



# Impact of COVID-19 pandemic on APRN practice: Results from a national survey

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## ARTICLE INFO

### Article history:

Received 13 January 2021

Received in revised form

19 April 2021

Accepted 1 May 2021

Available online May 11, 2021.

### Keywords:

Advanced practice nursing

COVID-19

Health policy

Healthcare policy

Health workforce

Nursing legislation

Pandemic

## ABSTRACT

**Background:** The impact of the COVID-19 pandemic on Advanced Practice Registered Nurse (APRN) practice is not well known.

**Purpose:** This study aimed to describe state practice barriers and explore the effects of the COVID-19 pandemic on APRN practice.

**Methods:** A descriptive study design used a 20-item web-based survey open from June 1 through September 23, 2020.

**Findings:** A total of 7,467 APRNs responded from all 50 states, including nurse practitioners ( $n = 6,478$ , 86.8%), certified registered nurse anesthetists ( $n = 592$ , 7.9%), certified nurse-midwives ( $n = 278$ , 3.7%), and clinical nurse specialists ( $n = 242$ , 3.2%). A number of barriers to practice prior to the pandemic were identified. Most respondents ( $n = 6334$ , 84.8%) identified that practice barriers limited the ability of APRNs to provide care during the pandemic.

**Discussion:** Barriers to APRN practice continue to restrict aspects of patient care and patient access to care, even in states with Full Practice Authority (FPA), during the COVID-19 pandemic and with state executive orders waiving practice restrictions. The study findings can be used to advocate for policy changes to support APRN practice authority.

**Cite this article:** Kleinpell, R., Myers, C.R., Schorn, M.N., & Likes, W. (2021, September/October). Impact of COVID-19 pandemic on APRN practice: Results from a national survey. *Nurs Outlook*, 69(5), 783–792. <https://doi.org/10.1016/j.outlook.2021.05.002>.

## Introduction

No one could have anticipated just how true the World Health Organization's (n.d.) designation of 2020 as the "Year of the Nurse and Midwife" would become. Instead of a year of celebrations, the COVID-19 pandemic of 2020 placed new, tremendous demands on

the entire nursing profession, demonstrating how important nurses are to global healthcare. While much emphasis in the media and other venues has been placed on bedside registered nurses, the COVID-19 pandemic has created unprecedented circumstances for Advanced Practice Registered Nurses (APRNs), including nurse practitioners (NPs), certified registered nurse anesthetists (CRNAs), clinical nurse specialists

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<https://doi.org/10.1016/j.outlook.2021.05.002>

(CNS) and certified nurse-midwives (CNM). In particular, sudden, significant changes have occurred to APRN practice and the regulation of practice. A pandemic-related study was conducted to highlight APRN practice barriers, determine the effect of COVID-19 pandemic-related suspension of practice restrictions or waiver of select practice agreement requirements in states with reduced or restricted practice, and explore the effects of the COVID-19 pandemic on APRN practice in the United States. The purpose of this paper is to describe the initial results of this U.S. study.

### Practice Barriers

One of the four key messages included in the *Future of Nursing* report (Institute of Medicine [IOM], 2011) is, “nurses should practice to the full extent of their education and training” (p. 4). State practice restrictions are barriers to APRNs achieving this aim. Three classifications are used to describe APRN practice authority: full practice authority (FPA), reduced practice authority, and restricted practice authority (American Association of Nurse Practitioners [AANP], 2020). APRNs in full practice authority states practice without restriction in the four domains of APRN practice which include evaluation, diagnosis, the ordering and interpretation of diagnostic tests, and the initiation and management of treatment under the exclusive authority of the Board of Nursing or equivalent body. In reduced practice states, APRNs must practice in collaboration with, or under the supervision of, a physician, reducing their ability to engage fully in one of the APRN domains of practice. Restricted practice is characterized by stricter collaboration or supervision practice requirements or limiting practice in two or more practice domains (AANP, 2020; IOM, 2011).

Since the release of the *Future of Nursing* report (Institute of Medicine [IOM], 2011), eight additional states have instituted FPA for APRNs, bringing the total FPA states to 22, along with the District of Columbia and 3 U.S. territories. Other states have made incremental improvements in their laws but are not considered FPA states. States that have made substantial progress towards FPA include: CA, FL, IL, KY, NY, UT, and WV. States that have made incremental improvement include: AL, AR, GA, IN, MI, OH, SC, TX, and VA (Campaign for Action, 2021). A specific factor that is assessed to track progress towards FPA is practice requirements for newly licensed APRNs. States with FPA that require post-licensure and/or certification supervision, collaboration, or mentorship include CO, CT, DE, MD, ME, MN, NE, NV, SD, and VT. States with APRN transition to practice requirements and reduced practice authority include IL, VA, and WV (Phillips, 2020). At present there are 16 reduced practice states and 2 U.S. territories as well as 12 restricted practice states (AANP, 2020).

Although progress has been made in reducing APRN practice barriers, resistance from organized medicine in the states that have not achieved FPA is strong

(AAFP, 2021; AANP 2020, AMA, n.d.; Myers & Alliman, 2018; Tennessee Medical Association (TMA) n.d.; Kaplan, 2014; Lardieri, 2019). Nurses, nursing organizations, and supportive policymakers and stakeholders are challenged with defining and illustrating practice barriers in a way that resonates with other stakeholders to promote FPA. In states with FPA, barriers to practice remain. These non-regulatory barriers are frequently less obvious and more difficult to address because they emanate from disparate sources. Many healthcare organizations and entities maintain practices and policies that impede care provided by APRNs (Hain and Fleck, 2014). APRN practice barriers include state laws, federal policies, outdated insurance models, and institutional practices (IOM, 2011). While progress has been made in breaking down barriers to APRN practice since the release of the *Future of Nursing* (2010) report, barriers persist even in states with FPA. In addition to determining scope of practice for APRNs, state laws allow inequities in reimbursement by third parties to persist; federal policies disadvantage APRNs by specifying eligible Medicare and Medicaid providers and determining reimbursement levels; insurance companies in many states do not credential APRNs and continue to reimburse them at lower rates than physicians; and hospitals and other institutions maintain barriers through regressive credentialing terms and the granting of provider privileges. In several states, a “transition to practice” model is being implemented. As noted by the American Nurses Association, these new models are the result of political compromise and not based on evidence or research and in itself creating new barriers (Nurse Practitioner Nurse-Physician Advisory Task Force for Colorado Healthcare (NPATCH) 2020).

### Pandemic-Related Changes in the Regulation of APRN Practice

The COVID-19 pandemic further highlighted the burden placed on APRNs to fully practice and provided a unique opportunity to study the impact of COVID-19 pandemic-related Executive Orders issued by Governors in the 21 reduced and restricted states. See Figure 1 for a visual representation of state APRN practice authority. Executive Orders, most commonly used during emergencies, allow Governors to create state laws without legislative involvement. The Executive Orders most germane to nurses during the COVID-19 pandemic addressed licensure, education, and regulatory barriers for APRNs (Fotsch, 2020). Executive Orders in five states temporarily suspended all APRN physician collaboration/supervision requirements. Select practice requirements were waived in 16 additional states. No action was taken in the seven remaining reduced or restricted states (AANP, 2020).

### Impact of the COVID-19 Pandemic on APRN Practice

Substantial changes in health care were precipitated by the COVID-19 pandemic and have persisted. APRNs,

like other healthcare workers, were faced with marked changes in their care delivery and endured significant personal sacrifices.

With the sudden novelty of the COVID-19 pandemic, the effect on APRN practice has not yet been systematically researched. The aims of our study were: (a) to describe state practice barriers prior to the COVID-19 pandemic, (b) to determine the effects of COVID-19 pandemic-related suspension of practice restrictions or waiver of select practice agreement requirements in states with reduced or restricted practice, and (c) to explore the effects of the COVID-19 pandemic on APRN practice. The changes in practice authority enabled by the COVID-19 pandemic-related state Executive Orders may be an opportunity to provide empirical evidence of the value and safety of APRN practice and the ineffectiveness of state practice restrictions laws (Anderson, 2020; Lai et al., 2020). Additionally, legislative changes enabled APRNs to bolster the national pandemic response by working to the full extent of their education and training, highlighting the value to the public of removing unnecessary restrictions to practice (Stucky et al., 2020).

## Methods

The study used a descriptive survey design with convenience sampling to achieve maximum variation. A voluntary web-based Research Electronic Data Capture (REDCap) survey was employed using a Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliant secure platform (Harris et al., 2009). The 20-item descriptive survey was developed by the investigative team adapted from several prior APRN surveys conducted by the co-authors. Content validity was established through review by national organization stakeholders and through pilot testing. Data were also collected on demographics including state of practice, type of APRN role, APRN certifications, years in APRN practice, practice setting, and gender, modeled after the National Sample Survey (Health Resource and Services Administration, 2018). The survey was pilot tested with 10 APRNs from 4 states, representing all APRN roles, and practicing in inpatient and outpatient, rural and urban settings. Feedback from the pilot test was used to make revisions to several questions to enhance clarity and add additional potential barriers to APRN practice as response options. Institutional review board approval was received at Vanderbilt University.

A variety of approaches were used to recruit participants including distribution of the study description and survey link by multiple national and state nursing organizations, e-mail distribution to national and other APRN listservs, and use of social media, including Twitter and Facebook. Two presentations were made during the national Future of Nursing Campaign for Action's (<https://campaignforaction.org/>) monthly

**Table 1 – COVID-19 Pandemic: Temporary Changes in State APRN Practice Requirements (States with Reduced or Restricted Practice Authority)**

Type of Executive Order	States Included
Temporary suspension of all practice requirements	Kentucky*, Louisiana*, New Jersey*, New York*, Wisconsin*
Temporary waiver of select practice restrictions	Alabama*, Arkansas*, California†, Indiana*, Kansas*, Massachusetts*, Michigan*, Missouri*, North Carolina*, Oklahoma, Pennsylvania, South Carolina, Tennessee†, Texas*, Virginia*, West Virginia*
No action	Delaware*, Florida†, Georgia†, Illinois*, Mississippi*, Ohio*, Utah*

Source: AANP, 2020.

Note: The table above reflects suspension of all practice requirements or waiver of select practice restrictions for Nurse Practitioners (NPs) only. The other three types of APRNs, Certified Registered Nurse Anesthetists (CRNAs), Certified Nurse-Midwives (CNMs), or Clinical Nurse Specialists (CNSs), are not included.

\* Reduced practice state.

† Restricted practice state.

Access to Care calls. Offline media including state newsletter advertisements were also used.

## Findings

### Sample Characteristics

A total of 7,467 APRNs responded, including nurse practitioners (NPs) ( $n = 6,478$ , 86.8%), certified registered nurse anesthetists (CRNAs) ( $n = 592$ , 7.9%), certified nurse-midwives (CNMs) ( $n = 278$ , 3.7%), and clinical nurse specialists (CNSs) ( $n = 242$ , 3.2%). Respondents represented all 50 U.S. states, with majority from the Southern region ( $n = 4,316$ , 57.8%), followed by the Midwest ( $n = 1,470$ , 19.7%), Northeast ( $n = 821$ , 11.0%) and West ( $n = 860$ , 11.5%) (Supplemental content Figure 1). As outlined in Figure 2, respondents were from reduced practice authority states ( $n = 3,496$ , 46.8%), states with restricted practice authority ( $n = 2,617$ , 35.0%), and from states with FPA ( $n = 1,354$ , 18.1%) (Table 2; Supplemental content Figure 2). Respondents identified working in outpatient settings ( $n = 4,445$ , 59.5%), inpatient settings ( $n = 1,430$ , 19.1%), or both ( $n = 1,596$ , 21.4%). A majority ( $n = 4,051$ , 54.8%) reported working in ambulatory or outpatient settings followed by hospital settings ( $n = 2,746$ , 37.1%), community/public health ( $n = 579$ , 7.8%), long term care/skilled nursing facility ( $n = 335$ , 4.5%), home health ( $n = 174$ , 2.4%), school/student health ( $n = 138$ , 1.9%), hospice ( $n = 115$ , 1.5%), and other areas of practice ( $n = 790$ , 10.7 %) including addiction residential facility, assisted living, college occupational health

**Table 2 – Respondent Demographics (N = 7,467)**

Respondent Characteristics	N	%
<i>Region</i>		
Midwest	1,470	19.7
Northeast	821	11.0
South	4,316	57.8
West	860	11.5
<i>Executive Order Status</i>	1,354	18.1
Full Practice Authority States		
No Action States	1,467	19.6
Yes, Executive Order Issued	4,646	62.2
<i>Practice Authority</i>		
Full Practice Authority	1,354	18.1
Reduced	3,496	46.8
Restricted	2,617	35.0
<i>APRN Role (Multiple selections possible)</i>		
Certified Registered Nurse Anesthetist	592	7.9
Certified Nurse Midwife/Certified Midwife	278	3.7
Clinical Nurse Specialist	242	3.2
Nurse Practitioner	6,478	86.8
<i>Length of time employed as an APRN</i>	N = 7,370	
< 2 years	727	9.9
2 to < 5 years	1,415	19.2
5 or more years	5,228	70.9
<i>Gender</i>		
Male	859	11.7
Female	6,353	86.3
Nonbinary	18	0.2
Do not wish to identify	129	1.8

**Table 3 – Respondent Work Characteristics**

Respondent Characteristics	N	%
<i>Practice/work setting (Multiple selections possible)</i>	N = 7,395	
Ambulatory/Outpatient	4,051	54.8
Birth center	89	1.2
Community/Public Health	579	7.8
Correctional Health	83	1.1
Free Standing Surgery Center	90	1.2
Home health	174	2.4
Hospice	115	1.6
Hospital/Medical Center	2,746	37.1
Industrial/Occupational	88	1.2
Long term care/Skilled nursing facility	335	4.5
Rehabilitation	82	1.1
School/student Health	138	1.9
Other	790	10.7
<i>Practice Setting Location</i>	N = 7,334	
Urban	3,094	42.2
Suburban	2,326	31.7
Rural	1,914	26.1
<i>Practice Setting Characterization (Multiple selections possible)</i>	N = 4,373	
Federally Qualified Health Center	1,348	30.8
Medically Underserved Areas/Medically Underserved Populations	2,138	48.9
Health Professional Shortage Areas	912	20.9
Indian Health Service	48	1.1
Military/VA	739	16.9
Other	651	14.9

clinic, county jail, dialysis center, among others. A total of 213 (48.9%) respondents reported working in medically underserved areas, and 1,348 (30.8%) reported working in federally qualified health centers. Respondents most commonly reported holding a Master's degree ( $n = 4,935$ , 66.7%) and 1,401 (19.8%) reported a DNP as the highest APRN degree. A majority of respondents ( $n = 6,353$ , 86.3%) were female. See [Table 2](#) for detailed demographic results.

A majority of respondents ( $n = 4,649$ , 63%) reported caring for a COVID-19 patient. All four APRN roles were equally impacted by the COVID-19 pandemic with a majority (75%) working in states with moderate, high, or very high rates of COVID-19 infections based on the Center for Disease Control state rankings (CDC, 2020). However, those working in restricted practice states experienced higher rates of COVID-19 infections, with 74% ( $n = 1,935$ ) practicing in states with high or very high rates compared with 42.3% ( $n = 14,790$ ) of those practicing in reduced states or 6% ( $n = 81$ ) of those practicing in FPA states ( $p < .05$ ).

### APRN Barriers to Practice

A number of barriers to practice were identified including restricted hospital admitting privileges ( $n = 2,446$ , 32.8%), restricted home health approval ( $n = 2,485$ , 33.3%), orders for durable medical supplies require a physician signature ( $n = 2,273$ , 30.4%) physician co-

signature of orders ( $n = 1,708$ , 22.9%), restricted health insurance credentialing ( $n = 1,465$ , 19.6%), requirement for supervision of procedures within APRN scope of practice ( $n = 1,227$ , 16.4%), physician signature on pre and postoperative assessments ( $n = 829$ , 11.1%), among others ([Table 3](#)). Of significance is that APRNs working in FPA states also reported similar barriers, although less frequently ([Tables 2 and 3](#)). For example, a total of 437 respondents from 22 FPA states (Alaska, Arizona, Colorado, Connecticut, Hawaii, Idaho, Iowa, Maine, Maryland, Minnesota, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oregon, Rhode Island, South Dakota, Vermont, Washington, and Wyoming along with the District of Columbia) reported that home health approval was restricted and was a barrier to practice. There were 352 respondents from the same 22 FPA states identified that restricted hospital admitting privileges was a barrier to practice. There were also 101 respondents from 19 states (Arizona, Colorado, Connecticut, Hawaii, Iowa, Maine, Maryland, Minnesota, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oregon, Rhode Island, South Dakota, Vermont, Washington, Wyoming) who identified that procedures within APRN scope of practice required physician supervision in their practice setting. There were also 43 respondents from 15 states (Colorado, Connecticut, Hawaii, Idaho, Iowa, Maine, Maryland, Minnesota, Nebraska, Nevada, New Mexico, Oregon, South Dakota, Vermont, and Washington along with the District of Columbia) who reported that laboratory or imaging study results were only reported to a



**Table 4 – Respondent Educational Characteristics**

Respondent Characteristics	N	%
Certificate/Award	79	1.1
Bachelors Degree	43	0.6
Masters Degree	4,935	66.7
Post-Masters Certificate	945	12.8
Doctorate - DNP	1,401	18.9
<i>Highest Educational Degree</i>		
Certificate/Award	34	0.5
Bachelors Degree	95	1.3
Masters Degree	4,659	63.0
Masters - non-nursing	111	1.5
Post-Masters Certificate	687	9.3
Doctorate - DNP	1,467	19.8
Doctorate - PhD Nursing	166	2.2
Doctorate - non-nursing	101	1.4
Other	73	1.0
<i>If DNP, type completed</i>		
BSN to DNP Non-clinical degree (e.g., leadership, policy)	26	1.8
BSN to DNP Clinical degree (e.g., NP, CRNA, CNM, CNS)	337	23.1
Post-Baccalaureate to RN to DNP Non-clinical degree (e.g., leadership, policy)	7	0.5
Post-Baccalaureate to DNP Clinical degree (e.g., NP, CRNA, CNM, CNS)	82	5.6
Post-Masters to DNP Non-clinical degree (e.g., leadership, policy)	216	14.8
Post-Masters to DNP Clinical degree (e.g., NP, CRNA, CNM, CNS)	785	53.8
Dual DNP/PhD	5	0.3

physician creating a barrier to practice (Table 3). Overall, most respondents (n = 6,334, 84.8%) identified that practice barriers and restrictions in place prior to the

pandemic further limited their ability as an APRN to provide care during the COVID-19 pandemic.

**Impact of COVID-19 Pandemic**

A majority of respondents (n = 4,646, 62.2%) reported that an Executive Order had been issued in response to the COVID-19 pandemic. The COVID-19 pandemic was identified as impacting APRN practice in a number of ways including scheduling changes (e.g., cancel or delaying appointments), which were significantly more than normal (n = 2,760, 46.2%), fewer new patient visits (n = 3,069, 51.5%), fewer normal preventative health visits (n = 3,268, 55%), fewer normal chronic care visits (n = 3,173, 53.5%), fewer normal acute care visits (n = 2,686, 45.3%), less revenue for the practice or facility (n = 3,145, 52.9%). A majority (n = 3,037, 50.4%) identified that their work responsibilities changed as a result of the COVID-19 pandemic. Prior to the COVID-19 pandemic, a majority of respondents (n = 5,444, 73.4%) identified that telehealth was not used in practice. As a result of the COVID-19 pandemic, a total of 3,685 (49.8%) reported that telehealth was used a high amount (e.g., daily). As a result of the COVID-19 pandemic, a total of 2,737 (37%) respondents reported that securing referrals or consults for patients was difficult. Similarly, securing supplies or services, such as durable medical equipment or home health care was reported to be difficult or very difficult by a total of 3,249 (44.5%) of respondents. Some reported obtaining an additional state license as an APRN (n = 351 4.7%) and practicing in a different state due to the COVID-19 pandemic (n = 316, 4.2%).

**Table 5 – Barriers to APRN Practice by State Practice Authority**

Barrier	Total Reportingn (%)	FPA n	Reducedn	Restrictedn
Restricted home health approval	2,485 (33.3)	437	1,157	891
Restricted hospital admitting privileges	2,446 (32.8)	352	1,168	926
Collaborating/supervising physician practice/population restricted	2,356 (31.6)	151	1,151	1,054
Orders for durable medical supplies require a physician signature	2,273 (30.4)	295	1,090	888
Physician co-signature of orders	1,708 (22.9)	119	738	851
Payment requirement to collaborating/supervising physician	1,650 (22.1)	106	721	823
Restricted health insurance credentialing	1,465 (19.6)	125	647	693
Consultants send recommendations only to collaborating/supervising physician	1,333 (17.9)	118	610	605
Prescriptions require a physician signature or co-signature	1,260 (16.9)	51	451	758
Referral or consultation declined by other providers	1,240 (16.6)	119	565	556
Requirement for supervision of procedures within APRN scope of practice	1,227 (16.4)	101	536	590
Pronouncing death including fetal death prohibited	1,138 (15.2)	100	548	490
Do-Not-Resuscitate (DNR) status orders restricted	1,047 (14)	62	466	519
Physician signature on pre and postoperative assessments	829 (11.1)	79	391	359
Anesthesia or emergency airway management requires physician supervision	679 (9.1)	93	299	287
Procedures essential to anesthesia require physician supervision	667 (8.9)	83	302	282
Discharges from post anesthesia care unit or other units requires physician signature	540 (7.2)	68	240	232
Lab or imaging results given only to collaborating/supervising physician	699 (9.4)	43	287	369
Unable to sign birth certificate	333 (4.5)	34	140	159

**Table 6 – Other APRN Barriers Reported By Practice Authority**

Barrier	FPA	Reduced	Restricted
Disability forms need MD signature	X	X	X
Unable to order hospice	X	X	X
Hospital bylaws restrictions on practice	X	X	X
85% reimbursement	X		
Admissions and orders for long term care require MD signature	X		
Unable to sign an emergency psychiatric hold	X		
Unable to practice telemedicine outside of state (New Hampshire)	X		
Social Security disability forms not honored without MD signature	X		
Unable to perform pulmonary function tests	X		
MD has to repeat all physical exams and sign all notes		X	
Insurance requires MD to be PCP		X	
Visiting Nurse Service will not take orders, only take MD referrals		X	
Unable to order skilled care/visiting nurse		X	
Unable to sign “return to play” after concussion		X	
Unable to order cardiac rehab		X	
Unable to refer to pulmonary rehab		X	
Unable to sign DNR document		X	
Unable to clear child for hearing aids without MD signature		X	
Unable to obtain informed consent for procedures		X	
Unable to perform sports physicals		X	
Ordering blood products requires MD signature		X	
Unable to bill for EKGs so these have to be sent to collaborating MD		X	
Patients have higher copay to see APRN		X	
Consults and H&P require MD cosignature			X
Unable to order imaging for patients with abnormal mammogram			X
All new hire physicians and work compensation injuries must be co-signed by MD			X

(continued)

**Table 6 – (Continued)**

Barrier	FPA	Reduced	Restricted
Unable to order physical therapy			X
Unable to sign for pulmonary rehab			X
Can pronounce death but unable to sign death certificate	X		X
Pharmaceutical companies require MD signature for samples			X

Note: abbreviations are as provided by the respondents

### Impact of State Practice Authority Classification

More respondents practicing in reduced or restricted states reported caring for patients with a diagnosis or symptoms of COVID-19 than respondents in FPA states ( $X^2 = 38.225$ ,  $df = 2$ ,  $p < .05$ ). More respondents working in reduced or restricted practice states than FPA states reported limited use of telehealth in primary care practices before the COVID-19 pandemic ( $X^2 = 27.215$ ,  $df = 6$ ,  $p < .05$ ), as well as high daily use of telehealth during the COVID-19 pandemic ( $X^2 = 20.85$ ,  $df = 6$ ,  $p = .002$ ). Additionally, more respondents working in reduced or restricted states reported significantly less than normal new patient visits (chi-square = 18.160,  $df = 8$ ,  $p = .20$ ) and less acute care problem visits ( $X^2 = 17.65$ ,  $df = 8$ ,  $p = .24$ ) than respondents in FPA states. There were no differences between respondents practicing in states with FPA, reduced or restricted with respect to working in inpatient, outpatient or both settings ( $X^2 = 4.616$ ,  $df = 4$ ,  $p = .33$ ), schedule changes (e.g., cancel/delayed appointments ( $X^2 = 10.719$ ,  $df = 8$ ,  $p = .22$ ), COVID-19 testing ( $X^2 = 6.76$ ,  $df = 8$ ,  $p = .56$ ), preventative health visits ( $X^2 = 12.89$ ,  $df = 8$ ,  $p = .12$ ), chronic care problem visits ( $X^2 = 12.342$ ,  $df = 8$ ,  $p = .14$ ), the volume of inpatients assigned ( $X^2 = 6.164$ ,  $df = 8$ ,  $p = .07$ ) or healthcare team approach to delivery of care ( $X^2 = 14.52$ ,  $df = 8$ ,  $p = .75$ ).

### Discussion

The demands associated with responding to the COVID-19 pandemic altered usual clinical practice and imposed new challenges on APRNs and other clinical providers throughout the United States. Social media and other media platforms are rife with personal accounts and stories about the physical, psychological, financial, family, and other adverse COVID-19 pandemic effects and practice challenges (McSpedon et al., 2020). The World Health Organization warned of COVID-19 pandemic-related stress that could have long-term and deleterious effects on the healthcare system (WHO, 2020). Nurses have been forced to shift from long-standing professional care standards to

crisis standards of care (ANA, n.d.) which can be disturbing or even traumatizing (McSpedon et al., 2020).

### Practice Barriers

Consistent with other studies, the results of this study indicate that barriers to APRN practice continue to restrict aspects of patient care and patient access to care, even in states with FPA (Bosse et al., 2017; Hain, 2014; Hastings-Tolsma et al., 2018; Peterson, 2017). Although state practice barriers are most commonly referenced, APRNs face other practice barriers. Even in FPA states, organizational bylaws and insurance and reimbursement issues continue to be barriers (Lofgren et al., 2017). Federal statutes from the Centers for Medicare and Medicaid Services (CMS) impede APRN practice. Other practice barriers include public and private reimbursement practices and various institutional and organizational policies related to credentialing as providers; clinical, admitting, and/or staff privileges (NAM, 2016, Robert Wood Johnson Foundation [RWJF], 2017). The cost of mandated collaborative or supervisory services is unregulated and can be cost-prohibitive (Martin & Alexander, 2019; Martin & Reneau, 2020; Myers and Alliman, 2018; Ritter et al., 2020; RWJF, 2017).

Practice barriers most frequently reported in this study among all states, including FPA, reduced, and restricted states, included hospital admitting privileges, home health approval, and orders for durable medical supplies. These barriers to care create unnecessary difficulty in the provision of continuity- and quality-of-care. During the COVID-19 pandemic, the inability to seamlessly provide continuity of care accentuated these issues by most of the respondents. When there are fewer state APRN practice restrictions, an increased number of APRNs providing care in underserved communities (Buerhaus, 2018) and improved health outcomes are found (Oliver et al., 2014; Xue et al., 2018).

Experts have warned against the reinstatement of practice barriers in those states that suspended them due to the COVID-19 pandemic. Lai et al. (2020) stated that replacing previous practice barriers could harm lawmakers' relationships with APRNs who may perceive a lack of appreciation and reciprocity for their personal sacrifices. Reverting to "the way things were," (Anderson 2020) argued, is not only unfounded but also unsupported by stakeholders in multiple U.S. sectors and around the globe. Nevertheless, as of late August 2020, Kansas, Michigan, and Tennessee rescinded Executive Orders and placed APRNs back under their usual restrictions (Raderstorf, 2020) despite ongoing, significant COVID-19 pandemic advancement in these states.

### Impact of COVID-19 pandemic-Related Executive Orders

The impact of Executive Orders in reduced and restricted practice states varied. In Tennessee, a restricted practice state, more than half of the respondents ( $n = 316$ , 57.1%)

indicated their collaborating physician did not stop reviewing charts. Reasons identified included that processes were already in place and were continued, that it was an automatic part of the workflow, or that it was current requirements of the practice setting or company policy. However, 72% ( $n = 398$ ) of respondents reported that the Executive Order waiver of chart reviews and site visits by the collaborating physician did change APRN practice or patient care. Examples included the ability to practice independently without having to spend time waiting for chart reviews, the ability to expedite orders that would previously require the collaborating physician signature, and the ability to follow patients through home health and direct care. Some larger healthcare practices or systems may not have changed their usual practices with an Executive Order that was designed to be temporary. Of significance, it remains unclear whether organizations fully adopted and implemented changes in SOP laws based on Executive Orders, especially in the midst of rapid pandemic changes.

Telehealth restrictions were lifted for all Medicare beneficiaries and for those residing in select states where Executive Orders were issued (American Medical Association, 2020; Centers for Medicare and Medicaid Services, 2020; LaRosa, 2020; Roth, 2020; State of Tennessee, 2020). Consequently, telehealth use increased dramatically (Browdin & Ross, 2020; Roth, 2020). This was reflected in the study results. The increased use of telehealth may continue beyond the COVID-19 pandemic once health outcomes have been evaluated.

### Limitations

This study reflected responses of APRNs in a similar distribution to the actual workforce, particularly for NPs and CNMs. There are more than 290,000 NPs (AANP), 70,000 CNSs (NACNS n.d.), 55,700 CRNAs (NBCRNA, 2019), 12,218 CNMs (ACNM, 2019) licensed in the U.S. The responses to this survey represent 2.2% of both NPs and CNMs, 1% of CRNAs, and 0.3% of CNSs in the United States. When considering all U.S. licensed APRNs ( $n = 427,918$ ), 1.7% responded to this survey. The respondents represented a wide variety of clinical specialties, geographic locations, populated areas, inpatient and outpatient settings, and types of practices. The respondents also represented reduced, restricted, or FPA states.

However, there were several study limitations including use of convenience sampling and varied response sample sizes among the states, impacting the ability to make state-based comparisons. While the survey was pilot tested and additional barriers to APRN practice were added to response options, other barriers may not be captured in the survey. An additional limitation may have been time constraints for APRNs to respond to the survey during the ongoing COVID-19 pandemic.

The NCSBN's Consensus Model (APRN Consensus Model, July 7, 2008) looks at the commonalities across

the four types of APRNs and calls for common regulation of APRN practice. However, there is a lack of uniformity in how the various types of APRNs are regulated across the United States. We found obstacles related to certain survey questions and our work with national NP, CRNA, and midwifery organizations that limited or otherwise impacted survey participation.

### Recommendations

The effects of the COVID-19 pandemic will extend well beyond the acute phase. APRNs should have an essential role throughout all phases of the COVID-19 pandemic. The natural experiment associated with the enactment of emergency Executive Orders offers a great opportunity for additional research on APRN practice authority. Research opportunities include examining the effect of Executive Orders, cost-effectiveness of APRN-provided care across different geographic areas and circumstances, and regulatory and non-regulatory barriers to care (Germack, Norful, & Riman, 2020).

Continued exploration about how ongoing APRN barriers to practice affect patient access to care and the quality of patient care is also needed. Additional research should examine strategies for removing barriers to practice. Strategies should be based on the economic, social, and political environment unique to each state. There is value in the reduced and restricted states collaborating to identify best practices for the advancement of FPA and sharing of experiences and resources. Research on strategies for reducing practice barriers even in FPA states is needed to improve patient care. Investigation on how APRN practice barriers impact access to care and the APRN's ability to provide needed patient care is relevant on an ongoing basis as well as how it pertains to the COVID-19 pandemic, COVID-19 pandemic sequelae, and preparedness for future emergencies. As demands change, such as seen during the acute phase of the COVID-19 pandemic, nursing practice and education must adapt. Additional research is needed to examine persistent non-regulatory barriers to practice and derive actionable strategy recommendations to remove the barriers.

### Conclusions

This national survey of APRNs during the COVID-19 pandemic identified that barriers to APRN practice continued to restrict aspects of patient care and patient access to care, even in states with FPA. The waiver of practice restrictions during the COVID-19 pandemic did result in the temporary removal of selected practice barriers for some APRNs but had minimal effect on APRN scope of practice in other instances. The study findings can be used to advocate for policy changes to modernize APRN practice authority regulations. These findings may support an evaluation of clinical institutions' ability to lift barriers

during times of increased demand during emergencies such as a pandemic. Identifying ongoing issues with APRN practice restrictions and the benefits of removal of practice barriers to APRN practice is essential. This is especially true for states that face critical shortages in primary care and in rural and underserved areas.

The reversal of Executive Orders, which eased practice restrictions temporarily for many APRNs, during the height of the COVID-19 pandemic, was surprising and concerning. Practice authority should be informed by credible evidence related to patient outcomes, the cost and quality of APRN-provided care, as well as the impact on access to care. The return to practice restrictions must align with empirical evidence (Yuanhong, Skillman, & Frogner, 2020). The findings of this study, combined with the ongoing devastation of the COVID-19 pandemic, require policy change. The sacrifices made by APRNs and other healthcare providers and the significant impact they had on the pandemic response must be appreciated, valued, and highlighted.

### Acknowledgments

The assistance of the research assistants Tracey Stansberry and Lauren Munoz, PhD students at the University of Tennessee Knoxville College of Nursing and Jennifer Doersem data analyst, and Rameela Ramen PhD, statistician at Vanderbilt University School of Nursing, are gratefully acknowledged.

### Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

### Author Contributions

Ruth Kleinpell, Carole Myers, Mavis Schorn, Wendy Likes: Conceptualization, Methodology, Study Implementation, Data review; Ruth Kleinpell: Writing- Original draft preparation; Ruth Kleinpell, Carole Myers, Mavis Schorn, Wendy Likes: Writing- Reviewing and Editing.

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