

ORIGINAL RESEARCH

Nurse practitioner perceptions of the impact of physician oversight on quality and safety of nurse practitioner practice

Bobby Lowery, PhD, FNP-BC, FAANP (Practice Consultant)¹, Elaine Scott, PhD, RN, NE-BC (Associate Professor)², & Mel Swanson, PhD (Professor and Chief Statistician)³

¹North Carolina Board of Nursing, Raleigh, North Carolina

²College of Nursing, East Carolina University, Greenville, North Carolina

³Office of Research and Creative Activity, College of Nursing, East Carolina University, Greenville, North Carolina

Keywords

Nurse practitioners; regulation; safety; quality; physicians.

Correspondence

Bobby Lowery, PhD, FNP-BC, FAANP, North Carolina Board of Nursing, 4516 Lake Boone Trail, Raleigh, NC 27607. Tel: 919-782-3211 X 290; Fax: 919-781-9461; E-mail: Blowery@ncbon.com

Received: 16 February 2015;

accepted: 6 November 2015

doi: 10.1002/2327-6924.12336

Abstract

Purpose: Nurse practitioner (NP) regulation and physician oversight (PO) of NP practice are inextricably intertwined. A flexible, well-prepared workforce is needed to meet consumer healthcare needs. All outcome studies have revealed that NPs provide safe, effective, quality care with outcomes equal to or better than that of physicians or physician assistants. Variability in state regulation of NP practice limits the full deployment of these proven healthcare providers, threatens the quality and safety of NP-delivered care, and limits consumer choice in healthcare access. The purpose of this study was to document NP perceptions of the impact of PO on the safety and quality of NP practice.

Data sources: A total of 1139 NP respondents completed an exploratory survey, *Impact of Regulatory Requirements for Physician Oversight on Nurse Practitioner Practice*. Participants were asked their perceptions of the impact of PO on patient care and NP practice. Descriptive statistics on the state of residence regulatory requirements and personal demographics were also collected.

Conclusions: NP perceptions of the impact of PO on the safety and quality of NP practice were predicted by NP experience and state regulatory environment ranking.

Implications for practice: The results of this study have implications for educators, policy makers, and nursing advocacy groups seeking to increase access to care in U.S. populations. Study participants perceived that requirements for PO impacted their practice and may jeopardize patient safety. An understanding of the impact of influences on regulatory processes is critical to ensuring full deployment of NPs as interprofessional leaders to meet current and future healthcare access.

Introduction

Current and evolving healthcare delivery systems call for a flexible, well-prepared workforce to meet increasingly complex consumer healthcare needs (Cronenwett & Dzau, 2010; Institute of Medicine, 2001, 2010; Instone & Palmer, 2013). It is well established that nurse practitioners (NPs) provide high-quality, accountable, safe, and effective care at least as well as physician or physician assistant colleagues (Dierick-van Daele, Metsemakers, Derckx, Spreeuwenberg, & Vrijhoef, 2009; Herrick, 2000; Lenz, Munding, Kane, Hopkins, & Lin, 2004; Munding et al., 2000; O'Grady, 2008; Ohman-Strickland et al., 2008). Over the last decade the available NP workforce has nearly

doubled in the United States (American Association of Nurse Practitioners [AANP], 2015) but there has also been a doubling of the number of Americans who forgo or delay needed health care (Nolte & McKee, 2011). However, the nursing workforce, and more particularly the NP workforce, has not been mobilized to meet the primary care needs of Americans. Scope of practice for NPs is defined by state law and regulated through many different state organizations, ranging from the board of nursing (BON) to an umbrella of organizations including medical boards. For the purposes of this article, the combination of legislation, regulatory rules and interpretations that carry the weight of law, and professional governance will be called

regulatory processes. Regulatory processes that require physician involvement in NP practice contribute to limiting consumer access to safe, quality NP-delivered care (Rudner Lugo, O'Grady, Hodnicki, & Hanson, 2010; Safriet, 2010).

NPs are uniquely positioned to meet the burgeoning healthcare needs in the United States as evidenced by decades of research demonstrating the safe, effective, high quality of NP-delivered care (Agosta, 2009; Center to Champion Nursing in America, 2010; Institute of Medicine, 2010). These competent practitioners could provide a broad continuum of health services for consumers; however, inconsistent and restrictive state regulation limits the scope of practice for the more than 192,000 NPs (AANP, 2012; Institute of Medicine, 2010; Klein, 2007). This is particularly important because trends in physician practice include a reduction in the number of hours worked per week and a lack of service availability on weekends or in the evenings (Elliott, 2011). A recent report by the National Association of Community Health Centers reported "sixty million Americans do not have adequate access to primary care because of shortages of such physicians in their communities" (National Association of Community Health Centers, 2012). Yet physicians continue to contest the full utilization of other qualified providers educated to deliver primary care and advocate for retaining their existing scope of practice.

Background

In the 1850s the medical profession used the legislative process to establish a broad-based scope of practice for physicians and created the first professional regulatory board (NC Medical Board, 2009). This action meant subsequent health professions, such as nurses and physical therapists, had to carve a professional scope of practice out of this all-encompassing medical practice act. According to legal scholar Barbara Safriet, challenging this legislative outcome has been difficult and compromised by three factors: legislative inertia, scope of practice fatigue, and organized opposition to change (2010). And, these legislative challenges must be undertaken state by state.

Nursing first addressed self-regulation and standardization of scope of practice in the general nursing population. It took tremendous effort to assure state BONs were regulating entry level practice and 26 state BONs remain situated in umbrella boards with other professions involved in the regulation of nursing practice (NCSBN, 2014).

NPs have been less successful in achieving self-regulation, resulting in multiple regulatory processes across the United States. Most professions, such as psychologists, physical therapists, and audiologists are regulated using representatives from within the discipline. This

is logical given that regulation of a professional group requires specialized licensure, education, and certification in the competencies of that particular profession.

Despite legislative mandates ensuring self-regulation of other professions, wide variation exists in how and by whom advanced practice registered nurses (APRNs) are regulated. NP regulatory processes vary by state, making NP utilization and practice authority inconsistent across the country. The variability in state regulation of NP practice not only contributes to access issues, it may also lead to inconsistencies in NP scope of practice, prescriptive authority, professional autonomy, mobility and reimbursement eligibility, and ability to maximize consumer access to health care (AANP, 2013; Bahadori & Fitzpatrick, 2009; Center to Champion Nursing in America, 2010; Hansen-Turton, Ritter, Rothman, & Valdez, 2006; Institute of Medicine, 2010; Lugo, O'Grady, Hodnicki, & Hanson, 2007; Mullinix & Bucholtz, 2009; NCSBN, 2008; Whelan, 2000).

While there has been momentum in successful legislation supporting full practice authority (FPA) for NP practice, challenges remain. Changes in the state regulatory environment (SRE) since the time of this study can be seen by comparing Figures 1 and 2 (AANP, 2015). Physician involvement is still commonplace in NP regulatory processes (AANP, 2015). At the time of this study, 35 states had legislation requiring physician oversight (PO) of some component of NP practice as noted in Figure 1. Currently, 28 states continue to require some degree of physician involvement and these states are found in Figure 2. Physician involvement in NP regulatory processes varies from state to state and can include mandated supervision, collaboration, and protocol approval, as well as prescriptive authority approval and signing practice-related forms requiring clinician of record signature.

In response to this dilemma, the national consensus model for APRN regulation has been recommended for implementation by all jurisdictional regulatory bodies (NCSBN, 2008). Consistent implementation of the consensus model may lead to better consumer understanding and access to NPs and other APRNs. Furthermore, public safety will be enhanced by consistent licensure requirements, education accreditation for certification, and licensure into the APRN role. This model recommends an independent scope of practice for NPs within their particular role and population focus (NCSBN, 2008). In contrast, continued regulation requiring PO of NP practice places NPs in positions of dependence on the medical profession for practice parameters for which NPs have been educated and credentialed. Additionally, any regulation requiring PO may jeopardize patient safety and quality by confounding provider accountability and safety in care management (Rudner Lugo et al., 2010).

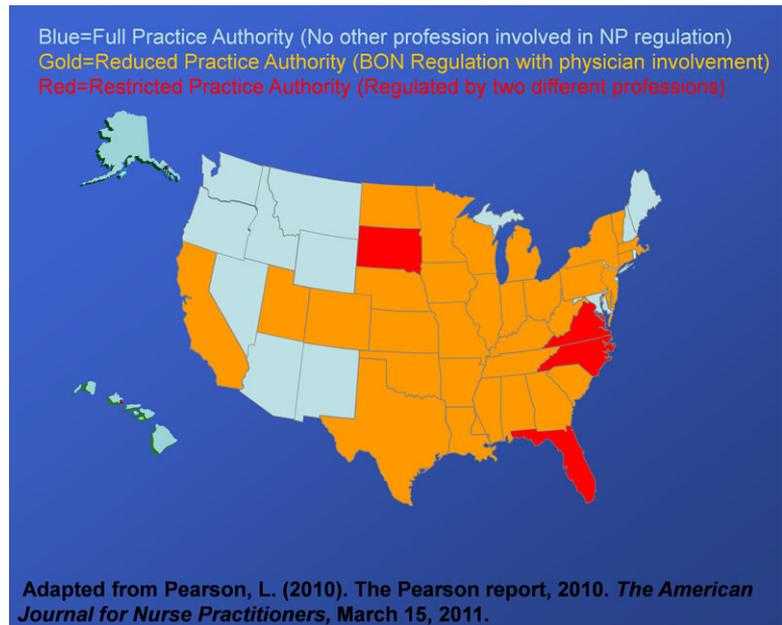


Figure 1 State regulatory map.

Regulatory research demonstrates that regulation based in science rather than sociopolitical norms is evidence-based regulation that supports FPA for NPs, increasing consumer choice for these safe, proven healthcare providers (Lugo et al., 2007; Rudner Lugo et al., 2010). FPA protects the public; empowers clinicians to practice to the full extent of their licensure, education, and credentials; and promotes professional autonomy (Gillman & Koslov, 2014; NCSBN, 2008). In contrast, restrictive regulatory models are derived from sociopolitical influences and have evolved in a nonevidenced manner. Many of these models such as joint regulation, a regulatory model wherein two different professions govern NP practice, restrict regulation, limit NP practice, and reduce consumer access to NP-delivered care (Center to Champion Nursing in America, 2010; Hansen-Turton et al., 2006; Institute of Medicine, 2010; Lugo et al., 2007).

Historically, the inequity experienced by NPs in practicing to the full extent of their licensure, certification, and education has been of limited concern to those outside of the nursing profession. The potential of new reimbursement sources of care via health reform and the critical reality of healthcare disparity in the United States now combine to make full utilization of all healthcare providers a common discussion among many key regulatory leaders and policy makers (Center to Champion Nursing in America, 2010; Cronenwett & Dzau, 2010; Gillman & Koslov, 2014; Institute of Medicine, 2010; Lowery & Varnam, 2011; Lugo et al., 2007; NCIOM Health Access Study Group, 2009; NCSBN, 2008). Historical and sociopolitical norms surrounding healthcare delivery are

challenged by current economic pressures and the convergence of skill sets and professional scopes of practice, leading to new challenges and opportunities to revise how health care is delivered (Mullinix & Bucholtz, 2009; Ricketts, 2011).

While well-designed research has documented elements of the regulatory environment, no research has documented NP's perception of the impact restrictive regulation has on the quality and safety of NP practice. Thus, the purpose of this study was to understand NPs' perception of the impact varying levels of PO had on the quality and safety of patient care delivered by NPs, consumer access to NP-delivered care, and cost. To categorize these variations in PO for this study, legislated NP scope of practice was grouped into three major categories.

Full practice

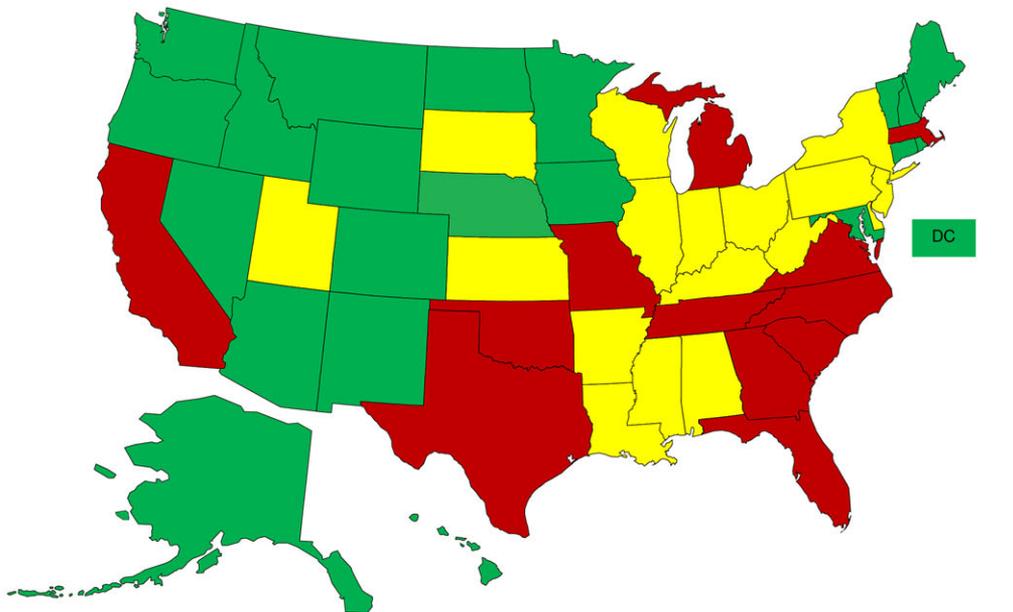
State practice and licensure law provides for NPs to evaluate patients, diagnose, order and interpret diagnostic tests, initiate and manage treatments—including prescribing medications—under the exclusive licensure authority of the state BON. This is the model recommended by the Institute of Medicine and National Council of State BONs.

Reduced practice

State practice and licensure law reduces the ability of NPs to engage in at least one element of NP practice and requires a regulated collaborative agreement with an outside health discipline in order for the NP to provide patient care.



2015 Nurse Practitioner State Practice Environment



- Full Practice**
 State practice and licensure law provides for nurse practitioners to evaluate patients, diagnose, order and interpret diagnostic tests, initiate and manage treatments—including prescribing medications—under the exclusive licensure authority of the state board of nursing. This is the model recommended by the Institute of Medicine and National Council of State Boards of Nursing.

- Reduced Practice**
 State practice and licensure law reduces the ability of nurse practitioners to engage in at least one element of NP practice. State requires a regulated collaborative agreement with an outside health discipline in order for the NP to provide patient care.

- Restricted Practice**
 State practice and licensure law restricts the ability of a nurse practitioner to engage in at least one element of NP practice. State requires supervision, delegation, or team-management by an outside health discipline in order for the NP to provide patient care.

Source: State Nurse Practice Acts and Administrative Rules, 2015
 © American Association of Nurse Practitioners, 2015

Updated: 5.12.20

Figure 2 AANP state practice environment map.

Restricted practice

State practice and licensure law restricts the ability of an NP to engage in at least one element of NP practice and requires supervision, delegation, or team management by an outside health discipline in order for the NP to provide patient care (AANP, 2014). This article reports on the findings related to NP perceptions of the impact PO had on the quality and safety of the care they delivered.

Interprofessional collaboration (IPC) is a professional expectation of NPs and other professionals to ensure that consumer needs are met in a safe, accountable, accessible manner. While variations in practice authority may create barriers to IPC, it does not alter this professional expectation.

Methods

A descriptive, correlational design was used to explore overall NP perceptions of the impact that PO had on the safety and quality of patient care they delivered. A researcher-designed survey was used to gather both quantitative and qualitative responses from the participants.

Participants and setting

Because there is no national database of licensed NPs, the study sample of 24,000 NPs was randomly selected from a database purchased from Fitzgerald Health Education Associates (FHEA), Inc., a national provider of NP certification review courses and continuing education. Using the FHEA membership sampling option ensured total anonymity as the agency randomly selected the participants from their database and sent out the timed mailings following instructions by the researcher. All NPs in the sample were practicing in the United States.

States where NPs resided and practiced were coded and categorized using the SRE rankings from the *Pearson Report* (Pearson, 2010). Because the database did not allow extraction of NPs by SRE, NPs in full practice, reduced practice, and restricted practice states received the survey. Using Pearson's (2010) annual state rankings of SRE, states and the District of Columbia were assigned an alpha score of A for the least restrictive (those states with FPA) to F for most restrictive (restricted practice authority). Using a table of random numbers and categorization by the SRE rankings 24 inclusion states were selected. From the stratified state sample, 500 NPs were randomly selected from each state for a total of 12,000 NPs to constitute the final sample for this study. Sample respondents ($n = 61$) in FPA states (OR, WY, ME, CO, NM) were excluded from the final analysis because they did not practice with PO. Final inclusion criteria for the study required NPs to be licensed

Table 1 Stratified sample

State	SRE ranking	State regulatory model
FL	F	Restricted practice authority
MO	F	Reduced practice authority
GA	F	Reduced practice authority
NC	F	Restricted practice authority
AL	F	Reduced practice authority
MI	F	Reduced practice authority
SC	F	Reduced practice authority
AR	D	Reduced practice authority
MA	D	Reduced practice authority
VA	D	Restricted practice authority
SD	D	Restricted practice authority
ND	C	Reduced practice authority
WV	C	Reduced practice authority
TN	C	Reduced practice authority
NV	C	Reduced practice authority
CA	C	Reduced practice authority
NJ	B	Reduced practice authority
IA	B	Reduced practice authority
HI	B	Reduced practice authority
OR	A	Full practice authority
WY	A	Full practice authority
ME	A	Full practice authority
CO	A	Full practice authority
NM	A	Full practice authority

and employed in one of the 24 randomly selected states listed in Table 1 at the time of the survey.

Instrument

A 34-item, researcher-designed, exploratory survey, *Impact of Regulatory Requirements for Physician Oversight on Nurse Practitioner Practice*, was developed for data collection. The survey was developed from NP regulatory research (AANP, 2013; AHRQ and HRSA, 2006; Center to Champion Nursing in America, 2010; Lugo et al., 2007; Safriet, 2010) with multiple-choice, Likert-scale questions to collect quantitative data and open-ended questions to collect qualitative data. Thematic analysis of qualitative data yielded six categories reflected in Table 5 relating NP perceptions on how PO improved NP practice. Content validity was established through linkages in the literature and through input from NPs with clinical and policy expertise.

The survey instrument was sent to 12 practicing NPs for review of the appropriateness and validity of the survey items, clarity and flow of survey content, and the time required to complete the survey. There was an 83% participation rate by the reviewers. Content experts' feedback resulted in revision of the survey tool to include a total of 34 mixed mode (multiple-choice, Likert, ranking, and open-ended) questions, embedded in seven rather than six blocks including: (a) informed consent, (b) current and

previous NP practice state(s) (five questions), (c) NP source of regulatory information (one question), (d) level of professional autonomy (three questions), (e) impact of PO on NP practice (seven questions), (f) external influences on NP regulation (three questions), and (g) demographics (15 questions). The final survey instrument is available as online Supporting Information and available for review upon request from the authors.

Procedures

After receiving approval for the study from the East Carolina University and Medical Center Institutional Review Board, the electronic survey was sent to 12,000 NPs by FHEA. Follow-up reminders were sent at 2 and 4 weeks (Dillman, 2007). Of the 12,000 NPs who received e-mail invitations to participate in the survey, 1% (120) were returned because of rejected or undeliverable e-mail addresses leaving a total of 11,880 NPs surveyed.

Participants were asked to rate their level of agreement regarding the impact of PO on eight patient safety and quality indicators: (a) promotes safe NP practice; (b) improves patient safety; (c) enhances public safety; (d) promotes safe medication management; (e) improves provider–patient communication; (f) creates provider–patient confusion; (g) hinders provider–patient trust; and (h) impedes transitions to other levels of care.

Of the 2322 respondents who opened the survey instrument, a total of 1200 (10%) respondents completed the survey. The sample was further filtered to include those who completed all items related to demographics and the patient safety and quality questions, making the final sample used for this analysis 1093 participants.

Results

Demographics of study participants closely paralleled the national demographics on years of experience as an RN and NP, age, race, gender, and educational level (Table 2). Study participants were fairly evenly split in years of NP experience, with 51% reporting more than 5 years’ experience and 49% reporting less than 5 years’ NP experience. The majority (75.5%) of study participants reported working in states with SRE rankings of D or F (restricted practice authority) and 24% in states with SRE rankings of B or C (reduced practice authority).

Safety and quality NP perceptions by state SRE ranking

SRE rankings were used to stratify the NPs into two groups. There were no statistically significant differences in the perceptions of NPs regarding the impact of PO on safety

Table 2 NP sample demographic (*n* = 1093)

Characteristic	Frequency (%)	Mean (SD)
Years’ NP experience	1098 (99.1)	8.49 (8.19)
≤5 years	542 (49.4)	
>5 years	556 (50.6)	
Missing	10 (0.01)	
Total	1098 (100)	
State regulatory environment		
Reduced practice authority	269 (24.5)	
Restricted practice authority	829 (75.5)	
Total	1098 (100)	
Age in years	1026 (93.7)	48.29 (10.29)
Missing	72 (0.07)	
Total	1098 (100)	
Gender		
Male	91 (8.3)	
Female	1002 (91.3)	
Missing	5 (0.5)	
Total	1098 (100)	
Race		
White/Caucasian	958 (87.2)	
African American	56 (5.1)	
Hispanic	26 (2.4)	
Asian	23 (2.1)	
Native American	5 (0.5)	
Pacific Islander	1 (0.1)	
Other	22 (2.0)	
Missing	7 (0.6)	
Total	1098 (100)	
First degree in nursing		
Diploma	166 (15.1)	
Associate degree	345 (31.4)	
Baccalaureate degree	485 (44.2)	
Master’s degree	92 (8.4)	
Doctorate	6 (0.5)	
Missing	4 (0.4)	
Total	1098 (100)	
Highest degree in nursing		
Diploma	2 (<1.0)	
Associate degree	0 (0.0)	
Baccalaureate degree	17 (1.5)	
Master’s degree	954 (86.9)	
Doctorate	120 (10.9)	
Missing	5 (<1.0)	
Total	1118 (100)	

whether they resided in states with reduced or restricted practice authority. When asked if PO promoted safety and quality, only a minority of participants perceived that PO promoted safe NP practice (37.9%) or improved patient safety (28.6%) or enhanced public safety (25.4%). Furthermore, only 27.8% of participants agreed that PO promoted safe medication management, while even fewer (18.7%) reported that PO improved provider–patient communication. Stated differently, the majority of participants indicated that PO did not improve safety in any of these

Table 3 State regulatory environment (SRE) prevalence of agreement in NPs from restricted practice authority (D, F: SRE rankings) states ($n = 829$) and reduced practice authority (B, C: SRE rankings) states ($n = 269$) on eight safety and quality survey items

Safety and quality items	SRE rankings				$\chi^2(1)$	Cum. %	<i>p</i>
	D, F states		B, C states				
	<i>n</i>	%	<i>n</i>	%			
Promotes safe NP practice	312	37.6	104	38.7	0.09	37.9	.76
Improves patient safety	228	27.5	86	32.0	1.96	28.6	.16
Enhances public safety	201	24.2	78	29.0	2.42	25.4	.12
Promotes safe medication management	219	26.4	86	32.0	3.12	27.8	.08
Improves provider–patient communication	150	18.1	55	20.4	0.74	18.7	.39
Creates provider–patient confusion	628	75.8	189	70.3	3.22	74.4	.07
Hinders provider–patient trust	436	52.9	144	53.5	0.07	52.8	.79
Impedes transition to other levels of care	593	71.5	180	66.9	2.08	70.4	.15

categories (Table 3). Moreover, the majority of participants perceived that PO created provider–patient confusion (74.4%), hindered provider–patient trust (52.8%), and impeded transitions to other levels of care (70.4%).

In addition to quantitative questions, the researcher-developed survey also offered participants the opportunity to describe how PO impacted the quality and safety of their practice. Forty-nine percent of the respondents said that oversight offered no benefit to their practice safety and quality. One participant reported “Physician supervision is required in N.C. but is not at all practiced where I work” while another reported “My [supervising] physician is not on site, he has his own practice. If I need him, or I have questions I asked the other practitioners.” Of those who responded that there was some benefit to oversight, 19% felt it offered a chance for consultation and 21% perceived that it promoted collaboration (see Table 4). However, that collaboration was reported in terms of mentorship. One participant stated PO provided “access to mentor for questions” while another stated “since I pay my collaborator a fee, at least she is always willing to collaborate about challenging cases.” Five percent said it met a regulatory requirement they had and 2% felt it gave them an increased confidence level. The practical significance of these findings is that the majority of participants perceived that PO provided no benefit to safety and quality of NP-delivered care.

Safety and quality NP perceptions by years of experience

Based on Benner’s work with skill acquisition, the NPs were divided into two groups: those with less than or equal to 5 years of NP experience and those with greater than 5 years of experience. Years of experience was a much stronger indicator of prevalence of agreement with the im-

Table 4 Coded qualitative responses of NP perceptions of the benefits of physician oversight (PO) of NP practice

Impact of PO	<i>n</i>	%
None	103	48.8
Consultation	40	18.9
Collaboration	44	20.8
Education	8	3.8
Regulatory requirement	10	4.7
Increases confidence	4	1.9
Increases access	2	<1
Total responses	211	100

Summary of qualitative responses to “How PO improves NP practice” ($n = 211$).

pact PO had on the eight safety and quality survey items (see Table 5). Chi-square tests were used to compare the perceptions of the impact of PO with NP experience. NPs with less than or equal to 5 years of experience (50%) perceived that PO promoted safe practice ($p \leq .001$) while only 25.7% of NPs with greater than 5 years of experience reported the same perceptions. Likewise, NPs with less than or equal to 5 years of experience (37%) perceived that PO promoted patient safety ($p \leq .001$). In contrast only 20.3% of NPs with greater than 5 years of experience reported the same perceptions. Moreover, the majority of participants perceived a negative impact of PO on public safety ($p \leq .001$), safe medication management ($p \leq .001$), and improved provider–patient communication ($p \leq .001$). Participants also perceived that PO impeded transitioning patients to other levels of care ($p \leq .001$). While the majority of participants agreed that PO created provider–patient confusion and hindered provider–patient trust neither had agreement levels that reached the level of statistical significance.

Table 5 Experience (exp) prevalence of agreement in NPs with ≤ 5 years' NP experience ($n = 542$) and > 5 years' experience ($n = 556$) on eight safety and quality survey items

Safety and quality items	NP experience				$\chi^2(1)$	<i>p</i>
	≤ 5 years		> 5 years			
	<i>n</i>	%	<i>n</i>	%		
Promotes safe NP practice	273	50.4	143	25.7	70.86	<.001
Improves patient safety	201	37.1	113	20.3	37.76	<.001
Enhances public safety	179	33.0	100	18.0	32.76	<.001
Promotes safe medication management	197	36.3	108	19.9	39.18	<.001
Improves provider–patient communication	130	24.0	75	13.5	19.91	<.001
Creates provider–patient confusion	394	72.7	423	76.1	1.65	.20
Hinders provider–patient trust	279	51.5	301	54.1	0.78	.38
Impedes transition to other levels of care	355	65.5	418	75.2	12.35	<.001

Discussion

Evaluation of NP perceptions is important because it facilitates discussion on how to increase consumer access to care (Center to Champion Nursing in America, 2010), supports legislative initiatives to reduce or eliminate PO for NP practice (Institute of Medicine, 2010; NCSBN, 2011), and contributes to the body of literature exploring NP practice issues, education, and concerns (Lugo et al., 2007; O'Grady & Brassard, 2011; Pearson, 2010).

One of the most significant findings in this study was the impact NP experience had on perceptions of PO on NP practice. The influence of experience on NP perceptions suggests that NP competency development may parallel the timeline for skill acquisition that Benner found in general nurse competence development (1982). While Benner's theory has been tested in the general nursing population, little evaluation has been done with advanced practice nurses. Data indicating that respondents with less than 5 years of NP experience were more likely to value PO suggests a need for stronger mentoring relationships during transition into the NP practice role. This does not however have to be mentoring by a physician. New graduates in general practice develop increased confidence and competence when mentored and exposed to formal transition programs. These study findings indicate a need for more structured transition programs to assist novice NPs with moving into the NP practice role.

Strengths and limitations

Strengths of this study included the use of a sample that closely paralleled the demographics of the U.S. NP population and included participants from all states with the most restrictive SRE ranking. Instrument content validity was also established through linkages in the literature and input from 10 content experts. However, dependence

on self-report raises concern about the validity of causal conclusions for a range of reasons, including systematic response distortions and reporter bias. Furthermore, evidence of survey fatigue was noted. Some participants did not complete all survey items, suggesting a need for a more concise survey.

Releasing the survey during a holiday period may have resulted in the low response rate (19.6%), which limits the generalizability of study findings. Because of the sampling design, only NPs included in the FHEA database were included in the study. These NPs self-selected to enroll in the FHEA programs and have views that may not reflect the entire population of NPs if a national licensure database existed and could be accessed for research. Lastly, NPs who feel constrained in their practices may have been more likely to respond to this survey, raising the potential for response bias.

Implications

Nurse educators must pay attention to the critical role of skill acquisition in NP students. New graduate NPs need educational preparation in the competencies independent practitioners use as part of interprofessional teams. As NP educational preparation moves to the Doctor of Nursing Practice (DNP) level, additional didactic and practicum hours will promote an NP workforce better prepared to ensure continued safe, accountable, and cost-effective care for consumers.

While emerging literature may support postgraduate programs to enhance NP confidence, job satisfaction, and retention, these opportunities are not necessary for successful entry and functioning in professional NP practice (NONPF, 2008). However, findings from this research revealed that NPs with less than 5 years of experience need more mentorship from seasoned primary care providers, may benefit from formal transition programs, and will gain needed skills from current DNP curricula and postgraduate

training programs. Qualitative findings evidenced valuing of collaboration and consultation that mentorship by a seasoned NP could provide and point to complexities of contemporary health care. Similarly consideration should be given to the possibility of incorporating NP transition to practice programs into DNP curricula as recommended by the Institute of Medicine to allow for skill acquisition and decision-making confidence.

Finally, policy leaders must consider the evidence supporting the effective, safe NP care outcomes demonstrated by decades of research. Policies supporting the APRN consensus model may increase consumer access to health care by fully utilizing the skill set of these proven healthcare providers. Federal and state funding may be used as an incentive to reflect these policy priorities. Future research regarding the regulation of NP practice should continue to include specific safety and quality outcome measurement.

Nurse educators, policy leaders, stakeholders, regulators, and legislators must understand the need for research on the influences of regulatory processes on the delivery of accessible, quality health care. These professionals also need to support mentorship and transition programs as aids in evolving NPs into expert clinicians. Funding priorities should support and incentivize the removal of regulatory barriers to NP practice. Developing independent, policy-savvy NPs who can mentor novice NPs and lead interprofessional teams is critical to the success of the profession and meeting the healthcare access needs now and in the future.

Acknowledgments

Bobby Lowery conducted the original research and wrote the original manuscript draft. Elaine Scott edited and revised the manuscript for final submission. Melvin Scott provided statistical analysis and support for this project.

References

- Agosta, L. J. (2009). Patient satisfaction with nurse practitioner-delivered primary healthcare services. *Journal of the American Academy of Nurse Practitioners*, 21(11), 610–617. doi:10.1111/j.1745-7599.2009.00449.x
- AHRQ and HRSA. (2006). *Access to quality health services: Healthy people 2010 information access project*. Retrieved from <http://www.healthypeople.gov/document/html/volume1/01access.htm>
- American Association of Nurse Practitioners (AANP). (2012). *Nurse practitioner facts*. Retrieved from <http://www.aanp.org/research/aanp-research>
- American Association of Nurse Practitioners (AANP). (2013). *Scope of practice for nurse practitioners*. Retrieved from <http://www.aanp.org/images/documents/publications/scopeofpractice.pdf>
- American Association of Nurse Practitioners (AANP). (2014). *2014 nurse practitioner state practice environment*. Retrieved from <http://www.aanp.org/images/documents/state-leg-reg/stateregulatorymap.pdf>
- American Association of Nurse Practitioners (AANP). (2015). *AANP—State practice environment*. Retrieved from <http://www.aanp.org/legislation-regulation/state-legislation-regulation/state-practice-environment>
- Bahadori, A., & Fitzpatrick, J. (2009). Level of autonomy of primary care nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 21(9), 513–519.
- Benner, P. (1982). From novice to expert. *American Journal of Nursing*, 82(3), 402–407.
- Center to Champion Nursing in America. (2010). *Access to care and advanced practice nurses: A review of southern U.S. practice laws*. Washington, DC: AARP.
- Cronenwett, L., & Dzau, V. (2010). Chairman's summary of the conference. In B. Culliton (Ed.), *Who will provide primary care and how will they be trained?* Durham, NC: Josiah Macy, Jr. Foundation.
- Dierick-van Daele, A., Metsemakers, J., Derckx, E., Spreeuwenberg, C., & Vrijhoef, H. (2009). Nurse practitioners substituting for general practitioners: Randomized controlled trial. *Journal of Advanced Nursing*, 65(2), 391–401.
- Dillman, D. (2007). *Mail and internet surveys: The tailored design method* (2nd ed.). Hoboken, NJ: John Wiley & Sons.
- Elliott, V. (2011). *Making part time work—amednews.com*. Retrieved from <http://www.amednews.com/article/20110926/business/309269966/4/#top>
- Gillman, D., & Koslov, T. (2014). *Policy perspectives: Competition and the regulation of advanced practice nurses*. Washington, DC: Federal Trade Commission.
- Hansen-Turton, T., Ritter, A., Rothman, N., & Valdez, B. (2006). Insurer policies create barriers to health care access and consumer choice. *Nursing Economic*, 24(4), 204–212.
- Herrick, T. (2000). JAMA reports patient outcomes comparable for NPs, MDs: Study may signal shift in physician attitudes. *Clinician News*, 1(1), 6.
- Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academies Press.
- Institute of Medicine. (2010). *The future of nursing: Leading change, advancing health*. Washington, DC: National Academies Press.
- Instone, S. L., & Palmer, D. M. (2013). Bringing the Institute of Medicine's report to life: Developing a doctor of nursing practice orthopedic residency. *Journal of Nursing Education*, 52(2), 116–119. doi:10.3928/01484834-20130121-03
- Klein, T. (2007). Scope of practice and the nurse practitioner: Regulation, competency, expansion, and evolution. *Topics in Advanced Practice Nursing*, 7(3), 9.
- Lenz, E., Mundinger, M., Kane, R., Hopkins, S., & Lin, S. (2004). Primary care outcomes in patients treated by nurse practitioners or physicians: Two-year follow-up. *Medical Care Research and Review*, 61(3), 332–351. doi:10.1177/1077558704266821
- Lowery, B., & Varnam, D. (2011). Physician supervision and insurance reimbursement: Policy implications for nurse practitioner practice in North Carolina. *North Carolina Medical Journal*, 72(4), 310. Retrieved from <http://www.ncmedicaljournal.com/archives/?72414>
- Lugo, N. R., O'Grady, E. T., Hodnicki, D. R., & Hanson, C. M. (2007). Ranking state NP regulation: Practice environment and consumer healthcare choice. *American Journal for Nurse Practitioners*, 11(4), 8–9, 14–8, 23–24.
- Mullinix, C., & Bucholtz, D. P. (2009). Role and quality of nurse practitioner practice: A policy issue. *Nursing Outlook*, 57(2), 93–98.
- Mundinger, M., Kane, R., Lenz, E., Totten, A., Tsai, W., Cleary, P., & Shelanski, M. (2000). Primary care outcomes in patients treated by nurse practitioners or physicians: A randomized trial. *Journal of the American Medical Association*, 283(1), 59–68.
- National Association of Community Health Centers. (2012). *Health wanted—The state of unmet need for primary health care in America report*. Retrieved from <http://www.nachc.com/client/documents/health-wanted.html>
- NC Medical Board. (2009). *Chapter 90. Medicine and allied occupations. Article 1. Practice of medicine*. Retrieved from <http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/ByChapter/Chapter.90.html>
- NCIOM Health Access Study Group. (2009). *Expanding access to health care in North Carolina: A report of the NCIOM health access study group (Task Force Report)*. Morrisville, NC: Author. Retrieved from http://www.nciom.org/projects/access_study08/access_study08.shtml (Access to care)
- NCSBN. (2008). *Consensus model for APRN regulation: Licensure, accreditation, certification and education*. Retrieved from https://www.ncsbn.org/7_23_08-Consensus-APRN-Final.pdf
- NCSBN. (2011). *APRN consensus model toolkit*. Retrieved from <https://www.ncsbn.org/2276.htm>

- NCSBN. (2014). *Member board profile: Board structure*. Chicago, IL: Author. (Umbrella Boards).
- Nolte, E., & McKee, C. M. (2011). Variations in amenable mortality—Trends in 16 high-income nations. *Health Policy*, *103*(1), 47–52.
- NONPF. (2008). *Nurse practitioner perspective on education and post-graduate training*. Retrieved from <http://c.ymcdn.com/sites/nonpf.site-ym.com/resource/resmgr/Docs/NPRoundtableStatementPostGra.pdf>
- O'Grady, E. T. (2008). Advanced practice registered nurses: The impact on patient safety and quality. In R. G. Hughes (Ed.), *Patient safety and quality: An evidence-based handbook for nurses*. Rockville, MD: Agency for Healthcare Research and Quality. Retrieved from (<http://www.ncbi.nlm.nih.gov/books/NBK2641/>)
- O'Grady, E. T., & Brassard, A. (2011). Health-care reform: Opportunities for APRNs and urgency for modernizing nurse practice acts. *Journal of Nursing Regulation*, *2*(1), 4.
- Ohman-Strickland, P., Orzano, A. J., Hudson, S. V., Solberg, L. I., DiCiccio-Bloom, B., O'Malley, D., . . . Crabtree, B. F. (2008). Quality of diabetes care in family medicine practices: Influence of nurse-practitioners and physician's assistants. *Annals of Family Medicine*, *6*(1), 14–22. doi:10.1370/afm.758
- Pearson, L. (2010). *Pearson report: Overview of diagnosing and treating aspects of nurse practitioner practice*. Retrieved from <http://www.pearsonreport.com/tables-maps/category/map-dx-tx/>
- Ricketts, T. (2011). The future of nursing in North Carolina. *North Carolina Medical Journal*, *72*(4), 277.
- Rudner Lugo, N., O'Grady, E. T., Hodnicki, D., & Hanson, C. (2010). Are regulations more consumer-friendly when boards of nursing are the sole regulators of nurse practitioners? *Journal of Professional Nursing*, *26*(1), 29–34. doi:10.1016/j.profnurs.2009.09.001
- Safriet, B. (2010). Federal options for maximizing the value of advanced practice nurses in providing quality, cost effective health care. In Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine, & Institute of Medicine (Eds.), *The future of nursing: Leading change, advancing health (appendix 11)* (p. 620). Washington, DC: National Academies Press. Retrieved from http://books.nap.edu/openbook.php?record_id=12956&page=443
- Whelan, E. (2000). *The relationship between state regulations and nurse practitioner practice*. PhD thesis, University of Pennsylvania, University City, Pennsylvania.

Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's website:

“Impact of Regulation and Physician Oversight on Nurse Practitioner Practice.”