	F
A38.	EEG	29	36	58	31	0	P
A39.	mammography	76	84	8	85	81	C
A40.	colposcopy	28	28	0	8	47	W
A41.	colonoscopy	24	30	17	39	6	A
A42.	sigmoidoscopy	24	28	17	46	6	A
A43.	Other diagnostic procedures you order	*	*	*	*	*	–
Use selected non- traditional strategies for health promotion:							
A44.	imagery	11	11	0	8	17	N
A45.	visualization	15	15	17	15	16	N
A46.	biofeedback	4	3	8	8	3	N
A47.	therapeutic touch	14	15	0	23	16	N
A48.	meditation	11	12	0	15	9	N
A49.	home remedies	25	25	17	23	31	N
A50.	acupressure	4	3	0	0	9	N
A51.	other non-traditional strategies you use.	*	*	*	*	*	–
A52.	Teach individual patients about: health promotion (safety, risk reduction, anticipatory guidance)	96	97	100	91	94	C
A53.	prenatal care	42	33	8	31	81	W
A54.	disease prevention: immunizations	89	87	100	92	91	C
A55.	smoking cessation	89	93	59	100	84	C

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Activities		total	F	P	A	W	R
A56.	weight loss or special diets	90	95	92	92	78	C
A57.	skin self assessment	70	74	42	85	66	C
A58.	disease management: use of medications	95	95	100	100	94	C
A59.	symptoms of worsening disease	95	96	100	100	94	C
A60.	methods to control disease	97	97	100	100	94	C
A61.	self care	98	97	100	100	97	C
A62.	when to consult a health care provider	96	96	100	100	94	C
A63.	how to consult a health care provider	90	92	100	85	85	C
A64.	cost of health care	59	67	67	39	47	N
A65.	Teach patients in groups	22	19	25	39	22	N
A66.	Monitor health status of patients with chronic illness (hypertension, diabetes, chronic respiratory disease, etc)	70	85	59	92	31	C
A67.	Adjust medications	79	78	83	92	75	C
A68.	Negotiate acceptable treatment plans with patient	83	87	91	100	66	C
A69.	Coach (support, counsel) patients as they move toward improved self care	87	93	83	92	72	C
A70.	Schedule return appointments	58	65	42	69	41	N
A71.	Precept NP students	60	53	83	69	63	C
A72.	Complete clerical tasks	22	23	25	39	13	N
A73.	Clean exam room to prepare for next patient	25	22	25	31	31	N
A74.	Teach clinic staff	56	58	58	54	53	C

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Activities	total	F	P	A	W	R
A75. Present community education programs	34	32	17	39	44	N
A76. Manage staff, budget, other clinical resources	25	26	17	15	32	N
A77. Participate in peer review and quality assurance	52	51	50	54	53	C
A78. Participate in research	27	22	25	23	41	N
A79. Design research	7	7	0	0	13	N
A80. Serve as a member of a hospital/clinic committee	39	31	42	62	47	N
A81. Serve as a member on a physician's committee	16	16	0	23	19	N
A82. Attend Continuing Education programs	99	99	100	100	97	C
A83. Attend grand rounds	18	19	33	23	9	N
A84. Other activities you do in your current practice.	*	*	*	*	*	
TECHNOLOGIES	0	0	0	0	0	0
T1. Arthrocentesis						
T2. Obtain blood culture specimens	21	26	25	31	3	N
T3. Obtain throat culture specimens	60	64	67	78	44	C
T4. Obtain wound culture specimens	60	66	58	54	47	C
T5. Obtain genital culture specimens	78	80	34	62	97	C
T6. Administer medication (other than injections)	55	54	58	54	56	C
T7. Give injections	62	57	50	69	75	C
T8. Insert/remove Norplant	9	1	0	0	32	W
T9. Insert/remove IUDs	13	8	0	0	34	W
T10. Obtain PAP smears	77	80	8	69	100	C
T11. Administer nerve blocks	2	3	0	0	0	N
T12. Administer/interpret developmental screening tests and growth charts	47	60	100	23	9	F P

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Activities		total	F	P	A	W	R
T13.	Interpret growth charts	48	60	100	23	13	F P
T14.	Draw blood	41	41	17	46	47	N
T15.	Perform urinalysis (dip stick)	44	41	33	31	59	N
T16.	Perform microscopic examination of urine	39	37	8	25	59	W
T17.	Perform microscopic examination of vaginal discharge	64	62	8	46	97	N
T18.	Perform microscopic examination of skin scraping	21	26	8	23	16	N
T19.	Perform ECGs	18	29	0	23	0	F
T20.	Perform wound care	49	52	50	46	44	N
T21.	Suture wounds	20	31	0	23	0	F
T22.	Perform xrays	5	8	0	0	0	N
T23.	Administer vision screening exams	34	39	25	62	13	A
T24.	Perform tonometry	5	7	8	8	0	N
T25.	Perform audiometry or tympanometry	28	32	58	39	0	P
T26.	Perform colonoscopy	0	0	0	0	0	0
T27.	Perform colposcopy	2	0	0	0	6	N
T28.	Perform lumbar puncture	2	3	8	0	0	N
T29.	Perform bone marrow aspiration	1	0	0	8	0	A
T30.	Perform electrocautery, chemical cautery	20	24	8	8	22	N
T31.	Remove cerumen (ear wax)	51	62	83	62	9	C
T32.	Perform incision and drainage	34	45	25	46	10	N
T33.	Apply casts and splints	10	15	0	8	3	N

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Activities	total	F	P	A	W	R
T34. Administer pulmonary function tests	11	15	8	16	0	N
T35. Perform anoscopy	7	8	0	23	0	A
T36. Other technologies you use in practice (Specify)	0	*	*	*	*	–
NEW Activities (ROUND 2)						
Make referrals to: N1. primary care physicians	68	65	70	62	81	C
N2. developmental specialists	31	32	91	8	12	P
N3. occupational therapists	23	22	55	39	4	P
N4. speech/ audiology	41	40	91	62	12	N
N5. mental health, substance abuse counselors, psychologists	73	71	73	77	77	C
N6. home health services	46	52	64	54	19	C
N7. dentists	64	69	82	77	39	C
N8. ophthalmology/ optometry	67	72	82	92	35	C
N9. chiropractor	8	9	0	8	8	N
N10. chaplain services	20	16	40	39	12	N
N11. hospice	26	31	10	46	8	A
N12. respiratory therapy	26	27	20	77	0	A
N13. support groups and classes related to illness	53	54	36	85	42	N
N14. other diagnostic test- ultrasound, mammography etc.	86	84	80	85	92	C
N15. nurse midwife	14	10	20	8	24	N
N16. medical genetics	28	8	55	15	73	P W

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Activities	total	F	P	A	W	R
N17. Programs such as healthy start, head start, early interventions	36	35	82	8	31	P
N18. surgeons or surgical clinic	77	79	82	77	69	C
N19. durable medical equipment companies	41	48	60	46	12	P
N20. emergency rooms	69	68	73	77	65	C
N21. exercise physiologist	15	19	10	23	4	N
N22. podiatry	36	41	20	62	15	A
N23. pain clinic	34	43	10	46	15	A F
N24. social services, outreach worker	65	60	91	54	73	C
N25. special clinics for low income patients	52	47	50	62	62	C
N26. STD clinics	48	38	64	46	65	N
Order medications by these other methods:						
N27. given in clinic by injection, oral, inhaled, etc.	92	93	91	85	92	C
N28. write script and then have physician sign or cosign	75	69	100	100	69	C
N29. indigent drug program, heath dept. hypertension clinic	54	56	40	69	46	N
N30. give samples obtained from drug reps	78	79	90	62	77	C
N31. by fax machine	22	25	30	31	4	N
N32. through hospital orders	21	19	30	23	19	N
N33. using Medicare printout of needed renewals	6	5	10	8	8	N
N34. standing orders, formulary, protocol, verbal order	84	75	100	92	96	C
N35. tell patient OTC meds they can buy	96	97	100	85	96	C

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Activities	total	F	P	A	W	R
Additional diagnostic procedures you order: N36. bronchoscopy	13	14	10	31	4	N
N37. pulmonary function tests, pulse oxygen	41	46	50	69	8	N
N38. GI tests-UGI, barium swallow,	53	60	60	77	19	C
N39. PH probe, ECD	13	14	40	17	0	P
N40. 24 hour Holter monitor	35	45	20	46	8	N
N41. thallium GXT	19	30	0	15	0	F
N42. targeted ultrasound	53	54	60	46	54	C
N43. bone density	19	23	10	23	12	N
N44. biopsies- skin, breast, endometrial	39	39	20	46	42	N
N45. vascular- noninvasive	29	39	0	39	8	F
N46. bone marrow biopsy/aspiration	4	5	0	15	0	N
N47. non stress tests	24	19	0	8	56	W
Other non-traditional strategies for health promotion: N48. vitamins / nutritional supplements	85	85	80	92	83	C
N49. herbs	15	15	10	15	19	N
N50. prayer, faith, spirituality	52	57	50	62	35	C
N51. music therapy	17	19	20	15	12	N
N52. rolfing, other massage therapy	10	15	0	0	8	N
N53. relaxation therapies	42	46	30	46	35	N
N54. journaling	21	27	20	8	12	N
N55. self exploration	16	22	10	0	12	N
N56. life patterning	11	15	20	2	4	N

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Activities	total	F	P	A	W	R
N57. listening	57	65	40	62	42	N
N58. exercise	92	93	73	100	92	C
N59. self empowerment	53	59	40	39	50	N
Other activities you do in your current practice: N60. EPSDT screening	39	49	82	23	4	P
N61. inpatient care, hospital rounds, discharge planning	16	9	30	39	19	N
N62. case management	27	22	50	39	23	N
N63. teach CPR	10	12	40	0	0	P
N64. serve as a member of community organizations	50	52	50	54	46	C
N65. care of nursing home patients	15	16	0	39	4	A
N66. care of home health patients	21	29	0	31	0	F A
N67. team management, clinic supervision	44	41	40	46	50	N
N68. act as consultant for wound care / chronic illness management/ other	28	31	30	69	0	A
N69. make house calls, home visits	12	15	0	15	8	N
N70. telephone triage	65	62	82	54	73	C
N71. call patients for follow up, report lab/other results or to schedule other services	90	88	100	100	85	C
N72. speak to community groups, clubs	50	47	64	54	50	C
N73. corporate entertaining, staff recruitment	16	17	20	15	12	N
N74. establish policies and procedures	58	58	60	62	58	C
N75. teach staff inservices	45	44	46	62	39	N

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Activities	total	F	P	A	W	R
N76. precept other (not NP) nursing students	43	35	36	54	62	N
N77. precept medical or other health care professions students	38	30	40	54	50	N
N78. recruit participants for research projects	20	9	10	39	42	W
N79. take call	13	9	20	15	19	N
N80. admit patients to hospital	13	12	20	23	8	N
N81. publish clinical papers	8	9	10	0	8	N
N82. prepare clinic work schedule for staff	17	18	10	15	19	N
N83. write histories/physicals and discharge for hospitalized patients	13	11	20	23	12	N
N84. do preemployment, sports, other specialized physical exams	64	79	60	77	23	C
N85. track patients with abnormal tests or for periodic visits	75	76	80	69	73	C
N86. talk with drug reps	78	82	82	54	81	C
N87. negotiate for cost of clinic supplies & equipment	17	23	20	0	8	N
N88. write letters for patients regarding school and work activities	71	74	80	46	73	C
Other technologies you perform in your current practice:						
N89. interpret pulmonary function tests	14	21	20	0	4	N
N90. ventilator management	2	0	20	0	0	P
N91. insert ET tubes	3	2	10	0	4	N
N92. perform femoral/atrial sticks	1	0	10	0	0	P
N93. insert subclavian lines	2	2	0	8	0	N

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Activities	total	F	P	A	W	R
N94. administer pulmo-aide treatments	21	29	30	17	0	F P
N95. perform ultrasounds-pelvic, abdominal, transvaginal	7	2	0	0	27	W
N96. dopple fetal heart tones	33	23	0	23	77	W
N97. remove ingrown toenails	17	26	0	15	0	F
N98. use laser to remove skin lesions	4	6	0	0	4	N
N99. administer breathing treatments	40	52	60	39	4	F P
N100. perform endometrial biopsy	6	3	0	0	19	W
N101. assist with vasectomies and circumcision	4	5	0	0	4	N
N102. fit diaphragms	32	21	0	0	89	W
N103. remove incision staples	57	61	10	62	65	C
N104. perform cryotherapy	17	17	0	23	23	N
N105. use Wood's light	30	39	40	39	0	N
N106. perform/instruct peak expiratory flow meter use	28	33	70	23	0	P
N107. perform accuchek	52	56	40	77	35	N
N108. access porta caths	11	14	20	15	0	N
N109. perform caths (in & out, foley)	36	39	40	31	31	N
N110. postcoital testing	5	0	0	8	19	W
N111. perform non stress tests	10	2	0	0	42	W
N112. administer questionnaires to measure depression, hyperactivity, etc	23	26	20	31	12	N

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Activities	total	F	P	A	W	R
FINAL Activities (round 3)						
F1. Council patients about high risk sexual activity, birth control, HIV testing	83	84	50	69	96	C
F2. Manage charity donations: clothing, funds	7	5	13	8	8	N
F3. Write letters reporting clinic visits to referring physicians	25	16	38	31	33	N
F4. Prepare budget: operating, capital	8	8	0	0	13	N
F5. Hire, fire, evaluate, discipline employees	22	21	13	8	38	N
F6. Instruct patients in proper condom use	55	55	13	46	75	N
Technologies						
F7. Treat for dog, cat, and/or snake bites	31	45	13	31	0	F
F8. Minor surgical procedures: skin lesion removal	26	29	0	31	25	N
F9. Assess psychological adjustment to procedures	47	45	38	61	46	N
F10. Artificial insemination	3	3	0	0	4	N
F11. Infertility management	11	7	0	8	33	W
F12. Preoperative dilator insertion	3	3	0	0	4	N

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APPENDIX K

Significant Results for Nurse Practitioner Specialty Practice

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Significant Results for Nurse Practitioner Specialty Practice

Activity	(Degrees of Freedom, N)	Chi Square	p
A4 Help patients gown	(3, 131)	9.018	.029
Order medication by using			
A26 presigned script	(3, 129)	12.693	.005
A34 MRI	(3, 131)	10.693	.014
A37 EMG	(3, 131)	13.552	.004
A38 EEG	(3, 130)	19.860	.000
A40 colposcopy	(3, 131)	12.914	.004
A41 colonoscopy	(3, 131)	8.780	.032
A42 sigmoidoscopy	(3, 131)	10.248	.017
Teach individual patients about			
A53 prenatal care	(3, 131)	29.278	.000
T2 Obtain blood culture specimens	(3, 130)	8.201	.042
T8 Insert/remove Norplant	(3, 129)	29.507	.000
T9 Insert/remove IUDs	(3, 130)	18.047	.000
T12 Administer/interpret developmental screening tests and growth charts	(3, 131)	39.281	.000
T13 Interpret growth charts	(3, 131)	36.280	.000
T16 Perform microscopic examination of urine	(3, 130)	11.556	.009
T17 Perform microscopic examination of vaginal discharge	(3, 131)	33.104	.000
T19 Perform ECGs	(3, 131)	15.068	.002
T21 Suture wounds	(3, 131)	16.851	.001
T23 Administer vision screening exams	(3, 131)	12.370	.006
T25 Perform audiometry or tympanometry	(3, 131)	19.555	.000
T29 Perform bone marrow aspiration	(3, 131)	9.147	.027
T32 Perform incision and drainage	(3, 131)	13.563	.004
T35 Perform anoscopy	(3, 131)	8.760	.033
Make referrals to:			
N2 developmental specialists	(3, 117)	26.106	.000
N3 occupational therapists	(3, 117)	13.304	.004
N4 speech/audiology	(3, 118)	23.021	.000
N11 hospice	(3, 117)	9.525	.023
N12 respiratory therapy	(3, 117)	27.088	.000

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Activity	(Degrees of Freedom, N)	Chi Square	p
N16 medical genetics	(3, 116)	45.135	.000
N17 programs such as healthy start, head start, early interventions	(6, 118)	15.741	.150
N19 durable medical equipment companies	(3, 116)	12.265	.007
N22 podiatry	(3, 117)	10.390	.016
N23 pain clinics	(3, 117)	9.676	.022
Order diagnostic procedure:			
N37 pulmonary function tests, pulse oxygen	(3, 116)	17.364	.001
N39 PH probe, ECD	(3, 113)	10.322	.016
N40 24 hour Holter moniter	(3, 116)	13.114	.004
N41 thallium GXT	(3, 115)	13.959	.003
N45 vascular-noninvasive	(3, 115)	13.928	.003
N47 non stress tests	(3, 112)	19.994	.000
N60 EPSDT screening	(6, 117)	27.486	.001
N63 teach CPR	(3, 117)	14.237	.003
N65 care of nursing home patients	(3, 117)	10.234	.017
N66 care of home health patients	(3, 117)	13.432	.004
N68 act as consultant for wound care / chronic illness / other	(3, 117)	21.276	.000
N78 recruit participants for research projects	(3, 115)	16.390	.001
N90 ventilator management	(3, 113)	21.372	.000
N92 perform femoral / atrial sticks	(3, 113)	10.492	.015
N94 administer pulmo-aide treatments	(3, 114)	9.930	.019
N95 perform ultrasounds-pelvic, abdominal, transvaginal	(3, 115)	20.753	.000
N96 dopple fetal heart tones	(3, 115)	31.320	.000
N97 remove ingrown toenails	(3, 115)	11.219	.011
N99 administer breathing treatments	(3, 115)	19.486	.000
N100 perform endometrial biopsy	(3, 115)	10.427	.015
N102 fit diaphrams	(3, 115)	52.293	.000
N106 perform/instruct peak expiratory flow meter use	(3, 115)	20.023	.000
N110 postcoital testing	(3, 115)	14.669	.002
N111 perform non stress tests	(3, 115)	36.559	.000

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Activity	(Degrees of Freedom, N)	Chi Square	p
F7 treat for dog, cat, and/or snake bites	(3, 107)	17.925	.000
F11 infertility management	(3, 107)	13.325	.004

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APPENDIX L

Categories of Activities

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CATAGORIES OF ACTIVITIES

Patient assessment
- A1-A4
- A6-A14
- N 60
- N 84
- F 9

Diagnosis and management
- A15
- A22-A24
- A66-A69
- N 61, N 62
- N 65, N66
- N 69- N 71
- N 79, N80
- N83
- N 85
- N88

Order medication
- A25-A27
- N27-N35

Referrals
- A16-A20
- N1-N 26

Order diagnostic procedures
- A30
- A31-A42
- N 36-47

Non-traditional therapies
- A44-A50
- N 48-N59

Teaching
- A52-A65
- A 71
- A74-A75
- N 63
- N 75-77
- F 1
- F 6

Perform Technologies
- T1-T35
- N 89-112

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APPENDIX M

Other Activities of NP Practice

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Other Activities of NP Practice

Patient assessment:
- escort patients to exam room
- measure routine vital signs
- weigh patients
- assess psychological adjustment to procedures

Diagnosis and management:
- inpatient care, hospital rounds, discharge planning (9% FNP)
- case management
- make house calls, home visits
- take call
- admit patients to hospital
- write histories / physicals and discharge for hospitalized patients

Order medication:
- using presigned script
- indigent drug program, health dept. hypertension clinic
- by fax machine
- through hospital orders
- using Medicare printout of needed renewals

Make referrals to:
- chiropractor (0% PNP)
- speech/audiology (12% WHNP)
- chaplain services
- support groups and classes related to illness
- nurse midwife
- exercise physiologist
- durable medical equipment co. (12% WHNP)
- STD clinics

Order diagnostic procedures:
- CT scans
- bronchoscopy
- pulmonary functions tests, pulse oxygen (8% WHNP)
- 24-hour Holter monitor (8% WHNP)
- bone density
- biopsies - skin, breast, endiometrial
- bone marrow biopsy / aspiration

Non-traditional therapies:
- imagery
- visualization
- biofeedback
- therapeutic touch
- meditation
- home remedies

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acupressure
herbs
music therapy
rolfing, other massage therapy
relaxation therapies
journaling
self exploration
life patterning
listening
self empowerment

Teaching:

cost of health care
patients in groups
present community education programs
teach staff inservices
precept other (not NP) nursing students
precept medical or other health care profession's students
instruct patients in proper condom use

Perform technologies:

obtain blood cultures specimens (3% WHNP)
administer nerve blocks
draw blood
perform urinalysis (dip stick)
perform microscopic examination of vaginal discharge (8%PNP)
perform microscopic examination of skin scraping
perform wound care
perform x-rays
perform tonometry
perform colposcopy
perform lumbar puncture
perform electrocautery, chemical cautery
perform incision and drainage (9% WHNP)
apply casts and splints
administer pulmonary function tests
interpret pulmonary function tests
insert ET tubes
insert subclavian lines
use laser to remove skin lesions
assist with vasectomies and circumcision
perform cryotherapy (0% PNP)
perform accuchek
access porta caths
perform caths (in and out, foley)

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administer questionnaires to measure depression, hyperactivity, etc.
minor surgical procedures: skin lesion removal
artificial insemination (0% PNP, ANP)
preoperative dilator insertion
use Wood's light (0% WHNP)
perform/instruct peak expiratory flow meter (0%WHNP)

Clinic operations:

obtain patient records from files
schedule return appointments
complete clerical tasks
clean exam room to prepare for next patient
manage staff, budget, other clinical resources
team management, clinic supervision
corporate entertaining, staff recruitment
prepare clinic work schedule for staff
negotiate for cost of clinic supplies and equipment
manage charity donations: clothing, funds
prepare budget: operating, capital
hire, fire, evaluate, discipline employees

Community involvement:

provide care in the community (i.e. worksites , schools, other public sites)
serve as a member of a hospital / clinic committee
serve as a member on a physician's committee

Continuing education:

attend grand rounds

Research:

participate in research
design research
publish clinical papers

Providing consultation:

write letters reporting clinic visits to referring physicians

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GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Lygia Holcomb

Major Subject Nursing Health Policy

Title of Dissertation A Delphi Survey to Identify Activities of Nurse Practitioners in Primary Care

Dissertation Committee:

Jeanette A. Stover, Chairman

Director of Graduate Program Carol Lindsey

Dean, UAB Graduate School Joan F. Lorden

Date 9/27/96

PS-428

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