



Published in final edited form as:

*Res Nurs Health*. 2022 October ; 45(5): 516–524. doi:10.1002/nur.22253.

## State-level scope of practice regulations for nurse practitioners impact work environments: Six state investigation

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### Abstract

Nurse practitioner (NP) scope of practice (SOP) policies are different across the United States. Little is known about their impact on NP work environment in healthcare organizations. We investigated the association between SOP policies and organizational-level work environment of NPs. Through a cross-sectional survey design, data were collected from 1244 NPs in six states with variable SOP regulations (Arizona, New Jersey, Washington, Pennsylvania, Texas, and California) in 2018–2019. Arizona and Washington had full SOP—NPs had full authority to deliver care. New Jersey and Pennsylvania had reduced SOP with physician collaboration requirement; California and Texas had restricted SOP with physician supervision requirement. NPs completed mail or online surveys containing the Nurse Practitioner Primary Care Organizational Climate Questionnaire, which has these subscales: NP-Administration Relations (NP-AR), NP-Physician Relations (NP-PR), Independent Practice and Support (IPS), and Professional Visibility (PV). Regression models assessed the relationship between state-level SOP and practice-level NP work environment. NP-AR scores were higher in full SOP states compared to reduced ( $\beta = 0.22, p < 0.01$ ) and restricted ( $\beta = 0.15, p < 0.01$ ) SOP states. Similarly, IPS scores were higher in full SOP states. The PV scores were also higher in full SOP states compared to reduced ( $\beta = 0.16, p < 0.001$ ) and restricted ( $\beta = 0.12, p < 0.05$ ) SOP states. There was no relationship between SOP and NP-PR score. State-level policies affect NP work environment. In states with more favorable policies, NPs have better relationships with

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#### AUTHOR CONTRIBUTIONS

Dr. Poghosyan was responsible for conceptualizing the study. Drs. Poghosyan, Martsof, and Liu determined the methodology of the study. Dr. Liu conducted the data analysis. Dr. Spetz provided expert methodological expertise and provided feedback on the study methodology. Dr. Poghosyan drafted the manuscript and Dr. Stein assisted with result interpretation. Dr. Osakwe provided NP perspective to be incorporated in the discussion. All authors reviewed the manuscript and contributed to the writing.

#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

#### PEER REVIEW

The peer review history for this article is available at <https://publons.com/publon/10.1002/nur.22253>

administration and report more role visibility and support. Efforts should be made to remove unnecessary SOP restrictions.

### Keywords

nurse practitioner; primary care; scope of practice; work environment

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## 1 | INTRODUCTION AND BACKGROUND

The growing workforce of nurse practitioners (NPs) plays a key role in meeting the increasing demand for primary care services in the United States (U.S. Department of Health and Human Services Health Resources and Services Administration Bureau of Health Workforce National Center for Health Workforce Analysis, 2016). Approximately one-fifth of all primary care providers are NPs, and this proportion will may reach to 27% by 2025 (U.S. Department of Health and Human Services Health Resources and Services Administration Bureau of Health Workforce National Center for Health Workforce Analysis, 2016). NPs deliver high quality, safe patient care (Buerhaus et al., 2018; Newhouse et al., 2011). Primary care practices increasingly rely on the NP workforce to meet the demand for care (Barnes et al., 2018).

Though NPs will play an increasingly important role in the US health care system, policy and practice barriers restrict NP practice. Only 27 states and the District of Columbia allow NPs to have full practice authority and deliver care to patients without any policy restrictions placed on their scope of practice (SOP) (American Association of Nurse Practitioners, 2021b). In the remaining states, NPs have to have a collaborative agreement with or supervision by physicians to deliver care despite evidence that these SOP restrictions are not associated with improved quality of care or reduced costs (Kurtzman et al., 2017; Ortiz et al., 2018; Perloff et al., 2019; Xue et al., 2016). Furthermore, restrictive SOP regulations may significantly restrict access to care for patients (Neff et al., 2018). Eliminating SOP restrictions on NPs can potentially increase access to healthcare with no negative impact on quality or cost of care, particularly in low-income communities facing a greater shortage of primary care providers and long-standing health disparities (Huang & Finegold, 2013; Poghosyan et al., 2019; Yang et al., 2021).

The SOP policies govern the care that NPs deliver to patients within their organizations and create the context for care delivery. Restrictions on NP SOP may limit the NP's ability to fully meet the needs of patients (Kuo et al., 2013) and healthcare organizations' ability to maintain favorable work environments for NPs to promote their care delivery (Poghosyan et al., 2013). Recent research shows that organizations employing NPs limit NP practice and create barriers to optimal NP care (Chapman et al., 2019; Pittman et al., 2020). Specifically, some organizations do not foster favorable work environments, attributes of settings in which clinicians practice. Work environment can determine the care delivered to patients, the performance of healthcare organizations, and the well-being of the clinicians themselves (Aiken et al., 2011; Poghosyan et al., 2020; Wei et al., 2018). Patients receive better care and have better outcomes in healthcare organizations with favorable environments for all types

of clinicians (Braithwaite et al., 2017). Additionally, adverse events and medical errors are lower in healthcare settings with positive work environments (Smith et al., 2019). Clinicians are also more satisfied with their jobs and turnover rates are lower in organizations with better environments—which is beneficial for healthcare organizations (Goodhue & Harris, 2019). Creating optimal work environment is important to ensure the delivery of safe patient care and better clinical outcomes.

Restrictive SOP regulations can contribute to suboptimal NP work environments, prohibiting NPs from delivering high-quality patient care. Many NPs report poor work environment characterized by lack of support and poor relationships with practice managers (Poghosyan et al., 2017). Restrictive SOP policy combined with poor work environment can have significant negative impact on patient care and clinician outcomes. One study conducted in New York State showed that the removal of state NP SOP restrictions was associated with improvements in primary care NP work environments (Poghosyan et al., 2020). Yet, more rigorous and large-scale studies are needed to better understand the link between state-level policy and work environment within healthcare organizations. To date, no large studies have explored how NP SOP policies impact the work environment of NPs within primary care practices.

## 2 | METHODS

The details of the study methodology are presented below; more information about the methodology is also available elsewhere (Harrison et al, 2021).

### 2.1 | Design

We collected survey data from primary care NPs in six states: Arizona (AZ), California (CA), New Jersey (NJ), Pennsylvania (PA), Texas (TX), and Washington (WA) in 2018–2019. These states were selected for variability in NP SOP regulations and geographic diversity. At the time of the survey, the states had various SOP regulations (American Association of Nurse Practitioners, 2018). In AZ and WA, NPs were allowed to independently deliver all aspects of patient care without physician involvement (full SOP). NJ and PA required NP collaboration with physicians (reduced SOP). CA and TX required NPs to practice under physician supervision (restricted SOP). The Institutional Review Board of Columbia University Medical Center approved the study.

### 2.2 | Source of participants and sampling criteria

We used IQVIA OneKey database to identify NPs. OneKey includes data from clinicians and practices across the United States (IQVIA Inc., 2020). It incorporates data from IMS Health, Healthcare Data Solutions, and SK&A and contains provider names, practice names, locations, contact information, network affiliations, and National Provider Identifiers of NPs and physicians. We identified primary care NPs using OneKey facility and physician specialty data (DesRoches et al., 2015). We defined practices as primary care if 50% or more of their physicians had the following specialties: family practice, general practice, geriatrics, internal medicine, preventative medicine, or pediatrics. This definition of primary

care practices has been used previously (Barnes et al., 2018). We selected practices which employed at least one NP. OneKey does not contain data on NP-owned practices.

### 2.3 | Sample and data collection

We included all primary care NPs in AZ, NJ, and WA, but took a 75% random sample of NPs in PA, and a 50% random sample in both CA and TX. PA, CA, and TX had a large number of NPs, and our sampling strategy allowed having a comparable number of NPs from each state. A professional survey organization conducted the data collection between 2018 and 2019. We mailed a paper survey to NPs that included a cover letter describing the study and a link to the online version of the survey. Each survey questionnaire was associated with a unique identifier. After completing the survey, we entered participants into a lottery drawing for one of 250 \$50 gift cards. We used a modified Dillman process to maximize response rates (Dillman et al., 2014). We sent NPs three separate survey mailings and two postcard reminders. We conducted telephone follow-up with nonresponders. In total, 5689 NPs in six states met the sampling criteria and 1244 NPs returned completed surveys for a final response rate of 22%.

### 2.4 | Data collection tool

The questionnaire included the Nurse Practitioner-Primary Care Organizational Climate Questionnaire (NP-PCOCQ). The NP-PCOCQ is a validated tool and contains 29 items that ask NPs to rate the degree to which they agree that certain work characteristics are present in their practices. The answers are measured on a 4-point Likert-like scale from “strongly agree” to “strongly disagree.” The items are grouped in four subscales: NP-Administration Relations (NP-AR), NP-Physician Relations (NP-PR), Independent Practice and Support (IPS), and Professional Visibility (PV). Higher scores on each subscale represent a more favorable work environment. The following are sample items from each subscale: “Administration takes NP concerns seriously” (NP-AR), “I feel valued by my physician colleagues” (NP-PR), “Physicians support NP patient care decisions” (IPS), and “Staff members have a good understanding about NP roles” (PV). We tested and demonstrated the reliability and validity of the NP-PCOCQ and its subscales in previous studies (Poghosyan et al., 2013, 2017).

We also collected demographic (e.g., age, sex, race, and education) and practice characteristics, including geographic location (rural or urban), and type of the practice setting (physician office, community health center, or hospital-based clinic).

### 2.5 | Dependent variable

NP work environment was the primary dependent variable. We aggregated the NP-level responses to the practice level because work environment is primarily a characteristic of an organization as opposed to an individual NP (James & Jones, 1974). First, we calculated mean scores on each NP-PCOCQ subscale for each NP respondent with completion rates greater than 70% across all items (Bono et al., 2007); then, we calculated practice-level mean scores as the aggregation of the responses of all NPs within each organization. Cronbach’s alphas were calculated for each of the subscales. All of the consistency coefficients were above the acceptable threshold of 0.70 (Cronbach, 1951).

More specifically, the alphas were 0.94, 0.94, 0.87, and 0.86 for PV, NP-PR, NP-AR, and IPS, respectively.

## 2.6 | Independent variable

State-level SOP regulation was the main independent variable. The six states included in the study were coded as having either full, reduced, or restricted SOP (American Association of Nurse Practitioners, 2018)

## 2.7 | Covariates

We used the following as control variables in the regression models: (1) NP demographic characteristics (e.g., age, sex, race, and education), (2) practice setting (e.g., whether the NP worked in a physician office, community health center, or hospital-based clinic), (3) duration of time in current position, (4) hours worked per week over the prior month, and (5) number of additional NPs within the organization.

## 2.8 | Data analysis approach

We calculated descriptive statistics for practice-level NP demographic characteristics and practices attributes. We calculated practice-level mean scores on each NP-PCOCQ subscale at each level of state SOP. We aggregated independent variables to the practice level as well. Following descriptive examinations, we also examined the significance of bivariate relationships between SOP and each practice-level NP-PCOCQ subscale score using two-way analysis of variance tests.

Next, we built ordinary least squares multiple linear regression models to examine the relationship between SOP and each NP-PCOCQ subscale score after controlling for all practice-level covariates: average age of NPs, female ratio, white ratio, proportion of NPs with doctoral degree (i.e., Doctorate of Nursing Practice, PhD, or other doctorate), average years in the primary position, practice site type, urbanicity, and the number of NPs in the practice. Beta weights and 95% confidence intervals (CIs) showed the strength and direction of the relationships. We calculated variance inflation factors (VIFs) to assess multicollinearity of independent variables in the final multiple regression models. In an effort to avoid unnecessarily inflating the Type II error rate, we did not perform a multiple testing adjustment as we only had four planned tests (Anderson, 2001; Thompson, 1994).

# 3 | RESULTS

## 3.1 | Sample characteristics

In total, 1244 NPs from 1109 unique primary care practices completed the survey. We received 954 surveys by mail (76.7%) and 290 surveys (23.3%) online. We report the practice-level NP characteristics and practice characteristics in Table 1. On average, NPs were 49.2 years of age ( $SD = 11.7$ ). The average proportion of NPs in practices with a doctoral degree was 11.7% ( $SD = 31\%$ ). About 80% ( $SD = 39\%$ ) of NPs were white. Physician offices were the largest group of practices (47%) employing NPs, and 86% of practices were in urban areas.

### 3.2 | The relationship between SOP policies and work environment

Table 2 presents the practice-level mean scores on the NP-PCOCQ subscales by SOP. Across all six states, NP-AR subscale had the lowest average score, followed by PV and NP-PR subscales. IPS for NPs had the highest average score. Subscale scores were consistently higher in full SOP states, indicating more favorable work environments. Before building the final multiple regression models, VIF was calculated to assess the multicollinearity of independent variables. The VIFs of the main factor (i.e., SOP status) and covariates fell below the cutoff value of 10 for high multicollinearity (Allison, 1999). Thus, multicollinearity was not a concern in our models.

Table 3 shows the results from the final regression models assessing the relationship between SOP and each practice-level NP-PCOCQ subscale. Primary care practices in full SOP states were more likely to have a higher PV score compared to practices within reduced ( $\beta = 0.16, p < 0.01$ ) and restricted ( $\beta = 0.12, p < 0.05$ ) SOP states. Primary care practices located in full SOP states were also more likely to have higher NP-AR scores compared to practices located in states with reduced ( $\beta = 0.22, p < 0.05$ ) and restricted ( $\beta = 0.15, p < 0.01$ ) SOP policies. In addition, practices in states with full SOP were more likely to have higher IPS scores compared to practices with reduced ( $\beta = 0.14, p < 0.01$ ) and restricted ( $\beta = 0.09, p = 0.01$ ) SOP policies. There was no statistically significant relationship between SOP policy and practice-level NP-PR scores.

## 4 | DISCUSSION

We investigated the relationship between the state-level NP SOP policies and organization-level primary care NP work environment. This is the first large-scale study to assess this relationship. Primary care practices employing NPs in the full practice authority states have better support for NP practice, more visible NP roles, and have better relationships between NPs and practice managers/administrators. These findings are consistent with other research showing favorable work environments for NPs in less restrictive policy environments (Poghosyan et al., 2015).

NP-physician relationships were favorably rated by NPs across all primary care practices compared to other domains of NP work environment. This finding is consistent with the literature showing favorable relationship between NPs and physicians (Fletcher et al., 2007; Poghosyan et al., 2020; Wilcox et al., 2007). Our findings demonstrate that NP-physician relationship was not associated with state-level policy regulations. Research has suggested that other factors, such as the length of time that NPs and physicians had worked together are associated with NPs' ratings of their relationships with physicians (Poghosyan et al., 2017). Similarly, physicians who work alongside with NPs and who have been in practice longer have the positive attitudes toward NPs (Street & Cossman, 2010). State-level policy appears to be not a key factor in determining of collegiality between NPs and physicians. Physicians and NPs practice together and build collegial relationships within healthcare teams to assure patients receive optimal care regardless of state policy. As the NP numbers continue to grow and primary care practices rely on NPs to care for patients (Barnes et al., 2018), creating favorable NP SOP policies and removing unnecessary restrictions may potentially create work environments conducive for effective care delivery.



Many studies have shown that restrictive SOP regulations negatively impact access to care and do not improve quality of patient care or outcomes (Neff et al., 2018; Poghosyan et al., 2019; Yang et al., 2021). One possible mechanism for these relationships may be that SOP regulations affect the NP work environment, which in turn affects patient care and outcomes, which should be investigated in future studies. Poor work environments in which NPs lack necessary support and collegial relationships with administration may prevent NPs from delivering efficient patient care. Creating favorable work environments is important to help NPs deliver high quality and safe care to patients (Neff et al., 2018; Poghosyan et al., 2018; Yang et al., 2021). Thus, having favorable SOP regulations that will enable favorable NP work environments is important.

Removing state-level policy restrictions on NPs can have implications for care delivery across the country. During the COVID-19 pandemic, many states issued emergency executive orders to remove SOP restrictions on NPs to meet surging patient care demand (American Association of Nurse Practitioners, 2020; Poghosyan et al., 2022). Many of these orders have since expired; policymakers should act to make full SOP for NPs permanent to support improvements in patient access and quality of care and to ensure the workforce is optimized for future emergency response (Fraher et al., 2020). Full SOP regulations should be the standard across the country.

Our findings have implications for primary care practices employing of NPs. Practices should invest in improving NP work environment. For example, the NP-AR was rated the lowest by NPs across all six states regardless of the state-level policy regulations, leaving substantial opportunity for improvement. Also, important focus includes visibility of the NP role and awareness among practice leadership about NP competencies. Increasing awareness of NP skills and competencies will enable practice leadership to optimally use NPs' advanced skill set and promote interdisciplinary teamwork (Poghosyan & Liu, 2016; Poghosyan et al., 2015). Practices should also invest efforts in enhancing communication between NPs and administrators so NPs' concerns can be addressed to ensure safe patient care. Efforts should be made to increase awareness among administrators about the NP role and competencies and how to optimize NP role within primary care practices regardless of the state SOP regulatory restrictions.

Our findings have implications for future research studies. Future studies should consider viewpoints of administrators in practices and physicians working with NPs regarding the NP work environment and the potential impact of restrictive SOP regulation on the environment and interdisciplinary teamwork. We recognize that our sample was predominantly white female NPs. Larger studies with diverse NP workforce are critically needed to inform efforts to diversify the NP workforce to achieve health equity.

## 5 | LIMITATIONS

The study findings should be interpreted in the context of its limitations, and future research should address these limitations. The study relied on self-reported data collected from NPs who may have under- or over-reported the challenges they experienced within their organizations. We did, however, inform NPs about the confidentiality of their responses.

The cross-sectional design limits causal inferences. Studies with more robust methodologies are needed to demonstrate the causal impact of SOP policies on NP work environment. Though the study was conducted in six US states, our findings might not be generalizable to other states. The states we included are also different from other states with the same SOP regulations. Our response rate was 22%. Yet, the demographic characteristics of our NP sample were comparable to the demographic characteristics of the national NP survey (American Association of Nurse Practitioners, 2021a). We conducted a detailed nonresponse bias analysis. More details about our nonresponse bias analysis can be found elsewhere.

## 6 | CONCLUSION

This was the first large-scale study to assess the impact of state-level SOP policies governing NP practice on NP work environment within their organizations. NPs practicing in primary care practices located in states with less restrictive SOP for NPs are more likely to have favorable work environments for NPs that support NPs' ability to deliver high quality, safe care. Policymakers should remove state-level restrictions on NPs and practice administrators should make efforts to improve NP work environments to promote high-quality patient care.

## ACKNOWLEDGMENT

The study was funded by the National Institute on Minority Health and Health Disparities (NIMHD), R01MD011514.

### Funding information

National Institute on Minority Health and Health Disparities, Grant/Award Number: R01MD011514

## DATA AVAILABILITY STATEMENT

The data that support the findings will be available in (repository name) at (DOI/URL) following an embargo from the date of publication to allow for commercialization of research findings.

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**TABLE 1**

Practice-level NP and practice characteristics (N = 1109 practices).

	Overall		Full SOP		Reduced SOP		Restricted SOP		P				
	M	SD	M	SD	M	SD	M	SD					
<i>Practice-level NP characteristics</i>													
Average age	49.19	11.65	49.34	11.23	49.78	11.69	48.67	11.86	0.38				
Average number of years in primary position	6.53	6.55	6.23	6.61	6.71	6.29	6.55	6.72	0.66				
<i>Practice-level NP ratio</i>													
Sex (female ratio)	0.88	0.28	0.86	0.27	0.91	0.25	0.87	0.30	0.06				
Race (white ratio)	0.80	0.39	0.88	0.31	0.90	0.29	0.69	0.46	<0.01**				
Education level (doctorate degree ratio)	0.12	0.31	0.17	0.36	0.10	0.30	0.10	0.29	<0.01**				
<b>Practice characteristics (practice level)</b>													
	<b>Overall</b>	<b>N</b>	<b>%</b>	<b>Full SOP</b>	<b>N</b>	<b>%</b>	<b>Reduced SOP</b>	<b>N</b>	<b>%</b>	<b>Restricted SOP</b>	<b>N</b>	<b>%</b>	<b>P</b>
<b>Geographic location</b>													
Rural	158	14	41	15	43	12	74	15	-	-	-	0.30	
Urban	951	86	228	85	318	88	405	85	-	-	-	<0.01**	
<b>Practice type</b>													
Community health center	222	20	58	22	44	12	120	25	-	-	-	-	
Hospital-based practice	101	9	30	11	29	8	42	9	-	-	-	-	
Physician practice	521	47	105	39	218	61	198	42	-	-	-	-	
All other	254	23	74	28	64	18	116	24	-	-	-	<0.01**	
<b>Number of NPs</b>													
1	443	40	92	34	176	49	175	37	-	-	-	-	
2-5	557	50	142	53	167	46	248	52	-	-	-	-	
6+	109	10	35	13	18	5	56	12	-	-	-	-	

Note: p-values generated from  $\chi^2$  tests for categorical and t-tests for continuous variables.

Abbreviations: M, mean; N, sample size; NP, nurse practitioner; P, p-value; SD, standard deviation; SOP, scope of practice.

\*\* Significant at  $p < 0.01$ .

**TABLE 2**

Descriptive statistics of practice-level NP-PCOCQ subscales in states with different scope of practice regulations.

NP-PCOCQ subscales	Overall (n = 1097)		Full SOP (n = 269)		Restricted SOP (n = 361)		Reduced SOP (n = 479)		p
	M	SD	M	SD	M	SD	M	SD	
Professional Visibility	3.17	0.65	3.26	0.63	3.11	0.66	3.16	0.66	<0.05*
NP-Administration Relations	2.90	0.72	3.01	0.67	2.81	0.71	2.90	0.75	<0.01**
NP-Physician Relations	3.32	0.50	3.35	0.52	3.31	0.53	3.30	0.53	0.52
Independent Practice and Support	3.48	0.46	3.56	0.40	3.43	0.49	3.47	0.46	<0.01**

Note: p-values generated from t-tests.

Abbreviations: M, mean; N, sample size; NP, nurse practitioner; NP-PCOCQ, Nurse Practitioner-Primary Care Organizational Climate Questionnaire; p, p-value; SD, standard deviation.

\* Significant at  $p < 0.05$ .

\*\* Significant at  $p < 0.01$ .

**TABLE 3**  
Findings from the regression models on the relationship between SOP regulations NP work environment.

	Professional Visibility			NP-Administration Relations			NP-Physician Relations			Independent Practice and Support		
	$\beta$	95% CI	<i>p</i>	$\beta$	95% CI	<i>p</i>	$\beta$	95% CI	<i>p</i>	$\beta$	95% CI	<i>p</i>
Main predictor												
SOP policy (reference = full)												
Full versus reduced	0.16	(0.05, 0.26)	0.00**	0.22	(0.10, 0.34)	0.00**	-0.04	(-0.13, 0.05)	0.36	0.14	(0.06, 0.21)	0.00**
Full versus restricted	0.12	(0.02, 0.22)	0.02*	0.15	(0.04, 0.26)	0.01*	-0.04	(-0.12, 0.04)	0.34	0.09	(0.02, 0.16)	0.01*
Covariates												
Average age	0.00	(0.00, 0.01)	0.08	0.00	(0.00, 0.01)	0.46	0.00	(0.00, 0.01)	0.17	0.00	(0.00, 0.00)	0.16
Sex composition (female ratio)	-0.05	(-0.20, 0.09)	0.45	0.16	(0.01, 0.32)	0.04*	-0.04	(-0.15, 0.08)	0.52	-0.06	(-0.16, 0.04)	0.22
Race composition (white ratio)	-0.07	(-0.17, 0.04)	0.23	0.13	(0.02, 0.25)	0.03*	0.00	(-0.09, 0.08)	0.98	0.04	(-0.03, 0.12)	0.24
Education level (PhD ratio)	0.03	(-0.10, 0.15)	0.66	0.09	(-0.05, 0.23)	0.22	0.15	(0.05, 0.25)	0.00**	0.08	(-0.01, 0.17)	0.08
Average years in the position	0	(0.00, 0.01)	0.17	0.00	(-0.01, 0.01)	0.90	0.01	(0.00, 0.01)	0.04*	0.00	(0.00, 0.01)	0.61
Geographic location (reference = rural)												
Urban	-0.01	(-0.12, 0.11)	0.90	0.03	(-0.09, 0.16)	0.58	0.06	(-0.03, 0.16)	0.17	0.04	(-0.04, 0.11)	0.38
Practice type (reference = physician practice)												
Community health center	-0.03	(-0.14, 0.08)	0.63	-0.06	(-0.18, 0.06)	0.34	-0.05	(-0.14, 0.04)	0.30	0.01	(-0.07, 0.09)	0.80
Hospital-based practice	0.33	(0.19, 0.47)	<0.01**	0.33	(0.18, 0.49)	<0.01**	-0.15	(-0.26, -0.03)	0.01*	0.22	(0.12, 0.32)	<0.01**
All other	0.04	(-0.06, 0.14)	0.43	0.02	(-0.09, 0.14)	0.68	-0.04	(-0.13, 0.04)	0.29	0.01	(-0.06, 0.08)	0.75
Number of NPs (reference = 1)												
2-5 NPs	0.06	(-0.03, 0.14)	0.18	-0.07	(-0.17, 0.02)	0.13	0.00	(-0.07, 0.07)	0.94	0.03	(-0.04, 0.08)	0.52
6+ NPs	0.08	(-0.07, 0.22)	0.32	-0.10	(-0.26, 0.06)	0.22	0.09	(-0.03, 0.21)	0.15	0.05	(-0.06, 0.14)	0.47

Abbreviations: CI, confidence interval; *N*, sample size; NP, nurse practitioner; *p*, *p*-value; SD, standard deviation; SOP, scope of practice;  $\beta$ , beta coefficient.

\* Significant at  $p < 0.05$ .

\*\* Significant at  $p < 0.01$ .