

DEMOGRAPHIC PROFILES OF CERTIFIED NURSE–MIDWIVES, CERTIFIED REGISTERED NURSE ANESTHETISTS, AND NURSE PRACTITIONERS: REFLECTIONS ON IMPLICATIONS FOR UNIFORM EDUCATION AND REGULATION

THERESA ANN SIPE, PhD, CNM, MPH,* JUDITH T. FULLERTON, PhD, CNM, FACNM,† AND KERRI DURNELL SCHUILING, PhD, CNM, WHCNP‡

There is wide variability in regulatory authority, basic education requirements, and titling for nurses in advanced practice roles, that is, certified nurse–midwives (CNMs), certified registered nurse anesthetists (CRNAs), and nurse practitioners (NPs). There is current advocacy for a common identity for advanced practice nurses (APNs), including uniform entry into practice requirements (the doctor of nursing practice [DNP]). Membership survey data were extracted to generate a contemporary profile of characteristics of these categories of practitioners. The APN groups are similar in age ($M = 47\text{--}48$ years) and race (predominantly Caucasian), with the largest proportions of all groups clustering in the age range of 51–54 years. There are more men in the CRNA group (45%). CNMs have the highest proportion of doctoral degrees (4.7%). CRNAs command the highest annual average salary (\$140,000). Membership survey data can monitor progress toward implementation of proposed educational and regulatory changes. The effect of these proposals on the availability of an experienced APN mentor workforce for DPN students and the availability of an APN workforce for clients remains largely unknown. Standardized indicators of performance and client outcomes may enhance current data collection of membership demographics and enable precise evaluation of outcomes and impact of APN care. (Index words: Uniform education; Advanced nursing practice; Regulatory authority) *J Prof Nurs* 25:178–85, 2009. © 2009 Elsevier Inc. All rights reserved.

THE SCOPE AND function of nursing practice has greatly expanded over the last century. Health care system restructuring in many global settings has led to the emergence of new roles and new relationships for nurses within health facilities, within ambulatory care settings, and in the community. The formalization of the advanced

practice nursing role in the United States has focused on four clinical practice domains: nurse–midwife, nurse anesthetist, nurse practitioner (NP), and clinical nurse specialist (CNS). There is wide variability in approaches to regulatory authority, basic education requirements, titling, and role autonomy (Bryant-Lukosius, Dicenso, Browne, & Pinelli, 2004).

The role of the midwife is timeless in history as women have typically sought supportive care during the birthing process. Historians have found evidence of the role of midwives in ancient Hindu and biblical writings (Brucker, 2000). The integration of midwifery into the professional nursing practice role has become more visible in the United States only since the early 1900s.

*Adjunct Professor, Rollins School of Public Health, Emory University, Atlanta, GA.

†Project Concern International, San Diego, CA.

‡Northern Michigan University, Marquette, MI.

Address correspondence to Dr. Sipe: Rollins School of Public Health, Emory University, 401 Lakeshore Drive, Berkeley Lake, GA 30096-3033. E-mail: theresa@sipe.org
8755-7223/\$ - see front matter

However, expansion of the role of the certified nurse-midwife (CNM) as an advanced practice nurse (APN) continues to develop in parallel with the traditional birth-support role of the professional midwife. CNMs are authorized under advanced nurse practice (ANP) regulatory authority in 45 states and the District of Columbia (DC; Phillips, 2006).

Certified registered nurse anesthetists (CRNAs) trace their history to the late 1800s. The nurse anesthetist role is acknowledged as the oldest advanced nursing specialty but was not formalized until the middle of the 20th century. The CRNA credential came into existence in 1956. CRNAs are authorized under ANP regulatory authority in 44 states and the DC (Phillips, 2006).

The NP role was crafted in the 1960s through deliberate and measured strategies to demonstrate the impact of the nursing scope of practice on access to primary health care services for children. The NP role has greatly expanded in the last half century and now includes a focus on population groups of all ages. The genesis of the CNS is less distinct, but it is widely accepted that the role evolved concurrently with that of the APN, and there is some degree of role overlap or lack of clear distinction between the roles in both title and practice (Hamric, Spross, & Hanson, 2004). Selected CNS specialties are authorized and regulated as APNs in 41 states and the DC (Phillips, 2007). NPs have title protection in all 50 states and the DC. Regulatory authority is vested in boards of nursing in 45 of these states and shared with the board of medicine in 5 others (Phillips, 2007).

It has been suggested that adoption of a common identity for all nurses in advanced practice would help both members of the profession and the consumer public (Macdonald, Herbert, & Thibeault, 2006). The National Council of State Boards of Nursing (NCSBN, 2006) recently promulgated a vision statement that advocates for a uniform regulatory model for entry into practice for three of the four categories of advanced practice registered nurses (nurse anesthetist, nurse-midwife, and NP; NCSBN, 2006). In addition, the American Association of Colleges of Nursing (AACN) and the National Organization of Nurse Practitioner Faculties (NONPF) both advocate that a doctor of nursing practice (DNP) degree become the standard terminal clinical degree for NP specialties (AACN, 2004; NONPF, 2006a). Furthermore, the AACN identifies 2015 as the date by which all APN education programs should be at the practice doctorate level, establishing the DNP as the requisite degree for entry into practice. NONPF does not identify a finite deadline for when the NP programs should be at the doctoral level. These proposals are currently undergoing wide deliberation and debate. Some of the discussion is philosophical in nature (Ballard, 2006; Lenz, 2005). However, much of this discussion focuses on the practical implications for education and legislation should these changes be enacted (Chase & Pruitt, 2006; Clinton & Spherhac, 2006; Fulton & Lyon, 2005).

This article presents a profile of demographic, education, practice, and salary characteristics for CNMs, CRNAs, and NPs. The characteristics of the three groups of APNs are compared with the general registered nurse (RN) popula-

tion because entry into these advanced practitioner groups requires first licensure as an RN. The intention of the article is to present the current similarities and differences in the three groups of APNs as a background for reflection upon the challenges inherent in the proposed educational and regulatory changes that promote a common identity.

Method

The data used in this article were obtained through surveys conducted by membership organizations of each of the three advanced practice nursing groups. Additional data are drawn from a recent national survey of RNs.

The American College of Nurse-Midwives (ACNM), the national organization for CNMs and certified midwives (CMs), conducts annual membership surveys consisting of 12 categorical questions of demographics, education level, employment and practice patterns, and licensure information (Schuiling, Sipe, & Fullerton, 2005). New members receive the survey with their initial application and annually thereafter. Because membership is on a rolling basis, renewal notices are sent throughout the year, and life members receive the survey each August.

Survey data were collected from 6,447 members who renewed or initiated their ACNM membership in 2005 (5,749 CNMs, 30 CMs, and 688 CNM and CM students in ACNM-accredited programs). The survey response rate cannot be determined with accuracy due to the rolling method of membership renewals. CMs were incorporated into the ACNM membership in 1990. However, the percentage of CMs is quite small (<0.1%), and CMs and students were removed from the data. Thus, this report contains profiles of CNMs only.

The American Association of Nurse Anesthetists (AANA, 2007) conducts an annual survey of members. Data used in this analysis are from the 2005 AANA Practice Profile Survey (InforMedix Marketing Research, Inc., 2006), which consists of items regarding demographics, compensation, and practice information. The survey was mailed to 29,486 AANA members in August 2005, and data were collected from September 2005 through January 2006. A total of 17,171 AANA members participated in the survey, representing a response rate of 58% (L. Rivera, personal communication, April 15, 2007).

The American Academy of Nurse Practitioners (AANP) conducts a survey of NPs on a regular basis. CNSs are not specifically included in this survey. Data used in this analysis are from the survey conducted in August 2004, which consists of 65 items including demographics, educational preparation, salaries, and benefits, as well as patient and practice variables (Goolsby, 2005). The survey was mailed to 23,850 NPs who were randomly selected from the AANP National NP Database of approximately 97,000 NPs recognized to practice in the United States. The random sample was stratified on clinical specialties, with oversampling of small specialties. The overall response rate was 69% ($n = 16,543$ NPs). Only the 16,042 respondents who were actively practicing were included in the results.

The U.S. Department of Health and Human Services (DHHS), Health Resources and Services Administration, Bureau of Health Professions conducts the National Sample Survey of Registered Nurses, which is the most comprehensive survey of RNs with current licenses to practice in the United States (U.S. DHHS, Health Resources and Services Administration, 2004). The survey was first conducted in 1977 and is repeated every 3–4 years. For each survey, a sampling frame is compiled from files of all 50 state boards of nursing and the District of Columbia, with weighting procedures that provide an unduplicated count of licensed RNs while omitting multiple licenses. Data used in this analysis are from the 2004 National Sample Survey of Registered Nurses. The survey was mailed to a probability sample of 50,691 RNs with current licenses to practice in the United States whether or not they are employed in nursing. A total of 35,724 RNs responded (response rate = 70.5%), representing all 50 states and the District of Columbia. The responses were weighted, and sampling errors associated with each characteristic were calculated.

Membership and practice surveys are considered exempt for review by institutional review boards. Confidentiality is ensured because personal identifying information is not reported to researchers using the data. Completion and return of the survey are considered evidence of agreement to participate (Schuiling et al., 2005).

Results

Gender and Race/Ethnicity

Demographic characteristics among the three groups of nurses in advanced practice are similar for mean age and race but differ on gender. The CNM and NP groups are predominately women (99% and 95%, respectively), whereas the CRNA group is nearly half men (44.5%).

Similar to the CNM and NP group, men comprise an estimated 5.7% of the general RN sample. Most of the providers in each advanced practice group are Caucasian. NPs have the highest amount of ethnic diversity among the three APN groups (Table 1), but they are not as diverse as the estimated population of licensed RNs.

Age and Years of Experience

The mean age is similar for the three groups of nurses in advanced practice, CNMs (48.0 years), CRNAs (48.2 years), and NPs (47.7 years), whereas the RN population mean is estimated to be 46.8 years. The age distribution varies only slightly among the groups. However, there is an age cluster of 50–54 years that represents the largest proportion of practitioners for each of the three groups. Less than 8% of CNM and NP groups are 60 years or older, whereas 12% of the CRNA group are 60 years or older (Figure 1).

Conversely, the number of years in practice in each group varies widely. Nearly 40% of the CRNAs have practiced for 20 or more years, whereas CNMs and NPs have a much smaller proportion in this category (21% and 14%, respectively). One third or more of the NP workforce have 5 or less years of experience as opposed to CNMs and CRNAs who have not quite one quarter of their workforce with 5 years or less of experience (Figure 2). Information on years of experience is not available for the RN sample.

Education

Most providers in all groups of advanced practice nursing hold a master's degree as their highest degree. CNMs have a higher proportion of their membership holding a doctoral degree (4.8%) as compared with CRNAs (1.2%) and NPs (3.6%), whereas the RN population is less likely to hold a master's or doctoral degree (estimated to be 13% combined; Table 1).

Table 1. Ethnicity and Education Level of CNMs, CRNAs, and NPs Among Those Employed (Full-Time and Part-Time) and All Sampled RNs

	CNMs	CRNAs	NPs	RNs *
Race/Ethnicity †				
American Indian/Alaskan Native	0.4	0.5	1.3	0.4
Asian/Pacific Islander	1.0	2.6	2.7	3.3
Black/African American	3.2	2.2	2.7	4.6
Caucasian/European American	95.2	92.2	89.4	88.4
Hispanic/Latina	0.9	1.5	3.0	1.8
Other	0.3	0.9	–	1.5
Highest academic degree				
Diploma	3.1	19.4	2.6	17.5
Associate	3.0	0.0	2.2	33.7
Bachelor's	10.8	24.8	8.1	34.2
Master's	78.3	54.6	84.8	13.0 ‡
Doctorate	4.8	1.2	3.6	

Note. Values are in percentage.

* Estimated percentages for the entire RN population employed part-time, employed full-time, or not employed in nursing.

† Multiple responses possible.

‡ Contains results for master's and doctorate.

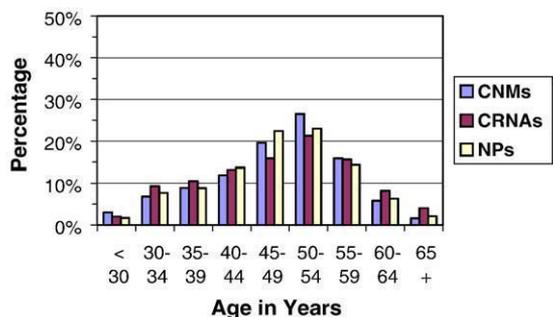


Figure 1. Age distribution of CNMs, CRNAs, and NPs.

Employment

The largest employers among the three groups of nurses in advanced practice are physician-owned practices and hospitals. A larger proportion of CRNAs work for nurse-owned groups (which includes self-employed). The largest employer for the RN population is hospitals (estimated 56.2%) followed by community and public health settings (including state and local health departments, visiting nursing services, and other health agencies; Figure 3).

Practice Privileges

Thirty-nine percent of NPs reported having hospital practice privileges, whereas 13% have privileges in long-term care facilities. More than 21% of NPs reported having admission–discharge privileges (Goolsby, 2005). The variable of hospital privileges is not available for CNMs or CRNAs. The CNM variable most closely related to hospital privileges is “attending births in a hospital setting”, which presumes hospital practice privileges (81.9%). For CRNAs, the variables most closely associated or suggestive of hospital privileges are work setting for CRNAs in hospitals (82%), ambulatory surgical centers (9.6%), or university hospitals (6.3%).

Salary

Certified nurse–midwives and NPs who are employed full-time have similar mean salaries in the \$70,000 range. However, CRNAs employed full-time earn double that amount on average (\$140,000). These data represent national averages, and regional variation has been documented (Lacey & Nooney, 2006; Newland,

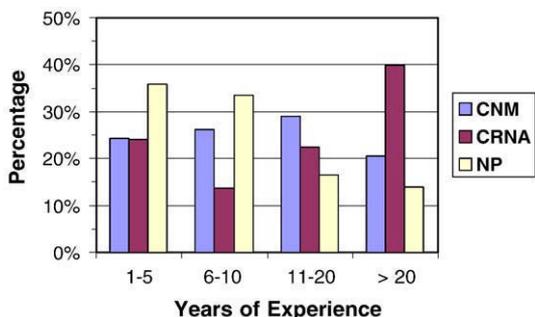


Figure 2. Years of experience distribution for CNMs, CRNAs, and NPs.

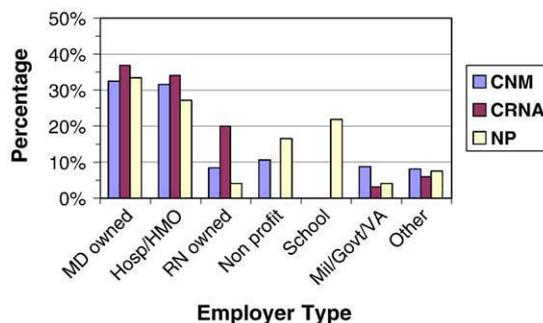


Figure 3. Employer types for CNMs, CRNAs, and NPs. RN owned includes self-employed. Multiple responses are possible for the NP group.

2006). Information concerning the range of salaries is not available in the survey membership data of the three groups of nurses in advanced practice. The actual average annual earnings of RNs employed full-time are \$57,784 (U.S. DHHS, Health Resources and Services Administration, 2004).

Limitations

Publicly reported data were used for CRNAs, NPs, and the estimated RN population. Data could not be manipulated at an individual level to explore associations and trends or to precisely align data for several variables of interest. However, available data did lend themselves to provide accurate comparison on the variables reported in this article.

Data concerning highest degree in the ACNM membership database have been externally verified by social marketing entities and are known to underreport doctorally prepared CNMs. Therefore, information for this specific variable was augmented with results from a more recent Web-based survey as this variable is critical to this discussion. Lastly, the AANP national NP sample survey and the National Survey Sample of Registered Nurses were collected in 2004, whereas the survey data from the other groups were collected in 2005. However, the 1-year difference does not appear to impact the variables of interest.

Discussion

Reflections on the Demographic Profile

It has long been known that nursing is a predominantly female profession, and therefore, it is not surprising that the CNM, NP, and general RN samples are each 95% or more female. It is also known that men in nursing tend to aggregate within certain practice specialties, and nurse anesthesia is one such specialty as the CRNA group is nearly half men (44.5%). Another difference is salary, and the CRNA group commands a higher mean salary. This phenomenon is explained by Rhoads (1994) as women being more attracted to jobs that require a good deal of interpersonal interaction, whereas salary ranks are more important to men than to women. Boughin (2001) suggested that male nurses in the United States are more likely than female nurses to realize their economic power.

Her study of student nurses in the United States identified that the most consistent difference between male and female nursing students regarding work expectations was that men clearly indicate that they chose nursing because they expected a good salary. In addition, although both men and women in the study were motivated by an interest in power, women expressed an interest in empowering patients, whereas the men were more inclined to empower themselves as professionals. It is not clear if more men are drawn to the CRNA specialty practice because the salaries are higher or if the salaries are higher because more men are at the negotiating table. However, Boughin's study suggests that men are more comfortable with issues surrounding salary and working conditions than are women.

The mean age is similar for all groups of advanced practice nursing. Nevertheless, the largest age cluster of each APN group is above the age of 50 years. Continued employment after the age of 60 years is notable only among CRNAs (data not shown). This may have a particular workforce implication for the near future as CNMs and NPs lose a valuable cadre of experienced practitioners and clinical mentors to retirement.

The number of years in practice does vary among the three groups of nurses in advanced practice, and taken as a whole, the figures indicate that the availability of experienced mentors for students in these specialties and for young professionals just entering the specialty may not be readily available in the near future (Greene & Puetzer, 2002; Hom, 2005). It appears that there is a greater proportion of NPs newly entering the profession but a smaller proportion having 20 or more years of experience. There appears to be a dip for the CRNA group at 6–10 years of experience. This is thought to have been caused by training rates below attrition rates from approximately 1993–2000 due to unfavorable environments for nurse anesthesia program growth and available clinical sites resulting in program closure (L. Rivera, personal communication, April 15, 2007). Nurse–Midwifery education programs have also experienced closure of education programs and decline in student enrollment in the recent decade (Fullerton, Schuiling, & Sipe, 2005), although NPs have not. This may account in part for the lower proportion of CNMs with 0–5 years of experience as compared with the NPs.

Certified registered nurse anesthetists represent the highest proportion of APNs who have 20 or more years of experience, which serves as a proxy for mentorship skill and ability. This finding may reflect the number of men in the CRNA profession. Men do not leave a profession to raise children as often as do women or suffer a wage penalty as a consequence (Kalist, 2002). Indeed, a study to determine the supply, demand, and equilibrium for CRNAs in the workplace identified a high exit rate for female CRNAs in their late 20s and early 30s due to a temporary exit from the workforce to raise children (Merwin & Jordan, 2006).

It is not surprising that hospitals are the largest employer for the RN population. Similarly, hospitals are

also one of the primary employers for the three groups of nurses in advanced practice. Presently, physician-owned practices are another major employer for these groups. However, physician practices as primary employers of APNs may change in the future as more practices are purchased by hospitals and physicians become hospital employees. In addition, more APNs, particularly acute care NPs (a subset of APNs), reported employment in collaborative practice settings (i.e., copractice settings), growing from 17% in 1996 to 25% in 2001 (Kleinpell, 2005). These collaborative practice settings offer increased negotiation opportunities compared with set salaries and benefits found in hospital settings (Kleinpell, 2006).

Reflections on the Potential Impact of Common Regulatory Requirements

Registered nurses in the RN sample survey hold associate degrees (34%) or bachelor's degrees (34%) in higher proportion than other degrees (master's and doctoral degrees = 13%), whereas most of the three groups of nurses in advanced practice hold master's degrees (CNMs = 78%, CRNAs = 55%, and NPs = 85%). The higher proportion of master's degrees is almost certainly due to the fact that this degree is currently the required entry point into each advanced practice role in most of the United States (Phillips, 2007). Despite the known under-reporting of doctoral degrees in the CNM group, this group has the highest proportion of members holding a doctoral degree (4.8%) as compared with the other two groups of advanced practice nurses (CRNAs = 1.2% and NPs = 3.6%). A recent demographic profile of CRNAs in the state of Washington revealed that none of the 283 respondents were doctorally prepared (Kaplan, Brown, Andrilla, & Hart, 2007).

The fact that a substantial majority of currently practicing APNs hold master's degrees and not doctoral degrees has major implications for the transition to the DNP as the entry-into-practice level (Draye, Acker, & Zimmer, 2006), specifically, whether existing APN faculty with master of science in nursing degrees will be required to obtain a doctoral degree. The AACN observed that many faculty members teaching presently in advanced practice programs will be involved in teaching DNP students, particularly at the beginning level. However, the AACN also stated that there will be components of the DNP that will demand doctorally prepared faculty. Specific qualifications for faculty in practice doctorate programs need to reflect the course responsibility. For example, faculty members teaching clinical courses need to have current certification in the related area of clinical practice and relevant clinical experience. For courses that are considered beyond the master's level, the faculty member also needs to have a doctorate in addition to the criteria for clinical competence. All faculty members who teach inquiry, research methods, and advise or chair the practice doctorate students' inquiry or scholarly projects should have doctoral degrees and be actively engaged in their own scholarly projects (AACN, 2006).

The recommendations regarding faculty qualifications for teaching in a DNP program are clarified even further by the [NONPF \(2006b\)](#), stating that at a “yet to be determined time in the future, all faculty teaching in practice doctorate programs should be doctorally prepared.” NONPF further noted the following:

During the period of transition from master's level programs to doctoral level programs, master's prepared faculty who have been teaching graduate level NP and APN courses will likely be needed to teach the same or similar courses in the first two years of practice doctorate programs. However even during the transition period, doctorally prepared faculty should be responsible for all courses that are beyond the master's specialty level.

A concerted effort will be required over the next decade to prepare both academic and clinical educators for this purpose, building from the current base of nurses in advanced practice.

Supporters of the DNP identify the need for research scientists (doctor of philosophy [PhD]) and practitioner–scientists. It has been reported that, although the number of master's prepared nurses continues to grow, the number of nurses acquiring PhDs is stagnant. Authors of these studies suggest that the real drivers of the DNP are nurses themselves because, although enrollments in PhD programs are not increasing, there is sustained enrollment by master's prepared nurses to continue their education in pathways other than traditional PhD programs ([Hathaway, Jacob, Stegbauer, Thompson, & Graff, 2006](#); [Radzyninski, 2005](#)). There is also some limited evidence revealing a rise in the number of PhD students when a DNP program is put in place ([Williams & Hathaway, 2006](#)).

Debate abounds about whether or not the mandate for a DNP by 2015 will detract potential students from entering advance practice programs. The extended period of educational enrollment that will be required for the DNP educational pathway will affect the costs of education for students and institutions. There is the possibility that the time and other expenses involved in acquiring the advanced degree may preclude some nurses from pursuing further education to become an APN. This could result in a smaller workforce of APNs, which, in turn, may present a challenge to access to patient care.

However, it has been well documented that the time and credit hours it now takes a nurse to earn an advanced practice master's degree have continued to grow. Data from AACN's 2000–2001 collaborative curriculum survey of NP programs found that, from 1995 to 2000, NP programs increased didactic content by 72 hours and clinical hours by 36 hours, although semester credit hours required for the master's degree remained stable ([AACN & NONPF, 2002](#)). The current curricula for many DNP programs are 3 years in length, thus eroding the argument that earning the practice doctorate will take a student significantly longer to complete than current master's programs.

Some in the midwifery profession would argue that the DNP does not represent the best education option for the profession itself because some education programs are organized outside of nursing. Moreover, legislative authority for practice is also outside of nursing in a number of states, and CM members of the ACNM are not required to be first prepared as nurses. The midwifery profession has initiated its own inquiry into the feasibility and desirability of a clinical doctorate in midwifery ([ACNM, 2007](#)).

Little is known about the cost effectiveness of obtaining a practice doctorate. Proponents of the DNP argue that the movement to a practice doctorate embodies a higher level of overall knowledge and responsibility with the same accountability and scope of practice as other practice doctorates ([Mundlinger, 2005](#)). In other words, it is suggested that the move to the DNP will provide parity with other clinicians who hold practice doctorates, such as pharmacists (PharmD), psychologists (PsyD), and physical therapists (DPT). Nevertheless, the status that will be afforded the DNP by other providers and by the consumer public remains largely unknown at present. Clients, other health care providers, and most importantly, employers will need to embrace and value the DNP ([Keepnews, 2006](#)). Therefore, whether the additional time and cost of a practice doctorate will lead to higher salaries remains to be determined. However, it can reasonably be predicted that practitioners who enter the marketplace with an advanced degree will expect compensation commensurate with that higher degree, and this fact can certainly be expected to generate deliberation—and perhaps concern—by those who deal with issues related to health care financing and budgeting.

Conclusion

The effect of the proposed educational and regulatory changes remains largely unknown. Factors that hinder or facilitate the implementation of the APN role include role definition and expectations, which might be addressed by making progress toward establishment of a uniform approach to education, titling, and regulation ([Jones, 2005](#)) and which can be monitored through periodic conduct of membership surveys, such as those that are used in this comparison. The point that must not be lost in all of this debate is the health and well-being of the recipients of APN care. Perhaps the professions should expand the focus of these surveys to center on common intended outcomes for their clients. The broader interest of the professions might be better served by extending the scope of inquiry of these surveys from basic issues, such as place of employment and type of employer, to address issues critical to the quality of professional practice, including standardized indicators of performance ([Devane, Begley, Clarke, Horey, & OBoyle, 2007](#); [Jenkins, 2003](#)). Accurate attribution within billing systems to the practitioner who was the actual provider of services would enable generation of richer data concerning the scope of APN practice and enable more precise evaluation

of outcomes and impact of APN care (Diers, 2007). These data would serve a very useful purpose in informing the debate about the role and status of APNs in the contemporary and evolving health care system.

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