Practice environments and job satisfaction and turnover intentions of nurse practitioners: Implications for primary care workforce capacity

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Background: Health care professionals, organizations, and policy makers are calling for expansion of the nurse practitioner (NP) workforce in primary care to assure timely access and high-quality care. However, most efforts promoting NP practice have been focused on state level scope of practice regulations, with limited attention to the organizational structures.

Purpose: We examined NP practice environments in primary care organizations and the extent to which they were associated with NP retention measures.

Methodology: Data were collected through mail survey of NPs practicing in 163 primary care organizations in Massachusetts in 2012. NP practice environment was measured by the Nurse Practitioner Primary Care Organizational Climate Questionnaire, which has four subscales: Professional Visibility, NP–Administration Relations, NP–Physician Relations, and Independent Practice and Support. Two global items measured job satisfaction and NPs' intent to leave their job. We aggregated NP level data to organization level to attain measures of practice environments. Multilevel logistic regression models were used.

Findings: NPs rated the relationship between NPs and physicians favorably, contrary to the relationship between NPs and administrators. All subscales measuring NP practice environment had similar influence on the outcome variables. With every unit increase in each standardized subscale score, the odds of job satisfaction factors increased about 20% whereas the odds of intention of turnover decreased about 20%. NPs from organizations with higher mean scores on the NP–Administration subscale had higher satisfaction with their jobs ($OR = 1.24$, 95% CI [1.12, 1.39]) and had lower intent to leave ($OR = 0.79$, 95% CI [0.70, 0.90]).

Key words: job satisfaction, practice environment, primary care, nurse practitioner, turnover

Practice Implications: NPs were more likely to be satisfied with their jobs and less likely to report intent to leave if their organizations support NP practice, favorable relations with physicians and administration, and clear role visibility. Creating productive practice environments that can retain NPs is a potential strategy for increasing the primary care workforce capacity.

The primary care system in the United States is overburdened with health care needs that exceed the system's capacity. This situation will worsen with the implementation of the Affordable Care Act, as the patient demand for primary care will be significantly higher than the supply of primary care providers (PCPs) (Petterson et al., 2012). The primary care workforce is projected to fall 20% short of demand for services by 2025 (Sargen, Hooker, & Cooper, 2011). However, this trend is not similar for all PCPs. Although the primary care physician workforce is expected to shrink, leading to a need for 52,000 additional physicians by 2025 (Petterson et al., 2012), the nurse practitioner (NP) workforce will grow by 130% in the same time frame (Auerbach, 2012). However, an increase in NP numbers does not necessarily mean that the challenges facing the primary care system would be addressed. The NP workforce is not optimally utilized, and there are wide variations in state level scope of practice (SOP) regulations governing NP practice (Pearson, 2012). Some states support NP full SOP, which is characterized by NPs' capacity to evaluate, diagnose, and treat patients or prescribe medications (Pearson, 2012). Other states either reduce or restrict NP SOP by requiring them to have collaborative or supervisory relationships with physicians to provide care (National Council of State Boards of Nursing, 2010). Whereas SOP regulations are receiving attention from researchers and policy makers including the Institute of Medicine calling for uniformity across the states (Institute of Medicine, 2010), limited attention has been given to organizational structures in settings employing NPs that may affect NP care and outcomes. For instance, although NPs across the country are trained similarly, possessing similar competencies and skills to deliver care, some primary care settings utilize NPs only in delivery of urgent care whereas others use NPs in chronic care delivery (Laurant et al., 2005; Poghosyan, Nannini, Smaldone, et al., 2013).

Such inconsistency in NP practice from setting to setting might be explained by setting's organizational structures such as the leadership structure or the relationship between NPs and other providers. However, little is known about them or how they affect NPs' job satisfaction or intent to leave their positions. Multiple studies have reported widespread dissatisfaction among primary care physicians with challenging work environments, time pressure, and high workload leading to job dissatisfaction and turnover (Buchbinder, Wilson, Melick, & Powe, 2001; Linzer et al., 2009). These negative provider outcomes may compromise their performance, ultimately influencing quality of care and patient outcomes. Thus, evidence is needed about organizational structures that are important for NP practice and how they affect NP outcomes.

Most studies examining organizational impact on nursing workforce have been conducted in hospitals and have focused on staff nurses. Researchers found that poor practice environments lead to poor quality of care, job dissatisfaction, turnover, and other unfavorable outcomes (Aiken et al., 2011). However, staff nurses and NPs have different SOP and roles and responsibilities. Although the SOP between NPs and physicians often overlap in primary care (American College of Physicians, 2009), in hospital settings nurses and physicians have distinct professional roles and clear boundaries. In addition, primary care settings are different from hospitals and create a different environment (Tallia et al., 2003). For example, decision-making, relationships between team members, and organizational processes vary among primary care settings and hospitals. Thus, to learn how to promote NP practice in primary care, it is necessary to understand NP practice environments in those settings and their influence on NP workforce.

Research has identified that, in primary care settings, relationships between NPs and physicians as well as relationships between NPs and managers are important aspects of practice environment (Poghosyan, Nannini, Stone, & Smaldone, 2013). However, studies show that many NPs view their relationship with physicians as supervisory, rather than collaborative, and express dissatisfaction with intra-practice partnerships (De Milt, Fitzpatrick, & McNulty, 2011) and physician support (Lindeke, Jukkala, & Tanner, 2005). In addition, during the process of patient care, NPs do not receive the same level of support as physicians. For example, even when NPs and physicians have similar PCP roles, physicians more often have dedicated staff support, whereas NPs might not receive the same help (Poghosyan, Nannini, Stone, et al., 2013). Thus, suboptimal NP practice environments may (a) prevent NPs from effectively utilizing their skills and knowledge to provide care, (b) lead to NPs being dissatisfied with their jobs, and/or (c) result in NPs leaving their jobs, thereby contributing to the shrinking primary care workforce.

Studies have shown that many NPs have low overall job satisfaction (Pasarón, 2013; Ryan & Ebbert, 2013). In addition, they are dissatisfied with specific aspects of their jobs, such as opportunities for professional advancement or involvement in organizational governance (Wild, Parsons, & Dietz, 2006). Numerous other studies and policy experts

have also concluded that the day-to-day job difficulties nurses face may affect their willingness to remain in specific jobs, both in the short term and in the profession over the longer term (Hayes et al., 2006). One study showed that 27% of NPs plan to leave their current positions (De Milt et al., 2011); however, we do not know the specific organizational structures that may lead to this outcome.

In summary, there is clear evidence that the organizational structures often fail to promote the best working conditions for PCPs. Yet we know little about NP practice environments and their impact on NP outcomes. As the NP workforce is expected to grow (Auerbach, 2012), it is essential to understand NP practice environments and their impact on NP job satisfaction and intent to leave. This evidence will promote organizational interventions to foster NP practice environments and retain NPs in their clinical positions.

Conceptual Underpinnings

We focused on studying how practice environments in primary care organizations affect NP job satisfaction and intent to leave. The conceptual underpinnings were based on theoretical and empirical research in organizational studies showing that employees' perceptions of their work setting impact their behaviors, performance, and outcomes (Aiken et al., 2011; James & Jones, 1974). In the literature, employees' perceptions of their work setting are often referred to as "organizational climate," "practice environment," or "work environment" (Sleutel, 2000). In this study, we assessed NPs' perceptions of their practice environments, which is conceptualized as NPs' shared perceptions about a set of organizational structures in their works settings that emerge from the way the organizations interact with NPs and influence their behaviors and outcomes (Poghosyan, Nannini, Stone, et al., 2013; Schneider, 2000). A literature review of the evidence on the organizational climate of NPs (Poghosyan, Nannini, & Clarke, 2013) and a qualitative study conducted with primary care NPs (Poghosyan, Nannini, Stone, et al., 2013) showed that NP practice environments include support for NP independent practice, visibility of the NP role, and the relationships between NPs, physicians, and administrators.

Organizational theorists and researchers also believe that organizational structures in the workplace impact employee performance (Kanter, 1976). If the organization fails to provide employees with structures and resources to enhance their performance, it becomes evident in their productivity and outcomes. Evidence is accumulating that poor practice environments in health care settings lead to poor patient and provider outcomes (Aiken et al., 2011; Benzer et al., 2011) such as low quality of care, diminished effectiveness, job dissatisfaction, and increased turnover (Brazil, Wakefield, Cloutier, Tennen, & Hall, 2010; De Milt et al., 2011; Linzer et al., 2009). Thus, studying practice environments and their influence on NP outcomes is important.

Methods

Using a cross-sectional survey design, we collected data from 163 primary care practices in Massachusetts in 2012. Approval from the institutional review board of Columbia University Medical Center was obtained.

Data and Sample

This study focuses on primary care practices that employ NPs, which we identified from the Massachusetts Provider Database (MPD) developed by Massachusetts Health Quality Partners. Massachusetts Health Quality Partners annually contacts the clinics in Massachusetts and collects information about them including their addresses and information on clinicians working there. MPD allows for the mapping of physicians, NPs, and specialists to the clinics where they provide care. The unique advantage of this database is that it identifies practices that employ NPs and NPs' roles as PCPs or specialists. We extracted the practice addresses of NPs who were listed as PCPs in MPD and sent surveys to 807 NPs using mail survey procedures. We followed a modified Dillman, Smyth, and Christian (2009) method to collect data. After the first survey, we sent a postcard reminder to nonrespondents and followed up with the second mailing of nonrespondents to increase the response rate. A practice was included in our study if we received a survey from at least one NP. A convenience sample of 314 NPs completed and returned surveys, which yielded a response rate of 40%, accounting for undeliverable mails and ineligible NPs. These NPs practiced in 163 primary care practices, and the number of NPs responding from each practice ranged from 1 to 12.

Measures

Organization level measures. NP practice environment was measured at the organization level using the *Nurse Practitioner Primary Care Organizational Climate Questionnaire (NP-PCOCQ)*, which is the first NP-specific survey instrument, with strong psychometric properties, designed to measure practice environments in primary care (Poghosyan, Nannini, Finkelstein, Mason, & Shaffer, 2013). It has 29 items that ask NPs to rate the degree to which certain characteristics are present in their work settings using a 4-point scale (1 = *strongly disagree* to 4 = *strongly agree*). The tool has four subscales, which have high internal consistency reliability: (a) NP–Physician Relations (NP-PR; Cronbach's alpha = .90), (b) NP–Administration Relations (NP-AR; Cronbach's alpha = .95), (c) Independent Practice and Support (IPS; Cronbach's alpha = .89), and (d) Professional Visibility (PV; Cronbach's alpha = .87; Poghosyan, Nannini, Finkelstein, et al., 2013). The NP-PR subscale has seven items measuring the relationship between NPs and physicians. For example, "*In my organization, NPs and physicians collaborate to provide patient care*" is an item in this subscale. NP-AR has nine

items, and "*Administration makes efforts to improve working conditions for NPs*" is an item from this subscale. IPS's nine items measure support for NP practice. "*My organization creates an environment where I can practice independently*" is an item from the IPS. The four PV subscale items assess NP role visibility. For example, "*In my practice setting, staff members have a good understanding about NP roles in the organization.*" These measures were collected at the individual level. We first computed NP level mean scores on each subscale for respondents who completed more than 70% of the items on the subscales (Bono, Ried, Kimberlin, & Vogel, 2007), then we aggregated the responses from all NPs practicing within the organization to obtain the organization level mean score. For each subscale, a higher organization level mean score indicates a better NP practice environment.

The survey asked the respondents to report the characteristics of their organizations, such as how many other NPs practice in their organizations as well as the type of the organization. NP practice sites included private physician offices, community health centers, and hospital-affiliated primary care practices, among others. We also collected information about whether the organization was located in a rural or urban area as well as demographic information such as age, gender, education, and years of experience.

NP level measures. Job satisfaction was measured by a single item that asks NPs to rate satisfaction with their current job on a 4-point scale from "*very satisfied*" to "*very dissatisfied.*" This item has been used globally in research with nurses to successfully differentiate nurses with different levels of job satisfaction (Aiken et al., 2011); however, to our knowledge, it has not been used with NPs. Evidence shows that global measures of job satisfaction are both effective and valid (Wanous, Reichers, & Hudy, 1997). In our study, we dichotomized job satisfaction by combining "*very satisfied*" and "*satisfied*" and "*dissatisfied*" and "*very dissatisfied*" into two categories. This differentiated NPs who were satisfied with their job from those who were dissatisfied, given that the extreme answer choice is of greatest interest in workforce management. Also, dichotomizing increased the statistical power and eased the interpretation of the results. NPs' intent to leave their current position was measured by the following item: "*Do you plan to leave your current position in the coming year?*" with to response choices (yes/no). This item has also been used in surveys of nurses but not with NPs.

Data Analysis

We first computed the descriptive statistics on NP demographic and work variables. Frequency tables and means with standard deviations were used to describe categorical variables (gender, education) and continuous variables (age), respectively. Next, we examined bivariate associations between each predictor and the outcome variables (NP level job satisfaction and intent to leave). Before

building the multilevel logistic regression models to investigate the relationship between NP practice environment and the outcome variables, we checked for multicollinearity of the predictors: The variance inflation factors were all less than 10, so there were no concerns of multicollinearity (Maxwell, Rutledge, Covington, Churchill, & Clancy, 1997). The four NP-PCOCQ subscales were measures of NP practice environment, and the Pearson's correlation coefficients among them were significant; thus, we performed a data reduction technique, principal component analysis, before building the final models. This allowed us to assess the effect of each subscale on the outcome measures.

The model building started by finding the bivariate associations between the predictor and the outcome variables using *t* test for continuous variables and chi-square for categorical predictors. If the *p* value was less than .20 (Hosmer & Lemeshow, 2000), the predictor was considered for inclusion in the multilevel model, which accounted for the hierarchical design of the data: 314 individual NPs, Level 1, were nested in 163 organizations, Level 2. The main predictor was the organization level principal component score extracted from the principal component analysis on the four organization level NP practice environment subscales, and it was included as a Level 2 variable. Covariate variables measuring NP demographics and work characteristics were Level 1 confounders, and organization level characteristics were Level 2 confounders. Dichotomized dummy variables were created for nominal variables with more than two categories.

Because the Level 2 contextual effects were of substantive interest, centering at grand mean was applied to continuous independent variables in the multilevel models (Enders & Tofighi, 2007). A procedure for fitting multilevel logistic regression models in Version 9.3 of the SAS System for Windows (SAS Institute, Inc., 2012), PROC NLMIXED, was used. We built separate final models for each NP level outcome variable: NP job satisfaction and NPs' intent to leave their current positions within 1 year. The principal component score, the main predictor in the multilevel regression models, was the product of the component score coefficient matrix and the four standardized original organization level subscales measuring NP practice environment. Thus, the component score coefficient matrix was applied to the regression coefficient of principal component score to get the standardized regression coefficient for each of the four original organization level subscales. The overall alpha level was set at .05 to control for Type I error throughout the study.

▪ Findings

Overall, 314 NPs from 163 primary care practices participated in the study. The demographic characteristics of the participants are presented in Table 1. The mean age of the participants was about 50 years, and the vast majority were women (97.3%), were White (93.3%), and had Master's degrees (92.1%). More than 56% of NPs practiced in their

		Table 1					
		Demographic, work, and organizational characteristics of the study participants					
	Total	Job satisfaction			Intention to leave		
		Satisfied	Not satisfied		Yes	No	
Characteristic	N = 314	n = 236	n = 67	p^a	n = 33	n = 265	p^a
Level 1: Nurse practitioner level[b]							
Demographic characteristics							
Age, years				.88			.71
Mean (*SD*)	49.3 (11.1)	49.5 (11.1)	49.3 (11.2)		50.2 (13.2)	49.2 (10.9)	
Range	26–71	26–70	26–71		29–70	26–70	
Sex, n (%)				.68			.53
Female	291 (97.3)	229 (97.4)	62 (96.9)		29 (96.7)	258 (97.7)	
Male	8 (2.7)	6 (2.6)	2 (3.1)		1 (3.3)	6 (2.3)	
Race, n (%)				1.00			.45
White	280 (93.3)	219 (93.2)	61 (93.8)		28 (90.3)	247 (93.6)	
Non-White	20 (6.7)	16 (6.8)	4 (6.2)		3 (9.7)	17 (6.4)	
Highest nursing degree, n (%)				.16			.16
Master's degree	279 (92.1)	220 (93.2)	59 (88.1)		30 (90.9)	244 (92.1)	
Doctor of Nursing Practice	6 (2.0)	3 (1.3)	3 (4.5)		2 (6.1)	4 (1.5)	
Other	18 (5.9)	13 (5.5)	5 (7.4)		1 (3.0)	17 (6.4)	
Work characteristics, n (%)							
Years in the current position				.04			.11
Less than 1 year	18 (5.9)	14 (5.9)	4 (6.0)		1 (3.0)	16 (6.0)	
1–6 years	114 (37.6)	80 (33.9)	34 (50.7)		18 (54.5)	95 (35.8)	
More than 7 years	171 (56.5)	142 (60.2)	29 (43.3)		14 (42.5)	154 (58.2)	
Average number of hours worked in the past month				.15			.37
1–20	23 (7.6)	21 (8.9)	2 (3.0)		2 (6.1)	20 (7.6)	
21–40	200 (66.2)	150 (63.8)	50 (74.6)		19 (57.6)	178 (67.4)	
>40	79 (26.2)	64 (27.3)	15 (22.4)		12 (36.3)	66 (25)	
Level 2: Organization level[b]							
Number of other NPs in their practice				.30			.41
0	12 (4.0)	7 (3.2)	5 (7.5)		2 (6.3)	10 (4.0)	
1–5	163 (54.9)	127 (57.2)	33 (49.3)		21 (65.6)	136 (54.0)	
6–10	56 (18.9)	44 (19.8)	10 (14.9)		3 (9.4)	50 (19.8)	
>10	66 (22.2)	44 (19.8)	19 (28.4)		6 (18.8)	56 (22.2)	
Main practice site				.03			.14
Physician's office	119 (40.1)	92 (41.4)	26 (38.8)		10 (31.3)	107 (42.5)	
Community health center	93 (31.3)	61 (27.5)	28 (41.8)		13 (40.6)	73 (29.0)	
Hospital-based clinic	51 (17.2)	39 (17.6)	11 (16.4)		8 (25.0)	41 (16.3)	
Other	40 (13.4)	30 (13.5)	2 (3.0)		1 (3.1)	31 (12.3)	
Practice site location				.49			.14
Urban	169 (56.7)	125 (55.8)	40 (60.6)		22 (68.8)	139 (54.9)	
Nonurban	129 (43.3)	99 (44.2)	26 (39.4)		10 (31.3)	114 (45.1)	

[a]The *p* value is from an independent-sample *t* test if the predictor is continuous and from chi-square or Fisher's exact test if the predictor is categorical.

[b]There were 314 Level 1 NPs nested within 163 Level 2 organizations.

current position for more than 7 years. Twenty-six percent of NPs reported working more than 40 hours per week. More than half of the NPs came from organizations that employed up to five NPs. About 20% of NPs reported that there are more than 10 NPs practicing in their organizations. None of the demographic and work variables were associated with NPs' intent to leave; only years in the current position and the type of the practice site were associated with job satisfaction. Overall, most of the NPs were satisfied with their job and did not want to leave their current position.

We assigned the organization level mean score on each NP-PCOCQ subscale to individual NPs (Table 2). In most primary care practices, NPs were able to practice independently,

	Table 2						
	Organization level mean scores on NP-PCOCQ subscales by NP level job satisfaction and intent to leave						
Characteristic	**Total**	**Job satisfaction**[a]			**Intention to leave**[a]		
Subscales	**N = 314**	**Satisfied n = 236**	**Not satisfied n = 67**	**p**	**Yes n = 33**	**No n = 265**	**p**
NP–Administration Relations				<.01			<.01
Mean (SD)	2.88 (0.54)	2.96 (0.49)	2.58 (0.63)		2.41 (0.74)	2.94 (0.49)	
Range	1.00–4.00	1.00–4.00	1.33–4.00		1.22–3.78	1.00–4.00	
NP–Physician Relations				<.01			<.02
Mean (SD)	3.37 (0.40)	3.41 (0.37)	3.23 (0.41)		3.19 (0.44)	3.40 (0.38)	
Range	1.71–4.00	1.71–4.00	2.14–4.00		2.14–4.00	1.71–4.00	
Professional Visibility				<.01			<.01
Mean (SD)	3.15 (0.50)	3.21 (0.46)	2.93 (0.57)		2.87 (0.68)	3.19 (0.46)	
Range	1.63–4.00	1.75–4.00	1.63–4.00		1.63–4.00	1.75–4.00	
Independent Practice and Support				<.01			<.01
Mean (SD)	3.45 (0.34)	3.49 (0.31)	3.31 (0.39)		3.28 (0.47)	3.48 (0.31)	
Range	2.44–4.00	2.67–4.00	2.44–4.00		2.44–4.00	2.67–4.00	

[a]With higher organization level means for each subscale, NPs were more satisfied with their job and were less likely to leave their current position. Results are based on independent-sample *t* tests.

evidenced by the high mean score on the IPS subscale (Table 2). The mean score on the IPS subscale was 3.45, the highest among all subscale means, followed by the NP-MD subscale mean (3.37). The NP-AR subscale, measuring the relationship between NPs and administration, had the lowest mean score of 2.88. NP job satisfaction and intent to leave current job were significantly associated with the mean scores on all NP-PCOCQ subscales. NPs working in organizations with higher organization level mean scores on each NP-PCOCQ subscale were more satisfied with their jobs and were less likely to report intent to leave.

The correlation coefficients between four NP-PCOCQ subscales ranged from .61 to .76 ($p < .001$; Appendix 1). The dimensions of practice environments were associated with each other. Principal component analysis was performed for data reduction, and only one principal component was extracted, which explained 74.2% of the total variance. Thus, no rotation was performed.

Next, we built separate multilevel logistic regression models for each outcome, which included the principal component score as the main predictor variable, controlling for variables measuring NP's demographic and work characteristics that were significant in the bivariate analysis ($p < .20$). Intraclass correlations were calculated to assess whether the Level 2 units, or the organization level, differ on the outcome measures. The intraclass correlations for both outcomes were greater than the cutoff point of 0.05 (Kreft & de Leeuw, 1998); it was 0.12 for job satisfaction and 0.24 for intention to leave. Therefore, the benefits of using multilevel models were validated in this study. Details of the final multilevel logistic regression models for out-

comes of NP job satisfaction and intent to leave are presented in Table 3. The main predictor, organization level principal component score, had a significant positive effect on job satisfaction ($B = .72$, $p < .001$) and a significant negative effect on the intent to leave ($B = -.77$, $p < .01$). Principal component score is a standardized score, and all other independent variables in the final models were dichotomous measures, so there was no need to perform any centering.

Finally, the component score coefficient matrix for generating the principal component score was applied to obtain the regression coefficient for each NP practice environment subscale on the outcome measures. Odds ratios and 95% confidence intervals were also calculated. Table 4 presents the regression coefficients and adjusted odds ratio for each of the four subscales measuring NP practice environment on the outcomes of (a) NP job satisfaction and (b) intention to leave current position in the coming year. All four subscales had a similar influence on the outcome variables. With every unit increase in each standardized subscale score, the odds of job satisfaction increased about 20% whereas the odds of intent to leave current position within 1 year decreased about 20%. For example, NPs from organizations with higher mean scores on the NP-AR subscale had higher satisfaction with their jobs ($OR = 1.24$, 95% CI [1.12, 1.39]) and lower intent to leave their current position ($OR = 0.79$, 95% CI [0.70, 0.90]).

Discussion

This study examined NPs' perception of their practice environment and its relationship with job satisfaction and

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Table 3

Regression coefficients from the multilevel logistic regression models predicting nurse practitioner job satisfaction and intention to leave

	Outcome variables				
	Job satisfaction (n = 291)		Intent to leave job (n = 285)		
Predictor variables	Estimate (95% CI)	p	Estimate (95% CI)	p	
High workload (L1)	0.59 (−0.18, 1.36)	.13	—	—	
In current position >7 years (L1)	0.63 (0.00, 1.26)	.05	−0.58 (−1.37, 0.21)	.15	
Practice setting type: CHC (L2)	—	—	0.38 (−0.60, 1.36)	.44	
Urban (L2)	—	—	0.19 (−0.71, 1.08)	.68	
PCS (L2)	0.72 (0.36, 1.07)	<.0001*	−0.77 (−1.18, −0.36)	.0003*	

Note. L1 = Level 1 measure or nurse practitioner level; L2 = Level 2 measure or organization level; CHC = community health center; PCS = principal component score.

*Significant at .05 level.

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intent to leave. We emphasized that NP practice environments represent a shared perception of work context from NPs practicing in the same organization and are related to NP retention measures. We found that the relationship between NPs and physicians in primary care organizations is rated favorably by NPs. However, the relationship between NPs and administration was ranked the lowest among all aspects of NP practice environments. Our findings demonstrate that NPs practicing in primary care organizations with favorable practice environments, including better working relations with physicians and administration, better support for NP independent practice, and clear role visibility, are more likely to be satisfied with their jobs and less likely to report intent to leave. This study highlights the potential value of improving NP practice environments as a strategy for retaining NPs in their clinical positions and promoting their job satisfaction. Keeping these providers in their clinical positions is important for maintaining a robust NP workforce in primary care practices that can address the quality and access to care issues facing our primary care system.

More than half of the practices included in our study employed between two to six NPs, and about one fifth of the practices had more than 10 NPs. Practices that have more NPs might be better at retaining NPs; however, the number of NPs in the practice site was not associated with NPs' job satisfaction or intent to leave. Thus, we did not further explore this variable in our models. In addition, we did not collect other data regarding the size of the practice

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Table 4

Component score coefficient matrix from the principal component analysis and the regression coefficients and odds ratios with 95% confidence interval for assessing the impact of nurse practitioner practice environment on the outcomes

		Outcome variables			
		Job satisfaction (n = 291)		Intent to leave job (n = 285)	
Subscales measuring nurse practitioner practice environment dimensions	Component score coefficient matrix[a]	Estimate	Odds ratio (95% CI)	Estimate	Odds ratio (95% CI)
Professional Visibility	0.294	0.211	1.24 (1.11, 1.37)	−0.226	0.798 (0.707, 0.900)
NP–Administration Relations	0.304	0.218	1.24 (1.12, 1.39)	−0.233	0.792 (0.699, 0.897)
NP–Physician Relations	0.283	0.203	1.23 (1.11, 1.35)	−0.217	0.805 (0.716, 0.904)
Independent Practice and Support	0.280	0.201	1.22 (1.11, 1.35)	−0.215	0.807 (0.719, 0.905)

Note. All variables were standardized.

[a]Using the component score coefficient matrix, the principal component score can be calculated using this formula:

PCS = (0.294 * PV) − (Organization-mean) + (0.304 * NP-AR-Organization-mean) + (0.283 * NP-PR-Organization-mean) + (0.280 * IPS-Organization-mean).

(e.g., how many physicians practiced with NPs), which might have explained the variability in the number of NPs employed in practices (e.g., larger practices hire more NPs). More research is needed to better understand NP practice environments in practices with different sizes.

In Massachusetts, NPs are recognized as PCPs and can independently diagnose and treat their patients without any involvement from physicians (Pearson, 2012). It is possible that these state level policies influence the perception of NPs in our study regarding their ability to practice independently in their organizations and have favorable working relationships with physicians, without feeling that their practice is restricted by physicians. Both measures, NP independent practice and NP–physicians relationships, were related to NPs' job satisfaction and intent to leave. These findings may have implications for other states where NP practice is limited by state regulations, requiring physician supervision or collaboration (Pearson, 2012); however, this should be studied in states with more restrictive SOP regulations to understand NP perceptions of their independent practice and the relationship they have with physicians in their organizations.

Practice Implications

Our study findings have significant practice implications. Health care organizations with practice environments that support autonomous action, clear NP roles, collegial relationships, and NP practice will ultimately promote NP job satisfaction and intentions of staying in their current positions. We find that in day-to-day practice NPs report favorable relationships with physicians in their organizations, and this relationship is a significant predictor of whether NPs are satisfied with their jobs or have intent to leave. Poor relationships between these providers in primary care may lead to NPs being dissatisfied or leave their jobs. To effectively utilize NPs in primary care, promote teamwork, and support national efforts of team-based care, it is important to better understand the relationship between these different types of PCPs with different discipline-specific knowledge, clinical practice, and professional identity.

Another important aspect of practice environment is the relationship NPs have with administrators, which in the current study was rated poorly by NPs. It seems NPs lack support from administrators and find their relationships with them challenging. This is very concerning because administrators and practice managers play a major role in how organizational structures are designed and how resources are distributed among providers. Attention should be focused on better understanding NP–administration relations and promoting effective communication among them. Also, clear understanding of NP skills and competencies by administrators is necessary to assure they provide full support to the NP role and share information and resources adequately.

Employee retention is a critical issue for managers as costs associated with recruiting and training new employees often is more than the annual salary for the position being filled (Cascio, 2006). This can be particularly difficult for health care organizations, because they have to hire and train new PCPs whose supply will fall short of demand in the future (Sargen et al., 2011). The evidence produced from our study can help practice managers understand what factors in the practice setting may increase job satisfaction and decrease intent to leave and enable them to devise ways to improve the practice environment. Effective practice environments will facilitate NP optimal utilization, promote their abilities to deliver high-quality care, and also support and maintain the expansion of this workforce. In addition, patients are now more open to a greater role of NPs in their care (Dill, Pankow, Erikson, & Shipman, 2013), and organizations should create environments to make it possible for NPs to deliver high-quality care to patients.

Limitations

This study has several limitations. First, it was conducted with a convenience sample of NPs in one state. More research is needed to be conducted with a nationally representative sample of NPs. NPs from other states might have different perceptions about their practice environments. Second, the study relied on self-reports of NPs, and nonresponse can be an issue. NPs who participated in our study might be different from those who did not; however, the response rate observed in our study is comparable to those of other studies conducted with nurses, which found no significant differences in nurse-reported measures between responders and nonresponders (Smith, 2008). Finally, we did not examine the impact of NP job satisfaction and intent to leave on patient outcomes. Future studies should focus on this area.

Conclusion

This cross-sectional study surveyed primary care NPs on their practice environments and job satisfaction and intent to leave. We found that favorable practice environments characterized by collegial relationships between NPs and physicians, NPs and administrators, clear visibility of NP role, and available support for independent NP practice promoted job satisfaction and reduced intent to leave. Fostering NP practice environments in primary care organizations can be a strategy for retaining NPs in their clinical positions and promoting their job satisfaction.

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