



# How collaborative practice agreements impede the provision of vital behavioral health services

Brendan Martin, PhD<sup>a,\*</sup>, Bethany J. Phoenix, PhD, RN, FAAN<sup>b</sup>,  
Susan A. Chapman, PhD, MPH, RN, FAAN<sup>c</sup>

<sup>a</sup>National Council of State Boards of Nursing, Chicago, IL

<sup>b</sup>UCSF School of Nursing, Department of Community Health Nursing, San Francisco, CA, USA

<sup>c</sup>UCSF School of Nursing, Department of Social & Behavioral Sciences, San Francisco, CA, USA

## ARTICLE INFO

### Article history:

Received 12 December 2019

Received in revised form

23 March 2020

Accepted 3 April 2020

Available online May 10, 2020.

### Keywords:

Collaborative practice  
agreement

Advanced practice registered  
nurse

Supervising physician

## ABSTRACT

**Background:** The critical shortage of behavioral health professionals impairs the ability of the U.S. health care system to respond to the growing demand for services to address mental illness and substance use disorders.

**Purpose:** To identify how restrictive state regulations act as barriers to full utilization of psychiatric mental health advanced practice registered nurses (PMH-APRN), whose scope of practice enables them to provide a full range of behavioral health services.

**Methods:** A sequential mixed methods study combining interview data ( $n = 94$ ) from a qualitative study of PMH-APRN practice with a subset of quantitative data ( $n = 699$ ) from a national APRN survey examining the impact of state-mandated APRN/MD collaborative practice agreements.

**Discussion:** Data sources converged to portray challenges to optimal use of APRNs providing psychiatric/mental health services, including high out-of-pocket fees, irregular communication with supervisors, mandated chart reviews, and supervisor turnover.

**Conclusion:** Inconsistent and burdensome supervision requirements contribute to cost inflation and may limit patient access.

**Cite this article:** Martin, B., Phoenix, B.J., & Chapman, S.A. (2020, September/October). How collaborative practice agreements impede the provision of vital behavioral health services. *Nurs Outlook*, 68(5), 581–590. <https://doi.org/10.1016/j.outlook.2020.04.002>.

## Introduction

The critical demand for behavioral health services and providers to address mental illness and substance use disorders is well described by researchers and policy makers. Nearly 20% of adults in the United States live with mental illness—over 46 million in 2017 (National

Institutes of Health, National Institute of Mental Health, 2019). Data from 2014 indicate that approximately 20.2 million adults had a substance use disorder within the past year (Lipari & Van Horn, 2017). To meet this demand, the Mental Health Parity and Addiction Equity Act and the Affordable Care Act significantly expanded treatment coverage (Beronio, Glied, & Frank, 2014; Letvak & Rhew, 2015; Sirotich, Durbin, & Durbin, 2016). Full

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

\*Corresponding author: Brendan Martin, National Council of State Boards of Nursing, 111 E. Wacker Drive, Ste. 2900, Chicago, IL 60601-4277.

E-mail address: [bmartin@ncsbn.org](mailto:bmartin@ncsbn.org) (B. Martin).

0029-6554/\$ - see front matter © 2020 Elsevier Inc. All rights reserved.

<https://doi.org/10.1016/j.outlook.2020.04.002>

**Table 1 – Respondent Demographics and Health Facility Characteristics**

Respondent Characteristics	Valid n	Total (N = 699)
Age (mean, SD)	677	55.1 (12.1)
Race/ethnicity	694	
Non-white/Caucasian		93 (13.4%)
White/Caucasian		601 (86.6%)
Sex	695	
Female		621 (89.4%)
Male		74 (10.7%)
Highest level of nursing degree	698	
Master's degree		498 (71.4%)
Doctor of nursing practice		95 (13.6%)
Doctor of philosophy (PhD)		46 (6.6%)
Other		59 (8.4%)
Year in practice (median, IQR)	699	15 (5–22)
Geographic setting	697	
Urban		460 (66.0%)
Rural		237 (34.0%)
Type of health care facility	699	
Health facility/health system		349 (50.0%)
Private practice (MD led)		72 (10.3%)
Private practice (APRN led)		92 (13.2%)
Private practice (other led)		22 (3.2%)
Self-employed		44 (6.3%)
Other		119 (17.1%)
Nursing role	699	
Nurse practitioner		535 (76.5%)
Clinical nurse specialist		164 (23.5%)
Number of collaborative agreements	699	
None		115 (16.5%)
One		390 (55.8%)
Two or more		194 (27.8%)
Practicing in multiple states	697	
No		674 (96.4%)
Yes		25 (3.6%)

Note: IQR, interquartile range.

implementation of the legislation's intent has faced numerous challenges, including difficulty recruiting an adequate number of psychiatric prescribers and ensuring full utilization of existing personnel.

The shortage of behavioral health providers is well documented. In December 2018, the Health Resources and Services Administration's Bureau of Health Workforce estimated there were approximately 5,565 Mental Health Professional Shortage Areas across the United States, encompassing more than 119 million people (U.S. Department of Health & Human Services, 2020). Consequently, as many as 55% of counties in the United States are without a single mental health provider (Kaiser Family Foundation, 2016). The lack of qualified personnel is felt particularly acutely in rural counties, which represent approximately 62% of Mental Health Professional Shortage Areas (U.S. Department of Health & Human Services, 2020).

Further, national estimates predict growing behavioral health practitioner shortages. The National Center for Health Workforce Analysis (2016) predicts shortages of over 10,000 full-time equivalent behavioral health

providers (Health Resources and Services Administration/National Center for Health Workforce Analysis; Substance Abuse and Mental Health Services Administration/Office of Policy, Planning, and Innovation, 2016). Current and projected shortages among psychiatric prescribers are particularly critical. Fewer applications for psychiatric residency training programs and a high percentage of psychiatrists reaching retirement age has contributed to significant shortages of behavioral health providers who can prescribe medications (Alang, 2015; Bartlett & Manderscheid, 2016; Weil, 2015).

One strategy to address this shortfall is to grant full practice authority to advanced practice registered nurses (APRNs) who are trained and educated to provide mental health services (National Council for Behavior Health, 2017; Olfson, 2016; Yang et al., 2017). This group includes Psychiatric Mental Health Nurse Practitioners (PMHNP), who have prescriptive authority in all states, and Psychiatric Mental Health Clinical Nurse Specialists (PMH-CNS), who can prescribe in 38 states and the District of Columbia (National Association of Clinical Nurse Specialists, 2015). In addition, care may be provided by nurse practitioners certified in other fields but working primarily in providing mental health services (Yang et al., 2017). In contrast to the declining number of psychiatrists, the psychiatric mental health APRN workforce is projected to grow substantially through 2025 (Delaney et al., 2018).

Evidence also confirms that PMH-APRNs improve behavioral health services by playing multifaceted roles and producing positive clinical outcomes (Baker, Travers, Buschman, & Merrill, 2018; Delaney et al., 2018; Fung, Chan, & Chien, 2014). Clinically prepared PMH-APRNs have a skill set that aligns with the needs of a wide range of behavioral health consumers and allows them to work in range of community settings (Hanrahan, Delaney, & Stuart, 2012).

Despite their potential to increase access and quality of behavioral health services, difficulties in recruiting and fully utilizing PMH-APRNs due to system-level barriers, lack of role-appropriate job descriptions, and substantial pay differentials are well documented across the United States (Chapman, Phoenix, Hahn, & Strod, 2018; Yang et al., 2017). Perhaps one of the greatest obstacles to addressing chronic workforce shortages are interstate variations in regulation that directly impact the availability, accessibility and full utilization of PMH-APRN providers.

Despite their advanced education and training, data indicate that nurse practitioners often face practice restrictions in states that require some form of physician supervision, contributing to resource scarcity in designated shortage areas (Xue, Ye, Brewer, & Spetz, 2016). Numerous research studies have broadly correlated restrictive state scope of practice with a smaller NP workforce, reduced patient access, and increased costs. State-level restrictions for nurse practitioners contribute to pre-existing barriers to care and inhibit full workforce utilization in disadvantaged communities and underserved populations (Doescher, Andrilla, Skillman, Morgan, & Kaplan, 2014; Graves et al., 2016;

**Table 2 – Univariable and Multivariable Binary Logistic Regression Results Examining Collaborative Agreement Fee Requirements**

Respondent and Practice Characteristics	OR (95% CI)	p	AOR (95% CI)	p
Age	1.01 (0.99–1.03)	.10	1.02 (0.99–1.04)	.24
Sex				
Female (Ref)	–		–	
Male	0.57 (0.30–1.10)	.09	0.53 (0.24–1.15)	.11
Race				
Minority	1.20 (0.72–2.00)	.49		
White/Caucasian (Ref)	–		–	
Highest nursing degree		.03		.11
Master's degree (Ref)	–		–	
Doctor of nursing practice	1.88 (1.15–3.09)	.01	1.52 (0.82–2.83)	.19
Doctor of philosophy (PhD)	1.03 (0.46–2.28)	.95	1.01 (0.37–2.78)	.99
Other	0.62 (0.30–1.29)	.20	0.44 (0.19–1.02)	.06
Practicing in multiple states				
No (Ref)	–		–	
Yes	1.60 (0.61–4.20)	.34		
Geographic setting				
Rural	1.81 (1.25–2.62)	.002	1.69 (1.05–2.70)	.03
Urban (Ref)	–		–	
Career stage		.15		.17
Early (Ref)	–		–	
Mid	1.69 (0.98–2.91)	.06	1.38 (0.72–2.67)	.33
Established	1.40 (0.90–2.19)	.14	0.77 (0.40–1.50)	.44
Type of health care facility		<.001		.001
Health Facility/health system	0.25 (0.15–0.43)	<.001	0.36 (0.18–0.69)	.002
Private practice (MD led)	0.19 (0.09–0.42)	<.001	0.33 (0.13–0.81)	.02
Private practice (APRN led) (Ref)	–		–	
Private practice (other led)	0.59 (0.21–1.66)	.32	0.67 (0.21–2.19)	.51
Self-employed	0.86 (0.39–1.92)	.71	1.16 (0.45–2.96)	.76
Other	0.22 (0.11–0.44)	<.001	0.25 (0.12–0.54)	<.001
Physician practice location		<.001		<.001
Same office/clinic	0.33 (0.19–0.59)	<.001	0.35 (0.18–0.67)	<.001
Same facility	0.25 (0.13–0.48)	<.001	0.25 (0.12–0.52)	.002
Same city/town (Ref)	–		–	
Other	2.27 (1.38–3.74)	.001	1.82 (1.02–3.22)	.04
Number of collaborative agreements				
One (Ref)	–		–	
Two or more	1.57 (1.08–2.27)	.02	2.21 (1.39–3.51)	<.001
Had role in collaborative agreement				
No (Ref)	–		–	
Yes	1.98 (1.37–2.86)	<.001	1.26 (0.78–2.04)	.34

Note: AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.

Reagan & Salsberry, 2013). A recent analysis of Community Health Center data from the National Ambulatory Medical Care Survey found that APRNs were more likely than physicians to provide mental health services to women, racial minorities, rural populations, individuals with substance use disorders, and patients with disabilities (Doescher et al., 2014; Graves et al., 2016; Yang et al, 2017; Weinberg & Kallerman, 2014). In addition, states with the least restrictive regulations documented increased NP staffing and patient access to health care services, as well as more cost-effective treatment (Conover & Richards, 2015; Ku, Frogner, Steinmetz, & Pittman, 2015; Kuo, Loresto Jr, Rounds, & Goodwin, 2013; Stange, 2014). Given their emphasis on preventive care, APRNs are also frequently well positioned to head off potentially adverse mental health

consequences through proactive education and counseling among these vulnerable populations (Delaney et al., 2018; Hing & Hooker, 2011). This compelling body of evidence indicates the benefit of full practice authority for APRNs overall, but there is a paucity of literature that focuses on advanced practice nurses in mental health settings.

## Methods

The purpose of this paper is to integrate findings from two national studies to provide a holistic understanding of the myriad challenges preventing the full utilization of PMH-APRNs. This collaboration employs a

**Table 3 – Univariable and Multivariable Binary Logistic Regression Results Examining Restricted Care Patterns**

Respondent and Practice Characteristics	OR (95% CI)	<i>p</i>	AOR (95% CI)	<i>p</i>
Age	0.99 (0.97–1.00)	.10	1.00 (0.98–1.01)	.75
Sex				
Female (Ref)	–		–	
Male	2.21 (1.29–3.78)	.004	2.43 (1.37–4.31)	.002
Race				
Minority	1.04 (0.62–1.76)	.88		
White/Caucasian (Ref)	–			
Geographic setting				
Rural	1.10 (0.76–1.60)	.61		
Urban (Ref)	–			
Career stage		.81		
Early (Ref)	–			
Mid	0.84 (0.51–1.40)	.51		
Established	0.92 (0.60–1.41)	.69		
Mandated chart reviews				
No (Ref)	–		–	
Yes	1.97 (1.34–2.89)	<.001	1.85 (1.20–2.86)	.002
Mandated min. distance				
No (Ref)	–		–	
Yes	1.63 (1.03–2.58)	.04	1.24 (0.74–2.07)	.60
Fee to establish		.001		.002
No (Ref)	–		–	
Yes, and I paid it	1.56 (0.88–2.77)	.13	1.90 (1.02–3.54)	.04
Yes, and my facility paid it	2.77 (1.65–4.65)	<.001	2.64 (1.52–4.61)	<.001
Fee to maintain		.02		
No (Ref)	–			
Yes, and I paid it	1.15 (0.66–2.01)	.62		
Yes, and my facility paid it	2.18 (1.33–3.57)	.002		
Lost supervising provider				
No (Ref)	–			
Yes	1.35 (0.94–1.93)	.11		
Physician practice location		.65		
Same office/clinic (Ref)	1.37 (0.81–2.32)	.25		
Same facility	1.14 (0.65–2.01)	.64		
Same city/town	–			
Other	1.09 (0.64–1.87)	.75		
Number of collaborative agreements				
One (Ref)	–			
Two or more	1.17 (0.80–1.69)	.42		
CPA author				
No (Ref)	–		–	
Yes	0.70 (0.48–1.03)	.07	0.66 (0.43–1.02)	.06

Note: AOR, adjusted odds ratio; CI, confidence interval; OR, odds ratio.

sequential mixed methods study design that integrates data from two sources: (a) a qualitative study on the impact of state scope of practice differences on PMHNPs (Chapman, Toretsky, & Phoenix, 2019); (b) a quantitative subanalysis of data on APRNs working in psychiatric settings from a larger national study that examined challenges and practice restrictions introduced by state-mandated collaborative practice agreements (CPAs; Martin & Alexander, 2019). The qualitative analysis builds on in-depth interviews and site visits with key informants located across five states. Informed by these findings, the follow-up quantitative analysis utilizes univariable and multivariable binary logistic regression models to examine collaborative agreement fee requirements and restrictive care trends.

*Qualitative Study of PMHNP Practice Environment.* A recent comparative case study conducted interviews and reviewed state regulations to examine aspects of the practice environment in states with full, reduced and restricted levels of nurse practitioner autonomy as categorized by the American Academy of Nurse Practitioners (AANP, 2018). The five states chosen were Oregon (full practice), Colorado (full practice), Illinois (reduced practice), Massachusetts (restricted practice), and North Carolina (restricted practice; Chapman et al., 2019). During site visits to each state, researchers conducted a total of 94 interviews with a variety of informants including PMHNPs, PMH-CNSs in states where they had prescriptive authority, PMH-APRN educators, collaborating psychiatrists, and state nursing regulators. Participants worked in community

mental health centers, hospital-based behavioral health clinics, private and group practices, hospital inpatient units, psychiatric crisis units, and schools of nursing.

In full practice states, PMHNPs reported it was relatively easy to set up group or private practices that used a nursing model of care (Chapman et al., 2019). Psychiatrists were occasionally used as consultants when they brought useful expertise, although peer consultation with other PMHNPs was more common. In states without full practice authority, informants reported a range of experiences with mandated MD supervision/collaboration. PMHNPs employed in agencies typically received psychiatrist supervision as part of their employment. Some informants, particularly early career practitioners, appreciated having required MD supervision as a form of mentoring or collegial support (Chapman et al., 2019).

However, PMH-APRN informants more commonly reported a variety of negative impacts of MD supervision requirements. In addition to disruptions in patient care when collaborating psychiatrists retired, resigned from the employing agency, or terminated the CPA, PMH-APRNs experienced adverse financial and practice effects (Chapman et al., 2019). For PMH-APRNs employed by agencies, the rationale that PMH-APRNs required “supervision” from psychiatrists was also used to justify significant salary differences, even when job duties were virtually identical.

*Quantitative Subanalysis of PMH-APRN Data.* The qualitative findings elicited further questions as to the scope and variability of these restrictions across states that mandate some level of supervision. Thus, the authors of this study sought to collaborate to broaden the scope of the initial investigation. To better understand how state-level regulations restrict PMH-APRNs from administering critical behavioral health services, a targeted quantitative subanalysis of data from a nationwide study examining APRN practice regulation (Martin & Alexander, 2019) was conducted to focus on the structure and individual components of CPAs.

The quantitative subanalysis draws from a larger national study that examined broader APRN practice trends to identify the common challenges and practice restrictions introduced by CPAs (Martin & Alexander, 2019). The national study sample was derived from all 29 states that mandate reduced scope of practice on at least one APRN role (Martin & Alexander, 2019). In this broad scope examination, over 54% of participants ( $n = 4,162$ ) self-reported working in primary care, but it was notable that Clinical Nurse Specialist (CNS) and Nurse Practitioner (NP) respondents working with patients in a psychiatric/mental health setting were one of only two groups to report significant and sustained financial challenges on multivariable analysis, suggesting unique difficulties for this APRN cohort. This finding led to a detailed subanalysis to focus on specific practice or profile characteristics that distinguish APRN respondents working in mental health settings. The investigators of this mixed methods study

sought to determine how the challenges identified in the qualitative study were further informed by the quantitative findings.

The quantitative analysis utilizes a subset of respondents drawn from a national sample of 8,701 APRNs. The parameters of the subsample are narrowly defined based on respondent feedback on patient population served. In total, 699 APRNs who indicated they primarily work with a psychiatric/mental health patient population comprise the final sample for this study. In line with the American Psychiatric Nurses Association’s definition of PMH-APRN (2019), the current analysis includes both graduate-trained CNS and NP respondents. Only the 22 states that place restrictions on one or both of the two advanced nursing provider roles aligned with a psychiatric/mental health patient population are included (National Council of State Boards of Nursing, 2018). Since the study did not determine specialty certification, this likely includes some APRNs who are not educated and certified as PMH-APRNs, but who work in mental health settings.

Consistent with the overall study, the quantitative subanalysis uses key terms that are critical to reader comprehension. In the APRN Consensus Model, which includes all of the licensure, accreditation, certification, and education elements, the title APRN is used for all four roles (National Council of State Boards of Nursing, 2008). While the role-specific knowledge and skills differ, respondents share the commonality of being APRNs. Thus, this paper will utilize the broad term PMH-APRN to refer to all eligible respondents. Furthermore, the term “supervising provider” is used throughout to remain consistent with the study methodology and key terminology employed in the quantitative survey. In line with the definition shared with respondents, this title refers to the provider with whom a PMH-APRN has established a CPA or supervisory agreement.

Participants were contacted via postcard and email, with all communications sent between September and November 2017. An online survey was administered using Qualtrics (Provo, UT). The instrument consisted of 47 questions divided across four content areas: baseline demographics, collaborative agreement framework, practice patterns, and collaborative agreement benefits/challenges. The survey topics were informed by the literature and feedback solicited from nursing regulators across the country. The final instrument was then reviewed and approved by the four APRN role associations: AANP, AANA, ACNM, and NACNS. Before the full administration, the survey was also pilot tested with a subsample of APRNs in select states to confirm the topics were relevant and comprehensive. The study was reviewed and determined to be exempt by the Western Institutional Review Board.

## Data Analysis

### Qualitative Analysis Coding

The qualitative study included site visits and interviews with multiple stakeholders, including nursing

regulators, PMH-APRN practitioners and faculty, and collaborating psychiatrists. Notes were taken by multiple members of the research team during interviews with each informant or group of informants and were reconciled and reviewed by the research team after the interview. Documents related to state scope of practice for APRNs, including behavioral health regulations that impacted PMH-APRN practice, were appraised. For this sequential mixed methods collaboration, a subset of interview notes from multiple stakeholders and other documents relevant to physician supervision were reviewed to identify prominent themes and areas of variability across states and informants that would inform results from the survey of APRNs described above.

#### Quantitative Analysis Dependent Variable Coding

One of the two primary dependent variables, collaborative agreement fee requirements, is an amalgamation of responses to two survey questions. The first asks respondents if they or their facility had to pay a fee to establish their collaborative agreement, while the second solicits information on whether they or their facility had to pay a fee to maintain their collaborative agreement. As either arrangement represents an additional financial burden on practicing APRNs or their employers, responses to these two items were combined. The second dependent variable was assessed in its raw form as a dichotomous outcome (Yes/No) asking if APRNs experience any practice restrictions associated with their collaborative agreement.

#### Quantitative Analysis Independent Variable Coding

A "Career Stage" variable was derived from participants' raw numeric responses related to years in practice. Respondents below the 25<sup>th</sup> percentile (5 years) were considered early career, while those between the 25<sup>th</sup> percentile and median were considered mid-career, and those at or above the median (15 years) were considered established. Furthermore, respondents who reported practicing in multiple states or working under two or more CPAs were re-classified into two binary predictors (e.g. One = 0, Two or More = 1). CPA authorship was also dichotomized to distinguish between any level of APRN involvement vs. no input. Finally, as over 86% of respondents were reportedly "white/Caucasian," all other racial/ethnic categories were collapsed into a single "non-white/Caucasian" group.

#### Statistical Analysis

For the quantitative subanalysis, any risk factors found to be marginally significant ( $p < .10$ ) on univariable analysis were initially evaluated in the multivariable models. However, as a measure of global fit, the composition of the final multivariable models was determined using only those parameters that best minimized Akaike's information criterion. An alpha error rate of  $p \leq .05$  was considered statistically significant. Quantitative analyses were conducted using SAS 9.4 (Cary, NC).

## Findings

### Description of Sample

Table 1 shows that PMH-APRN respondents were, on average, 55 years old (SD = 12.1), with a median of 15 years work experience (IQR: 5–22; Table 1). A majority were Caucasian ( $n = 615$ , 86.5%) and female ( $n = 632$ , 88.8%). A Master's degree was the most frequent level of nursing education reported ( $n = 512$ , 71.6%), but a sizeable proportion of respondents also indicated having a Doctor of Nursing Practice ( $n = 96$ , 13.4%). A majority worked in large health facilities/systems ( $n = 360$ , 50.4%) and in urban areas ( $n = 474$ , 66.4%). Nearly all respondents reported practicing in only one state ( $n = 689$ , 96.2%), but about one-quarter did indicate they work under more than one collaborative agreement ( $n = 197$ , 27.5%).

A majority of PMH APRN respondents working under a collaborative agreement reported discussing at least one patient case ( $n = 561$ , 94.3%) with and/or referring at least one patient case ( $n = 434$ , 73.1%) to a member of their physician team, which included but was not limited to their supervising provider, in the past month. It is unclear to what extent this represents state supervision requirements, or if these contacts represent collegial peer consultation that would occur in the absence of mandated supervision. In contrast, only half of respondents ( $n = 304$ , 52.1%) indicate their supervising physician communicated with them in-person at least once a month, while less than half ( $n = 244$ , 41.9%) communicated via phone/text/email at least once a month. A majority ( $n = 319$ , 53.6%) also report their supervising physician does not conduct chart reviews. This mirrored findings from the qualitative study in which the collaborative services provided were minimal. One informant noted, "The relationship with the supervisor I had before my current one was bogus. I could barely track her down. Besides, I didn't have anything to talk to her about because I've been in practice for so long." However, the PMH-APRNs reported that they had little choice but to accept these arrangements because of regulatory requirements to have a collaborating MD.

### Collaborative Agreement Fees

Approximately one in four respondents report that either they or their facility had to pay a fee to a supervising physician ( $n = 168$ , 28.2%). Of this subtotal, notable proportions of respondents reported paying directly out of pocket to establish ( $n = 60$ , 35.7%) or maintain ( $n = 71$ , 42.3%) their collaborative agreement. For these direct payments, the median fee to establish a collaborative agreement was \$500 ( $n = 49$ , IQR: \$150 - \$2,000). However, establishment fees ranged considerably, from \$50 to \$40,000. Seventeen respondents indicated they paid in excess of \$1,000 to establish their collaborative agreement, with five of those reporting

figures greater than \$5,000. By comparison, the median fee to maintain a collaborative agreement was \$275 per month ( $n = 58$ , IQR: \$150–\$500). Maintenance fees also ranged widely, from \$25 to \$2,000 per month. Twelve respondents indicated they paid more than \$500 a month, with 10 reporting monthly figures of \$1,000 or more. In the qualitative study, reported fees could be as high as \$1,500 to 3,000 per month, similarly representing a significant cost burden to PMHNP practices. Respondents also reported that fees paid had no relationship to the frequency of meeting or calling upon the collaborating physicians for required approvals.

Adjusting for select demographic and practice criteria, PMH-APRNs practicing in rural areas were 71% (AOR = 1.71, 95% CI [1.07–2.73],  $p = .02$ ) more likely to report needing to pay a fee to establish or maintain their collaborative agreement (Table 2). PMH-APRNs working in large health facilities/systems (AOR = 0.38, 95% CI [0.19–0.73],  $p = .004$ ) or physician private practices (AOR = 0.34, 95% CI [0.14–0.81],  $p = .02$ ) were significantly less likely to pay collaborative agreement fees compared to those working in an APRN-led private practice. In the qualitative study, informants reported reduced ability to establish nurse-led practices due to difficulties finding a supervising physician, either because no willing collaborator could be found or because the PMH-APRN was unwilling to work with any of the available psychiatrists: “If you want to open a private practice, you may have a hard time finding a supervising psychiatrist. My real dream is to open a practice in [rural area] and work 2 to 3 days a week, but would be impossible to find a supervisor.”

APRNs working in closer proximity to their supervising physician were also less likely to pay a fee to establish or maintain their collaborative agreement. APRNs working in the same office/clinic (AOR = 0.35, 95% CI [0.18–0.66],  $p < .001$ ) or facility (AOR = 0.24, 95% CI [0.11–0.51],  $p < .001$ ) were 65% and 76% less likely, respectively, to report a required fee to establish or maintain their collaborative agreement compared to those working remotely. Similarly, APRNs working under two or more collaborative agreements were 2.21 (95% CI [1.39–3.50],  $p < .001$ ) times more likely to pay collaborative agreement fees compared to those who only reported one. In the qualitative study interviews, respondents reported that the facility paid the supervising physicians, either in increased salary or increased allowed administrative time, but they were not aware of the specific amount paid or details of the compensation arrangements for their supervisors.

### Care Restrictions

Approximately one-third of respondents in the quantitative subanalysis ( $n = 189$ , 33.1%) reported that certain terms of their collaborative agreement significantly restricted the care they could provide. Among the 177 respondents who specified the nature of their restrictions, limits on controlled substance prescriptions emerged as the most common theme ( $n = 89$ , 50.2%).

On univariable analysis, male sex, mandated chart reviews, mandated minimum distance (to collaborating physician), as well as fees to establish and maintain a collaborative agreement emerged as significant drivers of care restrictions. Losing or needing to change a supervising physician represented a marginal obstacle, while APRN co-authorship on the collaborative agreement was marginally beneficial.

On multivariable analysis, male APRNs were 2.43 (95% CI [1.40–4.22],  $p < .001$ ) times more likely to report restrictions (Table 3). Similarly, APRNs working in states that mandated chart reviews were 89% (AOR = 1.89, 95% CI [1.25–2.86],  $p < .001$ ) more likely to report restrictions. Respondents who reported paying out-of-pocket fees to establish their collaborative agreement were 91% (AOR = 1.91, 95% CI [1.03–3.53],  $p = .04$ ) more likely to report restrictions compared to those who paid no fees. In addition, APRNs whose facility paid similar fees were 2.67 (95% CI [1.54–4.64],  $p < .001$ ) times more likely to report restrictions.

PMH-APRNs in states without full practice authority often reported that practice limitations imposed by the facilities where they worked were more restrictive than required by state regulation. These included requirements that psychiatrists review or co-sign all PMH-APRN patient notes, a practice that added to the workload of agency psychiatrists and reduced time available to see patients. In health systems that denied PMHNPs hospital privileges, their assessments were billed under their supervising MDs name, rendering their economic contribution to the agency invisible (Chapman et al., 2019).

While state-mandated minimum distance requirements (to collaborating physician) (OR = 1.60, 95% CI [1.01–2.35],  $p = .04$ ) and facility-paid fees to maintain collaborative agreements (OR = 2.17, 95% CI [1.32–3.55],  $p = .002$ ) emerged as significant barriers on univariable analysis, these trends were not maintained in the adjusted multivariable model and thus these variables were dropped to achieve the most parsimonious predictive model. By contrast, APRN collaborative agreement co-authorship remained marginally beneficial on multivariable analysis (AOR = 0.66, 95% CI [0.43–1.01],  $p = .06$ ).

### Discussion

The critical and growing demand for behavioral health providers in the United States is well documented (Kaiser Family Foundation, 2016; National Institutes of Health, National Institute of Mental Health, 2019; U.S. Department of Health & Human Services, 2020). Permitting PMH-APRNs full practice authority not only helps to address an immediate need, but also leverages a workforce projected to grow substantially through 2025 (Delaney et al., 2018). APRNs have been shown in multiple studies to produce consistently positive clinical outcomes (Baker, Travers, Buschman, & Merrill,

2018; Delaney et al., 2018; Fung, Chan, & Chien, 2014). To this end, this sequential mixed-methods study was conducted to investigate system-level barriers and interstate variations in SOP regulations that create barriers for PMH APRNs to help address a national workforce crisis. Through this joint effort, this analysis captures the breadth and depth of the obstacles PMH-APRNs encounter in their day-to-day practice that threaten to limit patient access and disrupt continuity of care.

Evidence shows that legally required physician supervision exacerbates pre-existing barriers to behavioral health services by disrupting the production of high-quality and cost-efficient care (Graves et al., 2016; Neff et al., 2018; Reagan & Salsberry, 2013; Ritter, Bowles, O'Sullivan, Carthon, & Fairman, 2018). While not limited to PMH-APRNs, Yang et al. (2017) found that APRNs are more likely than physicians to provide mental health services to women, racial minorities, rural populations, individuals with substance use disorders, and patients with disabilities (2017). In addition, states with the least restrictive regulations consistently document increased access to health care services and more cost-effective treatment (Conover & Richards, 2015; Stange, 2014). In the qualitative interviews, PMH APRNs without full practice authority reported facing similar obstacles to care at both the facility and state levels. For some respondents, the practice limitations imposed by facilities were more restrictive than required by state regulation. These included denying PMH-APRNs hospital admitting privileges and requirements that psychiatrists review or co-sign all patient notes, a practice that added to the workload of agency psychiatrists and reduced the time available to see patients (Chapman et al., 2019). Further evidence from the quantitative analysis also highlighted reduced prescribing power and burdensome restrictions associated with mandated chart reviews, mandated minimum distance (to collaborating physician), out of pocket fees, and disruptions to workflow and patient access associated with losing or needing to change a supervising physician.

In addition, PMH-APRNs often experienced adverse financial effects resulting from the physician supervision required by CPAs (Chapman et al., 2019). Such requirements can and often do inhibit provider entry to practice and thereby increase the cost of care, measured by wages for providers and the price of services for patients (Ritter et al., 2018). Although the rationale for requiring physician supervision is to ensure oversight of less knowledgeable practitioners, data indicate that in practice there is no correlation between APRN experience and expertise and the level of supervision received. A study of physician supervision of NPs in Florida demonstrated that a significant proportion of NPs with 0 to 2 years of experience received no physician oversight, while others with more than 20 years of experience found themselves restricted by extensive oversight (Rudner & Kung, 2017).

What can result from these imbalances is a form of economic exploitation, as evidenced by a website of a North Carolina psychiatrist group, which promises up to \$60,000 per year in “almost passive income” for fulfilling the “modest” supervision requirements for experienced PMH-APRNs (Carolina Partners, 2017). One in four respondents to the quantitative study reported a fee associated with mandated supervision. Direct payments (out-of-pocket) to maintain a collaborative agreement often exceeded \$10,000 a year. This finding was corroborated in the qualitative study, with reported fees as high as \$1,500 to 3,000 per month (Chapman et al., 2019). In both studies, PMH-APRNs looking to establish their own clinics encountered the most difficulty and incurred the most costs. Further, both studies also underscored that fees paid often had no relationship to the frequency of meeting or calling upon the collaborating physicians for required approvals.

Numerous research studies have broadly correlated restrictive state scope of practice with a smaller APRN workforce, reduced patient access, and increased costs. Further, evidence shows that the negative consequences of required physician supervision are often particularly acute in designated shortage areas (Xue, Ye, Brewer, & Spetz, 2016). Clinically prepared PMH-APRNs have a skill set that aligns with the needs of a wide range of behavioral health consumers and allows them to work in range of community settings (Hanrahan, Delaney, & Stuart, 2012). The findings of both the qualitative and quantitative studies underscore participants' strong collaborative tendencies and an interest in working in truly collaborative interdisciplinary teams. Despite these traits and significant work experience, PMH-APRNs often reported significant restrictions, while supervising physicians benefited from either increased salary or extra administrative time.

### Limitations

Although the findings of the two studies used in this sequential mixed methods approach are convergent in respect to costs and consequences of mandated physician supervision for APRNs working in behavioral health settings, there are significant differences between samples. Qualitative findings are from interviews in the three states in the study that had some degree of practice restriction, while the quantitative subanalysis includes respondents from all 22 states without full practice authority for two advanced provider roles (CNS & NP). In addition, the quantitative study did not ask respondents about specialty certification, so the sample used for the subanalysis likely contains a proportion of APRNs without specialty training in mental health who work in mental health settings.

Furthermore, there are limitations specific to the quantitative subanalysis that require consideration. As a retrospective survey, any associations identified during this analysis are correlative rather than causal. In addition, despite no evidence of respondent bias, it



may be that the thoughts and opinions expressed in this study are not fully representative of all APRNs working in a psychiatric/mental health setting.

## Conclusion

The inconsistent and overly burdensome variations in interstate supervision requirements contribute to cost inflation and limit patient access despite no evidence of increased patient safeguards. In practice, such arrangements result in some APRNs with no experience receiving no physician oversight, while other more experienced practitioners find themselves restricted by extensive oversight (Rudner & Kung, 2017). In this sequential mixed methods study, APRNs in mental health settings reported infrequent interaction with their supervising physicians, excessive fees, and practice restrictions impacting the delivery of timely, safe, and efficient behavioral health services. The capacity of qualified providers to meet growing demand by necessity relies upon an evidenced-based regulatory framework. In light of increased demand for behavioral health services, exacerbated by population aging and provider shortages, there is a need to reexamine and restructure regulations that impair professionals from practicing to the full extent of their education and training (Ritter et al., 2018). The results of this study underscore the need to remove obstacles that impede the availability and accessibility of PMH-APRN providers.

## Supplementary materials

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.outlook.2020.04.002.

## REFERENCES

- Alang, S. M. (2015). Sociodemographic disparities associated with perceived causes of unmet need for mental health care. *Psychiatric Rehabilitation Journal*, 38(4), 293.
- American Association of Nurse Practitioners. (2018). State practice environment. Retrieved from <https://www.aanp.org/advocacy/state/state-practice-environment> on April 26, 2020.
- Baker, J., Travers, J. L., Buschman, P., & Merrill, J. A. (2018). An efficient nurse practitioner-led community-based service model for delivering coordinated care to persons with serious mental illness at risk for homelessness. *Journal of the American Psychiatric Nurses Association*, 24(2), 101–108.
- Bartlett, J., & Manderscheid, R. (2016). What does mental health parity really mean for the care of people with serious mental illness? *Psychiatric Clinics*, 39(2), 331–342.
- Beronio, K., Glied, S., & Frank, R. (2014). How the Affordable Care Act and Mental Health Parity and Addiction Equity Act greatly expand coverage of behavioral health care. *Journal of Behavioral Health Services Research*, 41(4), 410–428.
- Carolina Partners. (2017). Doctors without bosses. Retrieved from <https://www.carolinapartners.com/doctors-without-bosses/> on November 16, 2017.
- Chapman, S. A., Phoenix, B. J., Hahn, T. E., & Strod, D. C. (2018). Utilization and economic contribution of psychiatric mental health nurse practitioners in public behavioral health services. *American Journal of Preventive Medicine*, 54(6), S243–S249.
- Chapman, S. A., Toretsky, C., & Phoenix, B. J. (2019). Enhancing Psychiatric Mental Health Nurse Practitioner practice: Impact of state scope of practice regulations. *Journal of Nursing Regulation*, 10(1), 35–43.
- Conover, C., & Richards, R. (2015). Economic benefits of less restrictive regulation of advanced practice nurses in North Carolina. *Nursing Outlook*, 63(5), 585–592.
- Delaney, K. R., Naegle, M. A., Valentine, N. M., Antai-Otong, D., Groh, C. J., & Brennaman, L. (2018). The effective use of psychiatric mental health nurses in integrated care: Policy implications for increasing quality and access to care. *The Journal of Behavioral Health Services & Research*, 45(2), 300–309.
- Doescher, M. P., Andrilla, C. H. A., Skillman, S. M., Morgan, P., & Kaplan, L. (2014). The contribution of physicians, physician assistants, and nurse practitioners toward rural primary care: Findings from a 13-state survey. *Medical Care*, 52(6), 549–556.
- Fung, Y. L., Chan, Z., & Chien, W. T. (2014). Role performance of psychiatric nurses in advanced practice: A systematic review of the literature. *Journal of Psychiatric and Mental Health Nursing*, 21(8), 698–714.
- Graves, J. A., Mishra, P., Dittus, R. S., Parikh, R., Perloff, J., & Buerhaus, P. I. (2016). Role of geography and nurse practitioner scope-of-practice in efforts to expand primary care system capacity. *Medical Care*, 54(1), 81–89.
- Hanrahan, N. P., Delaney, K. R., & Stuart, G. W. (2012). Blueprint for development of the advanced practice psychiatric nurse workforce. *Nursing Outlook*, 60(2), 91–104.
- Health Resources and Services Administration/National Center for Health Workforce Analysis; Substance Abuse and Mental Health Services Administration/Office of Policy, Planning, and Innovation. (2016). National projections of supply and demand for behavioral health practitioners: 2013–2025. Rockville, Maryland.
- Hing, E., & Hooker, R. S. (2011). Community health centers: Providers, patients, and content of care. *Age (years)*, 45(64), 18–44.
- Kaiser Family Foundation. (2016). Mental health care health professional shortage areas. Retrieved from <http://kff.org/other/state-indicator/mental-health-care-health-professional-shortage-areas-hpsas/?currentTimeframe=0> on May 16, 2019.
- Ku, L., Frogner, B. K., Steinmetz, E., & Pittman, P. (2015). Community health centers employ diverse staffing patterns, which can provide productivity lessons for medical practices. *Health Affairs*, 34(1), 95–103.
- Kuo, Y. F., Loresto, F. L. Jr., Rounds, L. R., & Goodwin, J. S. (2013). States with the least restrictive regulations experienced the largest increase in patients seen by nurse practitioners. *Health Affairs*, 32(7), 1236–1243.
- Letvak, S., & Rhew, D. (2015, September). Assuring quality health care in the emergency department. *Healthcare: Vol. 3. Multidisciplinary Digital Publishing Institute*.
- Lipari, R. N., & Van Horn, S. L. (June 29, 2017). Trends in substance use disorders among adults aged 18 or older. *The CBHSQ report*. Rockville, MD: Center for Behavioral

- Health Statistics and Quality, Substance Abuse and Mental Health Services Administration.
- Martin, B., & Alexander, M. (2019). The economic burden and practice restrictions associated with collaborative practice agreements: A national survey of advanced practice registered nurses. *Journal of Nursing Regulation*, 9(4), 22–30.
- National Association of Clinical Nurse Specialists. (2015, October). CNS prescriptive authority by state. Retrieved from <http://www.nacns.org/wp-content/uploads/2016/11/5-AuthorityTable.pdf> on November 16, 2017.
- National Council for Behavioral Health. (2017). The Psychiatric Shortage: Causes and Solutions. Washington, DC: National Council for Behavioral Health. Retrieved from [https://www.thenationalcouncil.org/wp-content/uploads/2017/03/Psychiatric-Shortage\\_National-Council-.pdf](https://www.thenationalcouncil.org/wp-content/uploads/2017/03/Psychiatric-Shortage_National-Council-.pdf) on April 16, 2019.
- National Council of State Boards of Nursing. (2008). Consensus Model for APRN Regulation: Licensure, Accreditation, Certification & Education. Retrieved from [https://www.ncsbn.org/Consensus\\_Model\\_for\\_APRN\\_Regulation\\_July\\_2008.pdf](https://www.ncsbn.org/Consensus_Model_for_APRN_Regulation_July_2008.pdf) on June 21, 2019.
- National Council of State Boards of Nursing. (2018). Independent Prescribing Maps. Retrieved from NCSBN. <https://www.ncsbn.org/index.htm> on June 21, 2019.
- National Institutes of Health, National Institute of Mental Health. (2019, February). *Mental Health Information: Statistics*. Retrieved from <https://www.nimh.nih.gov/health/statistics/mental-illness.shtml> on August 1, 2019.
- Neff, D. F., Yoon, S. H., Steiner, R. L., Bejleri, I., Bumbach, M. D., Everhart, D., & Harman, J. S. (2018). The impact of nurse practitioner regulations on population access to care. *Nursing Outlook*, 66(4), 379–385.
- Olfson, M. (2016). Building the mental health workforce capacity needed to treat adults with serious mental illnesses. *Health Affairs*, 35(6), 983–990.
- Reagan, P. B., & Salsberry, P. J. (2013). The effects of state-level scope-of-practice regulations on the number and growth of nurse practitioners. *Nursing Outlook*, 61(6), 392–399.
- Ritter, A. Z., Bowles, K. H., O'Sullivan, A. L., Carthon, M. B., & Fairman, J. A. (2018). A policy analysis of legally required supervision of nurse practitioners and other health professionals. *Nursing Outlook*, 66(6), 551–559.
- Rudner, N., & Kung, Y. M. (2017). An assessment of physician supervision of nurse practitioners. *Journal of Nursing Regulation*, 7(4), 22–29.
- Sirotych, F., Durbin, A., & Durbin, J. (2016). Examining the need profiles of patients with multiple emergency department visits for mental health reasons: a cross-sectional study. *Social Psychiatry and Psychiatric Epidemiology*, 51(5), 777–786.
- Stange, K. (2014). How does provider supply and regulation influence health care markets? Evidence from nurse practitioners and physician assistants. *Journal of Health Economics*, 33, 1–27.
- United States Department of Health and Human Services, Bureau of Health Workforce. (2020). Designated Health Professional Shortage Areas Statistics. Retrieved from <https://data.hrsa.gov/Default/GenerateHPSAQuarterlyReport> on April 25, 2020.
- Weil, T. P. (2015). Insufficient dollars and qualified personnel to meet United States mental health needs. *The Journal of Nervous and Mental Disease*, 203(4), 233–240.
- Weinberg, M., & Kallerman, P. (2014). *Full practice authority for nurse practitioners increases access and controls cost*. San Francisco, CA: Bay Area Economic Council Economic Institute.
- Xue, Y., Ye, Z., Brewer, C., & Spetz, J. (2016). Impact of state nurse practitioner scope-of-practice regulation on health care delivery: Systematic review. *Nursing Outlook*, 64(1), 71–85.
- Yang, B. K., Trinkoff, A. M., Zito, J. M., Burcu, M., Safer, D. J., Storr, C. L., & Idzik, S. (2017). Nurse practitioner independent practice authority and mental health service delivery in US community health centers. *Psychiatric Services*, 68(10), 1032–1038.