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Primary Care Nurses' Perception of Leadership and the Influence of Individual and Work Setting Characteristics: A Descriptive Study

Abstract

Aims: To describe primary care nurses' perceptions of their formal leaders' leadership behaviors and outcomes and explore differences based upon nurses' individual and work setting characteristics.

Background: Formal nursing leadership is positively associated with patient, nurse workforce, and organizational outcomes, yet no studies have examined primary care nurses' perception of formal leadership behaviors and outcomes in the United States.

Methods: Cross-sectional survey data from 335 primary care nurses were analyzed to assess perceived leadership behaviors associated with transformational, transactional, and passive-avoidant leadership styles, perceived leadership outcomes, and individual and work setting characteristics.

Results: Positive leadership behaviors (transformational) were lower than those reported for other settings. There were significant differences in nurses' perceptions of their leaders' leadership behaviors and outcomes based upon individual and work setting characteristics.

Conclusion: This study confirmed differences in perception of leadership and that individual and work setting characteristics influence nurses' perception of their leaders in primary care.

Implications for Nursing Management: Leaders must be versatile and consider the unique needs of each staff member and the influence of clinic characteristics.

Keywords: Primary health care, nurses, leadership, organizations, nurse individuality

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Background

Globally, primary care is a growing healthcare sector due to longer life expectancies and increasing attention on addressing social, economic, and environmental determinants of health (World Health Organization and the United Nations Children's Fund, 2018). Given this growth, the function and responsibilities of primary care registered nurses (PCRNs) are receiving added attention. In Spain, over a third of the nation's healthcare indicators in primary care settings are deemed nurse sensitive (Planas-Campmany et al., 2016), highlighting the impact registered nurses (RNs) have in primary care. Excellence and the importance of nursing practice in non-hospital settings is recognized with inclusion of ambulatory nurse-sensitive standards in the Magnet® Recognition Program (The American Nurses Credentialing Center, 2017) and, in the U.S., efforts to identify and refine ambulatory nurse-sensitive indicators (Start et al., 2018).

The National Academies of Sciences, Engineering and Medicine's report on The Future of Nursing 2020-2030 (2021) stresses the importance of nursing leadership in advancing health equity and quality patient outcomes while also creating and maintaining healthy work environments. Formal nursing leadership includes individuals who, based on their position, formally or operationally oversee and influence nurses to achieve a common goal (e.g., nurse managers) (Cummings et al., 2010). Internationally, it is associated with patient (e.g., decreased adverse events), nurse (e.g., increased satisfaction, retention), and organizational outcomes (e.g.,

decreased cost) (Alilyyani et al., 2018; Boamah et al., 2018). Formal nursing leadership directly affects practice behaviors of followers including clinical decision-making, and self-empowerment (García-Sierra & Fernández-Castro, 2018; Samuel et al., 2018).

Leadership outcomes can be described as the effects of leader behaviors on nurses' actions or perceptions and include, for example, willingness to exert extra effort, satisfaction with the leader, and value alignment between the nurse and the leader. There are multiple prerequisites to achieving positive leader outcomes including a leader's ability to adjust their leadership attitudes and behaviors to adapt to staff characteristics and the work environment (Oc, 2018). Leadership behaviors are actions that influence the individuals a leader leads and are often defined and associated with transformational, transactional, and passive-avoidance leadership styles (Avolio & Bass, 2004). Although studies have investigated leadership and associated outcomes in nursing around the world, research on formal nursing leadership in the U.S. predominately looks at hospital-based work environments with few studies conducted in primary care settings.

Formal leadership is often conceptualized as a group-level construct (Northouse, 2010); however, U.S. primary care settings frequently have few nurses reporting to one formal leader. Further, leaders may oversee multiple clinics that are geographically dispersed. Thus, it is important to understand perceptions of leadership at the individual-level. Some individual nurse and work setting characteristics (e.g., education, work environment) have been associated with perceptions of leadership in a small number of hospital-based studies (Khan et al., 2018; Olu-Abiodun & Abiodun, 2017). Exploring how certain subgroups of PCRNs, with similar individual

or work setting characteristics, perceive their leader's behaviors and outcomes may provide a foundation for the development of new leadership models and effective interventions or strategies to support PCRNs.

Although leadership is associated with outcomes in nursing, no comprehensive studies evaluated the association between individual nurse and work setting characteristics and how nurses perceive their formal leaders' behaviors and outcomes in primary care in the U.S. Therefore, this study sought to address these gaps. Specifically, this study aimed to: 1) describe PCRNs' perceptions of their formal leaders' leadership behaviors and outcomes, and 2) explore differences in PCRNs' perceptions of their formal leaders' leadership behaviors and outcomes based upon nurses' individual and work setting characteristics.

Theoretical Framework

This study was guided by the Full Range Leadership Model (FRLM), an established leadership model depicting a range of leadership styles with each style shaped by leadership behaviors (Figure 1) (Avolio & Bass, 2004). Though this model has been widely used, it has not been well tested with PCRNs in the United States. The *transformational leadership* style is visionary, leading followers to do more than they thought they could do and includes five behaviors. The *transactional leadership* style sets standards, approaches relationships as transactions, and focuses on corrective action and includes two behaviors. The *passive-avoidant leadership* style is passive and reacts after problems are serious or refrains from actions at all and includes two behaviors.

The FRLM also includes three leadership outcomes. *Extra effort* describes a leader's ability to drive followers to do more or work harder; *effectiveness* indicates a leader's ability to lead a group and meet goals; and *satisfaction with leadership* indicates the follower's satisfaction with their leader. Given what is known about leadership in nursing and the implications on professional nursing practice, it is important to consider nursing-specific outcomes such as the alignment of professional values with their leader (Dunning et al., 2021). Therefore, two additional outcomes – nurse manager ability, leadership and support of nurses and value alignment – were added to an adapted FRLM for the purposes of this study.

Methods

Design and Setting

This cross-sectional study was conducted in August – December 2020 using a web-based survey distributed to PCRNs across the U.S. Eligible RNs practiced in a U.S. primary care setting and spent at least 50% of their work time providing patient care (i.e., in-person, telephone, or virtual visits). PCRNs who served in a formal leadership role or advanced practice role as a part of their position were excluded. Participants were recruited using convenience techniques including social media posts (e.g., LinkedIn, Twitter, Facebook); emails and postings through professional organizations and in healthcare organizations; and emails sent to the study team's personal networks. Additionally, snowball sampling was encouraged by recommending that individuals share the survey link with others. Because we advertised the study in various ways and also employed snowball sampling, the number of PRCNs who saw the advertisement was

unknown. Therefore, we could not calculate a true overall response rate. However, using G*Power 3.1 software for calculating the minimum required sample size for ANOVA, with an effect size of 0.25, power of 0.95 and an alpha level of 0.05 with four groups, the study required at least 280 nurses (Faul et al., 2007). Therefore, the sample size of this study was sufficient.

Ethical Considerations

Approval to conduct the study was obtained from the University of Wisconsin – Madison's Institutional Review Board (No: 2020-0135).

Measures

Leadership Behaviors

The Multifactor Leadership Questionnaire 5X Short Form (MLQ-5x) Rater Version is a 45-item instrument that measures leadership behaviors (Avolio & Bass, 2004). Item responses are from 0 (not at all)-4 (frequently, if not always). Four items are averaged to determine the score for each of nine factors (Idealized Influence (Attributes); Idealized Influence (Behaviors); Inspirational Motivation; Intellectual Stimulation; Individual Consideration; Contingent Reward; Management-by-Exception: Active; Management-by-Exception: Passive; Laissez-Faire). Higher scores indicate greater perception that the leader demonstrates that behavior. The factors are grouped into three leadership styles (*Transformational, Transactional,* and *Passive-avoidant*). The MLQ-5x has been shown to be valid and reliable (Antonakis et al., 2003; Avolio & Bass, 2004) and is used extensively in nursing research (Boamah et al., 2018; Specchia et al., 2021). The measures showed acceptable to excellent internal consistency ($\alpha = 0.68 - 0.93$) in our sample.

Leadership Outcomes

The MLQ-5x also measures leadership outcomes (Avolio & Bass, 2004). Three, four and two items are averaged to determine the score of the *Extra Effort, Effectiveness* and *Satisfaction* subscales, respectively. Higher scores indicate greater perception that the leader demonstrates that outcome.

The five-item subscale of the Practice Environment Scale of Nursing Workforce Index (PES-NWI), *Nurse Manager Ability, Leadership and Support of Nurses*, was used (Lake, 2002). Items responses are from 1 (strongly disagree)-4 (strongly agree) and averaged. Higher scores indicate a more positive perception of the manager's ability, leadership, and support. The PES-NWI is reliable with robust construct validity (Lake, 2002), and is used internationally in nursing research in acute care (Smith, Morin, & Lake, 2018; Xiuwen et al., 2022) and ambulatory (Friese et al., 2016; Gea-Caballero et al., 2021) settings. Slight adjustments were made to two of the items to remove the reference to a "nurse" manager recognizing not all primary care clinics have nurse managers. The Cronbach's α for five items was 0.90 in our sample, indicating good internal consistency.

To measure value congruence, we used one of the 10 items from the Mini Z RN survey ("My professional values are well aligned with those of nursing leadership") (Shimotsu et al., 2015). The single item has been used in research with physicians that identified significant relationships between value alignment and job satisfaction, job stress, and burnout (Privitera et al., 2018). Item responses are from 1 (strongly agree)-5 (strongly disagree). The variable was

dichotomized into agree (strongly agree and agree) or not agree (neither agree nor disagree, disagree, strongly disagree).

Individual and Work Setting Characteristics

Based on previous studies of nursing leadership, items assessing multiple individual and work setting characteristics were included (Cummings et al., 2020). Individual characteristics included demographics, education status, tenure, and employment. Work setting characteristics included clinic type, Magnet® and Pathway to Excellence® status, geographic location of clinic, training of supervisor, number of RNs in the clinic, and percentage of time per week the supervisor is physically in the clinic.

Data Analysis

There were 448 eligible participants. Individuals who exited the survey prior to completing measures and individuals who were deemed not eligible due to responses in demographic questions were removed. Little's missing completely at random (MCAR) test was used to examine missing data (Little, 1988). Results indicated data were MCAR ($p = .931$), therefore pairwise deletion was used. The normal distribution of continuous variables was evaluated with skewness and kurtosis and found to be within acceptable ranges of ± 2 (Garson, 2012).

Data were analyzed using SPSS 26.0 (IBM Corp.). Categories of certain items assessing individual and work setting characteristics were collapsed for theoretical reasons (i.e., ages grouped into generational cohorts) and to ensure sufficient sample size in comparison groups. Descriptive statistics including mean, standard deviation (SD), frequency, and percentage were

calculated for study variables. Analyses of Variance and independent t-tests were conducted to evaluate differences in the relationships between independent variables (individual and work setting characteristics) and dependent variables from the MLQ-5x and PES-NWI. Chi-square tests were conducted to assess the association between individual and work setting characteristics and the single item value alignment measure from the Mini Z RN. P-values for each family of variables (e.g., p-values for all behaviors by age) were corrected using the False Discovery Rate correction for multiple testing (Benjamini & Hochberg, 1995) in SAS 9.4 (SAS Institute Inc). Given the exploratory nature of Aims 2 and 3, the level of statistical significance used was an adjusted p-value less than 0.10.

Results

After pairwise deletion, 335 participants were included the final sample, including nurses working in 35 states across the U.S. Most participants were female (91.1%), and the mean age was 43 years (SD = 12.5; Table 1). Participants indicated working in a variety of clinic types and locations of clinics (Table 2).

Perception of Leadership Behaviors and Outcomes

Overall, mean scores were highest for behaviors associated with transformational leaders including Idealized Influence (Attributes), Idealized Influence (Behaviors), and Inspirational Motivation (Table 3). Lowest mean scores were observed for passive-avoidant leadership style behaviors. Almost two thirds (64.5%) of nurses agreed or strongly agreed with the statement *My professional values are well aligned with those of nursing leadership*.

Differences in Leadership Behaviors and Outcomes Based Upon Individual Characteristics

Significant differences were observed for leadership behaviors based upon gender, years of primary care experience, and weekly work hours (Table 4). There was a significant difference in the transformational leadership behavior Intellectual Stimulation, and transactional leadership behaviors Individual Consideration, and Management-by-Exception: Active based on gender, with males rating their leaders higher than females. Regarding primary care experience, participants in categories with ≤ 5 years in primary care rated their leader higher for all transformational behaviors and the transactional leadership behavior Contingent Reward and lowest for the passive-avoidant leadership behavior Laissez-Faire than participants with ≥ 6 years in primary care. Regarding weekly work hours, participants who worked 40 hours per week scored their leader highest for all transformational behaviors and the transactional leadership behavior Contingent Reward, and lowest for passive-avoidant behaviors. Participants who work more than 40 hours scored their leader lowest for transformational behaviors and highest for passive-avoidant behaviors.

For leadership outcomes, significant differences were observed for primary care experience and weekly work hours (Table 5). Regarding primary care experience, participants with ≤ 5 years of experience rated their leader higher for Extra Effort, Effectiveness, Satisfaction with Leader and Nurse Manager Ability, Leadership and Support of Nurses than participants with ≥ 6 years in primary care. A significantly higher proportion of participants with ≤ 5 years of primary care experience agreed or strongly agreed that their values align with their leaders' values (71% and 72% respectfully) than individuals with ≥ 6 years in primary care (54% and 61% respectfully).

Participants who worked 40 hours per week scored their leader highest and participants who work more than 40 hours scored their leader lowest for Extra Effort, Effectiveness, Satisfaction with Leader and Nurse Manager Ability, Leadership and Support of Nurses. Participants who worked 40 hours or less per week agreed or strongly agreed more with the statement that their values align with their leaders' values (62%-74%) than individuals who worked more than 40 hours per week (42%).

Differences in Leadership Behaviors and Outcomes Based Upon Work Setting Characteristics

There were significant differences in leadership behaviors based upon clinic type, training of supervisor and number of RNs in the clinic (Table 3). Participants in family practice and pediatric clinics scored their leader higher for all transformational behaviors and the transactional behavior Contingent Reward, and lower for passive-avoidant behaviors than participants who worked in internal medicine clinics or "other" types of primary care clinics. Regarding training of supervisor, leaders who were non-nurse clinicians scored highest for transformational behaviors and the transactional behavior Contingent Reward while nurse leaders scored the lowest. Additionally, leaders who were non-nurse clinicians scored the lowest for passive-avoidant behaviors while non-clinical leaders scored highest. Regarding the number of RNs in the clinic, clinics with 1 RN scored their leader highest followed by clinics with 2-5 RNs and clinics with 6+ RNs scoring their leader lowest for transformational leadership behaviors. Clinics with 1 RN and

2-5 RNs scored their leader highest and clinics with 6+ RNs scoring their leader lowest for the transactional behavior Contingent Reward.

Leadership outcomes differed significantly based upon clinic type, Magnet® designation, clinic location and the number of RNs in the clinic (Table 4). There were significant differences with Extra Effort and Satisfaction with Leader based upon clinic type, with family practice and pediatric clinics rating their leader higher than internal medicine or "other" types of clinics. There also were significant differences with Extra Effort and "My professional values are well aligned with those of nursing leadership" based upon Magnet® designation. Participants who did not know if their organization was Magnet® and those who worked in a Magnet® organization rated their leader highest and agreed or strongly agreed more with the statement that their values align with their leaders' values (78% and 61% respectfully) than individuals who worked in non-Magnet® organizations (59%). Regarding clinic location, nurses in suburban areas rated their leader higher for all three leader outcomes than nurses in rural or urban clinics. For number of RNs in the clinic, participants in clinics with one RN or 2-5 RNs rated their leader higher for Extra Effort and agreed or strongly agreed with the statement that their values align with their leaders' values (70% and 72% respectfully) more than individuals who worked in clinics with 6+ nurses (57%).

Discussion

Nurse leaders are critical to improving patient, nurse, and organizational outcomes; yet very little research on formal nursing leadership has been conducted in U.S. primary care settings. To our knowledge, this was the first nation-wide study to explore these concepts and test a model

and measures commonly used within nursing with PCRNs. Results demonstrate similarities and differences in perceptions of leadership compared to other practice settings. Further, findings identified differences in PCRN perceptions of formal leadership behaviors based on their individual and clinic characteristics. Results may provide insight into future research and the development of new leadership models and associated interventions or strategies to support PCRNs.

A leader is bound by the environmental context in which they work, requiring them to adjust behaviors and actions accordingly to each practice site (Cummings et al., 2020; Oc, 2018). Overall, PCRNs perceived their leaders to practice transformational leadership behaviors more than transactional and passive-avoidant behaviors. This aligns with previous research with U.S. hospital nurses (Farag et al., 2009). However, when comparing PCRNs to hospital nurses, PCRNs scored their leaders lower for transformational and transactional behaviors and higher for passive-avoidant behaviors (Farag et al., 2009). Similarly, Nurse Manager Ability, Leadership, and Support of Nurses was lower for PCRNs compared to a large nation-wide study of hospital nurses (Nelson-Brantley et al., 2018). These results highlight that although the relative perceptions of different leadership behaviors and outcomes are comparable between primary care and hospital settings, the actual perceived values may differ. It is important to recognize there may be contextual influences (i.e., leader's presence on site; number of nurses in the clinic) on nurses' perceptions of leadership. Future studies should evaluate why these differences exist to better understand the unique needs of nurses and role of leadership primary care.

When looking at the influence of various individual and work characteristics, what has been identified to influence nurses' perceptions of leadership in other settings did not consistently hold to be true in primary care. Formal education of a nurse impacts knowledge, skills and competencies and has been shown to influence perception of a leader's transformational leadership behaviors in hospital nurses (Olu-Abiodun & Abiodun, 2017); yet, formal education was not significant in this study. However, nurses' primary care experience was significantly associated with perceptions of leadership behaviors and outcomes in this study. These differences may be attributed to the structure of nursing education and exposure to clinical settings as a nursing student. Nurses often graduate from nursing school with limited exposure to ambulatory settings. Consequently, learning to practice in primary care occurs through on-the-job training and experience as opposed to formal education (Watkins & Neubrander, 2020). Regardless of practice setting, through formal education or on-the-job training and experience, it seems that as a nurse's knowledge and skills in a particular practice area increase, their expectations for effective leadership behaviors shift. Further exploration of these findings is needed to better understand what about a nurse's exposure to clinical practice in a setting influences their perception of leadership. Nurse leaders in all settings need to consider and tailor their leadership behaviors to nurses' level of education, experience, and competency (American Association of Colleges of Nursing, 2019).

There were significant differences between clinic types, locations, and size for nurses' perception of leadership behaviors and outcomes. These clinic characteristics are not easily shifted

by an organization. Rural settings in the U.S. are known to experience challenges with nursing workforce and resources (Smith et al., 2019). Additionally, clinic characteristics such as the proportion of provider full-time equivalent can have a significant influence on staff outcomes (Bruhl et al., 2020). Nevertheless, clinic attributes and their impact on leadership behaviors and outcomes are not well understood. Future work on formal leadership should recognize the potential influence of clinic characteristics identified in this study and explore the relationship of other clinic variables (i.e., providers, panel sizes, etc.). These findings would provide a deeper understanding of leader "best practices" and adaptation of leadership behaviors needed based upon clinic characteristics.

Leaders who were non-nurse clinicians were perceived to exhibit more transformational leadership behaviors than RN leaders. Nurses are often promoted for the great work they are currently doing, not necessarily because they are the right person for the next level job (Morse & Warshawsky, 2021). This may provide some explanation for the less favorable perceptions of RN leader behaviors as nurse leaders are often promoted without leadership competencies. Strategies such as improved leadership training in nursing school curriculum, ongoing leadership development opportunities provided within healthcare organizations, and succession planning are essential in nursing to build the skills of future RN leaders. Furthermore, given the diversity of backgrounds of leaders in primary care, exploration is needed to determine what specific characteristics and competencies primary care leaders need to best support their nurses.

Limitations

Using convenience and snowball sampling methods may have resulted in coverage error. Although multiple approaches for recruitment were used to reach diverse members of the population, a large proportion of participants were from midwestern and western parts of the U.S. with relatively few nurse participants from the southern and northeastern parts of the country. There are no published demographics on PCRNs in the U.S. preventing descriptive comparison of the composition of our sample to national data. However, this is the largest cross-sectional study of PCRNs we have seen. Additionally, although data collection was postponed until the initial surge of Coronavirus disease (COVID-19) in the U.S. began to recede, implications of the pandemic's influence on nurses and leaders, including historical effects from the initial surge, changes in working conditions, patient care shifting to telehealth, and new safety precautions, may have impacted leaders' behaviors as well as nurses' responses and perceptions of leadership. However, changes in healthcare resulting from COVID-19 persist and are becoming the new "normal" with ongoing surges and cases.

Conclusion

This study directly addresses an important and understudied area in nursing leadership research and contributed new knowledge of nursing leadership with the exploration of PCRNs' perception of leadership behaviors and outcomes, and the influence of individual and work setting characteristics on those perceptions. Our findings identified that, overall, PCRNs' perceptions of

leadership behaviors are favorable with transformational leadership behaviors being most predominant. However, positive leadership behaviors identified in this study are notably lower than previous reports of hospital nurses warranting more attention on leadership in primary care settings. This study highlighted that there is not a one-size-fits-all when it comes to leadership behaviors and outcomes. Individual nurse characteristics, and more-so, work setting characteristics, influence a PCRNs' perception of their leader. Leadership effectiveness is dependent upon situational influences and this study is the first to call attention to the unique staff and work setting characteristics in and among primary care settings in the U.S.

Implications for Nursing Management

Staff and clinic characteristics may influence perception of leadership behaviors and outcomes including staff willingness to do more and the leader's ability to guide the group toward goal obtainment. Nursing leaders should recognize that leadership behaviors are not necessarily transferable from one setting to the next, or from one clinic to the next. Leaders must be versatile and consider the unique needs of each staff member and the influence of work setting characteristics as they draw upon multiple leadership styles and deploy various behaviors and actions. Additionally, education of leaders should include strategies to support leaders in adapting to the unique needs of nurses and settings. As healthcare delivery in the U.S. shifts to clinic settings, nursing leaders must be active participants in their own leadership development and training on leadership behaviors to align their actions with the needs of their team.

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Tables

Table 1

Demographic Characteristics

Individual Characteristics (n = 335)	n (%)
Gender (n = 303)	
Female	276 (91.1)
Male	23 (7.6)
Other	1 (0.3)
Prefer not to answer	3 (1.0)
Hispanic, Latinx or Spanish (n = 301)	
Hispanic, Latino/a, Spanish origin	23 (7.6)
Not of Hispanic, Latino/a, Spanish origin	269 (89.4)
Prefer not to answer	9 (3.0)
Race (n = 300)	
White	261 (87)
Black or African American	8 (2.7)
American Indian or Alaska Native	6 (2.0)
Asian	6 (2.0)
Prefer not to answer	10 (3.3)
Other	4 (1.3)
Select more than 1	5 (1.7)
Age in years (n = 275)	
Millennial 20-39	126 (45.8)
Generation X 40-55	89 (32.4)
Baby Boomer 56-75	60 (21.8)
Highest nursing degree (n = 303)	
Diploma	3 (1.0)
Associate	81 (26.7)
Bachelor's	185 (61.1)
Master's	32 (10.6)
Doctorate (DNP)	2 (0.7)
Nursing certification (n = 303)	
Yes	99 (32.7)
No	204 (67.3)
Years of experience as a Registered Nurse (n = 276)	
Less than 2	10 (3.6)

2 to 5	61 (22.1)
6 to 10	61 (22.1)
11 to 15	42 (15.2)
16 to 20	24 (8.7)
>20	78 (28.3)
Years of experience in primary care (n = 290)	
Less than 2	28 (9.7)
2 to 5	124 (42.8)
6 to 10	59 (20.3)
11 to 15	31 (10.7)
16 to 20	19 (6.6)
>20	29 (10.0)
Years of experience in current role (n = 296)	
Less than 2	59 (19.9)
2 to 5	157 (53.0)
6 to 10	46 (15.5)
11 to 15	16 (5.4)
16 to 20	9 (3.0)
>20	9 (3.0)
Years of experience with current supervisor (n = 299)	
Less than 2	117 (39.1)
2 to 5	151 (50.5)
6 to 10	21 (7.0)
11 to 15	6 (2.0)
16 to 20	2 (0.7)
>20	2 (0.7)
Number of clinics covering (n = 303)	
Single clinic	239 (78.9)
Multiple clinics	35 (11.6)
Float	16 (5.3)
Other	13 (4.3)
Work hours per week (n = 282)	
Less than 40	143 (50.7)
40	118 (41.8)
More than 40	21 (7.5)

Note. Missing data for each variable are reported in Supplemental Table 1.

Table 2

Work Setting Characteristics

Work Setting Characteristics (n = 335)	n (%)
Clinic type (n = 301)	
Internal Medicine	65 (21.6)
Family Practice	139 (46.2)
Pediatrics	26 (8.6)
Other	71 (23.6)
Magnet (n = 292)	
Yes	70 (24.0)
No	126 (43.2)
I don't know	96 (39.2)
Pathway to Excellence (n = 292)	
Yes	34 (11.6)
No	82 (28.1)
I don't know	176 (60.3)
Location of clinic (n = 293)	
Rural	88 (30.0)
Suburban	94 (32.1)
Urban	111 (37.9)
Training of supervisor (n = 292)	
RN	207 (70.9)
Clinical non-RN	29 (9.9)
Non-clinical	52 (17.8)
Unknown or other	4 (1.4)

Number of Registered Nurses in clinic (n = 290)	
1	34 (11.7)
2-5	137 (47.2)
6+	119 (41.0)
Supervisor physically in clinic (n = 302)	
0-19%	80 (26.5)
20-39%	26 (8.6)
40-59%	25 (8.3)
60-79%	36 (11.9)
80-100%	135 (44.7)

Note. Missing data for each variable are reported in Supplemental Table 1.

Table 3

Descriptive Statistics of Leadership Behaviors and Outcomes

	n	Mean	SD
LEADERSHIP BEHAVIORS BY LEADERSHIP STYLE			
MLQ-5x			
Transformational Leadership Style			
Idealized Influence (Attributes)	335	2.33	1.19
Idealized Influence (Behaviors)	335	2.23	1.08
Inspirational Motivation	335	2.44	1.15
Intellectual Stimulation	335	2.04	1.14
Individual Consideration	335	2.02	1.20
Transactional Leadership Style			
Contingent Reward	335	2.18	1.15
Management-by-Exception: Active	335	1.79	0.88
Passive-Avoidant Leadership Style			
Management-by-Exception: Passive	335	1.51	1.10
Laissez-Faire	335	1.34	1.15

LEADERSHIP OUTCOMES			
MLQ-5x			
Extra Effort	334	2.05	1.30
Effectiveness	335	2.31	1.23
Satisfaction with Leadership	335	2.30	1.35
PES-NWI: Nurse Manager Ability, Leadership, and Support of Nurses	315	2.67	0.78
Mini Z: My professional values are well aligned with those of nursing leadership (score 1-5)	315	2.28	1.15

Note. n=number of participants; SD=Standard Deviation; Min=minimum score from participant; Max=maximum score from participants; MLQ-5x= Multifactor Leadership Questionnaire 5X Short Form (MLQ-5X) – Rater Version, score range is 0 to 4, higher is better; PES-NWI=Practice Environment Scale of Nursing Workforce, score range is 1 to 4, higher is better; Mini Z score range is 1 to 5, lower is better. A full range of values were observed for each measure.

Table 4

Leadership Behaviors with Significant Differences by Individual and Work Setting Characteristics

		MLQ-5X								
		Transformational Leadership					Transactional Leadership		Passive Avoidant Leadership	
		Idealized Influence (Attributes)	Idealized Influence (Behaviors)	Inspirational Motivation (IM)	Intellectual Stimulation (IS)	Individual Consideration (IC)	Contingent Reward (CR)	Management-by-Exception: Active (MBEA)	Management-by-Exception: Passive (MBEP)	Laissez-Faire (LF)
	n	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
INDIVIDUAL CHARACTERISTICS										
Gender										
Male	23	2.58 (1.30)	2.58 (1.08)	2.65 (1.24)	2.59 (1.13)	2.59 (1.20)	2.49 (1.35)	2.27 (0.68)	1.34 (0.89)	1.04 (0.98)
Female	276	2.35 (1.16)	2.25 (1.06)	2.47 (1.12)	2.04 (1.11)	2.01 (1.17)	2.20 (1.11)	1.74 (0.86)	1.50 (1.10)	1.32 (1.14)
adj p-value		.485	.347	.497	**.072***	**.072***	.381	**.045***	.497	.381
Experience in primary care (years)										
Less than 2	28	2.65 (1.19)	2.58 (1.07)	2.78 (1.06)	2.44 (1.14)	2.30 (1.16)	2.43 (1.08)	1.96 (0.64)	1.29 (1.08)	0.95 (1.00)
2-5	124	2.52 (1.10)	2.41 (0.95)	2.67 (1.03)	2.26 (1.09)	2.32 (1.10)	2.35 (1.06)	1.76 (0.81)	1.37 (1.01)	1.19 (0.98)
6-10	59	2.12 (1.18)	2.08 (1.16)	2.24 (1.10)	1.80 (1.14)	1.75 (1.24)	1.89 (1.22)	1.73 (0.82)	1.67 (1.08)	1.61 (1.16)
11+	79	2.20 (1.21)	2.05 (1.07)	2.25 (1.22)	1.86 (1.08)	1.74 (1.18)	2.11 (1.18)	1.79 (1.00)	1.55 (1.17)	1.44 (1.28)
adj p-value		**.060***	**.040***	**.027***	**.023***	**.009***	**.060***	.695	.262	**.040***
Work hours per week										
Less than 40	143	2.37 (1.08)	2.29 (1.05)	2.47 (1.04)	2.03 (1.08)	2.02 (1.14)	2.15 (1.09)	1.71 (0.84)	1.53 (0.99)	1.37 (1.03)
40	118	2.55 (1.15)	2.39 (1.02)	2.64 (1.13)	2.29 (1.10)	2.23 (1.20)	2.44 (1.10)	1.82 (0.86)	1.33 (1.13)	1.12 (1.16)
More than 40	21	1.51 (1.31)	1.37 (1.07)	1.63 (1.28)	1.36 (1.29)	1.42 (1.18)	1.21 (1.13)	1.83 (0.68)	2.25 (1.19)	1.86 (1.33)
adj p-value		**.002***	**<.001***	**.002***	**.002***	**.014***	**<.001***	.541	**.002***	**.014***
WORK SETTING CHARACTERISTICS										
Clinic Type										
Internal Medicine	65	2.15 (1.24)	2.03 (1.09)	2.28 (1.22)	1.83 (1.26)	1.73 (1.19)	2.03 (1.20)	1.79 (0.85)	1.70 (1.15)	1.48 (1.23)

Family Practice	139	2.61 (1.02)	2.45 (0.99)	2.67 (1.04)	2.29 (1.09)	2.31 (1.15)	2.38 (1.08)	1.80 (0.82)	1.36 (1.02)	1.13 (1.02)
Pediatrics	26	2.48 (1.07)	2.55 (0.94)	2.63 (0.88)	2.32 (1.03)	2.21 (1.07)	2.45 (0.99)	1.69 (0.81)	1.23 (0.96)	1.18 (1.00)
Other	71	2.10 (1.31)	2.07 (1.14)	2.29 (1.19)	1.85 (1.05)	1.83 (1.21)	2.00 (1.18)	1.72 (0.99)	1.61 (1.16)	1.46 (1.22)
adj p-value		**.020***	**.020***	**.057***	**.020***	**.020***	**.057***	.882	**.093***	**.098***
Training of Supervisor										
RN (including APRN)	207	2.28 (1.15)	2.19 (1.08)	2.38 (1.10)	2.01 (1.11)	1.99 (1.17)	2.14 (1.13)	1.79 (0.86)	1.50 (1.06)	1.33 (1.10)
Clinical Non-RN	29	2.86 (1.00)	2.83 (0.85)	3.07 (0.94)	2.61 (0.99)	2.55 (1.15)	2.64 (1.12)	1.88 (0.84)	0.94 (0.94)	0.81 (0.79)
Non-Clinical	52	2.50 (1.21)	2.36 (1.02)	2.58 (1.17)	2.16 (1.18)	2.12 (1.21)	2.29 (1.15)	1.67 (0.88)	1.69 (1.14)	1.37 (1.23)
adj p-value		**.054***	**.027***	**.027***	**.054***	**.064***	**.084***	.560	**.027***	**.064***
Number of RNs in clinic										
1	34	2.65 (1.21)	2.48 (1.13)	2.79 (1.19)	2.36 (1.25)	2.32 (1.26)	2.37 (1.23)	1.95 (0.71)	1.28 (1.01)	1.02 (1.06)
2-5	137	2.54 (1.07)	2.42 (1.03)	2.61 (1.04)	2.25 (1.08)	2.22 (1.13)	2.39 (1.04)	1.77 (0.88)	1.44 (1.06)	1.26 (1.10)
6+	119	2.15 (1.20)	2.09 (1.05)	2.29 (1.18)	1.85 (1.10)	1.84 (1.18)	2.02 (1.19)	1.73 (0.88)	1.57 (1.13)	1.38 (1.15)
adj p-value		**.038***	**.038***	**.038***	**.038***	**.038***	**.038***	.429	.380	.330

Note. n=number of participants, adj=adjusted p-value, M=Mean, SD=Standard Deviation, RN=Registered Nurse, APRN=Advanced Practice Registered Nurse. All results are presented in Supplemental Table 2.

* $p < 0.1$

Table 5

Leadership Outcomes with Significant Differences by Individual and Work Setting Characteristics

		MLQ-5x			PES-NWI	Mini-Z	
						My professional values are well aligned with those of nursing leadership	
		Extra Effort	Effectiveness	Satisfaction with Leadership	Nurse Manager Ability, Leadership, and Support of Nurses	Agree & Strongly Agree	Do Not Agree
	n	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*n (%)*	*n (%)*
INDIVIDUAL CHARACTERISTICS							
Experience in primary care (years)							
Less than 2	28	2.40 (1.27)	2.55 (1.33)	2.71 (1.34)	2.84 (0.74)	20 (10.6)	8 (7.9)
2-5	124	2.23 (1.25)	2.52 (1.13)	2.54 (1.26)	2.78 (0.72)	89 (47.1)	35 (34.7)
6-10	59	1.83 (1.26)	2.09 (1.24)	2.10 (1.36)	2.47 (0.81)	32 (16.9)	27 (26.7)
11+	79	1.88 (1.37)	2.21 (1.21)	2.11 (1.36)	2.56 (0.81)	48 (25.4)	31 (30.7)
adj p-value		**.084***	**.084***	**.060***	**.060***	**.084***	
Work hours per week							
Less than 40	143	2.03 (1.25)	2.29 (1.18)	2.28 (1.31)	2.64 (0.73)	89 (48.4)	54 (55.1)
40	118	2.29 (1.26)	2.62 (1.15)	2.60 (1.29)	2.80 (0.77)	86 (46.7)	32 (32.7)
More than 40	21	1.29 (1.31)	1.54 (1.26)	1.52 (1.37)	2.19 (0.94)	9 (4.9)	12 (12.2)
adj p-value		**.004***	**<.001***	**.004***	**.004***	**.016***	

WORK SETTING CHARACTERISTICS							
Clinic Type							
Internal Medicine	65	1.87 (1.44)	2.11 (1.32)	2.08 (1.42)	2.58 (0.79)	38 (19.2)	27 (26.2)
Family Practice	139	2.30 (1.20)	2.54 (1.15)	2.58 (1.24)	2.76 (0.75)	98 (49.5)	41 (39.8)
Pediatrics	26	2.29 (1.12)	2.40 (1.14)	2.63 (1.25)	2.71 (0.71)	19 (9.6)	7 (6.8)
Other	71	1.77 (1.31)	2.24 (1.20)	2.08 (1.39)	2.59 (0.83)	43 (21.7)	28 (27.2)
adj p-value		**.035***	.138	**.035***	.290	.278	
Magnet							
Yes	70	2.09 (1.32)	2.35 (1.23)	2.38 (1.33)	2.69 (0.75)	43 (22.4)	27 (27)
No	126	1.89 (1.32)	2.23 (1.22)	2.23 (1.39)	2.60 (0.79)	74 (38.5)	52 (52)
I don't know	96	2.34 (1.19)	2.57 (1.15)	2.54 (1.25)	2.77 (0.78)	75 (39.1)	21 (21)
adj p-value		**.095***	.192	.269	.269	**.035***	
Location of Clinic							
Rural	88	2.11 (1.27)	2.28 (1.17)	2.30 (1.31)	2.58 (0.75)	56 (29.2)	32 (31.7)
Suburban	94	2.33 (1.18)	2.63 (1.14)	2.60 (1.31)	2.86 (0.76)	67 (34.9)	27 (26.7)
Urban	111	1.84 (1.36)	2.21 (1.26)	2.20 (1.36)	2.60 (0.79)	69 (35.9)	42 (41.6)
adj p-value		**.048***	**.048***	.114	**.048***	.355	
Number of RNs in clinic							
1	34	2.41 (1.38)	2.62 (1.37)	2.60 (1.46)	2.79 (0.87)	24 (12.5)	10 (10.2)
2-5	137	2.22 (1.23)	2.45 (1.18)	2.50 (1.29)	2.74 (0.74)	100 (52.1)	37 (37.8)
6+	119	1.85 (1.28)	2.23 (1.17)	2.16 (1.32)	2.59 (0.79)	68 (35.4)	51 (52)
adj p-value		**.060***	.186	.123	.232	**.060***	

Note. n=number of participants, adj=adjusted p-value, M=Mean, SD=Standard Deviation, RN=Registered Nurse, APRN=Advanced Practice Registered Nurse. All results are presented in Supplemental Table 3.

* $p < 0.1$

Figure 1

Full Range Leadership Model as Adapted for this Study

Note. Behavior descriptions are adapted from Avolio & Bass, 2004.