



# APN Knowledge, Self-Efficacy, and Practices in Providing Women's Healthcare Services to Women with Disabilities

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## KEY WORDS

access to health care  
advanced practice nurse  
women with disabilities  
women's health care

*Women with disabilities require the same gynecological and reproductive healthcare services as women without disabilities, yet they often experience difficulty obtaining them. Advanced practice nurses (APNs) increasingly provide primary care services that include women's health care, yet their influence on this population has not been systematically examined. This study examined the practices, environments, knowledge, and self-efficacy of APNs in Texas regarding provision of women's health care to women with disabilities. The study's respondents are 744 women who replied to a mailed survey. The results reveal that while nurses do not lack knowledge, work environments do not support competent care of women with disabilities and practices do not always follow national guidelines. Predictors of self-efficacy in provision of health care to women with disabilities were status as a women's health nurse practitioner, previous rehabilitation experience, high knowledge scores, and a working environment perceived as accessible. Until changes are made in APN education and environmental barriers are addressed, APNs may not be able to provide optimal women's healthcare services to women with disabilities.*

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; Agency for Healthcare Research and Quality, 2008). Although women who have disabilities are living longer and healthier lives (Jans & Stoddard, 1999), access to preventive services continues to be a critical barrier to care (Association of State and Territorial Health Officials [ASTHO], 2003; Becker, Stuijbergen, & Tinkle, 1997; Iezzoni, McCarthy, Davis, & Siebens, 2000; Nosek & Howland, 1997).

Women with disabilities who live in the United States face many barriers in the healthcare system. They are more likely to be poor, unemployed, and lack adequate health insurance. Some facilities present physical barriers such as a lack of accessible transportation or wheelchair access. In addition, many healthcare providers lack the necessary knowledge to provide basic services to women with disabilities, and attitudes toward people with disabilities may interfere with provision of care. There also are additional related costs for care providers, such as costs of examination tables that rise and lower, wheelchair scales, and accessible mammography machines (ASTHO, 2003; Becker et al., 1997; Iezzoni et al., 2000; Nosek & Howland, 1997).

Women with disabilities have the same need for gynecological healthcare as women without disabilities, yet they are less likely to receive these services from their healthcare provider (ASTHO, 2003; Becker et al., 1997; Iezzoni et al., 2000; Nosek & Howland, 1997). Women

with disabilities are also more likely to have difficulty finding an accessible doctor's office or transportation and even encounter more difficulty getting onto an examination table (Nosek & Howland; Nosek et al., 1995). In one study, more than 50% of women with disabilities reported that their hospital could not accommodate their childbirth due to architectural barriers (Nosek, Rintala, Young, Foley, & Dunn, 1996). Women with disabilities are less likely to receive sex education than their male counterparts (Becker et al.). One study of women with acquired or congenital disabilities found that more than 50% had received information about contraception, but 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. Women with spinal cord injury, for example, require special consideration of the relationship between the autonomic nervous system and the reproductive system. Intercourse, menstruation, and labor and delivery all can cause autonomic dysreflexia, a life-threatening elevation of blood pressure, in women with spinal cord injuries above the T5 level (Zejdlik, 1992). In some populations, mobility and range of motion can affect care providers' abilities to carry out an examination. This especially may occur when working with 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 on self-care during menstruation,

or on performing self-breast examination (Center for Research on Women with Disabilities, 1999).

An APN is a registered nurse (RN) who has completed additional coursework and clinical practice requirements leading to recognition as a nurse practitioner (NP), clinical nurse specialist (CNS), certified nurse midwife (CNM), or certified registered nurse anesthetist. In Texas, APNs complete basic education in nursing and also have completed a specialty APN program at the master's-degree level at an accredited school of nursing.

APNs have the potential to influence care delivered to women with disabilities because they increasingly provide services that traditionally were available only from physicians.

APN influence on the care of women with disabilities has not been systematically studied. No studies have been published regarding APNs' knowledge about the gynecological health care required for women with disabilities or about APNs' ability to deliver such services. Self-efficacy of APNs in providing care to people with disabilities also has not been studied.

### Study Purpose

The purpose of this study was to explore the baseline knowledge, self-efficacy, and current clinical practice of APNs in Texas regarding provision of reproductive and gynecological healthcare services to women with disabilities and impaired mobility. For this study, *self-efficacy* is defined as confidence or belief in one's ability to provide effective gynecological and reproductive healthcare services to women with disability who have impaired mobility.

### Theoretical Framework

The overall conceptual framework for this study was the Institute of Medicine's (Brandt & Pope, 1997) Enabling-Disabling Process Model. The disabling process was conceptualized as follows: women with disabilities may have women's healthcare service needs that are more complex than the environment usually encounters, and the environment may be unable to accommodate their needs. The environment includes the APN, who may not have the knowledge or self-efficacy to provide the needed services, and the provider's physical and social environment, which may not allow access to the provider. The enabling process was conceptualized as an environment that could meet the needs of women with disabilities. In this environment, providers have the knowledge and self-efficacy to provide services and both the physical and social environments accommodate access to the provider.

Bandura's model of social-cognitive theory (1986) was used as a framework with which to identify provider-centered characteristics that might influence

the fit between a woman with a disability and the care 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. For this study, this was conceptualized as the APN's personal factors (e.g., knowledge, education, past experiences) and environmental factors (e.g., time, cues to action, available equipment, patient characteristics) that influence behavior (i.e., the provision of women's healthcare services).

### Methods

This exploratory study was based on a written survey of APNs conducted in Texas. The survey was a voluntary, anonymous, paper-based questionnaire. A mailing list was purchased from the Texas Board of Nurse Examiners. After limiting potential subjects to those licensed as APNs with a master's degree or higher who were likely to provide women's health services and eliminating those who participated in survey development, the mailing list included 3,387 CNMs, NPs, and CNSs in Texas.

Content validity of the overall survey instrument, which specifically was developed for this study, was provided by a panel of content reviewers that included a female healthcare researcher with a disability, a female physician with a disability, a CNM, and a women's health NP. Pilot testing with 19 APNs helped to further refine the instrument. The self-efficacy scale, constructed specifically for this study, was a 14-question instrument that used a 5-point Likert scale to indicate agreement with each statement. This scale was found to have good internal consistency, justifying later use of summary scores for analysis (Cronbach's alpha 0.94). Sample questions from this section of the survey include "I am comfortable with alternative positioning to facilitate pelvic exams in disabled women with impaired mobility" and "I am knowledgeable in the indications/risks of contraceptives for women with different disabilities." Institutional review board approval was obtained to protect human subjects.

### Results

The survey had a 42% response rate ( $n = 1,406$ ). Among respondents, 72.6% were NPs, 14.3% were CNSs, and 5.8% were CNMs. The study was limited to the 744 APNs who provided gynecological and reproductive healthcare services to their patients.

### Sample

The mean age of the 744 subjects was 47.4. **Table 1** summarizes the sample demographics. **Table 2** describes the population these APNs serve, and **Table 3** describes the services they provide.

# APN Knowledge, Self-Efficacy, and Practices in Providing Women's Healthcare Services to Women with Disabilities

## Education

A minority (21.6%) of respondents received education in their APN coursework specific to providing gynecological and reproductive healthcare services to women with differing disabilities such as multiple sclerosis, spinal cord injury, obesity, and congenital disability. Only 25% ( $n = 184$ ) of respondents said they received education specific to providing women's healthcare services to women with disabilities with impaired mobility, and 30.7% ( $n = 226$ ) received education in their APN coursework about providing care to physically disabled people in general. NPs were the least likely to have received disability education. Statistically significant associations were found between APN specialty and receipt of education on providing care to physically disabled people in general (Pearson's chi-square 7.924,  $df = 2$ ,  $p = .019$ ,  $n = 689$ ). Significant associations also were found between APN specialty and whether the subject had received education specific to providing women's healthcare services to women with disabilities with impaired mobility (Pearson's chi-square = 17.11,  $df = 2$ ,  $p \leq .001$ ,  $n = 687$ ).

## Accessibility

**Table 4** summarizes APNs' descriptions of their working environment, while **Figure 1** summarizes APNs' perception of the accessibility of their environment.

## Knowledge

The knowledge test that was developed for this study was based upon the literature. The majority of APN respondents correctly answered the 12-question, true-false knowledge test (overall mean number correct = 10.79,  $SD = .92$ ). There were no statistical differences found in mean knowledge scores between the APN specialties. The number of incorrect answers to two questions about spina bifida indicated a lack of knowledge about this condition. These specific questions were "Higher doses of folic acid are recommended for some disabled women contemplating pregnancy" and "Latex condoms are recommended as a potential method of birth control for sexually active women with spina bifida."

## Self-Efficacy

APNs' self-efficacy in providing gynecological and reproductive healthcare services to women with disability who experience impaired mobility was measured through a 14-question instrument using a 5-point Likert scale to indicate agreement with each statement. The internal consistency of the instrument (Cronbach's alpha) was 0.93, indicating a strong model, as was found in the pilot. Self-efficacy was found to vary by APN subspecialty (one-way ANOVA,  $F = 11.329$ ,  $p < .0001$ ,  $df = 4;486$ ). Women's health NPs (WHNPs) had scores that were statistically significantly higher than those of family NPs (FNPs), geriatric NPs (GNPs), and pediatric NPs (PNPs;  $p < .0001$ ,  $p < .0001$ ,  $p < .001$ , respectively), whereas adult NPs (ANPs) had significantly higher scores than PNP's and FNPs ( $p = .008$ ,  $p = .024$ , respectively).

Data for analysis of the relationship of self-efficacy scores to knowledge was limited to those who provide services and who were licensed as an NP, CNS, or CNM. Pearson's correlation showed a small but statistically significant positive correlation between knowledge scores and self-efficacy score ( $r = .09$ ,  $p = .038$ ). The effect size however, showed little clinical significance ( $r^2 = .0076$ ).

Pearson's correlation found a small positive and statistically significant association between self-efficacy scores and perceived accessibility of work environment. A small effect size also was found ( $r^2 = .034$ ). Therefore, as knowledge increases, self-efficacy increases, and as perceived accessibility of a workplace increases, self-efficacy increases.

Regression analysis was performed to identify self-efficacy predictors for providing women's health services to physically disabled women. Preliminary testing of regression assumptions, with the histogram of standardized residuals and the P-P plot, showed normally distributed residuals. Using a direct (simultaneous) entry method, the overall regression model

**Table 1. Sociodemographic Sample Characteristics**

Variable	<i>n</i>	%
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
Prior rehabilitation experience	115	17.2
	<b>Mean, SD</b>	<b>Range</b>
Age	47.3, 9.08	26–82 ( $n = 665$ )
Average time as RN before APN	12.5, 7.96	0–40
Length of time as NA before RN	6 months–6 years	$n = 76$
Length of time as LVN before RN	1–25 years	$n = 45$

was significant ( $F_{13,498} = 7.996, p = .0001$ , adjusted  $R^2 = .151$ ). Inside the regression model, four predictor variables were statistically significant for self-efficacy. These were WHNP status, previous rehabilitation experience, education on differing disabilities, and knowledge scores. CNM status, while not statistically significant, did have a moderate effect size (beta weight 0.63, squared semipartial .032,  $p = .15$ ). For estimates of effect size, squared semipartial correlations were calculated. Squared semipartials represent the unique explanation of a predictor variable beyond the 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 (Table 5). This indicates that WHNP status predicts higher self-efficacy, as does previous rehabilitation experiences 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 it has a clinical effect on self-efficacy.

### Current Practice

Fourteen questions examined clinical practices. Respondents indicated agreement or disagreement on a 5-point Likert scale (1= *strong disagreement*). Not all APNs practiced according to national standards and guidelines. See Table 6 for clinical practice questions and associated findings.

### Discussion

Respondents offered a wide range of primary care women's health services to their patients, from managing childbirth to performing pelvic examinations. Some services were within the traditional RN domain, such as offering education about sexually transmitted diseases (STDs) and contraception, whereas others required a higher level of knowledge and skills.

The three questions about APN education verified expectations—a minority of APNs receive training in care of patients with disabilities and offer women's healthcare services to women with disabilities. This finding was validated by unsolicited written comments on the surveys and is not in concordance with the fact that so many APNs care for women with disabilities. Many APNs care for women with disabilities and are offering women's healthcare services to them without special training.

Many of the APNs who answered the knowledge questions scored very high. There was no difference in knowledge between groups or subspecialties within groups. No difference in knowledge scores was found among those who said they received education about provision of women's health services for women with disabilities. There are several possible reasons for these findings. One is that the wrong

**Table 2. Population Served**

Variable	<i>n</i>	%
Number and percentage of APNs caring for patients of these ages ( <i>N</i> = 744)		
Pediatric, ages 1–12	278	37.4
Teenage, ages 13–19	446	59.95
Young adult, ages 20–29	548	73.66
Adult, ages 30–49	558	75.00
Older adult, ages 50–64	509	68.41
Geriatric, ages 65–84	406	54.57
Oldest old, ages 85+	251	33.74
Number and percentage of APNs caring for patients with these disabilities ( <i>N</i> = 744)		
Amputation	256	34.41
Arthritis	613	82.39
Cerebral palsy	315	42.34
Congenital deformity	268	36.02
Lower-extremity contractures	294	39.52
Head injury	242	32.53
Multiple sclerosis	389	52.28
Neuromuscular disorder	247	33.2
Parkinson's disease	316	42.47
Polio	169	22.72
Spina bifida	173	23.25
Spinal cord injury	166	22.31
Stroke	466	62.63
Other	141	18.95
	<i>SD, Range</i>	%
Percentage of females seen	22.39, 1–100	71.3
Percentage of female patients with impaired mobility	17.58, 1–100	11.75
Percentage of female patients wheelchair-bound	12.95, 0–11	6.4

**Table 3. Services Provided**

Variable	<i>n</i>	%
Percentage of APNs offering these services ( <i>N</i> = 744)		
Pelvic exams	662	88.98
Breast exams	655	88.04
Screening for UTI	643	86.42
Screening for STDs	638	85.75
Pap smears	622	83.60
Education about STDs	619	83.20
Education about contraception	575	77.28
Birth control pills	554	74.46
Sexual counseling	523	70.30
Menopause management	517	69.49
Education about pregnancy	460	61.83
Other contraception	436	58.60
Preconception counseling	389	52.28
Breast feeding education/assistance	239	32.12
Pregnancy management	221	29.70
IUDs	193	25.94
Childbirth	113	15.19
Pessary fitting	91	12.23
Infertility services	90	12.10
Other	48	6.45

# APN Knowledge, Self-Efficacy, and Practices in Providing Women's Healthcare Services to Women with Disabilities

**Table 4. APN Work Environment**

Survey questions	Those who answered "yes"	
	n	%
1. Are the examination tables in your clinic or office adjustable for height?	280	37.63
2. Is there a mechanical lift or other equipment available to help transfer patients from wheelchairs to the examination table in your office or clinic?	64	8.6
3. Is staff available to help transfer patients with impaired mobility onto the examination table in your office or clinic?	661	88.84
4. Is there a wheelchair-accessible weight scale in your office or clinic?	105	14.11
5. In your opinion, are the bathrooms in your office or clinic wheelchair accessible?	625	84.0
6. In your opinion, are the examination rooms in your office or clinic wheelchair accessible?	568	76.34

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.

One specific knowledge concern is that many APNs report caring for people with spina bifida, yet there was an overall lack of knowledge regarding spina-bifida-specific care. It is probable that there are other disability-specific aspects of women's healthcare

services that were not explored in this survey but are important to the care of women with disabilities.

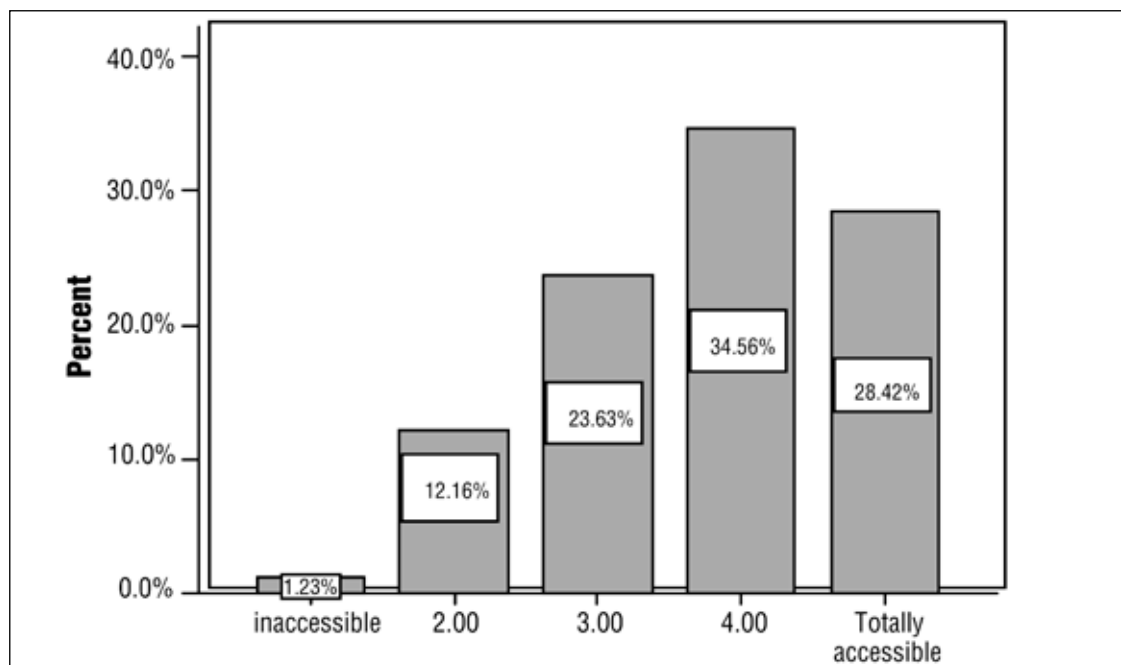
## Self-Efficacy

Overall, self-efficacy scores were in the mid range. The question eliciting the lowest score was confidence in providing pessary fitting/evaluation (a pessary is a vaginally inserted device used to support a prolapsed uterus); the highest scores were linked to 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 FNPs, PNPs, and GNPs, and APNs had higher self-efficacy than PNPs and GNPs. It can be expected that WHNPs' training focuses on women's healthcare, so it is logical this group has 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 APNs, PNPs, and GNPs. APNs likely provide women's services more frequently than the other two groups.

Self-efficacy scores were associated with knowledge scores. As knowledge increases, self-efficacy increases. Self-efficacy scores also had a positive correlation with perceived accessibility of workplace. 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

**Figure 1. Perceived Accessibility of Work Environment (N = 687)**



experience, WHNP status, and disability education are the predictors. Higher knowledge predicted higher self-efficacy, as did previous rehabilitation experience and disability-specific training. WHNP-positive status predicted higher scores. More knowledge may indicate that as one knows more about caring for women with disabilities, confidence in ability to offer appropriate care increases. Those with previous rehabilitation experience have more experience in providing care to this population, so their self-efficacy is higher. 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 to a difference in training and experiences from the other groups. See **Table 7** for self-efficacy questions and **Table 5** for regression results.

### Practices

Few APNs reported having equipment to help lift patients, accessible wheelchair scales, or examination tables that rise and lower. 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).

The lack of wheelchair-accessible scales is problematic. There are many conditions, including pregnancy,

**Table 5. Summary of Regression Predicting Self-Efficacy Scores**

Predictor Variable	$\beta$	Squared Semipartial	<i>p</i>
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 designation	.007	.000	.874
CNM designation	.063	.032	.15
Years practiced as RN	.051	.002	.227
Patients in wheelchairs (%)	-.1	.002	.233
Education on disability	.023	.0003	.687
Education on gynecology	-.022	.0004	.602
Education on gynecology for the disabled	-.08	.003	.209

that require close monitoring of weight. It is expected that general-practice APNs such as FNPs, GNPs, and acute care nurse practitioners, among others, care for patients requiring weight monitoring, such as those with heart failure and renal diagnoses. It could be viewed 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 higher scoring on the 1–5 scale regarding accessibility of environment was not clear. It may indicate a lack

**Table 6. Clinical Practice Questions**

	<i>n</i>	Mean*	<i>SD</i>
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 women with disabilities 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 women with disabilities with impaired mobility.	634	2.56	1.09
7. I routinely offer preventive gynecological 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 perimenopausal patients according to national guidelines.	637	1.90	0.87

\*Mean indicates level of agreement with statement on 5-point Likert scale, with 1 = strong disagreement and 5 = strong agreement.

# APN Knowledge, Self-Efficacy, and Practices in Providing Women's Healthcare Services to Women with Disabilities

**Table 7. Self-Efficacy Questions**

1. I am confident that I have been well trained to provide gynecological and reproductive services to disabled women with impaired mobility.
2. I am comfortable with alternative positioning to facilitate pelvic exams in disabled women with impaired mobility.
3. I am confident that I know the indications and risk factors for pregnancy in women with physical disability.
4. I am confident in my ability to provide sexual counseling to a woman with physical disability.
5. I am confident in my ability to provide contraceptive counseling to teen-aged women with spinal bifida.
6. I am knowledgeable in the indications/risks of contraceptives for women with different disabilities.
7. I am comfortable discussing techniques for sexual gratification, including intercourse, with a physically disabled woman.
8. I am confident in my ability to safely prescribe a method of birth control for a disabled woman of childbearing age.
9. I am comfortable with providing pelvic exams to disabled women with muscle contractures.
10. I am confident in providing pessary fitting/evaluation and follow-up for a physically disabled woman.
11. I am confident that I know when to refer a disabled woman to a(n) obstetrician/gynecologist for reproductive/gynecological services.
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.
13. I am confident in my ability to recognize physical or sexual abuse in a woman with disability.
14. I am comfortable in treating urinary incontinence in a disabled woman.

of knowledge on the part of providers regarding the definition of "accessible" or what "accessible" looks like. As stated above, Sanchez and colleagues (2000) found similar results in their study of 40 healthcare facilities in the Midwest.

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. Significant differences were found between the three main groups (NPs, CNMs, CNSs) on many of the questions. CNSs were more likely to provide physical assistance so women could get onto an examination table. This likely is due to the fact that most, if not all, CNSs have previous experience as staff RNs, and assisting with mobility would have been usual practice. CNSs also were more likely to refer women to another provider, which may reflect their training and past experiences. No-lift policies in some institutions may limit lifting; if so, alternative methods of transfer must be offered to women with disability.

CNM practices differed from the two other groups, with CNMs being significantly more likely to offer recommended women's healthcare services to disabled

women and NPs least likely to do so. It is possible that because CNMs focus solely on providing women's health services, their skills are stronger when it comes to interventions such as alternative positioning. It also is possible that, being focused on a single specialty, it is ingrained in CNM practice that all appropriate services always are offered to all women, and it is possible that they have more time to provide these services. NPs may have other pressures unique to the work setting, such as dealing with health insurance issues and time management or other pressures unique to their role. It is possible that NPs also care for patient's medical issues beyond women's health care and that women's healthcare issues are not viewed as important as the presenting problems. The CNS sample may not represent all CNSs who provide services because such a small number of them completed the survey.

## Unsolicited Open-Ended Comments

Respondents had a lot more to say about this study's topic than could be gathered through answers to survey questions, as evidenced by their unsolicited written comments. Their comments provided insight into the daily working environment of APNs in Texas. Although not formally analyzed, comments fell into four main categories: environmental accessibility, time and practices, personal awareness of disability issues, and education. The personal perspective of these respondents is important enough to share. Here are a few comments:

### Environmental Accessibility

*I work in a mobile clinic without a wheelchair lift.*

*Due to age and health problems with staff, I am reluctant to schedule patients who are unable to transfer [themselves] unless a family member can accompany the patient and assist with lifting to avoid injury to staff.*

*I previously had electronic chairs which are best for these patients—now I don't so sometimes, for patient safety, I refer.*

### Time and Practices

*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.*

*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.*

*I have many elders who are sexually active in the nursing home with multiple partners.*

### Personal Awareness

*Thank you for pursuing a topic of great need. It seems as if this topic is usually swept under the rug.*

*I had never realized how unfriendly we are in our service to the disabled.*

*This study has made me ask myself questions about how I provide care that I never thought about asking.*

### APN Education

*I do not feel adequately trained in disabled patients' care.*

*Caring for disabled women was only briefly covered in my CNM program.*

*I received absolutely no instruction on women with disabilities from my FNP program.*

### Summary

This study revealed many issues about APNs and provision of women's healthcare services to women with disabilities. Overall, the needs of women with disabilities are more complex than what care environments can accommodate.

### Strengths and Weaknesses

It was not possible to know in advance of this survey exactly which APNs provided women's healthcare services in Texas because there is no central repository of this information. Surveys were sent to all APNs in Texas who could potentially provide women's healthcare services. This reduced the chance of noncoverage. Drawbacks to this method of locating the sample of interest include the time and expense to produce several thousand mail surveys and the likelihood of oversampling and finding differences that are solely due to sample size and are not of practical importance. It also is feasible that there may not be an equitable response from select regions of Texas.

The survey was limited to APNs in Texas because these names and addresses were easily accessible. This may affect the generalizability of results to other states. It is probable that educational programs, licensure, protocols, and practices may differ by state. The survey also was limited to those with a master's degree or higher, which may have eliminated APNs who were grandfathered into APN practice without a master's degree, as Texas Board of Nursing rules and regulations have changed over time.

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 surveys. Although a higher return rate may be more representative of the population, the number of respondents who would provide the services of interest was unknown.

## Key Practice Points

1. Women with disabilities have the same needs for gynecological health care as women without disabilities, yet are less likely to receive these services from their healthcare provider.
2. This study found that many advanced practice nurses (APNs) in Texas are offering women's healthcare services to women with disabilities without special training in their care.
3. A minority (21.6%) of the 744 APN respondents received education in their APN coursework specific to providing gynecological and reproductive healthcare services to women with differing disabilities such as multiple sclerosis, spinal cord injury, obesity, and congenital disability.
4. Few APNs reported having equipment to help lift patients, accessible wheelchair scales, or examination tables that raised and lowered.

The drawbacks common to all mailed surveys existed here: With self-report data, surveys are returned only by those who are motivated to do so, and the chance that the nonresponder population is different than responders in important ways may affect study conclusions. However, the information provided by nearly 750 APNs remains valuable and important (taking into account missing data). Another drawback to mail-based surveys is the lack of control over some issues. For example, it was discovered well into the survey process that two pages of the survey were sticking together, and many respondents inadvertently skipped these pages. Postcards that alerted recipients about these pages were mailed in an attempt to address this issue as soon as it was noted. Consequently, data were missing for questions that appeared on stuck-together pages.

Knowledge questions used in this study should be reevaluated to see if they measure the salient information required to offer women's healthcare services to women with disabilities. 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 women with disabilities. Based on the findings of this study, further research is warranted. More knowledge is needed on APN practice in states other than Texas because there may be regional differences within and between states. It also is possible that the same issues exist among other provider groups such as physician's assistants, doctors of osteopathy, and medical doctors.

# APN Knowledge, Self-Efficacy, and Practices in Providing Women's Healthcare Services to Women with Disabilities

Research into APN curricula also is warranted. The type of education about disability that should be a core component of all APN programs is unknown. It also is not known where APN students can best obtain the knowledge needed to safely care for disabled women and the core knowledge that is required. There is also a question about whether APNs who are not specially trained should offer services to women with disabilities. Research into practice environments should continue until all environments are fully accessible to the disabled population. Research questions could include: Why do healthcare facilities remain less than fully accessible to the disabled? What interventions could help improve accessibility? Should women with disabilities receive all services from those who specialize in disability care, such as physiatrists and APNs who specialize in rehabilitation? How can women with disabilities in rural areas best receive care?

Perceptions of the client also are important. Are women with disabilities receiving services from APNs? Are they comfortable with the care they receive? Do they feel that their APN is competent and can see beyond their disability? What recommendations would women with disabilities make to improve APN practices? Research into outcomes of care provided by APNs also is indicated. Do women with disabilities who receive services from APNs have outcomes comparable to those who receive services from physicians?

## Conclusion

APNs are important providers of primary health care to women with disabilities. APNs are not fully supported by their education and care environment to provide competent care to this population. Until changes are made, the provision of care for women with disabilities by APNs may be less than optimal.

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