KNOWLEDGE, SELF-EFFICACY AND PRACTICES OF ADVANCED PRACTICE NURSES REGARDING THE PROVISION OF GYNECOLOGICAL AND REPRODUCTIVE HEALTHCARE SERVICES TO DISABLED WOMEN WITH IMPAIRED MOBILITY

by

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This dissertation is dedicated to the memory of my father and of my brother,
Glenn William Jackson (1928-1978)
Ronald Eugene Jackson (1950-1998)
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This study examined the knowledge, self-efficacy and practices of advanced practice nurses (APNs) in the State of Texas regarding the provision of women's healthcare services to females with disability. Data supplied by more than 1400 APNs in response to a mailed, voluntary, anonymous survey revealed that nearly half of these APNs provide women's healthcare services and the majority sees disabled patients. The APNs, however, received little-to-no education in their APN coursework regarding providing healthcare services to persons with disability. While overall knowledge scores were high, knowledge was lacking in care of the woman with spina bifida. Self-efficacy in provision of women's healthcare services was found to be related to knowledge and perceived accessibility of the environment. Characteristics associated with accessibility were not frequently present in the APN's work environment, yet the majority of APNs rated their workplace as being very accessible. Although further research is recommended, it is concerning that APNs offer women's healthcare services to disabled women without receiving disability-specific education in their graduate programs. APNs are thus not fully supported, in their education and environment, in providing competent care to this population. Until changes are made, the provision of care to disabled women with impaired mobility by APNs may not be optimal. Further study into the practice of the APN in care of disabled women is warranted.

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CHAPTER 1: INTRODUCTION

It is widely recognized that access to preventive women's healthcare services such as breast and cervical cancer screening is of utmost importance to all women (American Cancer Society, 2005; AHRQ, 2005). Although women who have disabilities are living longer and healthier lives (Jans & Stoddard, 1999), access to preventive services continues to be a critical issue for many of them (Association of State and Territorial Health Officials, 2003; Iezzoni, McCarthy, Davis & Siebens, 2000; Nosek & Howland, 1997; Becker, Stuifbergen & Tinkle, 1997). Healthy People 2010 recognized this problem, and developed several national health goals related to improving use of preventive services by disabled women. These goals include: 1) improving accessibility to health and wellness programs, 2) improving surveillance and health promotion programs, and 3) reducing the proportion of people with disabilities reporting physical barriers to participation in home, school, work or community activities (Centers for Disease Control, 2003).

There are many barriers to healthcare services for disabled women in the United States. Disabled women are more likely to be poor and unemployed, and also more likely to lack adequate health insurance. There are often physical barriers such as facilities that cannot accommodate a wheelchair, or a lack of accessible transportation. In addition, many healthcare providers lack the knowledge needed to provide basic services to disabled women, and attitudes toward persons with disability may interfere with the provision of care. There are also financial costs for the providers, such as the costs of examination tables that raise and lower, wheelchair scales and accessible mammogram machines (Association of State and Territorial Health Officials, 2003; Iezzoni, McCarthy, Davis & Siebens, 2000; Nosek & Howland, 1997; Becker, Stuifbergen & Tinkle, 1997).

The Americans with Disabilities Act (ADA) was enacted by the United States Congress in 1990 to assure full participation of disabled individuals in American society. The Act states that: "No individual shall be discriminated against on the basis of disability in the full and quality enjoyment of the goods, services, facilities, privileges, advantages or accommodations of any place of public accommodation" (U.S. Department

of Labor, 1993). Healthcare workers and the healthcare industry fall under the purview of the ADA. Unfortunately, access to healthcare by persons with disability remains an issue in the United States in 2005, fifteen years after the ADA was passed. To date, not all healthcare facilities are physically accessible and many other issues of access have not yet been addressed.

Demographic Trends

Nearly 20% of the United States population lives with a disability. The 2000 U.S. Census found nearly 50 million people with some sort of long-lasting condition or disability. The Census found that disability increases with age and that gender differences in disability also change with age. At earlier ages males are more likely to experience disability, while at older ages women are more likely to be disabled than are men. Racial and ethnic differences also exist in disability. The highest overall disability rates in the Census were found for respondents who self-reported as Black (24.3%), or as American Indian/Alaska Native (24.3%). Among all racial/ethnic groups, Asians reported the lowest overall disability rate. Racial-ethnic disparities existed across all age groups (Waldrop & Stern, 2003).

Families with disabled members were found to have a lower median income than other families in the 2000 Census. In every state, families with disabled members were found more likely to be living in poverty. Nearly 30% of families in which there were both disabled adults and disabled children were found to be impoverished. They were also more likely than other families to receive income from Social Security and social assistance programs. Racial differences also exist in disabled families. Non-Hispanic Whites and Asians in the 2000 census were less likely to be living in poverty and less likely to have disabled family members than Blacks and American Indians/Alaska Native (Wang, 2005).

There are nearly 26 million women living with disabilities in the United States. From 1990-1994, a 33% increase in activity limitations was found among girls. Such an increase may unfortunately herald future increases in disability among women in the

United States. Discrimination against disabled persons is often compounded by race, class and gender. The consequences of disablement are particularly serious for women. Not infrequently, women with disabilities are discriminated against because of a combination of race, gender and disability, and "often they have less access to essential services such as health care, education and vocational rehabilitation" (McClain, 2002). Women with disabilities can be considered one of the most disadvantaged and underserved groups in the United States (Thierry, 2000).

Access to Healthcare

Access has many definitions, including the right to enter, the right to obtain or make use of or take advantage of something, as well as the ability or right to approach, enter, exit, communicate with, or make use of (The American Heritage® Dictionary of the English Language, 2000). Access to healthcare can mean physical access to a facility: handicapped parking, wide doorways, examination rooms and bathrooms that accommodate a wheelchair, equipment that accommodates the disability, and so on. It can also be interpreted to mean access to healthcare providers who are knowledgeable in treatment of the person with disability. The ADA mandates that reasonable modifications must be made to policies, practices or procedures to avoid discrimination unless a fundamental alteration to the nature of the goods or services would result (ARC, 1995). Thus, the practices of the care provider must adapt to fit the needs of the patient. If the primary care provider were unable to offer disabled women a Papanicolaou smear because the examination table was at a fixed height that the patient could not access, or if, for some other reason, the provider did not provide services to the disabled female that he routinely provides to other patients, it may be interpreted as discrimination.

Barriers to Healthcare

A barrier is defined as a structure, such as a fence, built to bar passage; something immaterial that obstructs or impedes, such as attitudes; or something that separates or holds apart (The American Heritage® Dictionary of the English Language, 2000). Many

segments of the population in the United States experience barriers to healthcare, and thus, receive less than optimal healthcare services. The people who encounter these barriers tend to have lower incomes and less education and to be from minority populations, including many persons with disabilities. Frequently encountered barriers to healthcare include money, transportation, language, knowledge, motivation, facilities and qualified providers. These barriers do not occur in isolation; rather, they tend to occur together, forestalling simple solutions.

Healthy People 2010 identifies barriers to access as being financial, structural or personal barriers. Financial barriers include inadequate or no health insurance and lack of enough money to cover services not covered by a healthcare plan. Structural barriers are identified by Healthy People 2010 as a lack of primary care providers, medical specialists or other healthcare professionals to meet special needs as well as the lack of healthcare facilities and services. Personal barriers can include cultural or spiritual differences, language barriers, not knowing what to do or when to seek care or concerns about confidentiality or discrimination. Other barriers include provider and patient attitude, language, culture, physical habitus of the patient, transportation and even weather.

Advanced Practice Nurses

This study examined access to healthcare from the viewpoint of one of the newest primary-care providers: the advanced practice nurse (APN). APNs are increasingly providing services that were traditionally available from only a physician. An advanced practice nurse is a registered nurse who has completed additional coursework and clinical practice requirements leading to recognition as a nurse practitioner, clinical nurse specialist, certified nurse midwife or certified registered nurse anesthetist. In the State of Texas, APNs have completed basic education in nursing, and have also completed a specialty APN program at the Master's level at an accredited school of nursing.

According to the American Nurses' Association, many Americans go without essential health care services because physicians are simply not available to provide care. This problem is present in both rural and urban areas. Medicaid beneficiaries are

particularly at risk, since many health professionals have chosen not to care for them due to reimbursement issues. “APNs are an exception to this trend; they frequently accept patients that other providers will not treat and they often serve in health care shortage areas” (ANA, 2005).

APNs have the potential to affect the care delivered to disabled women. Yet, the impact of the APN on the care of the disabled female has not been systematically studied. There have been no studies published regarding the knowledge of APNs about the gynecological healthcare required for disabled women or about the APN’s ability to deliver such services. Self-efficacy of APNs in providing care to persons with disability has also not been studied.

Specific Aims

This study had three specific aims. The first was to explore the baseline knowledge of APNs in Texas about the gynecological and reproductive healthcare services required by disabled women with impaired mobility. The second aim was to examine the self-efficacy of APNs regarding provision of gynecological and reproductive health services to disabled women with impaired mobility. The third aim assessed the current clinical practice of APNs in provision of gynecological and reproductive healthcare services to disabled women with mobility deficits. It was anticipated that this study would provide a significant contribution regarding access to healthcare services by disabled women from the perspective of the provider.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a detailed review of the literature on the provision of women's healthcare services to disabled women. The chapter covers topics related to 1) characteristics of disabled women in the United States, 2) healthcare providers' interactions with women who are disabled and 3) the conceptual framework for this study.

Disability is defined as a limitation in the ability to perform roles and tasks that society expects of an individual. It is the gap between an individual's capabilities and the demands of the environment. Disability is therefore an interaction of an individual's limitations with social and physical environmental factors (IOM, 1997).

One goal of Healthy People 2010 is to eliminate health disparities among various segments of the United States population, including the disabled population (U.S. Department of Health and Human Services, 2000). People with disabilities account for approximately 20% of the U.S. population and they often lack access to health services. Healthy People 2010 (Chapter 6) noted that "the health promotion and disease prevention needs of people with disabilities are not nullified because they are born with an impairing condition or have experienced a disease or injury that has long-term consequences". Rather, people with disabilities have an increased need for health promotion. Goal 6-10 of Healthy People 2010 is to increase the proportion of health and wellness and treatment programs and facilities that provide full access for people with disabilities. Further, Goal 6-12 is aimed at reducing the proportion of people with disabilities who report environmental barriers to participation in home, school, work or community activities.

The Institute of Medicine (IOM) noted in 1997 that little was known about how persons with disabilities access primary care services and about the quality and impact of these services on well-being and costs. The IOM stated that "what is known is that existing services are fragmented and often inadequate in addressing (in a timely manner) the constellation of health problems experienced by people with disabling conditions once they leave rehabilitation" (p. 181). The IOM continues, "Primary care providers are

not typically trained to recognize the general health care needs of people with disabling conditions. In the absence of this training, they too often focus on the specific limitation and underlying physical and cognitive impairment and not on the individual's increased susceptibility to acute and chronic health conditions" (p. 181). Thus, poorly trained primary care providers frequently make inappropriate referrals to several sources, essentially delaying treatment and escalating healthcare costs. The IOM recommends an examination of healthcare for persons with disabilities (PWD), indicators of quality health care, and the factors that impede access to appropriate use of services. This organization notes that the roles of unrecognized need for services and provider attitudes and perceptions play in accessing and using services are often underemphasized.

Disabled Women in the United States

Prevalence of Disability

According to the 1996 Medical Expenditure Panel Survey (MEPS), 14.3% of all women in the United States had a functional limitation; 10.4% had activity limitations; and 6.8% needed help with an activity of daily living (ADL) or an instrumental activity of daily living (IADL). Limitations and impairments increased with age, with nearly one-third of women having a limitation of some kind by age 65-74. White and black women had higher levels of physical limitations than did Hispanic women and women of other races (20.9% of whites; 18.9% of blacks; 16.2% of Hispanics; and 12.5 % of other race/ethnic groups). Single women without children in the study were more likely than married women without children to have functional and activity limitations and to require assistance with ADLs and IADLs (Altman & Taylor, 2001).

The 1996 MEPS also found that women in families with incomes at or near the poverty level were more than twice as likely as women in higher income families to have a physical limitation, and more than three times as likely to need assistance with ADLs and IADLs. Among women under 65, over one-third of those with only public health insurance had a physical limitation, almost 16% required assistance with an ADL or IADL and nearly 14% had functional or activity limitations. Women who lived in non-

metropolitan areas were more likely to have functional, activity, IADL and ADL limitations than women in metropolitan areas (Altman & Taylor, 2001).

Iezzoni, McCarthy, Davis and Siebens (2001) found that mobility difficulties are not just a problem of the older adult. They performed secondary data analyses on the 1994-1995 National Health Interview Survey with the disability supplement (NHIS-D), which contained questions about functional limitations, performance of daily activities, assistive devices and health conditions. Based on responses from 145,007 people 18 years of age and older, they found that 10% of the non-institutionalized U.S. population reported some mobility difficulty with more than 3% indicating major difficulty. The mean age of those with minor, moderate or major difficulty ranged from 59-67 years. Nearly a third reported that their problem began at age 50 or earlier. Rates for mobility difficulties were highest for women and African Americans (15%). People with mobility difficulties were more likely to be poorly educated, living alone, poor, unemployed and having problems with daily activities. Persons with major mobility difficulties reported more depression and anxiety. The most common causes of difficulty were arthritis and back problems as well as chronic conditions associated with aging, and trauma.

Causes of disability can be congenital, traumatic or disease-related. Congenitally-acquired disability may include such conditions as spina bifida or dwarfism. Traumatic conditions include spinal cord injury and amputation, while disease-related disability includes stroke, amputation, arthritis and multiple sclerosis. The leading causes of disability reported in women in 1992 were spine and back problems, arthritis, heart disease, asthma, orthopedic impairment of lower extremity, mental illness and diabetes (U.S. Department of Health and Human Services, 2002).

Need for Preventive Services

The maintenance of gynecological and reproductive health is of high importance throughout the lifespan of women. Gynecological and reproductive healthcare refers to a broad range of services that includes prevention, screening and treatment of sexually transmitted diseases; contraception and abortion; treatment of infertility; perinatal care,

including pregnancy management and delivery of babies; treatment of menstrual-related disorders such as amenorrhea, dysmenorrhea and premenstrual syndrome; treatment for peri/post-menopausal symptoms; prevention, screening and treatment of reproductive system cancers; and education of women of all ages about reproductive health and practices.

Since gynecological and reproductive healthcare needs can be expected to change as women age, it is important that all women have access to age-appropriate gynecological and reproductive healthcare. Multiple agencies and organizations, including the National Cancer Institute, the American College of Obstetricians and Gynecologists, the Centers for Disease Control and Prevention, the National Institutes of Health, the American Cancer Society and the U.S. Preventive Services Task Force, among others, have issued clinical practice guidelines and recommendations for gynecological and reproductive healthcare such as the detection and treatment of cervical and breast cancer, prevention and treatment of sexually transmitted diseases and management of symptoms of menopause.

Women with disabilities have the same needs for gynecological healthcare as non-disabled women, yet are less likely to receive these services from their healthcare provider (Association of State and Territorial Health Officials, 2003; Iezzoni, McCarthy, Davis & Siebens, 2000; Nosek & Howland, 1997; Becker, Stuifbergen & Tinkle, 1997). Some of the barriers previously mentioned may be the cause, since disabled women face significantly higher rates of unemployment and poverty (Nosek et al, 1995). There are also other barriers unique to the disabled population.

Women with disabilities have been found to be more likely than non-disabled women to have difficulty finding an accessible doctor's office, difficulty finding transportation and even difficulty getting onto an examination table (Nosek & Howland, 1997; Nosek et al., 1995). More than 50% of disabled women in one study reported that their hospital could not accommodate their childbirth due to architectural barriers (Nosek, Rintala, Young, Foley & Dunn, 1996). Women with disabilities have been found to be twice as likely as their male counterparts to not receive sex education (Becker,

Stuifbergen & Tinkle, 1997). Some women with disability have reported that the most difficult barrier to healthcare was the negative attitude of the provider (Becker, Stuifbergen & Tinkle, 1997). Just the presence of a wheelchair may color the attitude of the provider toward the person with a disability and potentially affect the care delivered (Gething, 1992). Nosek et al. (1995) found that women with physical disabilities reported encountering many physicians who displayed negative, stereotypic attitudes toward them. One study of women with acquired or congenital disabilities found that, while more than half had received information about contraception, women with paralysis, obvious physical deformity and severely impaired motor function were not offered this information (Nosek et al., 1995).

Not every woman with a disability has the same gynecological and reproductive healthcare needs, and not every disability can be treated in the same way. For instance, women with spinal cord injury require special consideration of the relationship of the autonomic nervous system with the reproductive system. Intercourse, menstruation, ovulation, labor and delivery can all cause autonomic dysreflexia, a life-threatening elevation of blood pressure. Pregnancy with spinal cord injured women can be a challenge: the onset of labor may not be noticed due to sensory deficits; the pregnant woman is at higher risk for pressure ulcers; and weight gain can affect self-care activities (Zejdlik, 1992). Mobility and range of motion that affects the ability of the provider to carry out the examination can be an issue in some patient populations, including elderly women and women with traumatic brain injury, cerebral palsy or stroke. Other women with mobility or range of motion issues may require special education and guidance in handling self-care during menstruation or in performance of self-breast examination (Center for Research on Women with Disabilities, 1999).

Use of Screening and Preventive Services

Iezzoni, McCarthy, Davis and Siebens (2000) used the NHIS-D to examine mobility impairments and use of screening and preventive services. They found that persons with mobility problems were generally older. However, 23.2% of those with

major difficulty, 37.1% of those with moderate difficulty and 38.4% of those with minor difficulty were younger than 55. Adjusted rates for women with major mobility difficulties showed that these women were significantly less likely to report receiving Papanicolaou tests and mammographies. The higher the degree of immobility, the less likely the person was to receive these services. In this study, age was found to be the most important predictor for preventive services, with services decreasing as age increased.

In a study of 930 women with multiple sclerosis (MS), Cheng and colleagues (2001) examined mobility impairments and the use of preventive services. Rates for the use of Papanicolaou tests and mammographies exceeded the Healthy People 2000 recommendations, but rates were highest for those with higher mobility and lowest for those unable to walk. Ambulatory patients had 5.32 times the odds of having a Papanicolaou test, 3.62 times the odds of having a breast examination and 3.24 times the odds of having mammography relative to non-ambulatory patients. Older age was associated with lower rates of Papanicolaou smears.

Shabas and Weinreb (2000) also examined preventive healthcare use among 220 women with MS. Their study showed that 50% of the women did not get regular medical preventive checkups, 25% did not have regular pelvic examinations and 11% had not had a Papanicolaou smear within 3 to 5 years. Forty-eight percent of women over the age of 50, and 53% of women over the age of 40 did not have yearly mammograms. Forty-seven percent were ambulatory, 36% required an assistive walking device and 15% were not ambulatory. Sixty-three percent were pre-menopausal, while 31% noticed changes in their MS with menstruation and 26% noticed worsening of their MS with menopause. Sixty-five percent were mothers, and 38% were currently sexually inactive. In a subset of 116 women, 11% reported physical abuse, 30% reported verbal abuse and 9% reported sexual abuse. Ninety-six percent reported fear of seeking services to ameliorate the abuse.

The MEPS study referenced above found that women with some form of limitation were significantly less likely than women with no limitations to have received either a recent Papanicolaou smear (58.9% compared to 73.5%) or a recent mammogram

(56.4% vs. 67.1%) (Altman & Taylor, 2001).

Barriers to Care

Veltman, Stewart, Tardif and Branigan (2001) surveyed 201 disabled people concerning access to primary healthcare. Eight percent of respondents reported that they had, at sometime in their lives, been refused medical treatment by a family doctor because of their disability. Twenty-seven percent of respondents felt that there was inadequate time allotted for their medical appointments, while 20.4% felt that the medical office staff was insensitive. Transportation barriers were noted by nearly 40% of respondents, physical barriers in the medical office by 32.3%, equipment barriers by 38.3% and bathroom barriers in the office by 23%. Twenty-two percent felt that their disability prevented them from receiving appropriate medical care.

Becker, Stuifbergen and Tinkle (1997) performed a qualitative study of disabled women, exploring their experiences with healthcare. The most commonly discussed barrier was the provider. Providers were viewed as insensitive or lacking awareness of disability issues as they impact reproductive health care. One woman talked about nearly falling off an examination table when no one held her paralyzed legs. Others felt patronized, not listened to or given inadequate explanations of their conditions. Another individual noted that the providers got easily distracted by the disability, attributing symptoms to the disability instead of looking for other answers. One woman reported shock on the part of the provider when the provider was asked about providing birth control. The interviewees felt that providers were reluctant to discuss sexual issues with disabled women. Overall, their suggestions were that providers become better prepared to work with people with disabilities. Communication skills were identified as an area where providers could improve. Physical barriers were also discussed in this study. Inaccessible offices were a problem for many of the women.

Nosek et al. (1995) examined barriers to reproductive health maintenance in a qualitative study of thirty-one disabled females with functional impairments. One key finding in this study was that some women with disabilities lacked basic knowledge

about their reproductive system. Several indicated that they had been denied physician services due to their disabilities. As one participant noted, "I called four doctors and none of them would see me because I was in a wheelchair" (p. 511). The most common barrier to healthcare cited was the lack of elevating examination tables and lack of platform weight scales. As another subject stated, "Could you believe that all through my pregnancy so far, they don't know how much weight I've gained, because they don't have a wheelchair or sitting scale" (p. 512). Another barrier to healthcare was that many physicians had negative, stereotypic attitudes toward disabled women. One subject related, "He stuck his fingers in there, hurting me. He was real rough. He just assumed that I had no feeling" (p. 512). Women in this study also related difficulty in obtaining reliable information about contraception and several did not feel that they understood their options (Nosek et al, 1995).

Healthcare Providers

There are three types of APNs recognized in Texas who provide women's healthcare services. These include the nurse practitioner, the clinical nurse specialist and the certified nurse midwife. [Note: certified registered nurse anesthetists are also APNs, but are not being considered in this project since they do not provide gynecological or reproductive healthcare.]

Nurse practitioners (NPs) specialize in different patient populations. In Texas, recognized NP specialties include Adult, Acute Care, Emergency Room, Family, Gerontological, Neonatal, Pediatric, Perinatal, School, Women's Health and Psychiatric. NPs are eligible for prescriptive authority, if educational requirements have been met. They are also licensed to carry out medical aspects of care under the supervision of a physician. As of September 2004, there were more than 5500 NPs licensed in Texas (Texas Board of Nurse Examiners, 2004). NPs conduct physical examinations, take medical histories, diagnose and treat common acute minor illnesses or injuries, order and interpret lab tests and X-rays and counsel and educate clients (ANA, 1993).

Clinical nurse specialists (CNSs) also specialize in caring for different patient

populations. CNSs are more likely to be found in the hospital setting, where they serve in several roles: direct caregiver, primary care provider, administrator, researcher and educator. Qualified to handle a wide range of physical and mental health problems, CNSs provide primary care and psychotherapy. They conduct health assessments, make diagnoses, deliver treatment and develop quality control methods (ANA, 1993). As of September, 2004, there were more than 1350 CNSs licensed in Texas (Texas Board of Nurse Examiners, 2004).

Certified nurse midwives (CNMs) provide primary health care to women of childbearing age including: prenatal care, labor and delivery care, care after birth, gynecological exams, newborn care, assistance with family planning decisions, preconception care, menopausal management and counseling in health maintenance and disease prevention. CNMs attend over 10% of the births in the United States (American College of Nurse-Midwives, 2004). As of September, 2004, there were more than 340 CNMs licensed in Texas (Texas Board of Nurse Examiners, 2004). One note: the Master's degree requirement for CNMs does not become effective in Texas until 2007. This study will be limited to CNMs with Master's degrees recognized as APNs.

There are several aspects of APN practice about which little is known, but which were explored in this study. These include the percentage of the APNs' patient caseload that is disabled, what types of disabilities they see in their practice and what gynecological and reproductive health services APNs provide for this population. Other questions explored include the education the APN received in his/her graduate program.

Healthcare Providers and Women with Disability

Many disabled people are not satisfied with their contact with healthcare professionals. Scullion (1999) reports a study of nursing students which identified three themes concerning disability: a deviation from norms, a state characterized by dependency and disability as an ill-defined state (Scullion, 1999). Campbell (2005) developed a conceptual model of attractiveness as a factor that influences the quality of care and outcomes of nursing home residents. She theorized that personal characteristics,

including cleanliness, weight, cognitive status, behavior, communication patterns and functional abilities can influence the quality of care received by patients in nursing homes. Campbell has not yet tested this conceptual framework.

Research about nurses' attitudes towards physically disabled patients is limited (Conway, 1996). Brillhart, Jay and Wyers (1990) found that registered nurses and new student nurses were significantly more positive in their attitudes toward the disabled than were recent nursing graduates and faculty. These researchers concluded that student nurses entered training with positive attitudes toward the disabled, which became more negative as they continued through their coursework and interacted with faculty. Then, as they entered the workforce and had more contact with disabled people, their attitudes again changed. Biordi and Oermann (1993) found that prior work experience with disabled persons was associated with a more positive attitude toward the disabled in student nurses, even when those with and without prior experience received education. These findings were replicated by Lindgren and Oermann (1993).

Ormond, Gill, Semik and Kirschner (2003) examined the attitudes of health care trainees about genetics and disability. The sample consisted of 85 medical students, residents and genetic counseling students who completed a voluntary survey. The majority felt that disability caused significant suffering for both the person and the family. Thirty-eight percent agreed with the statement, "Society would be better off if we could eliminate as many disabling conditions as possible". Factors rated high in relation to quality of life of the disabled person included ability to communicate, overall level of functioning, level of independence and level of cognitive support.

Knowledge

It is not clear that all practitioners have adequate knowledge about provision of preventive services to the disabled population. As some of the literature implies, it is easy for the healthcare provider to get overwhelmed by the disability and neglect to provide the basic services. Oshima et al. (1998) examined the knowledge of medical residents regarding the care of a woman with tetraplegia. The residents all had at least one year of

training either in internal medicine (IM) or obstetrics and gynecology (Ob/Gyn) in a large urban academic medical center. Both groups indicated that they were not very comfortable in managing the care of a tetraplegic woman. Only about a quarter of the IM residents and most of the Ob/Gyn residents reported experience treating women with spinal cord injury (SCI). Most of the residents felt that their offices and examination rooms were wheelchair accessible. Three-fourths of the IM residents and two-thirds of the Ob/Gyn residents indicated that they would perform a pelvic examination as part of their primary examination of a 35 year old female with C-6 tetraplegia who presented for a new patient visit. When asked how they would transfer the patient up onto the examination table, 53% of the IM residents and 64% of the Ob/Gyn residents said that they would use their staff to lift her. Forty percent of the IM residents said that they had no resources in place or did not know what they would do. Only twenty-one percent of the Ob/Gyn residents said that they had access to an electric examination table. The residents also showed a knowledge deficit when it came to specific care of the patient in this case study who, as it turns out, is pregnant. A small number was aware of autonomic dysreflexia, an SCI-related complication that can occur in childbirth, or with other noxious stimuli. Fewer than half saw themselves consulting a physiatrist or other disability specialist for this patient. It must be noted that the knowledge of first year residents may not reflect what third or fourth year residents have learned throughout their residency. However, these findings echo what disabled women have been saying – their physicians are often not knowledgeable in providing care for them.

Hefner (2003) collected data on 108 consecutive patients seen at a health center for women with physical disabilities in Pittsburgh. In the five years preceding the study only 6% of the 92 non-ambulatory patients had been examined by their PCP on an examining table. Only 51% of eligible women had had a mammogram, and only 33% of eligible women had had a Papanicolaou smear. The author speculates that physicians lack knowledge and training in the delivery of primary care to the physically disabled woman.

Self-efficacy

Self-efficacy beliefs originate from four sources. The strongest source is an evaluation of one's success in performing the behavior in the past. That is, outcomes considered to be successes bolster self-efficacy and those outcomes considered to be failures lower it. Another source of self-efficacy beliefs is observation of others performing the same task. That is, people have the ability to learn from other's successes and mistakes. Observing the success of others bolsters one's own self-efficacy. A third source of self-efficacy beliefs is the feedback of others, and the fourth is the somatic and emotional states associated with performing the task. High levels of anxiety and stress concerning the performance of the task can lessen self-efficacy (Pajares, 2002).

According to social-cognitive theory, people's accomplishments are better predicted by their self-efficacy than by their knowledge and skills. No amount of self-efficacy can, however, produce success if knowledge and skills are lacking. One interesting point that Pajares (2002) makes is that "collective systems develop a sense of collective efficacy". For example, a certain school may develop a high sense of efficacy in the ability of its students. This concept could be extrapolated and applied to nursing specialties – it is possible that certain nursing specialties have developed a sense of collective efficacy, and that some specialties, as a group, could have a higher sense of efficacy than others.

The application of self-efficacy to provision of healthcare services is important. As Pajares (2002) notes, people tend to do the tasks in which they have high self-efficacy and avoid those in which they do not. Self-efficacy also determines how much effort will be expended to perform a task and how long the person will persevere if there are obstacles to completion of the task. Performance of activities can be hampered by factors other than self-efficacy. People with high self-efficacy and a high level of skills may not perform an activity if the environment or social situation does not support performance of the activity (Pajares, 2002). For instance, an APN who works for an HMO and who has a limited amount of time to see each patient may not perform a Papanicolaou smear because of the time constraints. Or an APN who is in private practice may elect to defer a

Papanicolaou smear for a wheelchair-bound patient due to the lack of equipment to transfer the patient to the examination table. It is noted that disparities in self-efficacy judgments will occur if self-efficacy is measured in a simulated situation and performance is subsequently measured in a real situation (Bandura, 1986).

Self-efficacy can affect the provider's ability to offer services to disabled women. According to Albert Bandura (1997) "the outcomes that people anticipate depend largely on their judgments of how well they will be able to perform in given situations" (p. 21). Bandura asserts that effective personal functioning is more than just "knowing what to do and being motivated to do it" (p. 36). People who see themselves as efficacious will be more successful in performance. Bandura sees perceived self-efficacy as "a belief about what one can do under different sets of conditions with whatever skills one possesses" (p. 37). There have been no published studies on the self-efficacy of APNs concerning provision of healthcare to disabled women.

Conceptual Framework

This study examined the knowledge, self-efficacy and practices of advanced practice nurses regarding the provision of gynecological and reproductive healthcare services to disabled women with impaired mobility. The overall conceptual framework used in this study is the Institute of Medicine's (1997) Enabling-Disabling Process model, seen in Figure 1. The environment, shown as a square, represents both physical and social environments (family, community, society). A person who does not have a disability, as in graphic "a", is fully integrated into society and "fits within the square." A person with potentially disabling conditions has increased needs (expressed by the size of the individual) and is dislocated from his or her prior integration into the environment as in "b": that is, "doesn't fit into the square." The enabling process attempts to rectify this displacement, either by restoring function in the individual (c) or by expanding access to the environment (d).

For this study, the IOM Enabling-Disabling Process has been conceptualized as including:

A. Disabling process: The disabled woman's needs regarding the provision of gynecological/reproductive healthcare services are more complex than the environment usually sees, and the environment may be unable to accommodate her needs. The environment generally includes the healthcare provider (APN), who may not have the knowledge or self-efficacy to provide the needed services, and/or the provider's physical and social environment which may facilitate access to the provider (see Figure 2A).

B. Enabling process: The environment is able to meet the disabled woman's complex needs regarding the provision of gynecological/reproductive healthcare services. The provider has the knowledge and self-efficacy needed to provide the services, and the physical and social environment of the provider accommodates access to the provider (see Figure 2B).

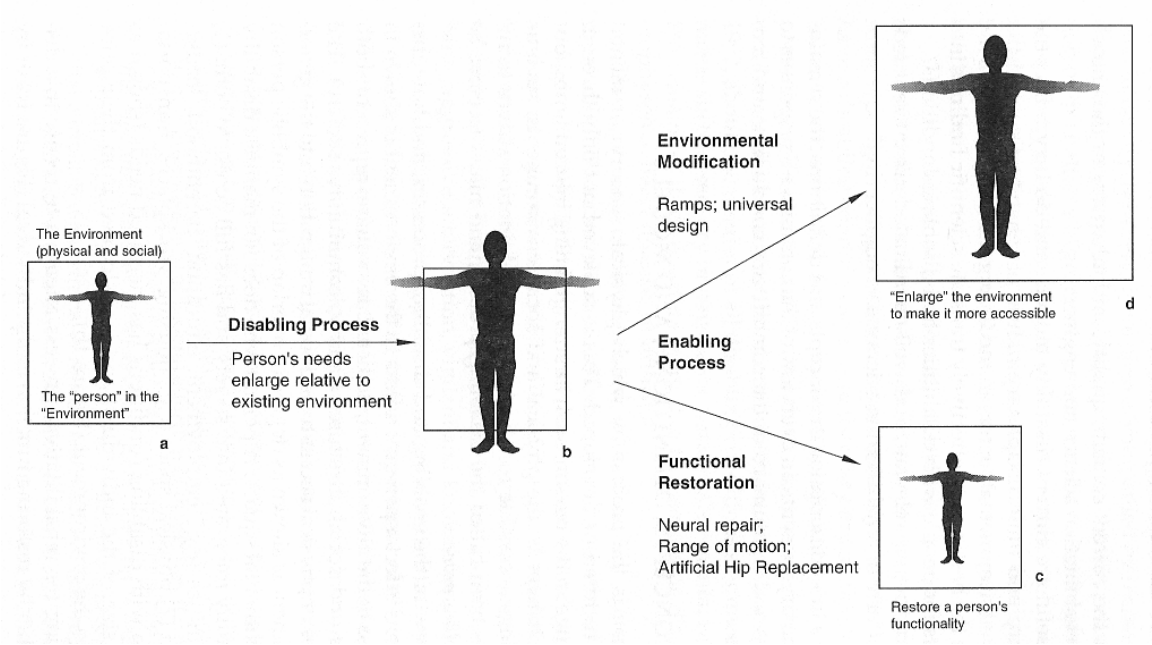

Figure 1: Enabling-Disabling Process

From: IOM (1997)

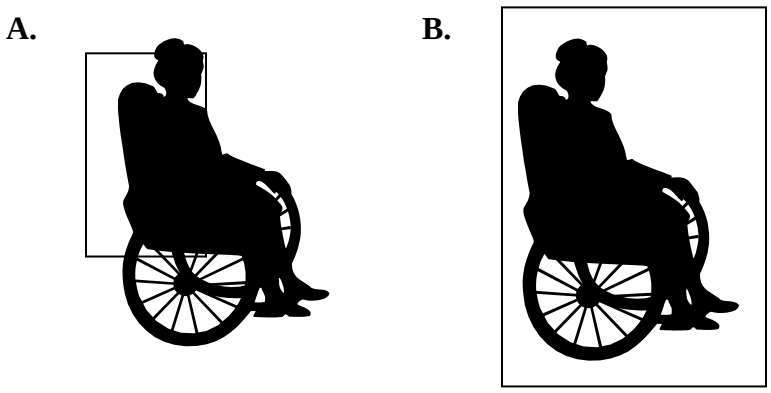

Figure 2: Conceptualization of enabling-disabling process

Bandura's model of social cognitive theory (Figure 3, 1986) was used as a framework to identify provider-centered characteristics that may influence the fit between the woman with disability and the environment. Within this three-armed model, classes of determinants in reciprocal causation are the internal factors of the person, the external environment and the behavior in question. Bandura theorizes that all three interact and influence each other bi-directionally. The relative influence of each (person, environment and behavior) varies for different activities and under different circumstances (Bandura, 1997).

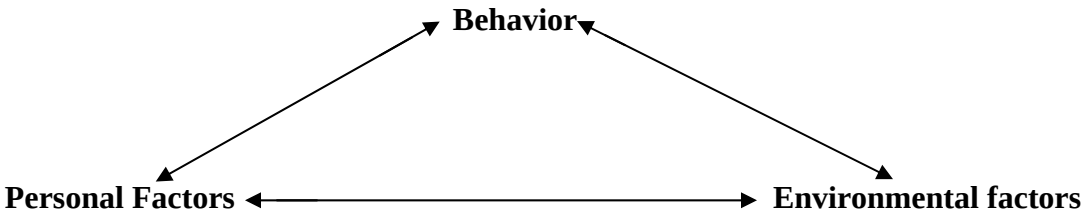

Figure 3: Bandura's model of social cognitive theory (1986)

For this study, Bandura's model of social cognitive theory (1986) has been conceptualized as the model shown in Figure 4.

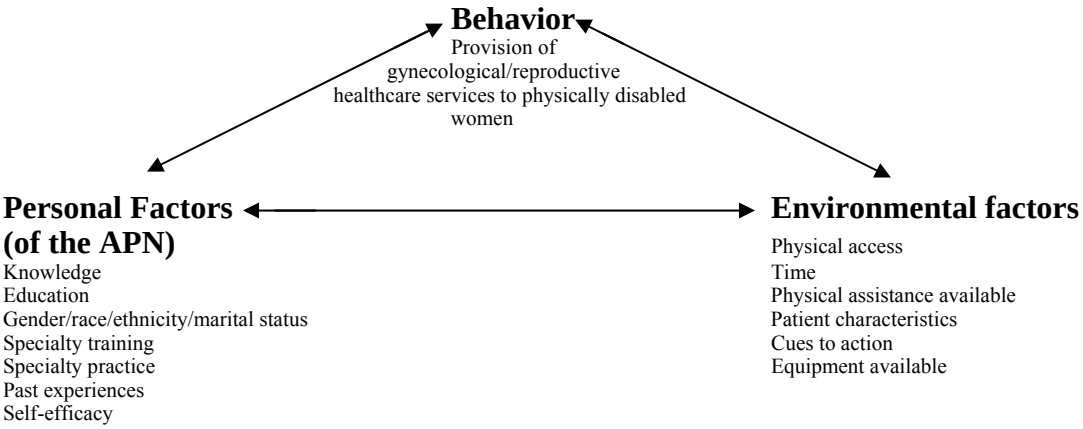

Figure 4: Conceptualization of Bandura's model of social cognitive theory

Thus, for this study the APN, with the APNs' own personal and environmental factors and behavior, is depicted in Figure 5 as ◢◣. The APN is seen as an integral part of the environment, contributing to an environment that may affect the ability of the disabled woman with mobility impairment in the procurement of gynecological or reproductive healthcare services. Personal and environmental factors specific to the APN may affect the behavior or provision of healthcare services to the disabled woman. The APN may contribute to the either the enablement or the disablement of the woman in terms of accessing women's healthcare services.

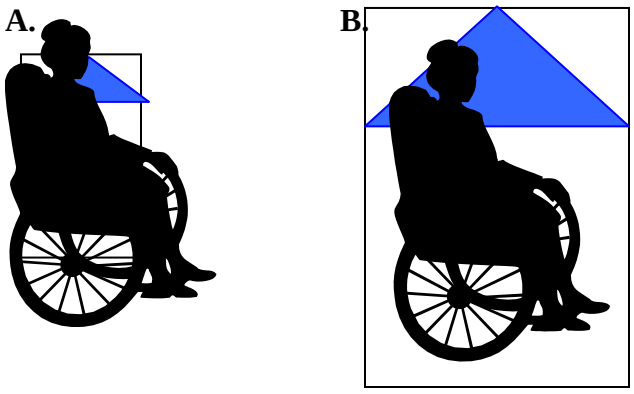

Figure 5: Enabling-disabling process with the involvement of the APN

Conceptual Definitions

1. Gynecological and reproductive healthcare services: performance of pelvic examinations, screening for cancer of the breast and cervix, screening for sexually transmitted diseases, prescribing contraception, managing infertility, managing pregnancy, managing childbirth, managing menopause, sexual counseling and providing education about all of the above.
2. Disabled women with impaired mobility: women with a disability that affects brain, nerves, muscles or bones and that impairs the ability to stand and walk. These women often use an assistive device such as crutches, a cane, a walker, a wheelchair or a care provider to assist with transfers and mobility. The conditions that cause impaired mobility can range from congenitally acquired (such as spina bifida), to traumatically acquired (such as spinal cord injury or head injury) to disease-related (stroke, multiple sclerosis, muscular dystrophy, obesity).
3. APN: a master's prepared advanced practice nurse, licensed in the State of Texas as a nurse practitioner, clinical nurse specialist or certified nurse midwife.

4. Knowledge*:* Awareness of the factual information on the topic in question.
5. Self-efficacy: Confidence or belief in one's capability to produced desired effects by one's actions (provide effective gynecological and reproductive healthcare services to disabled women with impaired mobility).
6. Practice: Provision of gynecological-reproductive healthcare services.

Hypotheses

Aim 1: Explore the baseline knowledge of APNs in Texas about the gynecological and reproductive healthcare services required for women with impaired mobility.

> *Hypothesis 1a*: The majority of APNs in Texas will lack knowledge of gynecological and reproductive healthcare services recommended for disabled women with impaired mobility.
>
> *Hypothesis 1b*: Knowledge of the gynecological and reproductive healthcare services required for women with impaired mobility will vary by the specialty and sub-specialty in which the APN was trained.
>
> *Hypothesis 1c*: APNs' knowledge about what services are recommended for all women, and how to provide these services to disabled women with impaired mobility, will vary by the amount of training in their APN educational program.

Aim 2: Examine the self-efficacy of APNs regarding provision of gynecological and reproductive health services to disabled women with impaired mobility.

> *Hypothesis 2a*: Self-efficacy of the APN in providing gynecological and reproductive healthcare services required for disabled women with impaired mobility will vary by the specialty in which the APN was trained.
>
> *Hypothesis 2b*: Self-efficacy of the APN in providing gynecological and reproductive healthcare services required for disabled women with impaired mobility will vary by the sub-specialty of the APN.
>
> *Hypothesis 2c*: Knowledge scores will be positively associated with self-efficacy and specialty licensure.

Aim 3: Assess the current clinical practice of APNs in provision of gynecological and reproductive healthcare services to disabled women with mobility deficits.

Hypothesis 3: APNs' current clinical practice will not reflect national guidelines for provision of Papanicolaou smear, pelvic exam, STD screening and other gynecological and reproductive healthcare services provided for disabled women with impaired mobility.

Summary

In summary, there are increasing numbers of physically disabled women in the United States whose disability stems from varying causes. These women require the same women's healthcare services as the fully mobile population, but often encounter barriers to these services that mobile women do not. There is no question that women's healthcare services are vital for prevention, early recognition and treatment of conditions associated with fertility, pregnancy, menopause and sexually transmitted diseases as well as cancer. Healthcare services can be affected by patient-specific issues, provider-specific issues and by societal issues such as insurance and physical access. Provider-specific issues may include knowledge, self-efficacy and limitations imposed by the structure within which the provider works. Advanced practice nurses can increasingly be expected to be providing primary care services to disabled women. Nothing is known, however, about the interaction between APNs and the disabled female population. Thus, this study is unique in that it examines the perceptions and practices of advanced practice nurses in delivery of women's healthcare services to physically disabled women.

CHAPTER 3: METHODS

This chapter provides an overview of the methods used in this study to explore the knowledge, self-efficacy and practices of APNs in Texas regarding the provision of women's health services to the disabled population. Major components of this chapter include: 1) a description of the sample and data collection procedures; 2) a description of key variables and handling of missing data; and 3) an analytic plan for each specific aim.

Design

This exploratory study was based on a written survey of advanced practice nurses in the State of Texas. The survey was a voluntary, anonymous, mail-out paper questionnaire. As a descriptive study, it allowed examination of previously unknown aspects of APN practice, including services provided, types of disabilities seen and the environments within which APNs practice. A wealth of data was collected on demographics, knowledge, self-efficacy and practices of the APNs. Another advantage was the accessibility to the population. Weaknesses of all survey designs include the potential inaccuracies of self-report, completion of surveys only by those motivated to do so and the possibility that surveys returned do not adequately represent all APNs who provide women's healthcare services. Data accuracy may be limited by misinterpretation of questions, inaccurate recall or purposeful misrepresentation of facts, as in all questionnaires. There is the possibility that respondents gave answers they perceived as socially acceptable rather than factual. Causation cannot be implied through this type of exploratory survey.

Sample

The desired sample was the APNs in Texas who provide gynecological and reproductive healthcare services to women with impaired mobility. A mailing list, available under the freedom of information act in Texas, was purchased from the Texas Board of Nurse Examiners (BNE). Names and addresses of APNs in the State of Texas,

licensed as RNs and recognized as NPs, CNSs and CNMs were requested, with all having at least a Master's degree. The BNE was asked to include those whose clinical practice area was community/public health, general practice, geriatrics, obstetrics/gynecology, medical/surgical, pediatrics, emergency room, home health, oncology, rehabilitation and occupational/environmental health. They were asked to delete from the list those whose clinical practice was in psychiatry/mental health/substance abuse, anesthesia, intensive/critical care, neonatology and operating room/recovery care. Thirty-four hundred ninety-six subjects met these criteria and were included in the database supplied by the Texas BNE for this study.

The database supplied by the BNE included limited information that is routinely obtained when RNs renew their licensure every 2 years. Data included name, address, highest degree attained, status of employment (full or part time), employment field, position type and current clinical practice area. A purposive sampling plan was initially designed to ensure adequate representation from each specialty group. However, the mailing list provided by the Texas Board of Nurse Examiners did not include information about licensed specialty. Thus, the following plan was used.

The list of names supplied by the BNE was reviewed, and all persons listed as employed full or part time in a field other than nursing were deleted, as were those listed as unemployed (n = 39). The remainder was 3402 potential subjects. After deleting content experts and pilot subjects used in survey development, there were 3387 potential subjects left.

Instrument

The literature was used to guide survey development. Based on the combined models of the Institute of Medicine and Bandura, as described in the previous chapter, it was decided to focus upon three potential provider-centered barriers to healthcare for disabled women - knowledge, self-efficacy and actual practice.

Content validity of the survey was assessed by experts in the field of disability and reproductive health. The survey was sent to four content experts for review. These

experts included a disabled female researcher, a disabled female physician, a certified nurse midwife and a women's health advanced practice nurse. The content experts were asked to review the survey in its entirety and to make general suggestions for improvement. They were also asked to grade the self-efficacy, knowledge and practice questions on two different 4-point scales. The first grade was a judgment of whether each question within each scale fit the domain (that is, knowledge, self-efficacy and practice). The content experts graded each question within each scale on an A-D continuum: "A" being perfect fit with the domain through "D" being no fit at all. The content experts then graded each question within each scale on importance; that is, how important did the expert feel that the question was to the overall survey. Importance was also graded on an A to D scale, with "A" being extremely important and "D" being not at all important. The survey was edited based upon their input.

The edited survey was then mailed to 19 advanced practice nurses who worked at the University of Texas Medical Branch at Galveston. Seventeen (89.5%) returned the survey. All were licensed as APNs in the State of Texas, 82% NPs and 18% CNSs. Of the NPs, five were certified as Family NP; 5 as Adult NP; 4 as geriatric NP; and 1 as Acute Care NP (one person held two certifications). The CNSs were certified as Adult (one); Gerontological CNS (one); and Cardiology CNS (one). Nearly one half (47%) provided gynecological and/or reproductive healthcare services to their patients. All pilot subjects were female, their ages ranged from 29 to 63, and the racial mix was 76% Caucasian, 12% Asian/Pacific Islander, and 12% Hispanic/Latino. Eighty-eight percent were MSN/MS/MN degreed, and 12% were PhD/DSN/DNSc degreed. The populations that they routinely cared for ranged from young adult to the oldest old (20-85+). Their work settings ranged from hospital clinic (53%), to acute hospital setting (18%) to ER and "other". Their mean estimate of the percent of their female patients who have impaired mobility was 43% (range 0-98%). This pilot group estimated that 10% of their female patients used a wheelchair some or all of the time. The pilot subjects had been an RN for an average of 13.7 years before becoming an APN.

The seventeen subjects in the pilot survey were asked to complete the entire

survey, to make suggestions for revision and to estimate the amount of time that it took them to complete the survey. The mean estimate of time to complete the survey was 17 minutes. There were no difficulties reported about completing the survey, other than the fact that some of them did not perform these types of services to patients. A few suggestions were made about formatting the survey; otherwise, no suggestions were made to improve the survey.

Cronbach's coefficient alpha was computed for this set of pilot data to test the internal consistency of the self-efficacy scale. The alpha coefficient was 0.9365, showing an acceptable level of internal consistency, justifying later use of summary scores for this scale.

The survey consisted of eight pages of questions (see Appendix A). Socio-demographic characteristics obtained include licensure and specialty, age, gender, marital status, race/ethnicity, education, years of experience, rehabilitation history, area, region, age of patient population, percentage of females in practice, type of healthcare setting, services provided and common disability diagnoses of patients. Questions were also asked about percentage of mobility-impaired patients in practice, professional education received about disability and provision of services to the disabled, and the clinic/office characteristics. There were 26 questions on self-efficacy, 14 questions about knowledge and 14 questions about practice. The response categories of the self-efficacy and practice questions were based on a 5 point Likert scale while the knowledge questions were based on true-false categories.

Surveys were printed and compiled in booklet format and a cover letter explaining the survey and the protection of subjects was included in the packet. Methods known to improve response rate within a limited budget were used. These included using the university logo on the survey and cover letter, personally signing the cover letter and including a stamped addressed envelope for return of the surveys (using real stamps). Return envelopes were coded so that returns could be recorded and reminders sent to those who did not return a survey. Anonymity of responses was maintained by coding only the envelopes and discarding envelopes after return was noted on the master list.

Twenty-five hundred personally signed, colorful reminder postcards were sent to non-respondents 3 weeks after the surveys were mailed, which was one week before the due date of May 30, 2005.

Institutional Review Board approval was obtained for this study, to assure protection of study subjects.

Data Management

Data were entered into SPSS version 11.0, which was used for data analysis. Each survey was assigned a unique code number, which was written on the original survey and entered into SPSS. Data were entered into the statistical program by the author. After data entry, data were cleaned and frequencies used to examine for outliers due to errors in data entry. Original surveys were referred to for all corrections to data entry errors.

Data Analysis

An Excel file was created from the dataset supplied by the BNE. A second and third file were made for responders and non-responders, respectively. The three groups were then compared on the characteristics supplied by the BNE. A map of the mail-out group by Texas counties was constructed by the UTMB Office of Community Outreach from the Excel file.

Frequencies were run on the responder characteristics in the SPSS file for the entire sample for the first three questions (are you currently licensed, what is your licensure and your specialty, do you provide women's healthcare services). As those who did not provide services were asked to stop at this point and mail back the survey, demographics were not collected on those who did not provide services of interest to the study. Thus, all remaining questions were answered only by those providing services.

Missing data were present, and handled statistically through use of mean scores where applicable.

Specific Aim 1

Explore the baseline knowledge of APNs in Texas about the gynecological and reproductive healthcare services required by disabled women with impaired mobility.

This aim was examined through use of mean scores, standard deviations, one-way ANOVA with Tukey's post hoc test and t-tests of the difference in means to examine differences between groups and sub-specialties within each group.

Specific Aim 2

Examine the self-efficacy of APNs regarding provision of gynecological and reproductive health services to disabled women with impaired mobility.

For analysis of this aim, mean summary scores were used to accommodate missing data. Scores were first reversed, so that low scores indicated less self-efficacy. Mean scores and standard deviations were computed for each individual question. Principal factors extraction with oblique rotation was performed, and internal consistency was computed using Cronbach's alpha. Summary scores for groups and sub-specialties were computed using one-way ANOVA and t-tests of the difference in means. Pearson's correlations and effect sizes were used to examine the relationship between self-efficacy scores and environmental characteristics. Regression analysis was used to explore predictors of self-efficacy.

Specific Aim 3

Assess the current clinical practice of APNs in provision of gynecological and reproductive healthcare services to disabled women with mobility deficits.

Means and standard deviations were computed for each individual question, and differences between groups were computed using one-way ANOVA.

CHAPTER 4: RESULTS

Survey Return Rate

As of August 1, 2005, 41.6% of mailed surveys were accounted for, with 1406 surveys returned and 3 surveys returned as undeliverable. Figures 6 through 10 summarize characteristics of the total sample compared to responders and non-responders using data supplied by the Texas Board of Nurse Examiners. Overall, the majority of the mail-out population, the responders and the non-responders are educated at the Master's level, as seen in Figure 6.

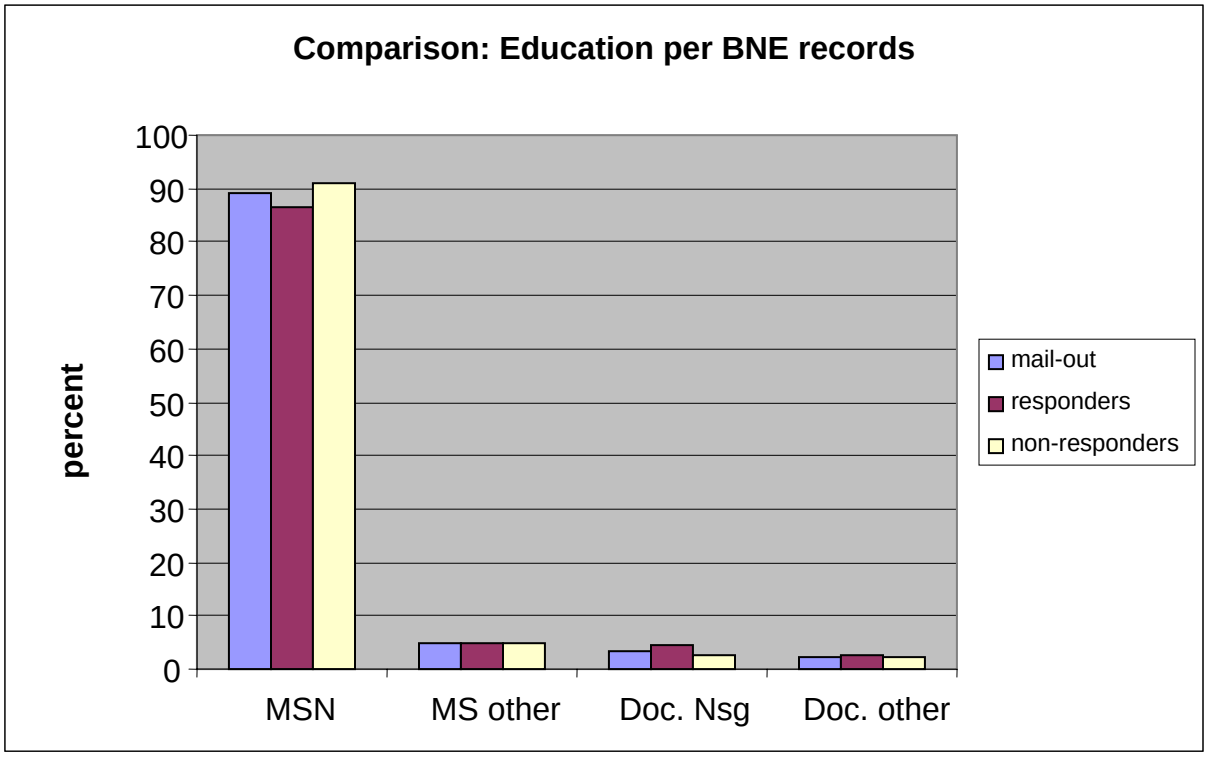

Figure 6: Highest degree held by total sample, responders and non-responders (% within group)

The majority of the mail-out population, the responders and the non-responders are also employed full-time as seen in Figure 7.

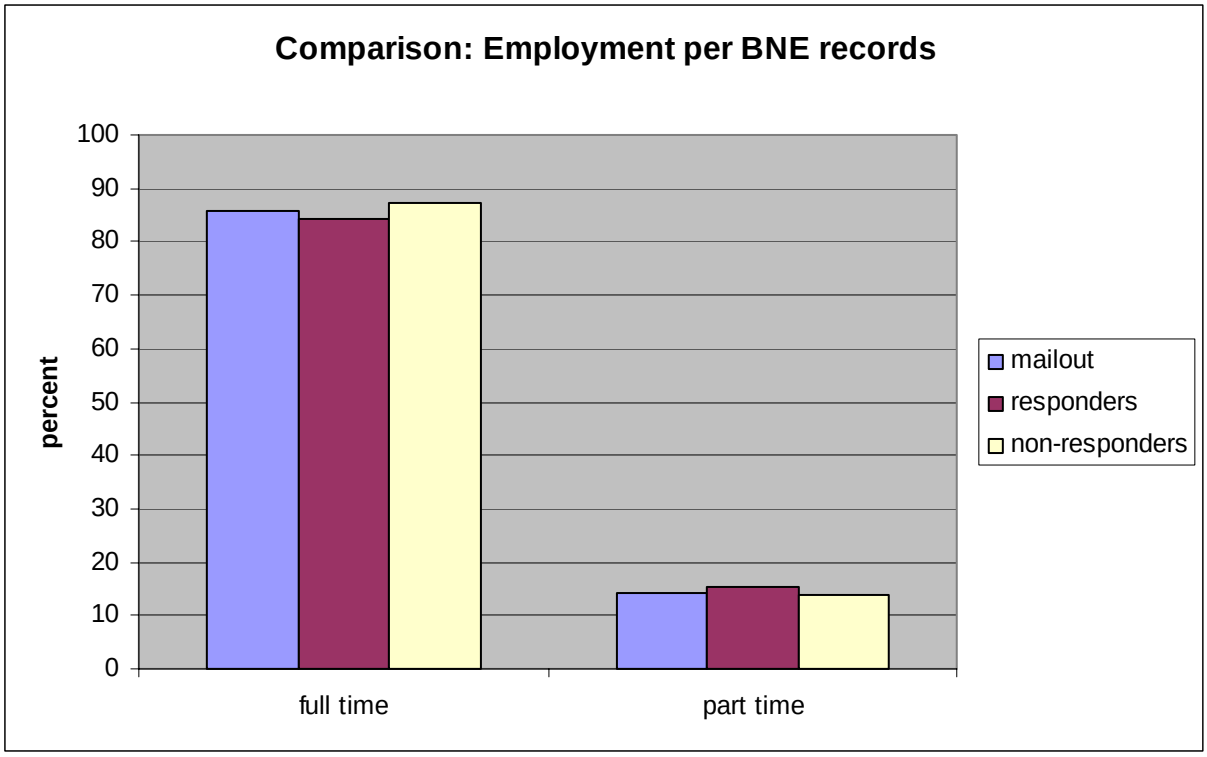

Figure 7: Employment status in nursing by total sample, responders and non-responders (% within group)

Figure 8 illustrates that the two highest fields of employment for the mail-out population, the responders and the non-responders are physician's office and inpatient areas. Slightly more responders work in schools of nursing and in the school setting than do non-responders, and fewer responders work in the inpatient and outpatient areas than non-responders.

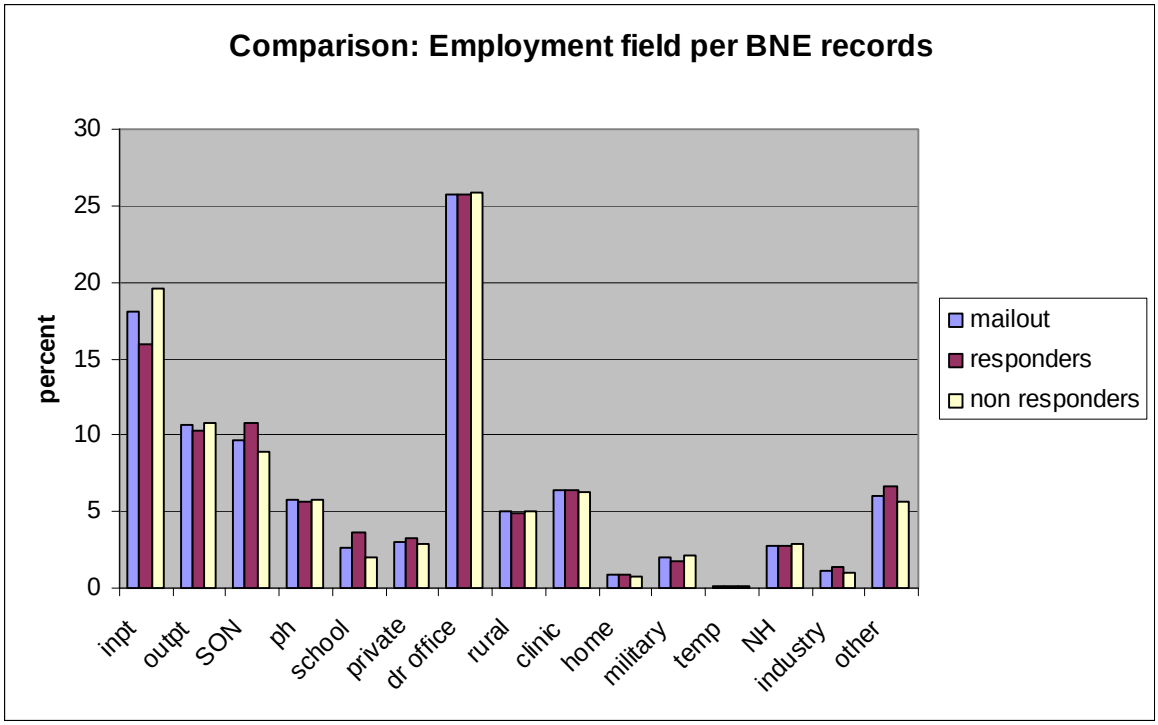

Figure 8: Employment field in nursing by total sample, responders and non-responders (% within group)

Key:

Inpt:	Inpatient hospital care
Outpt:	Outpatient hospital care
SON:	School of nursing
PH:	Community/public health
School:	School/college health
Private:	Self employed/private practice
Dr office:	Physician or dentist/private practice
Rural:	Rural health care
Clinic:	Freestanding clinic
Home:	Home health agency
Military:	Military installation
Temp:	Temporary agency/nursing pool
NH:	Nursing home/extended care facility
Industry:	Business/industry
Other:	Other, or no response

Figure 9 illustrates that, by far, the highest number of the mail-out population, the responders and the non-responders are employed as nurse practitioners.

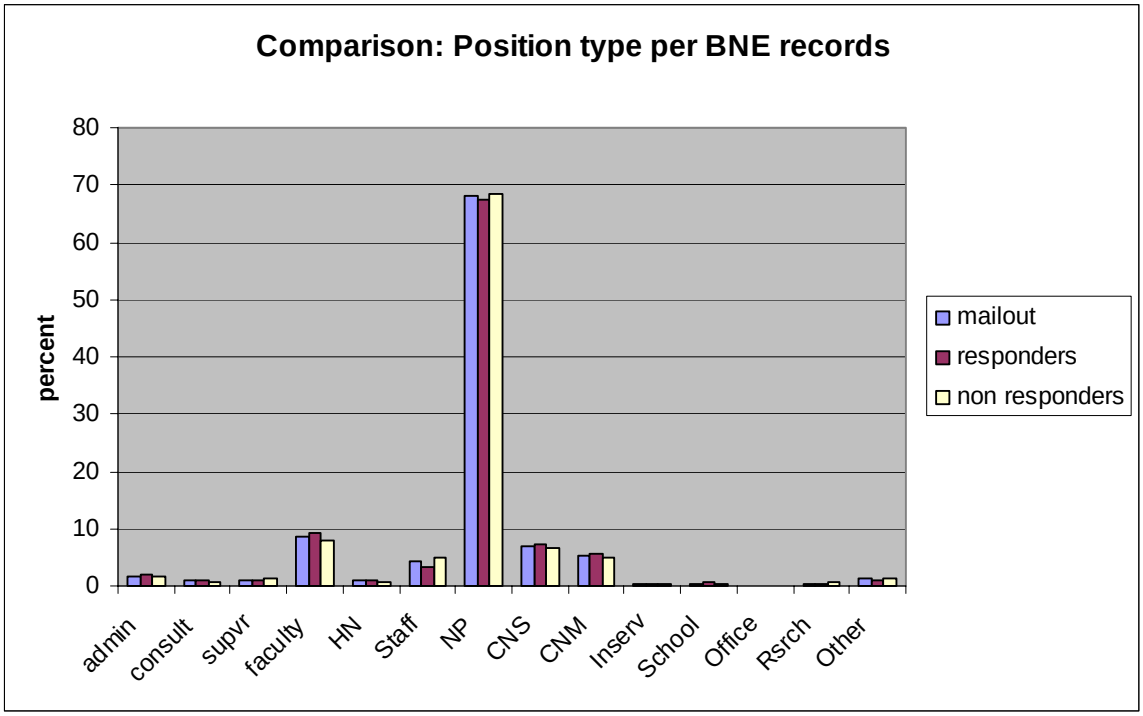

Figure 9: Self reported employment position: total sample, responders and non-responders (% within group)

Key:

Admin:	Administrator or assistant
Consult:	Consultant
Supvr:	Supervisor or assistant
Faculty:	Faculty/educator
HN:	Head nurse or assistant
Staff:	Staff nurse/general duty
NP:	Nurse practitioner
CNS:	Clinical nurse specialist
CNM:	Nurse midwife
Inserv:	Inservice/staff development
School:	School nurse
Office:	Office nurse
Rsrch:	Researcher
Other:	Other or no response

It can be seen in Figure 10 that there were more non-responders in the areas that often do not provide women's health services – the emergency room, oncology, geriatrics and pediatrics.

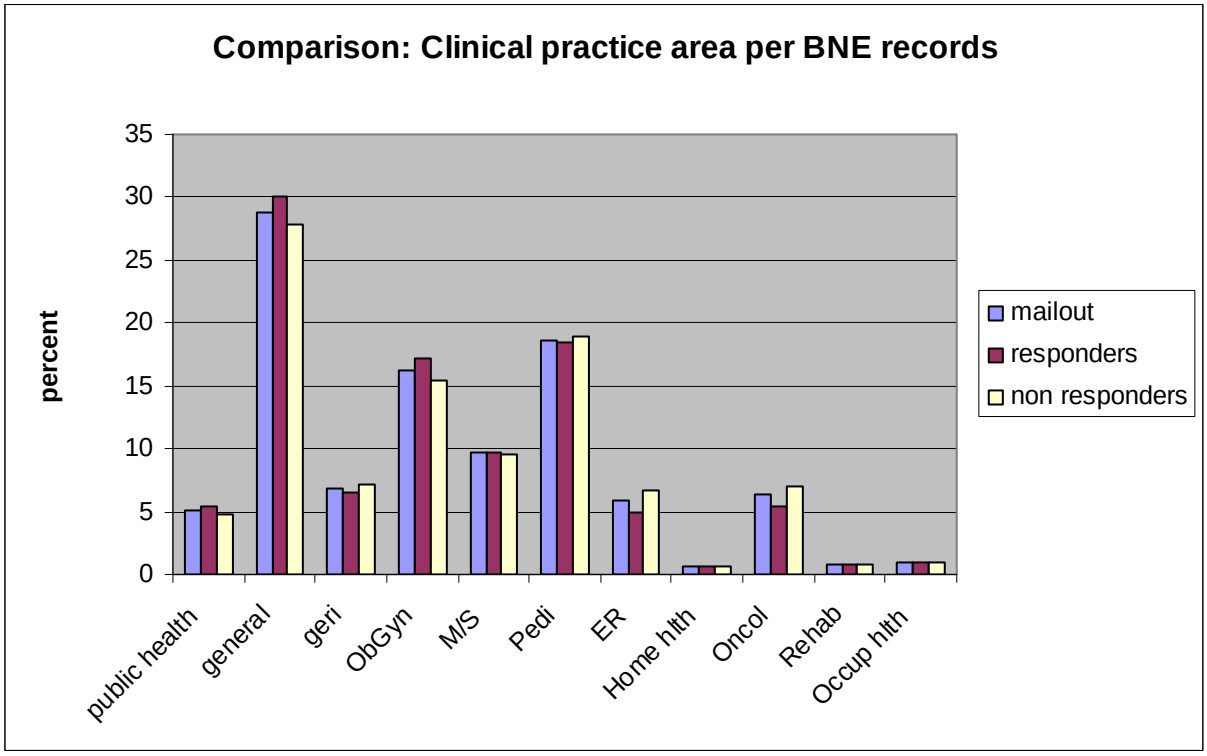

Figure 10: Current clinical area: Potential subjects

Key:

Public health:	Community/public health
General:	General practice
Geri:	Geriatrics
ObGyn:	Obstetrics/gynecology
M/S:	Medical/surgical
Pedi:	Pediatrics
ER:	Emergency care
Home hlth:	Home health
Oncol:	Oncology
Rehab:	Rehabilitation
Occup hlth:	Occupational health

Using data supplied by the Texas BNE, chi-square analysis revealed no significant association between responders and non-responders and employment status (full time/part time) (χ^2= 2.261, *df* = 1, *p* = .133). There was also no significant association found between clinical area of work and responders and non-responders (χ^2 =11.627, *df* = 10, *p* = .311). Chi-square analysis could not be performed on responders and non-responders and employment field, nor on responders and non-responders and position type due to a number of cells with less than expected counts. A statistically significant association was found between highest degree attained and responders and non-responders (χ^2 = 8.474, *df* = 3, *p* = .037). In comparison to non-responders, responders were less likely to have an MSN degree, a master's degree in another field, or a doctorate degree in another field, and more likely to have a doctorate in nursing. Persons with doctorates in nursing may have been more likely to return the survey due to their involvement in nursing research in general, and their knowledge of the importance of supporting other nurses in their research efforts.

Characteristics of the Sample

Figure 11 illustrates the Texas counties to which surveys were mailed. The counties in white did not have APNs who met the study criteria.

APN status

Nearly all (98.6%) of the 1396 persons who answered the first question were recognized as an APN in Texas. A minority (1.4%) of the respondents noted that they were either retired or on inactive status. Ten people did not answer this question.

Of the 1377 people who noted the type of specialty they were in, 72.6% were nurse practitioners, 14.3% were clinical nurse specialists and 5.8% were certified nurse midwives. The remaining one hundred people were recognized in two or more specialties by the Board of Nurse Examiners, which included 95 people as both NP and CNS; 4 people as both NP and CNM; and one person as an NP/CNS/CNM.

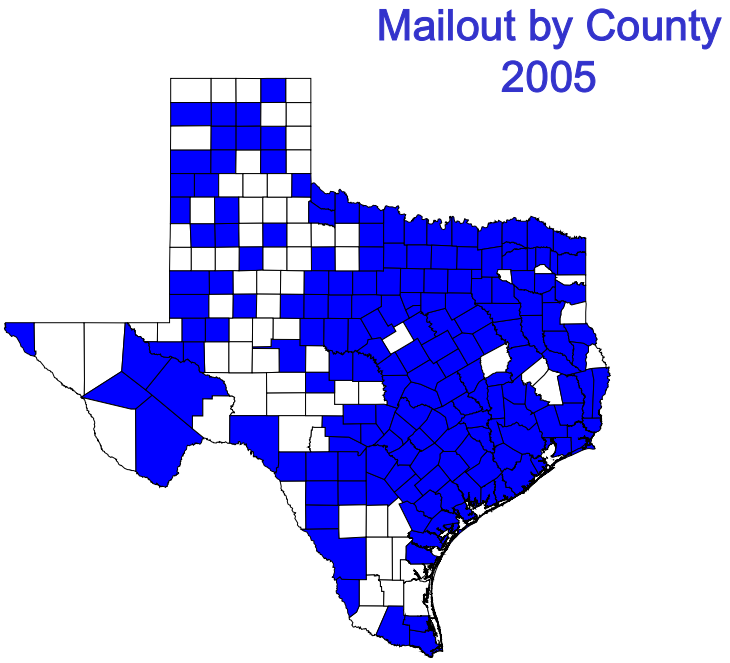

Figure 11: Texas counties to which surveys were mailed

NP sub-specialties

NPs were asked to note the type of specialty in which they were recognized by the BNE. Of the 1086 NPs who answered this question, 51.5% were family nurse practitioners (FNP), 17.4% were pediatric NPs (PNP), 10.2% were women's health NPs (WHNP), 6.7% were Adult NPs (ANP), 3.5% were geriatric NPs (GNP), 1.7% was acute care NPs (ACNP) and 27 listed their specialty as "other." "Other" included emergency (12), oncology (1), perinatal (5), cardiology (1), school nurse (3), psychiatry (2), pediatrics (1) and pediatric critical care (2). Several NPs were recognized by the BNE in multiple specialties, the most common being ANP/GNP (3.0%, $n = 33$), followed by FNP/ WHNP (1.1%, $n = 12$). Nearly 3% % ($n = 31$) had combinations of other specialties, 16 of whom had FNP plus one other specialty; 8 of whom had ANP plus one

other specialty; 4 of whom had PNP plus one other specialty; one who had WHNP plus one other; and one of whom had FNP, ANP plus GNP.

CNS sub-specialties

CNSs were also asked to note the type of CNS specialty in which they were recognized by the BNE. Of the 285 CNSs who answered this question, 72 answered adult, 62 maternal child, 48 medical-surgical, 24 oncology, 24 community health, 14 mental health, 9 pediatrics, 8 women's health, 7 geriatric, 4 emergency room, 3 critical care and one each of child/adolescent, home health, burn, palliative care, neonatal, perioperative and family. One person had two specialties, women's health and maternal-child, and two had adult/medical-surgical.

Provision of Services

Do you provide gynecological and/or reproductive health services for the females that you see in your practice? Of the 1384 people who answered this question, 744 (53.8%) provided reproductive/gynecological services to their patient population. Thus, the remainder of the data analysis was limited to these 744 APNs.

Description of the Sample

Table 1 describes the general demographic characteristics of the sample. Reflecting Texas' nurse population in general, the sample is overwhelmingly female, Caucasian and in their mid 40's.

The characteristics of the respondents in this study reflect the larger RN and APN population in Texas. The mean age of the sample (47.4 years) is slightly older than the mean age of all RNs in Texas (46 years). This is understandable, as higher education is logically related to older age. While the overall gender split among RNs in Texas is 90.3% female and 9.7% male, the proportion of male to female APNs in Texas is less (NPs 7.4% male, CNMs 0.4% male, and CNSs 7.7% male). Thus, the 6.7% male proportion in the study can be expected to reflect the larger Texas proportion of male APNs (Sanchez & Raimer, 2004).

Table 1: Socio-demographic sample characteristics

Variable	***n***	***%***
Age: (mean, SD, range)	665	(47.36, 9.08, 26-82)
Sex		
Women	625	93.3
Men	45	6.7
Marital status		
Married	490	73.1
Divorced	100	14.9
Single, never married	63	9.4
Widowed	12	1.8
Separated	4	0.6
Other	1	0.1
Race, ethnicity		
Caucasian	557	83.1
Hispanic	57	8.5
African American	34	5.1
Asian/Pacific Islander	15	2.2
Other	4	0.6
Native American	3	0.4
Educational level		
MSN, MN, MS	625	93.1
DNSc, PhD, DNS	31	4.6
Other	15	2.2
Average time as RN before APN (mean/SD/range)	(12.5, 7.96, 0-40)	
Length of time as NA before RN	76	(6 mos-6 yrs)
Length of time as LVN before RN	45	(1-25 years)
Prior rehabilitation experience	115	17.2

Table 2 illustrates the breakdown by race/ethnicity for study participants and Texas APNs. As can be seen in the table, the racial/ethnic breakdown for respondent APNs also mirrors the APN population in Texas. The majority of study APNs (over 80%) work in metropolitan areas of Texas (Table 3), as do the majority of the RN population in Texas (Sanchez & Raimer, 2004).

Table 2: Racial/ethnic breakdown of respondents

	APNS in study	Texas NPs*	Texas CNMs*	Texas CNSs*
Caucasian	83.1%	84.6%	91%	93.7%
African American	5.1%	4.7%	5.3%	6.7%
Hispanic	8.5%	6.9%	2.4%	6.3%
Other	3.2	3.8%	1.3%	3.3%

*As reported in Sanchez & Raimer, 2004

Respondents in this study thus resemble the overall Texas APN and RN population in age, gender and ethnicity. Respondents also resemble non-respondents in educational level, position type, employment status, employment field and clinical practice area as seen in Chapter 4. Thus it is not unreasonable to assume that the results of this study can be generalized to all APNs in Texas who provide women's healthcare services.

Tables 4 and 5 further describe the APN respondents' practices, ie: the population they serve and the setting in which they provide services. Table 6 describes the specific services provided by the APN.

Table 3: Region and area of Texas where employed

Variable	*n*	%
Size of region where employed		
>100,000 population	396	58.1
10,000-99,999 population	174	25.6
5,000-9,999 population	39	5.7
<5,000 population	26	3.8
Rural, with widely scattered population	40	5.9
Area of Texas where practices		
Prairies and Lakes (Dallas-Fort Worth area)	176	25.8
Gulf Coast (Houston area)	164	24.1
Hill Country (Austin area)	153	23.9
Big Bend (West Texas, El Paso area)	52	7.6
South Plains (South Texas)	47	6.9
Piney Woods (East Texas)	43	6.3
Panhandle (Amarillo area)	32	4.7

Table 4: Population served

Variable	*n*	%
Percentage of females seen (%, SD, range)	(71.3, 22.39, 1-100)	
Percentage of female patients with impaired mobility	(11.75, 17.58, 1-100)	
Percentage of female patients wheelchair-bound	(6.4, 12.95, 0-11)	
Number and % of APNs caring for patients of these ages		
Pediatric, age 1-12	278	40.5
Teenage age 13-19	446	64.9
Young adult age 20-29	548	79.8
Adult age 30-49	558	81.2
Older adult age 50-64	509	74.1
Geriatric age 65-84	406	59.1
Oldest old age 85+	251	36.5
Number and % of APNs caring for patients with these disabilities		
Amputation	256	43.1
Arthritis	613	91.1
Cerebral palsy	315	51.2
Congenital deformity	268	44.8
Lower extremity contractures	294	47.5
Head injury	242	41.7
Multiple sclerosis	389	62.3
Neuromuscular disorder	247	42
Parkinson's disease	316	51.5
Polio	169	29.2
Spina bifida	173	29.9
Spinal cord injury	166	29.1
Stroke	466	71.9
Other	141	20.7

"Other" disability diagnoses written in by respondents can be combined into a variety of diagnoses in the following categories: mental retardation (*n* = 56), obesity (*n* = 39), orthopedic (hip, knee, various fractures, trauma and surgeries; *n* = 29), psychiatric (*n* = 20), neurological (*n* = 20), blindness (*n* = 13), deafness (*n* = 11), dementia (*n* = 12), dwarfism (*n* = 5), gunshot or combat wounds (*n* = 4), muscular (*n* = 3), and pain, cancer and diabetes (*n* = 1 each).

Table 5: Setting where employed majority of time

Variable	*n*	%
Private physician's office	259	37.6
Community clinic	150	21.8
Other	97	14.1
Hospital based clinic	85	12.4
ER	28	4.1
Acute hospital - inpatient	19	2.8
School	15	2.2
Occupational health	3	0.4
Multiple settings	32	4.7

"Other" settings noted by participants include: nursing home or long term care (*n*=18), rural health clinic (*n* = 16), university health clinic (*n* = 16), private NP practice (*n* = 9), military clinic or hospital (*n* = 8), home (*n* = 7), urgent care (*n* = 5), prison or jail (n = 5), free-standing birth center or private midwifery office (n = 5), NP managed clinic (*n* = 4), planned parenthood (*n* = 4), multi-specialty clinic (*n* = 4), mobile clinic or psychiatric residential center (*n* = 3 each), public health clinic or health department (*n* = 2 each), and wellness clinic, free clinic, L&D ER call, cancer clinic, VA, Department of Aging, physician's office, acute psychiatric hospital or volunteer clinic (*n* = 1 each).

Table 6: Services provided

Variable	*n*	%
% APNs offering these services		
Pelvic exams	662	96.1
Breast exams	655	95.2
Screening for UTI	643	93.5
Screening for STDs	638	92.7
Papanicolaou smears	622	90.4
Education about STDs	619	90
Education about contraception	575	83.6
Birth control pills	554	80.5
Sexual counseling	523	76
Menopause management	517	75.1
Education about pregnancy	460	66.9
Other contraception	436	63.4
Preconception counseling	389	56.5
Breast feeding education/assistance	239	34.7
Pregnancy management	221	32.2
IUDs	193	28.1
Childbirth	113	16.4
Pessary fitting	91	13.2
Infertility services	90	13.1
Other	48	4.7

"Other" services noted by participants included colposcopy and biopsy (*n* = 14), urinary incontinence management (*n* = 5), management of non-STD infections (*n* = 2), assist with surgery (n = 2), and one each mentioned ultrasound, chemotherapy, diaphragm fitting, immediate newborn care, management of sexual dysfunction, pregnancy diagnosis, dysplasia workup, pelvic muscle rehabilitation, miscarriage

management, urodynamics, sexual assault/abuse forensic examinations, abortive services, management of abnormal Papanicolaous, hormone replacement therapy, management of spontaneous bleeding during pregnancy or spontaneous abortions.

APN Education

Four questions asked specifically about education received in the APN program. Tables 7 and 8 summarize this information by question and by specialty.

Table 7: APN education

Survey question	*n*	% yes
1. Did you receive education specific to providing gynecological or reproductive health care to women in your APN education?	600	81.3
2. Did you receive any education specific to providing care to physically disabled people in your APN education?	226	30.7
3. Did you receive education specific to providing gynecological or reproductive healthcare to disabled women with impaired mobility?	184	25%
4. Did you receive education specific to providing gynecological or reproductive health care to women with differing disabilities, such as multiple sclerosis, spinal cord injury, obesity and congenital disability?	159	21.6%

Statistically significant associations were found between APN specialty and whether they had received education specific to providing care to physically disabled people in their APN education (Pearson chi-square = 7.924, $df = 2$, $p = .019$, $n = 689$). Statistically significant associations were also found between APN specialty and whether they had received education specific to providing gynecological or reproductive healthcare to disabled women with impaired mobility (Pearson chi-square = 17.11, $df = 2$, $p = <.001$, $n = 687$).

Table 8: APN education by specialty

Survey question	NP		CNS		CNM	
	n	% yes	*n*	% yes	*n*	% yes
1.	485	81.1	18	78.2	57	82.6
2.	167	28	10	43.5	29	42
3.	132	22.1	8	34.8	30	44.1
4.	115	19.3	6	27.3	26	37.7

The opinion of the APN on the accessibility of their work environment was solicited through several yes-no questions. Table 9 summarizes this information.

A statistically significant association was found between specialty and accessibility of examination rooms (Pearson chi-square 7.014, $df = 2$, $p = .03$, $n = 687$). Figure 12 illustrates the overall accessibility rating assigned to the workplace.

Table 9: APN work environment

Survey question	*n*	% yes
1. Are the examination tables in your clinic or office adjustable for height?	280	38.2
2. Is there a mechanical lift or other equipment available to help transfer patients from wheelchair to the examination table in your office or clinic?	64	8.7
3. Is there staff available to help transfer patients with impaired mobility onto the examination table in your office or clinic?	661	89.8
4. Is there a wheelchair accessible weight scale in your office or clinic?	105	14.2
5. In your opinion, are the bathrooms in your office or clinic wheelchair accessible?	625	85.0
6. In your opinion, are the examination rooms in your office or clinic wheelchair accessible?	568	77.3

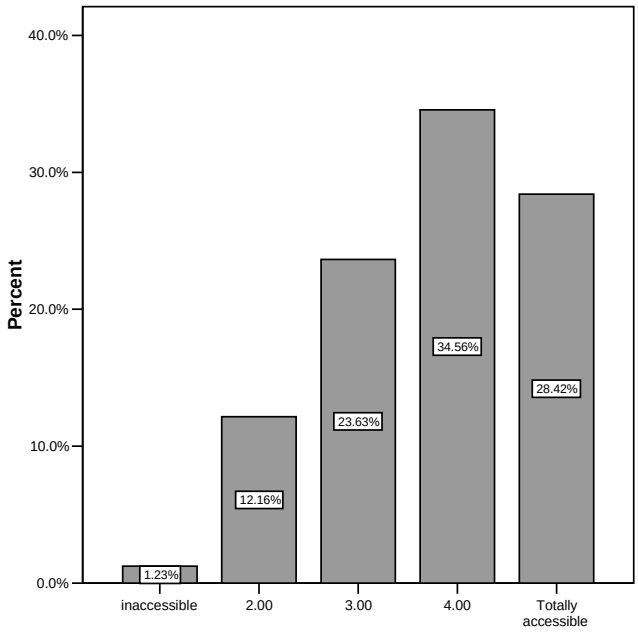

Figure 12: Accessibility of workplace on 1-5 scale

Knowledge

Aim 1: Explore the baseline knowledge of APNs in Texas about the gynecological and reproductive healthcare services required by disabled women with impaired mobility.

Hypothesis 1a: The majority of APNs in Texas will lack knowledge of gynecological and reproductive healthcare services recommended for disabled women with impaired mobility.

Data for all specialties and sub-specialties were combined for this analysis (n = 644). The majority of APNs answered most of the knowledge questions correctly. Total raw scores for each person could range from 0-14, with 14 being the best possible score. The actual range of scores was 5 (n = 1) to 14 (n = 26) (overall mean = 11.76; SD = 1.11). See Table 10 for details on percentage of respondents who answered each question correctly. There were two questions that reflect an overall lack of knowledge of Texas

APNs, both dealing with the population of women with spina bifida. One question concerned folic acid intake when contemplating pregnancy and one concerned the use of latex condoms as a contraceptive. Several respondents voiced discomfort with Question #1, noting that they felt that this question could be misinterpreted. Although the majority of respondents answered the final question correctly, further investigation revealed that this question should be deleted from this section, due to sparse evidence in the literature supporting this statement. With the first and last questions deleted, leaving a 12-question test of knowledge, the range of correct answers changes to 4-12, overall mean = 10.79, and $SD = .92$.

The data did not support Hypothesis 1a. In fact, the majority of APNs in Texas had knowledge of gynecological and reproductive healthcare services recommended for disabled women with impaired mobility, except for the two cases noted above.

Hypothesis 1b: Knowledge of the gynecological and reproductive healthcare services required by disabled women with impaired mobility will vary by the specialty and sub-specialty in which the APN was trained.

Data from persons stating that they had state recognition for more than one specialty were deleted from this analysis. Thus, only persons who said they are recognized as NP, CNS or CNM were included. The difference in mean knowledge scores for the specialties was examined through use of one-way ANOVA with Tukey's post hoc test. There was no statistical difference in mean knowledge scores among specialty groups ($F = 1.46$, $p = .23$, $df = 2; 622$). Tukey's post hoc test did not reveal any pairwise differences, as implied by the insignificant overall F-ratio.

Sub-specialties of NPs were compared to each other. Due to the small numbers, those who indicated that they were recognized as "other" or "acute care NP" were deleted from the analysis. One-way ANOVA showed no significant differences among NP specialties in knowledge ($F = 2.226$, $p = .065$, $df = 4; 494$). Tukey's post hoc found a small difference between FNP and GNP (mean difference in knowledge scores 0.79, $p = .39$)

Table 10: Knowledge questions: Percent correct

	Percent correct
1. Disabled women with impaired mobility require the same gynecological and reproductive healthcare services as the non-disabled population	78
2. A sexual history should always be taken for a physically disabled woman.	98.5
3. Physically disabled women can have a normal sexual life.	95.9
4. Physically disabled women have a lower libido than non-disabled women.	97.1
5. Teens who use wheelchairs require the same sexual counseling as ambulatory teens.	90.5
6. Disabled women are no different from non-disabled women in regard to their chances of acquiring an STD.	96.5
7. National recommendations for Papanicolaou smear frequency are different for women who are physically disabled.	98.6
8. Mammography is recommended less often for women with physical disability than for the non-disabled population.	97.7
9. It is OK to delay the initiation of mammography for the physically disabled woman if she is difficult to position.	98.9
10. Women who are physically disabled may need education to learn to independently manage the hygiene products used for menstruation.	98.5
11. Pregnancy is not advisable for wheelchair-bound women.	95.5
12. Latex condoms are recommended as a potential method of birth control for sexually active women with spina bifida.	61.0
13. Higher doses of folic acid are recommended for some disabled women contemplating pregnancy.	71.9
14. Ovulation can cause a fatal rise in blood pressure in a woman with spinal cord injury.	20.8

Sub-specialties of CNSs were compared to each other. No differences were found in mean knowledge scores among those sub-specialties on the 12 question test (one-way ANOVA, F=.27, p = .85, df = 3; 14).

There were not enough CNS-WH (n = 6) to include in a sub-group comparison, so CNS-MC was combined with CNS-WH analysis for comparison of women-specific sub-specialties. Thus, WHNP (n = 86) was compared to CNM (n = 62) and CNS-WH/CNS-MC (n = 15). The difference in mean self-efficacy scores for these three sub-specialties was examined through use of one-way ANOVA, with Tukey's post hoc test. There was no statistical difference in mean self-efficacy scores among these sub-specialty groups (F = .973, p = .38, df= 2;160). Tukey's post hoc test did not reveal any pairwise differences, as implied by the insignificant overall F-ratio (p = .628). The data did not support Hypothesis 1b. Knowledge of the gynecological and reproductive healthcare services required by disabled women with impaired mobility did not vary by the specialty and sub-specialty in which the APN was trained. One slight difference was found between FNP and GNP, which was less than one point in mean scores.

Hypothesis 1c: APNs' knowledge about what services are recommended for all women and how to provide these services to disabled women with impaired mobility will be related to the amount of training in their APN educational program.

Data from all participants were included in this analysis. Independent samples t-tests were used to analyze the difference in mean knowledge scores on the 12-question test between those who answered yes and those who answered no to the four education questions.

A statistically significant difference in scores was found between people who said they did and those who said they did not receive education specific to providing gynecological or reproductive healthcare to women in their APN courses (t = 2.208, df = 662, p= .014). No differences in mean knowledge scores were found between those who said they did and those who did not receive disability education in their APN courses (t = 1.120, df = 662, p = .13). No differences in mean knowledge scores were found between

those who said they did and those who did not receive education specific to providing gynecological services to disabled women in their APN courses ($t = .60$, $df = 660$, $p = .27$). No differences in mean knowledge scores were found between those who said they did and those who did not receive education specific to providing gynecological services to women with differing disabilities in their APN courses ($t = .43$, $df = 661$, $p = .34$).

The data did not support Hypothesis 1c. APNs' knowledge about what services are recommended for all women and how to provide these services to disabled women with impaired mobility was not found to be related to the amount of training in their APN educational program, except in one instance. The mean knowledge score for APNs who said that they did not receive education specific to providing gynecological and reproductive health services to women in general in their APN courses was significantly lower than those who did receive education.

Self-efficacy

Aim 2: Examine the self-efficacy of APNs regarding provision of gynecological and reproductive health services to disabled women with impaired mobility.

Self-efficacy was initially rated on a 1-5 scale, with 1 being "strongly agree" and 5 being "strongly disagree". Higher scores indicated less self-efficacy. This scale was reversed, with 1 being strongly disagree, and 5 being strongly agree, and summary scores were computed. Scores could range from 14 to 70, with higher scores now indicating higher self-efficacy. The mean summary score was 45.08 ($SD = 11.11$, range 14-70, $n = 650$). In order to accommodate missing data, mean scores were used for analysis instead of summary scores. The overall mean score for $n = 670$ was 3.23, $SD = .79$. See Table 11 for the mean response and standard deviation for each question.

Factor analysis

Principal factors extraction with oblique rotation was performed on the 14 items from the self-efficacy scale for a sample size of 651. Two factors with Eigenvalues > 1.0

were initially extracted. Since the correlation between the two factors was .753, it was decided that it would be appropriate to force a single factor solution. See Table 12 for factor loadings for a single factor solution. All loadings were >.55, which is considered to be good-excellent. The internal consistency of this scale was .93 (Cronbach's alpha) indicating, as in the pilot survey, a strong model. Thus, an overall summary score is justified for individual and group comparisons.

Hypothesis 2a: Self-efficacy of the APN in providing gynecological and reproductive healthcare services required by disabled women with impaired mobility will vary by the specialty in which the APN was trained.

Data from persons stating that they had state recognition for more than one specialty were deleted from this analysis. Thus, only persons who said they are recognized as NP (n = 1000), CNS (n = 197) or CNM (n = 80) were included. The difference in mean self-efficacy scores for the specialties was examined through use of one-way ANOVA with Tukey's post hoc test. There was no statistical difference in mean self-efficacy scores among specialty groups (F = 0.58, p = .561, df= 2; 605). Tukey's post hoc test did not reveal any pairwise differences, as implied by the insignificant overall F-ratio (p = .41).

The data do not support Hypothesis 2a. Self-efficacy of the APN in providing gynecological and reproductive healthcare services required by disabled women with impaired mobility did not vary by the specialty in which the APN was trained.

Hypothesis 2b: Self-efficacy of the APN in providing gynecological and reproductive healthcare services required by disabled women with impaired mobility will vary by the sub-specialty of the APN.

Data from persons stating that they had state recognition for more than one specialty were deleted from this analysis, as were CNMs and CNSs. Thus, only persons who said they are recognized as NP were included. NPs who indicated that they were certified as ACNP (n = 2), certified in more than one NP specialty or who indicated that

their certification was “other” were also deleted.

The differences in mean self-efficacy scores for the NP sub-specialties of FNP, ANP, PNP, WHNP and GNP were examined through use of one-way ANOVA with Tukey’s post hoc test. There was a statistically significant difference in mean self-efficacy scores among specialty groups ($F = 11.329$, $p < .0001$, $df = 4; 486$). Tukey’s post hoc test revealed several pairwise differences. Mean scores for FNP, PNP and GNP differed significantly from WHNP ($p < .0001$, $p < .0001$, and $p < .001$, respectively). PNP and GNP differed significantly from ANP ($p = .008$ and $p = .024$, respectively). See Table 13 for mean scores, standard deviations and 95% confidence intervals by specialty.

Numbers of CNSs who completed this scale were too small for comparison between CNS groups.

There were not enough CNS-WH ($n = 6$) to include in a sub-group comparison, so CNS-MC was combined with CNS-WH analysis for comparison of women-specific sub-specialties. Thus, WHNP ($n = 87$) was compared to CNM ($n = 63$) and CNS-WH/CNS-MC ($n = 16$). The difference in mean self-efficacy scores for these three sub-specialties was examined through use of one-way ANOVA with Tukey’s post hoc test. There was no statistical difference in mean self-efficacy scores among these sub-specialty groups ($F = 2.53$, $p = .083$, $df = 2;163$). Tukey’s post hoc test did not reveal any pairwise differences, as implied by the insignificant overall F-ratio ($p = .284$).

The data found Hypothesis 2b to be true. The self-efficacy of the APN in providing gynecological and reproductive healthcare services required by disabled women with impaired mobility varied by the sub-specialty of the APN. WHNPs had significantly higher scores than FNP, GNP and PNP while ANPs had significantly higher scores than PNPs and FNPs.

Table 11: Mean scores and SD per question for self-efficacy scale

Question	Mean	SD
1. I am confident that I have been well trained to provide gynecological and reproductive services to disabled women with impaired mobility.	3.17	1.23
2. I am comfortable with alternative positioning to facilitate pelvic exams in disabled women with impaired mobility.	3.3	1.14
3. I am confident that I know the indications and risk factors for pregnancy in women with physical disability.	3.1	1.15
4. I am confident in my ability to provide sexual counseling to a woman with physical disability.	3.3	1.13
5. I am confident in my ability to provide contraceptive counseling to teenaged women with spinal bifida.	3.0	1.13
6. I am knowledgeable in the indications/risks of contraceptives for women with different disabilities.	3.13	1.08
7. I am comfortable discussing techniques for sexual gratification, including intercourse, with a physically disabled woman.	3.2	1.12
8. I am confident in my ability to safely prescribe a method of birth control for a disabled woman of childbearing age.	3.5	1.06
9. I am comfortable with providing pelvic exams to disabled women with muscle contractures.	3.15	1.08
10. I am confident in providing pessary fitting/evaluation and follow-up for a physically disabled woman.	2.14	1.05
11. I am confident that I know when to refer a disabled woman to a gynecologist/obstetrician for reproductive/gynecological services.	4.13	.89
12. I am confident that I could find my disabled patient an ob/gyn physician with an accessible office and equipment plus knowledge of reproductive health in the context of disability.	3.44	1.14
13. I am confident in my ability to recognize physical or sexual abuse in a woman with disability.	3.41	.95

14. I am comfortable in treating urinary incontinence in a disabled woman.	3.17	1.13

Table 12: Factor loadings for self-efficacy scale

	Factor 1
Confident well trained	.729
Alternative positioning	.738
Know risks of pregnancy	.753
Provide sexual counseling	.805
Care for spina bifida	.765
Know risks of contraceptives	.835
Discuss sexual gratification	.731
Prescribe birth control	.807
Exam with muscle contractures	.778
Can fit pessary	.547
Know when to refer to ob/gyn	.567
Can find accessible ob/gyn	.568
Can recognize abuse	.642
Can treat incontinence	.548

Extraction method: Principal Axis Factoring

1 factor extracted, 4 iterations required

Table 13: Differences in self-efficacy scores by NP sub-specialty

Sub-specialty	*n*	*Mean*	*SD*	*SE*	*95% CI*
FNP	362	43.52	10.32	.542	42.45-44.59
ANP	24	48.42	7.92	1.62	45.07-51/76
PNP	12	36.00	11.19	3.23	28.89-43.11
WHNP	82	50.30	11.75	1.30	47.72-52.89
GNP	11	37.00	8.83	2.66	31.07-42.93
TOTAL	491	44.56	10.90	.4918	43.60-45.53

Hypothesis 2c: Self-efficacy scores are positively associated with knowledge, environmental characteristics and specialty licensure.

The data for this analysis was limited to those who provide services and who are licensed as NP, CNS or CNM. Pearson's correlation shows a small but statistically significant positive association between knowledge score and self-efficacy score ($r = .09$, $p = 0.038$). The effect size for this, however, showed little clinical significance ($r^2 = .0076$). Pearson's correlation found a small positive and statistically significant association ($r = .184$, $p = <.001$) between self-efficacy scores and perceived accessibility of work environment. A small effect size was also found ($r^2 = .034$). Thus, as knowledge increases, self-efficacy increases, and as the perceived accessibility of the workplace increases, self-efficacy increases.

Regression analysis

Preliminary testing of regression assumptions, with the histogram of standardized residuals and the probability-probability (P-P) plot, showed normally distributed residuals. Using a direct (simultaneous) predictor entry method, the overall regression

model was significant ($F_{13,498} = 7.996$, $p = .0001$, adjusted $R^2 = .151$). Inside the regression model, four predictor variables were statistically significant. For estimates of effect size, squared semipartial correlations were calculated. The squared semipartials represent the unique explanation of a predictor beyond the collective contribution of all other predictors in the model. The squared semipartials showed that the four significant predictor variables had small to moderate effect sizes. All beta weights were positive. This indicates that WHNP status predicts higher self-efficacy, as prior rehabilitation experience, and education on differing disabilities. As knowledge score increases, so does self-efficacy. Although not statistically significant, CNM status does have a moderate effect size, indicating that CNM status has a clinical effect on self-efficacy. Table 14 summarizes the regression findings.

Table 14: Summary of Regression Predicting Self-Efficacy Scores

Predictor variable	Beta	Squared Semipartial	*p*
Women's health NP	.19	.032	<.001
Prior rehabilitation experience	.15	.021	<.001
Education on differing disabilities	.13	.013	.011
Knowledge score	.10	.01	.014
% patients with impaired mobility	.16	.006	.058
CNS	.007	.000	.874
CNM	.063	.032	.15
Years practiced as RN	.051	.002	.227
% patients in wheelchair	-.1	.002	.233
Education on disability	.023	.0003	.687
Education on gynecology	-.022	.0004	.602
Education on gynecology for disabled	-.08	.003	.209

Practices

Aim 3: Assess the current clinical practice of APNs in provision of gynecological and reproductive healthcare services to disabled women with mobility deficits.

Hypothesis 3: APNs' current clinical practice will not reflect national guidelines for provision of Papanicolaou smear, pelvic exam, STD screening and other gynecological and reproductive healthcare services provided for disabled women with impaired mobility.

There were fourteen questions about clinical practice, answered on a 1-5 scale (1 being strongly agree, 5 being strongly disagree). Table 15 shows the *n*, mean and standard deviation for each question.

The data support Hypothesis 3. Not all APNs practice according to national guidelines.

Table 15: Clinical practice questions

	n	mean	*SD*
1. In my place of work, we routinely assist women who cannot walk to get up on the exam table	658	2.56	1.28
2. I am allowed enough time to provide the gynecological health care that a physically disabled woman requires.	656	2.50	1.20
3. I routinely inquire into the sexual lives of my disabled female patients.	654	2.35	1.03
4. I often refer disabled women to another provider for gynecological/reproductive healthcare services.	650	3.21	1.13
5. I have recommended genetic counseling to women with congenital disability when pregnancy has been contemplated.	625	2.37	1.15
6. I routinely use alternative positioning techniques to facilitate pelvic examinations in disabled women with impaired mobility.	634	2.56	1.09
7. I routinely offer preventive gyn. screening to my disabled female patients.	645	2.05	1.01
8. I routinely schedule my elderly female patients for Pap smears and pelvic exams as recommended by national guidelines.	641	1.78	0.866
9. I always screen my disabled female patients for STDs.	640	2.58	1.13
10. My female patients who are disabled are routinely offered education about STDs.	644	2.30	1.02
11. I always discuss contraceptive options with physically disabled patients of reproductive age.	643	2.10	0.95
12. I discuss the functional aspects of managing menstruation with my physically disabled female patients.	638	2.58	1.04
13. I always schedule mammograms for my disabled peri-menopausal patients according to national guidelines.	637	1.90	0.87

14. I always screen my disabled female patients for physical and sexual abuse.	646	2.33	0.97

Open-ended Comments

Respondents had a lot more to say about the topic of this study than was asked in the survey, as evidenced by their written comments. Their comments give insight into the daily working environment of the APN in Texas. The comments fell into four main categories: environmental accessibility, personal awareness of disability issues, clinical practices and education.

Environmental access

Those who commented on accessible environments were very aware of the shortcomings of their workplace and even their community. For instance, participant #878 notes a common but glaring accessibility issue regarding mobile clinics that has also been discussed in the literature: "I work in a mobile clinic without a wheelchair lift." Several respondents commented on the lack of accessible examination tables in their facility (#223, 520, 1132). While in some facilities staff members are used for lifting patients onto the examination tables (#631, 1094), participant #1349 realistically notes: "Due to age and health problems with staff, I am reluctant to schedule pts [sic] who are unable to transfer unless a family member can accompany the patient and assist with lifting to avoid injury to an employee. I think the needs of the disabled are not being met. And not likely to be met with the current political climate." Another respondent was concerned about patient safety in her facility: "I previously had electronic chairs which are the best for these patients – now I don't so sometimes for patient safety I refer" (#1132).

Accessible weight scales are also an environmental issue for many. Two participants note that there are wheelchair scales available at their facilities that take extra effort to get to: one in the warehouse basement (#1163) and one next door (#1195). While

several noted working in new facilities, they were not always perfect. For example, "We recently moved into a new building. Has huge bathrooms for wc accessible [sic] but has regular commodes too close to walls" (#907). Obesity brings its own accessibility issues, notes participant #579: "When discussing disabilities, I feel you have to also address size-friendly atmosphere. Chairs w/o [sic] arms, sales equipped for pts [sic] >350#, gowns that fit larger patients, etc".

The APN workplace was not the only issue regarding accessibility. Participant #205 wrote: "I am happy that you are looking at how well people with disabilities are accommodated. I refer my disabled patients to providers in the community and they are often not able to accommodate them well (not enough staff, lift, etc)". And participant #1400 expressed her personal frustration with her community: "I am having problems finding mammogram facilities for those with disabilities that can't stand or have a large wheelchair".

Time and practices

Several APNs expressed frustration with the system within which they provide services. "[I am] working in an HMO setting – no extra time is allotted for disabled patients – it is a great frustration – unfair to patient and practitioner" (#896). "Although it is a possibility to see disabled patients it is sometimes a problem to get adequate staff to assist in a timely manner. We have a quota to see daily & are not given extra time for increased acuity, I see primarily high risk OB and encounter a number of disability [sic] in this population" (#644). "It is often frustrating for the patient as well as myself. I find also patients are unwilling to accept referrals to providers who may be more knowledgeable treating females with their particular issues" (#283). "I have done nursing home, rehab and assisted living rounds in the past; the females in those settings do not receive adequate gynecological care or mammograms" (#974). One APN noted the need for services, even in the elderly institutionalize population: "I have many elders who are sexually active in [nursing] home with multiple partners" (#739). Another noted that sometimes it is necessary to realize one's own limitations: "Every person should be

assessed for their specific need whether physically disabled, mentally disabled or non disabled and all treated under the same guidelines for preventive care. It is also important to realize that sometimes you can help the patient most by realizing that you aren't the best person for them and help them get to someone who is better suited to help them" (#412).

Personal awareness

Many APNs expressed emotions ranging from surprise to guilt when asked to reflect on their knowledge and practices in care of the disabled. Several expressed gratitude for increasing their awareness of the topic of disability and healthcare practices: "Thank you for pursuing a topic of great need. It seems as if the topic is usually swept under the rug" (#939). "Thank you. This was thought provoking!" (#89). "I am glad you are addressing this important topic" (#150). Others expressed disbelief: "I had never realized how un-friendly we are in our service to the disabled" (#882), "You raise relevant and intriguing questions…some I've never even considered before!" (#416). "This study has made me ask myself questions about how I provide care that I never thought about asking" (#447). And others expressed an eagerness to learn more about the topic: "Inspires me to be more aware!" (#59). "This made me want to research these disability topics!" (#638). "This questionnaire served up food for thought – thought provoking, stimulating. I am glad you are addressing this important topic" (#150). One APN with a disability diagnosis confirmed the need for this research: "Though I am an APN, I also have MS. I have had difficulty walking in the past. Thanks! for your interest" (#179).

APN education

Questions about APN education stimulated many comments from study participants. None indicated that they got adequate preparation in their APN courses, as seen in the following comments. "I do not feel adequately trained in disabled patients care" (#704). "…caring for disabled women was only briefly covered in my CNM

program" (#751). "Very little ed re: physically disabled people, very little ed re:gyne care to disabled women" (# 192). "I received absolutely NO instruction on women with disabilities from my FNP program…disappointing" (#401). "While the special needs of disabled clients was addressed in my education as an APN it was limited and certainly did not prepare me adequately. Additionally, my clinical rotations as an NP student did not afford me the opportunity to experience the challenge in providing gynecologic care to this special population" (#561). "I did not have a specific class, but was given a booklet on examining women with disabilities as a student and had a clinic site as a student that had a disabled woman" (#547). Participant #144 sums it up: "I feel there should be more emphasis on this type of patient in all core curriculum for APN from CNM to NPs". Participant #553 continues: "It would have been good to have had at least one class discussion on disabilities (physical) and their relationship to reproduction, especially…in my master's program".

Some APNs are self-taught in caring for disabled women. "The familiarity I have with providing gyn care to disabled is because of my own research on it and seeking out CE on the topic. Poorly handled in both my Women's Health and FNP education" (#967). "I also see many older women from nursing homes who have gyn concerns. Many disabled women have taught me the best was to position them, and have told me many stories about their experiences with healthcare and childbirth etc" (#18). "Most of my "education" in providing gyn services to disabled females was learned on the job. Not covered in my APN course" (#790).

Several APNs commented on their need to learn more. "I obviously need ed. [sic] in this area" (#136). "Interesting! Makes me realize there is a big hole in my education!" (#213). One APN also expressed guilt: "I feel that I have been trained to work with most population types but because the mobility disabled represents less than 5% of my clients all their needs related to their disability may not be addressed" (#399).

Many had suggestions for education for APNs. "This needs to be added to the curriculum" (#173). "Maybe you will provide all of us with more info!" (#285). "CEUs in dealing with gyn exams for pts with disabilities would be great!" (#309). "As a neuro-

rehab oriented FNP very interested in this topic. I would like you to present your findings to the annual TX Nurse Practitioners conference and to the national conference" (#357). "Would love to see some type of education program developed to provide gyn/repro healthcare to disabled women" (#366). "It would be nice to have a web site to go to to learn more or share experiences. This was an impetus for me to review the different positioning techniques. We sure could use more training and practice in positioning" (#1220).

One APN summed it up the feelings expressed by many of the participants who wrote comments: "I feel with more education/assistance we could all certainly do a better job for our patients with disabilities" (#400).

CHAPTER 5: DISCUSSION

Access to preventive services is important for women with disability. While APNs are increasingly providing primary care services that were traditionally available from only a physician, the impact of the APN on the care of the disabled female had not been systematically studied. This exploratory study examined the personal, environmental and behavioral factors of APNs that could potentially interact to affect the provision of women's healthcare services to females with disability. It also examined the environmental factors of access, time, physical assistance, patient characteristics and equipment as well as the behavior of provision of women's healthcare services to disabled females.

All respondents to this study who provide women's healthcare services have some proportion of their clients who are disabled females, although not all take care of wheelchair-bound patients. The fact that the majority of APNs who offer women's healthcare services are actively caring for people with some kind of disabling disease or injury holds implications for APN education. It is logical to expect that since the majority of APNs will at some time care for disabled patients, issues concerning disability would be included within the curricula of each type of APN. This was not found to be true.

Respondents offered a wide range of primary care women's health services to their patients, from managing childbirth to performing pelvic examinations. The range of services was unexpected, as was the large number of APNs who offer these services. While some services are with the traditional RN domain, such as offering education about STDs and contraception, some definitely require a high level of knowledge and skills, including pelvic examinations, Papanicolaou smears and prescription of birth control.

Knowledge

According to responses received, many respondents are offering women's healthcare services without receiving education on providing these services in their APN program. The question reads "Did you receive education specific to providing

gynecological or reproductive healthcare to women in your APN courses?" It was unexpected that many respondents report NOT receiving this education. It is unlikely that the question was misunderstood, yet even CNMs report that they DID NOT receive this education. This answer is puzzling, since the primary role of the certified nurse midwives is to offer women's health services. Measurement error may play a part in this finding.

The other three questions on APN education verified what was expected – a minority of APNs received training in care of patients with disability and in offering female healthcare services to women with disability. This finding was validated by written comments on the surveys and is not in concordance with the fact that so many APNs care for disabled females. Statistically significant associations were found between APN specialty and whether the APN had received education about disability in their APN coursework with NPs being the least likely to have received disability education. This is disturbing, as APNs are thus caring for disabled women and are offering women's healthcare services to them, the majority without special training. NPs are the fastest growing group of APNs and likely care for the highest numbers of disabled patients. Serious questions should be raised – should APNs not offer services to women with disability if they have not been trained? Should disabled women seek providers who have been specially trained in offering healthcare services to the disabled?

It was thus surprising to find that so many of the APNs who answered the knowledge questions scored very high, although so few received disability education during their APN programs. There was no difference in knowledge between groups or between sub-specialties within groups. No difference in knowledge scores was found between those who said they received education about provision of women's health services for people with disability, although a difference was found between those who said that they received general women's health training and those who said they did not. There are several possible reasons for these findings. One is that the wrong questions were asked and that the questions did not fully measure "knowledge of disability and women's health". Second, the questions asked might reflect general nursing knowledge

rather than advanced practice knowledge. Third, professional learning continues even after formal education is completed and many APNs may have gained this knowledge through reading, continuing education activities or on the job experiences. Also, there is a difference between having knowledge and applying that knowledge in clinical situations (Bandura, 1997). Thus, while a clinician may "know" that disabled women require certain healthcare services, the clinician may not always offer those services for a variety of reasons. All the client sees is that the practitioner does not offer the service; this does not mean that the practitioner does not have the knowledge needed.

One specific knowledge concern is that many APNs report caring for people with spina bifida, yet, overall, there was a lack of knowledge in important spina-bifida-specific care regarding folic acid and pregnancy, as well as latex condoms. It is recommended that women with spinal bifida who are contemplating pregnancy take higher than usual doses of folic acid to prevent neural tube defects in their children (Spina Bifida Association, 2001); and due to over-exposure to latex in this population, latex allergies are not uncommon and contact with latex products such as condoms should be avoided (Spina Bifida Association, 2002). Thus, it is important that providers who deliver women's healthcare services to females with spina bifida be aware of these aspects of care as they are important in preventing poor outcomes. It is probable that there are other disability specific aspects to women's healthcare services that were not asked in this survey but which are important to the care of disabled female patients.

Self-efficacy

Overall self-efficacy scores were in the mid-range. The question eliciting the lowest score was confidence in providing pessary fitting/evaluation; the highest was knowing when to refer to an obstetrical-gynecologic specialist. The self-efficacy analysis found no differences between NPs, CNSs and CNMs for self-efficacy scores. Differences were found within the NP group, however. WHNPs had higher self-efficacy than FNP, PNPs and GNPs, and ANPs had higher self-efficacy than PNP and GNP. Since it can be expected that WHNPs' training focuses on women's healthcare, it is logical that this

group would have higher self-efficacy than other NPs. WHNPs also can be expected to provide these services more frequently than the other three groups. The same can be said for the differences between ANP, PNP and GNP. ANPs likely provide the services more frequently than the other two groups.

Self-efficacy scores were found to be associated with the knowledge scores. As knowledge increases, self-efficacy increases. Self-efficacy scores also had a positive correlation with perceived accessibility of workplace. Thus, as perceived accessibility of the workplace increases, self-efficacy scores increase. Both of these findings are logical.

Four predictors for self-efficacy were found through regression analysis. Knowledge, rehabilitation experience, WHNP status, and disability education are the predictors. Higher knowledge predicted higher self-efficacy, as did prior rehabilitation experience and disability-specific training. WHNP-positive status predicted higher scores. More knowledge might indicate that as one knows more about caring for the disabled woman the more sure one might be about one's ability to offer appropriate care. Those with prior rehabilitation experience have more experience in providing care to the population, and so their self-efficacy would be higher. And those with a lack of disability-specific training were less sure about their ability to offer appropriate women's health services. WHNP status predicting higher self-efficacy could be due to a group effect of WHNPs or could be due to a difference in training and experiences from the other groups.

Practices

It was expected that the working environment of the APN would not be fully accessible. Few APNs reported having equipment to help lift patients, having accessible wheelchair scales or having examination tables that raised and lowered. The lack of mechanical lifts, wheelchair accessible scales and adjustable examination tables indicates an ongoing issue with accessibility of healthcare facilities and validates findings of an earlier study by Sanchez et al. (2000). In Sanchez' study of healthcare facilities in the Midwest, practitioners' perceptions of accessibility exceeded the actual accessibility of

the facility. That study also found that while a person in a wheelchair could access the facility and the examination rooms, most of the 40 facilities did not have examination tables that raised and lowered and tended to use staff members to transfer patients to the examination tables.

Less than one quarter of APNs in Texas reported that their examination rooms and bathrooms were not accessible by wheelchair. While the majority of APNs said that staff is available to help with lifting, the written comments received about protecting staff from lifting injuries bears notice. Healthcare workers occupy 6 positions on the top ten list of occupations at highest risk for back injury and back injury may be a contributing factor to the nursing shortage (Brown, 2003). No-lift policies are increasingly being implemented in healthcare facilities nationwide to protect staff from lifting injuries. In fact, the Texas Legislature recently passed a bill, effective January, 2006, that mandates initiation of safe handling programs for nurses. Under the law, a nurse can refuse to perform or be involved in an activity if he or she believes in good faith that the activity poses an unreasonable risk of injury to anyone involved (Healthcare Workforce Development, 2005). Expecting staff to lift disabled patients onto an examination table is not safe for the staff and yet not helping facilitate transfer of the patient may be detrimental to the patient's health. The new Texas law may speed the development of accessible healthcare facilities for the disabled.

The lack of wheelchair accessible scales is unsettling. There are many conditions, including pregnancy, that require close monitoring of weights. It can be expected that the general practice APNs, such as FNPs, GNPs, ACNPs, among others, would care for patients requiring weight monitoring, such as patients with heart failure and renal diagnoses. It could be seen as malpractice or discrimination if patients requiring weight monitoring for their health or the health of their child are denied this assessment when it is routinely offered to patients who are mobile.

The discordance between the APN-identified lack of proper equipment and the higher scoring on the 1-5 scale regarding accessibility of environment was not clear. It may indicate a lack of knowledge on the part of the provider as to the definition of

"accessible" or what "accessible" looks like. As stated above, Sanchez et al. (2000) found similar results in their study of 40 healthcare facilities in the Midwest. Again, this finding has implications for APN education about disability.

Clinical practice questions were examined individually, as common factors could not be found among the questions. Means for each question indicate that most people answered agree or strongly agree to each statement. It is of note that there were significant differences found between the three main groups (NP, CNM, CNS) on many of the questions. CNSs were more likely to provide physical assistance to women to get up onto the examination table. This is likely due to the fact that most, if not all, CNSs have prior experience as staff RNs, where assisting with mobility would be a usual practice. CNSs were also more likely to refer women to another provider, which may be a reflection of their training and past experiences.

It is interesting that the practices of CNMs differed from the two other groups, with CNMs being significantly more likely to offer recommended women's healthcare services to the disabled female population and the NPs were least likely to do so. It is possible that, since CNMs focus solely on provision of women's health services, their skills are better with interventions such as use of alternative positioning. It is also possible that, being focused on a single specialty, it is ingrained in their practice that all appropriate services are always offered to all women and it is possible that that they have more time to provide these services. NPs may have other pressures unique to the work setting, such as HMOs and time management, or unique to their role. It is possible that they are also caring for each patient's medical issues, more than just offering women's healthcare, and the women's healthcare issues are not seen as being as important as the presenting problems. The CNS sample may not be representative of all CNSs who provide services, since there is such as small number of them who answered the survey.

Summary

Overall, this study revealed many issues with APNs and provision of women's healthcare services to disabled women with impaired mobility. Overall, a disabling

process was seen with the disabled women's needs being more complex than the environment can accommodate.

First, APNs revealed deficits in their APN education with a minority receiving education specific to disability. As they enter practice as an APN in the real world, however, all have some proportion of their patient population that is disabled. Many even indicated a lack of training in providing basic gynecological procedures although all in this study provide them. There is a lack of awareness within the APN community of what constitutes accessibility with dissonance revealed between perceptions of accessibility and the actual equipment available to the APN to care for the disabled.

APNs did have basic knowledge of services required by the disabled woman and as knowledge increased, so did self-efficacy. WHNPs had higher self-efficacy than other NP groups, which may hold implications for education of FNPs, PNPs and GNPs in particular, since all provide women's healthcare services. Many APNs indicated that they learned to care for disabled women after their APN program, through continuing education programs or on-the-job experience. Those with prior rehabilitation experience seemed to have an advantage.

CNMs were more likely to provide recommended services than other groups. This holds implications for CNS and NP education. It also holds implications for the setting within which APNs work. Is there enough time to provide the correct services? Is there administrative support for providing these services? Is preventive healthcare for disabled women a priority or an afterthought? Are CNSs and NPs distracted by the disability, and forgetting preventive care?

Environments remain poorly accessible to the disabled, these many years after the APA was enacted by Congress. The denial of services to disabled women that are provided to fully mobile women may constitute discrimination and malpractice. Weight scales and electric examination tables that raise and lower are the minimum equipment required in order to offer basic healthcare services to the disabled.

Conceptual framework

It is clear that disabled women who seek women's healthcare services do not "fit" the existing environment as described by the IOM model– that is, they have needs that are often not met by the healthcare environment. These needs include providers with special knowledge and self-efficacy within an accessible environment. The provider must have personal factors that contribute to provision of services and must work in an environment that supports provision of services to disabled women before the services can be offered. This study identified several factors that may contribute to the disablement of the female seeking women's healthcare services from the APN. These include the personal factors such as knowledge, self-efficacy, past experiences, specialty practice, education and training as well as the environmental factors of access, time, available assistance, available equipment, cues to action and patient characteristics. Any and all of these factors can contribute to the disablement of the female – that is, the lack of services offered to them. The IOM's Enablement-Disablement model and Bandura's Social Cognitive Theory were both valid frameworks within which to examine the questions in this study.

Strengths and weaknesses

It was not possible to know in advance of this survey exactly which APNs provided women's healthcare services in Texas, as there is no central repository of this information. Thus, an educated guess was made and surveys were sent to all APNs in Texas who could potentially provide women's healthcare services. One advantage of this was to reduce the chance of non-coverage error – all APNs who potentially provide the services were "covered" by the method of APN selection. Those included were recognized by the state as FNPs, ANPs, PNPs, WHNPs, GNPs and ACNPs as well as CNMs, WH-CNSs, Adult/Medical Surgical CNSs, Geriatric CNSs, Community Health CNSs and Maternal-Child CNSs. Drawbacks to this method of locating the sample of interest include the time and expense involved in producing several thousand mailed-out surveys as well as a likelihood of oversampling and thus finding differences that may not

be of practical importance but are due solely to sample size. It is also feasible that there may not be an equitable response from select regions of Texas.

The survey was limited to APNs in Texas, since these names and addresses were easily accessible. Limiting the survey to Texas alone, however, may affect the generalizability of results to other states. It is probable that educational programs, licensure, protocols and practices may differ state by state. The survey was also limited to those with Master's degrees or higher, which may have unknowingly eliminated any APNs who were grandfathered into APN practice in the past without a Master's degree as BNE rules and regulations changed over time. For instance, although most midwifery programs in Texas are at the master's level, there are practicing CNMs who do not yet have a master's degree.

Figure 12, which shows mail-out by county, illustrates the lack of APNs who could potentially offer women's health services in the western and southern portions of Texas. These areas tend to be rural. The lack of APNs who provide women's health services in rural Texas can conceivably affect the rural population.

A return rate of 30% was assumed in the proposal for this study. This return rate was exceeded, as 42% of APNs who were invited to become subjects returned the surveys. Although a higher return rate may be more representative of the population, as previously stated, the number of respondents who would provide the services of interest was unknown. Over 50% of the respondents actually provide women's healthcare services.

Of interest is the U.S. mail service itself. Although surveys were mailed in April, 2005 with the required postage, one respondent did not receive hers until mid-July. The surveys were received back as late as October 6, 2005, although the due date was May 30. Surveys received after July 31 (n =10) were not included in the analyses. It cannot be known how many other APNs received the survey after the due date, which could have affected the return rate.

The obvious drawbacks to a mail-out survey exist here – with self-reported data, surveys being returned only by those motivated to do so and the chance that the non-

responder population is different from the responders in important ways may affect the conclusions of this study. However, the information provided by nearly 750 APNs remains valuable and important.

Missing data was a problem in this study. Since many subjects skipped facing pairs of pages, there seems to have been a problem with pages sticking together. This is a problem related to the quality of paper used by the printing company and could not be foreseen. A caution about this problem was printed on the reminder postcards that were sent out. Page numbering may have helped decrease the amount of missing data.

I would recommend that knowledge questions be reevaluated to see if they actually measure the salient points of "knowledge" required to offer women's healthcare services to disabled women. The high knowledge scores obtained on this survey were unexpected, given the lack of formal education in APN programs.

Recommendations for future research

This was the first study of APNs and services provided to disabled women. Based on the findings of this study, further research is warranted. Since this study was restricted to Texas, more knowledge is needed on APN practice in other states, since there could be regional differences within and between states. It is also possible that the same issues exist in other provider groups, such as physician's assistants, DOs and MDs. Perhaps there are interventions that can be successfully implemented to assist the practicing APN in improving the care they deliver to the disabled female.

Research into APN curricula is also warranted. It is unknown what type of education about disability should be a core component of all APN programs. It is also not known where APN students can best obtain the knowledge needed to safely care for the disabled woman and what core knowledge is actually required. There is also the question about whether APNs who are not specially trained should offer services to disabled women.

Research into practice environments should continue until all are fully accessible to the disabled. Questions include: why do healthcare facilities remain less than fully accessible to the disabled? What interventions could help improve accessibility? Should

disabled women receive all services from those specialized in disability, such as physiatrists and APNs who specialize in rehabilitation? How can disabled women in rural areas best receive care?

Perceptions of the client are also important. What about those disabled women receiving services from APNs? Are they comfortable with the care they receive? Do they feel that their APN is competent and sees beyond the disability? Are they comfortable with APN care? What recommendations would disabled women make to improve APN practices?

Research into the outcomes of care provided by the APN is also indicated. Do disabled women receiving services from APNs have outcomes comparable to those who receive services from physicians? Are the outcomes acceptable?

Conclusion

APNs are an important provider of primary healthcare to disabled women. APNs are not fully supported in their education and environment in providing competent care to this population. Until changes are made, the provision of care to disabled women with impaired mobility by APNs may not be optimal. Further study into the practice of the APN in care of disabled women is warranted.

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APPENDIX A: SURVEY

Provision of Gynecological Services to Women with Disability: A Survey of APNs in Texas

For the purposes of this study, "disabled women with impaired mobility" and "physically disabled women" are defined as…

- women with a disability that affects brain, nerves, muscles or bones and that impairs the ability to stand and walk.
- These women will use an assistive device such as crutches, a cane, a walker, a wheelchair, or a care provider to assist with transfers and mobility.
- The disability that causes impaired mobility can range from congenitally acquired (such as spina bifida), to traumatically acquired (such as spinal cord injury or head injury) to disease-related (such as arthritis, stroke, multiple sclerosis, muscular dystrophy, obesity).

This section is for screening purposes only.

1. Are you currently licensed as an APN in Texas?
   - □ yes
   - □ no

2. What is your APN licensure? **(Mark all that apply)**
   - □ Nurse Practitioner
   - □ Clinical Nurse Specialist
   - □ Certified Nurse Midwife
   - □ _____

   2A. **For NPs**: what is your specialty licensure?
   - □ Family NP
   - □ Adult NP
   - □ Pediatric NP
   - □ Women's Health NP
   - □ Geriatric NP
   - □ Acute Care NP
   - □ Other NP_____

2B**. For CNSs**, what is your specialty licensure?

□ Women's Health
□ Adult
□ Gerontology
□ Community Health
□ Maternal/Child
□ Other CNS _____

3. Do you provide gynecological and/or reproductive health services for the females that you see in your practice?

□ yes
□ no

If you answered "no" to Number 1 and/or Number 3 above, STOP HERE. Please return the survey in the enclosed, stamped envelope.

Thank you for your time and assistance.

4. How old were you on your last birthday? _____years

5. Are you: □ Female □ Male

6. Are you currently:

□ Single, never married
□ Legally separated from your spouse
□ Divorced
□ Widowed
□ Married

7. Which term best describes your ethnicity?

□ Caucasian
□ African American
□ Hispanic/Latino
□ Native American Indian
□ Asian/Pacific Islander
□ Other _____

8. What is your highest level of education?

□ BSN
□ MSN, MS or MN
□ PhD/DNS/DNSc
□ Other _____

9. What year did you graduate from your basic (RN) nursing training? _____

10. What year did you graduate from your advanced (APN) training? _____

11. Before you became an APN, how many years did you practice as a(n):
    ____Nurse's Aide
    ____LVN or LPN
    ____RN

12. Before you became an APN, did you ever work in a rehabilitation setting?
    □ yes
    □ no

Self-efficacy in provision of services *Please circle the letters that indicate your level of agreement with the following statements…*	Strongly Agree	Agree	Uncertain	Disagree	Strongly disagree
13. I am confident that I have been well trained to provide gynecological and reproductive services to disabled women with impaired mobility	SA	A	U	D	SD
14. I am comfortable with alternative positioning to facilitate pelvic exams in disabled women with impaired mobility.	SA	A	U	D	SD
15. I am confident that I know the indications and risk factors for pregnancy in women with physical disability.	SA	A	U	D	SD
16. I am confident in my ability to provide sexual counseling to a woman with physical disability.	SA	A	U	D	SD
17. I am confident in my ability to provide contraceptive counseling to teenaged women with spinal bifida.	SA	A	U	D	SD
18. I am knowledgeable in the indications/risks of contraceptives for women with different disabilities	SA	A	U	D	SD
19. I am comfortable discussing techniques for sexual gratification, including intercourse, with a physically disabled woman.	SA	A	U	D	SD
20. I am confident in my ability to safely prescribe a method of birth control for a disabled woman of childbearing age.	SA	A	U	D	SD
21. I am comfortable with providing pelvic exams to disabled women with muscle contractures	SA	A	U	D	SD
22. I am confident in providing pessary fitting/evaluation and follow-up for a physically disabled woman.	SA	A	U	D	SD
23. I am confident that I know when to refer a disabled woman to a(n) gynecologist/obstetrician for reproductive/gynecological services.	SA	A	U	D	SD
24. I am confident that I could find my disabled patient an ob/gyn physician with an accessible office and equipment plus knowledge of reproductive health in the context of disability.	SA	A	U	D	SD
25. I am confident in my ability to recognize physical or sexual abuse in a woman with disability.	SA	A	U	D	SD
26. I am comfortable in treating urinary incontinence in a disabled woman.	SA	A	U	D	SD

Provision of services *Please circle the letters that indicate your level of agreement with the following statements…*	Strongly Agree	Agree	Uncertain	Disagree	Strongly disagree
27. In my place of work, we routinely assist women who cannot walk to get up on the examination table.	SA	A	U	D	SD
28. I am allowed enough time to provide the gynecological health care that a physically disabled woman requires.	SA	A	U	D	SD
29. I routinely inquire into the sexual lives of my disabled female patients.	SA	A	U	D	SD
30. I often refer disabled women to another provider for gynecological/reproductive healthcare services	SA	A	U	D	SD
31. I have recommended genetic counseling to women with a congenital disability when pregnancy has been contemplated.	SA	A	U	D	SD
32. I routinely use alternative positioning techniques to facilitate pelvic examinations in disabled women with impaired mobility.	SA	A	U	D	SD
33. I routinely offer preventive gynecological screening, such as PAP smears and mammograms, to my disabled female patients.	SA	A	U	D	SD
34. I routinely schedule my elderly female patients for PAP smears and pelvic examinations as recommended by national guidelines.	SA	A	U	D	SD
35. I always screen my disabled female patients for STDs.	SA	A	U	D	SD
36. My female patients who are physically disabled are routinely offered education about sexually transmitted diseases.	SA	A	U	D	SD
37. I always discuss contraceptive options with physically disabled female patients of reproductive age.	SA	A	U	D	SD
38. I discuss the functional aspects of managing menstruation with my physically disabled female patients.	SA	A	U	D	SD
39. I always schedule mammograms for my disabled peri-menopausal and menopausal patients according to national guidelines.	SA	A	U	D	SD
40. I always screen my disabled female patients for physical and sexual abuse.	SA	A	U	D	SD

41. How would you describe the area in which you practice as an APN?

□ City or town with 100,000 or more population
□ City or town with 10,000-99,999 population
□ City or town with 5,000-9,999 population
□ City or town with less than 5,000 population
□ Rural area with widely scattered population
□ Other _____

42. What is the region of Texas in which you practice as an APN?

□ Big Bend Country (West Texas)
□ Panhandle Plains (Amarillo area)
□ Hill Country (Central Texas)
□ South Texas Plains (the Valley)
□ Gulf Coast (Southeast Texas)
□ Piney Woods (East Texas)
□ Prairies and Lakes region (Dallas-Fort Worth area)

43. What best describes your patient population **(check all that apply):**

□ pediatric ages 1-12
□ teenage ages 13-19
□ young adult ages 20-29
□ adult ages 30-49
□ older adult ages 50-64
□ geriatric ages 65-84
□ oldest old ages >84

44. Please estimate the % of your entire patient population that is female

_____%

45. The majority of the time, in what type of healthcare setting do you provide services?

□ Hospital-based clinic
□ Private physician's office
□ Community-based clinic
□ Acute hospital setting (in-patient)
□ Emergency room
□ School setting
□ Occupational health setting
□ Other _____

46. What gynecological or reproductive health services do you provide for your female patients? **(check all that apply):**

□ Pelvic examinations
□ PAP smears
□ Breast examinations
□ Screening and treatment for STDs
□ Contraception: birth control pills
□ Contraception: IUD

□ Other contraception
□ Preconception counseling
□ Infertility services
□ Pregnancy management
□ Management of childbirth
□ Breast feeding education/assistance
□ Management of menopausal symptoms
□ Sexual counseling
□ Education about contraception
□ Education about STDs
□ Education about pregnancy
□ Pessary fitting/follow-up
□ UTI screening and treatment
□ Other _____

47. Do any of your female patients have the following diagnoses?

___ Ye s___ No amputation
___ Ye s___ No arthritis
___ Ye s___ No cerebral palsy
___ Ye s___ No congenital deformity (hip dislocation, club feet, etc)
___ Ye s___ No lower extremity contractures
___ Ye s___ No head injury
___ Ye s___ No multiple sclerosis
___ Ye s___ No neuromuscular disorder (muscular dystrophy, etc.)
___ Ye s___ No Parkinson's disease
___ Ye s___ No polio
___ Ye s___ No spina bifida
___ Ye s___ No spinal cord injury
___ Ye s___ No stroke

48. Are there any other disabilities that you encounter? Please list them here:
_____

49. A percentage of your patients are likely to have impaired mobility. That is, they require a cane, walker, or wheelchair to move from place to place.

49 a. Please estimate the % of your **female patients** who have impaired mobility. _____%

49 b. Please estimate the % of your **female patients** who use a wheelchair some or all of the time. _____%

□ yes □ no Did you receive education specific to providing gynecological or reproductive health care to women in your APN courses?

□ yes □ no Did you receive any education specific to providing care to physically disabled people in your APN education?

□ yes □ no Did you receive education specific to providing gynecological or reproductive health care to disabled women with impaired mobility?

□ yes □ no Did you receive education specific to providing gynecological or reproductive health care to women with differing disabilities, such as multiple sclerosis, spinal cord injury, obesity and congenital disability?

□ yes □ no Are the examination tables in your clinic or office adjustable for height?

□ yes □ no Is there a mechanical lift or other equipment available to help transfer patients from wheelchair to the examination table in your office or clinic?

□ yes □ no Are there staff available to help transfer patients with impaired mobility onto the examination table in your office or clinic?

□ yes □ no Is there a wheelchair accessible weight scale in your office or clinic?

□ yes □ no In your opinion, are the bathrooms in your office or clinic wheelchair accessible?

□ yes □no In your opinion, are the examination rooms in your office or clinic wheelchair accessible?

Indications for services - True or False
Please circle the appropriate letter next to each statement

T F Disabled women with impaired mobility require the same gynecological and reproductive services as the non-disabled population.

T F A sexual history should always be taken for a physically disabled woman.

T F Physically disabled women can have a normal sexual life.

T F Physically disabled women have a lower libido than non-disabled women.

T F Teens who use wheelchairs require the same sexual counseling as ambulatory teens.

T F Disabled women are no different from non-disabled women in regard to their chances of acquiring an STD.

T F National recommendations for pap smear frequency are different for women who are physically disabled.

T **F** Mammography is recommended less often for women with physical disability than for the non-disabled population.

T **F** It is OK to delay the initiation of mammography for the physically disabled woman if she is difficult to position.

T **F** Women who are physically disabled may need education to learn to independently manage the hygiene products used for menstruation.

T **F** Pregnancy is not advisable for wheelchair bound women

T **F** Latex condoms are recommended as a potential method of birth control for sexually active women with spina bifida..

T **F** Higher doses of folic acid are recommended for some disabled women contemplating pregnancy.

T **F** Ovulation can cause a fatal rise in blood pressure in a woman with spinal cord injury

50. On a scale from 1-5, with 1 being **inaccessible** and 5 being **totally accessible,** *please circle the number* that best describes how accessible your clinic or office is to a person in a wheelchair?

1 2 3 4 5

Inaccessible **Totally accessible**

If you have any comments about this topic or this study, feel free to write them in the space below.

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