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Primary Care Nurse Practitioner Practice Characteristics:

Barriers and Opportunities for Interprofessional Teamwork

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Abstract

Developing team-based care models and expanding nurse practitioner (NP) workforce in primary care are recommended by policy makers to meet demand. Little is known how to promote interprofessional teamwork. Using a mixed-methods design, we analyzed qualitative interview and quantitative survey data from primary care NPs to explore practice characteristics important for teamwork. The Interprofessional Teamwork for Health and Social Care Framework guided the study. We identified NP-physician and NP-administration relationships; organizational support and governance; time and space for teamwork; and regulations and economic impact as important. Practice and policy change addressing these factors is needed for effective interprofessional teamwork.

Keywords

interprofessional teamwork; nurse practitioner; primary care

THE AGING population, high prevalence of chronic illness, and the enactment of the Affordable Care Act have led to an increase in the demand for primary care that the current supply of primary care providers (PCPs) may be unable to meet (Pettersen et al., 2012). Developing optimal team-based care delivery models and expanding the nurse practitioner (NP) workforce in primary care have been recommended as 2 intricately related approaches to ensure that the system is adequately prepared (Institute of Medicine, 2012; National Committee for Quality Assurance, 2014). Projections suggest that the development of high-functioning teams, with the aid of technology, will allow current PCPs to see 5 times more patients (Green et al., 2013). Furthermore, the number of NPs is expected to double by 2020 (Auerbach, 2012). The success of these potential policy solutions relies on developing effective interprofessional teams in primary care that optimally utilize all available workforce resources, including NPs.

Despite the promise of team-based care in combination with the expanded use of NPs, little is known about the extent to which the current primary care environment is capable of

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supporting effective interprofessional teamwork. Researchers have demonstrated that primary care physicians report time pressure, low control over work, and unfavorable organizational culture in their practices (Linzer et al., 2009). These factors may undermine the development of effective teams. However, limited attention has been given to the practice characteristics of primary care NPs that are important for interprofessional teamwork. To ensure that the development of team-based care and the expansion of NP workforce will meet their full promise, we need to better understand NP practice characteristics that may promote or hinder teamwork. In this study, we analyzed quantitative survey and qualitative in-depth interview data to explore primary care NP practice characteristics to understand the extent to which they are likely to foster effective interprofessional teamwork. Qualitative findings helped provide a deeper understanding of practice characteristics. NP narratives were added to survey data from a large sample of NPs to provide meaning. Combining these methods produced more in-depth knowledge needed to inform practice and policy change and helped enrich our understanding of how NP practice characteristics can be modified to promote interprofessional teamwork.

Methodology

Conceptual framework

The Interprofessional Teamwork for Health and Social Care Framework (Figure) guided the analysis of the data (Reeves et al., 2010). This framework has 4 domains: relational, organizational, processual, and contextual. Each domain describes a set of specific factors important for interprofessional teamwork. The relational domain emphasizes that professional power, hierarchy, communication, trust, and respect among team members are important factors to consider for optimal teamwork. In addition, this domain indicates that establishing clear professional roles for each member is essential for a team functioning. The organizational domain focuses on the support for care delivery, professional representation, and advocacy for individual team members within the organization. The third domain, processual, highlights time and space allocated for teamwork and task-shifting within the team. The last domain, contextual, encompasses the broader social, political, and economic landscape in which the team is located. The 4 domains, although presented individually, collectively determine the effectiveness of interprofessional teamwork.

Design

Using a mixed-methods design, we conducted a secondary data analysis to explore the extent to which primary care NP practice characteristics are conducive for teamwork as described in the Interprofessional Teamwork for Health and Social Care Framework. The study was approved by the Columbia University Medical Center institutional review board.

Data sources

We used 2 data sources. The first consisted of transcripts of qualitative interviews about NP perceptions of their practices, work context, and the relationships between team members. The second consisted of survey data collected from NPs on similar practice characteristics. The details of data collection for each data set can be found elsewhere (Poghosyan et al., 2013a, 2015). Each study is summarized as follows.

NP interviews—A qualitative descriptive design was used to collect data through in-person interviews of primary care NPs recruited from the Massachusetts Coalition of Nurse Practitioners membership list. The researchers developed and tested an interview guide. An e-mail invitation was sent to members of the Massachusetts Coalition of Nurse Practitioners. Interested participants contacted the researcher to arrange interviews. One researcher, with expertise in qualitative interview techniques, conducted all interviews in spring 2011. Data saturation was reached following 16 interviews (Sandelowski, 2000).

NP survey—The second source of data originated from surveys collected from NPs using the Nurse Practitioner Primary Care Organizational Climate Questionnaire (NP-PCOCQ), a tool designed to measure NP practice environments in primary care (Poghosyan et al., 2013b). NPs were asked to rate, on a 4-point scale (4 = strongly agree; 3 = agree; 2 = disagree; 1 = strongly disagree), the degree to which practice characteristics are present in their work settings, such as the relationship with physicians and administrators or their organizational support. Primary care NPs were recruited from the Massachusetts Health Quality Partners' Massachusetts Provider Database. Using NPs' practice addresses extracted from the Massachusetts Provider Database, surveys were mailed to 807 NPs. Overall, 314 NPs, practicing in 163 practices, returned the completed questionnaires, yielding a response rate of 40%. Individual practices employed anywhere from 1 to 12 NPs.

Data analysis

The qualitative interview transcripts were entered into Atlas.ti (6.2) software and underwent content analysis (Krippendorf, 1980; Neuendorf, 2002) to explore NPs' perceptions about domains important for teamwork. The data were coded and grouped into categories by 2 researchers. The categories were analyzed and grouped by themes according to the conceptual framework (Sandelowski, 2000). The researchers reached 100% agreement of the thematic results. Data-rich statements were collected to present various perspectives.

Before analyzing the survey data, we compared the items on the NP-PCOCQ with each domain of the conceptual framework. We had regular meetings over a 3-month period to review the alignment of items on domains. We analyzed the survey data using SPSS (version 21) software to compute descriptive statistics. We transformed the NP-PCOCQ 4-point Likert scale responses to categorical variables by combining “strongly agree” and “agree” responses into one category and “strongly disagree” and “disagree” responses into the other category. Using these dichotomous responses, we calculated the proportions of NPs agreeing and disagreeing with each statement.

Finally, we integrated the qualitative and quantitative findings. Most of the thematic areas were developed from the qualitative data, and the survey data were used to triangulate the results.

Results

Participant characteristics

NPs in both data sources had similar characteristics (Table 1). All NPs from the interviews were female and reported a master's degree as their highest level of education. The average

age of NPs in the survey was 49.5 years, and more than 97% were female; 57% practiced in their organizations for more than 7 years. Most NPs, in both data sets, practiced in physician offices, 40% of NPs in the survey and 30% of those interviewed. More NPs from the interviews (25%) practiced in outpatient clinics affiliated with hospitals or medical centers compared with NPs in the survey (16.8%).

Findings

The thematic results are aligned with each of the framework's domains. Table 2 presents specified factors within each domain that were identified by NPs as important to teamwork. Table 3 demonstrates the descriptive statistics on the survey items aligned with domains.

Relational domain—NPs spoke about their role within teams and their relationships with staff, physicians, and administrators. The NP role was generally well understood within practices. A little more than 10% of NPs reported their role not being clear, and 16.3% reported their competencies being misunderstood. The NP role was often confused with that of primary care physicians. One NP in a community health clinic said, “The staff doesn't always understand the difference.” However, in environments where NPs have been practicing longer, their role appeared to be clearer. An NP with 11 years of experience in a women's health practice explained, “One thing about this organization is that they've always had the nurse practitioner role and understand the role.”

NPs reported favorable relationships with staff members. An NP working in a community health clinic for 25 years described the role that the staff plays in ensuring that other team members are able to perform their tasks and efficiently deliver care. “I've got great support. I've got medical assistants ... RNs [registered nurses] ... people helping me.” Another NP from a large primary care practice said, “I have a really good team. I have a nurse helping me. I have a medical assistant helping me.”

The most commonly discussed relationship by NPs participating in the interviews was that with primary care physicians. The analysis of both qualitative and survey data demonstrated favorable relationships, characterized by ongoing communication, trust, respect, and willingness for collaborative practice. One NP working in a private internal medicine practice described: “Whenever I ask a question ... I'm fine with asking her [physician] ... whether she's out of the office or not, she's always reachable.” She elaborated that ongoing communication and a good relationship with physicians are beneficial to the team. Only 5% of surveyed NPs reported that NPs and physicians do not collaborate, and 8% reported that physicians do not value the NP role.

The NP-physician relationship, once established, matured to greater mutual reciprocity and equity over time. An NP working in the same practice for 7 years explained, “I don't have to run things by him [physician]; I just do what I think is indicated but I will consult with him as to the next step or ... what do you think about this?” Almost all surveyed NPs reported that they do not discuss every patient care detail with a physician. However, NPs and physicians seek each other's suggestions in care delivery and NPs reported that physicians and NPs discuss patient care and ask each other for input. One NP explained, “They'll

[physicians] come to you just as soon as you go to them to ask questions.” About one-fifth of NPs reported that physicians do not seek NP input (22.2%).

A few NPs spoke about hierarchy and professional power as influential relational factors. For example, primary care teams have traditionally been medically dominant, with the physicians' decisions prevailing. An NP with 2 years of experience explained: “Their [physicians'] names are at the top of the chart ... there's no NP names ... because it's a high power organization and it's more medically driven ... they do not give that responsibility to a nurse practitioner.” Several NPs elaborated that hierarchy was instigated by administrators rather than by physicians. The majority of the surveyed NPs (60%) reported that administrators do not treat NPs and physicians equally.

Some NPs discussed how this old-fashioned hierarchy is starting to evaporate. One NP in a community health center said, “If you're very hierarchical it doesn't work well with our patients. Our team is very collegial We all have different experiences that are respected.”

The relationship between NPs and administrators was characterized by fragmented communication and lack of administrator support for NP practice. For majority of NPs, administrators were perceived as absent from day-to-day practice and lacked sufficient knowledge about the NP scope of practice, which in some cases negatively impacted how the NP role was viewed in teams. In fact, NPs' practice was often shaped at the local level by an administrator. One NP with 25 years of experience as a family NP said, “The administrator isn't a medical person so he doesn't really know what's happening,” whereas another NP from a family practice said: “They [administrators] are the ones that tell us what [patient conditions] we have to see and how many [patients] we have to see.”

If administrators were familiar with NP roles and competencies, they were more likely to support and advocate for the NP role. One NP shared:

I think it helps to have an advocate like my Office Manager ... she's been able to push for me to really advance ... when I first walked in there, they were like you couldn't see sore throats. You can see UTIs [urinary tract infections] ... you can see colds. You can't see anything else. She came from a practice where nurse practitioners did everything ... she's been able to advocate for me to be able to do different things.

Half of the surveyed NPs reported no ongoing communication between NPs and administration.

Organizational domain—Organizational domain factors driving the teamwork included the availability of organizational support and professional representation and advocacy of team members. The vast majority of surveyed NPs reported adequate access to resources to deliver care. However, when asked to compare resources allocated to NPs and physicians, almost one-fifth of NPs said they do not have similar support. In addition, 40.4% of NPs reported that organizational resources such as information were not equally shared between NPs and physicians.

Lack of equity in how organizational resources were allocated was a pervasive finding in the interview data. One NP at a university-based health clinic reported:

If you have a physician and NP ... practicing in a particular place ... and the physician wants two rooms, and say there's three rooms, the physician's going to get two ... there's no question the physician is going to get two.

Despite the unequal support, NPs may be held to the same requirements. An NP from a private practice explained: "If we're simply short-staffed ... they [administrators] make sure the doctors have the staff and we might have to fend for ourselves ... but they actually make us see the same number of patients as the doctors."

Similar concerns were observed in NPs' participation in organizational governance such as representation in decision-making committees. One NP in a hospital-affiliated practice said, "Annual Meetings, it's all physicians ... there's no conversation about nurse practitioners. ..." Another NP from a hospital-affiliated practice explained, "I don't feel like there's anybody that represents nurse practitioners."

NPs expressed frustration for not being identified as their own discipline within their organizations. An NP who practiced in a hospital-based clinic explained:

I work in an environment where NPs are under the role of medicine and I really wished we stayed under the role of Nursing. ... We are able to go to the Medical Practice Meeting once a year but we have no voting rights.

One-third of NPs in the survey reported not being represented in committees responsible for setting organizational policy, and one-fourth reported that NP concerns are not taken seriously by administration.

Processual domain—According to the framework, when teams share more time and space together, they develop mutual understanding, trust, and respect. However, most NPs from the interviews reported limited opportunity to interact with physicians due to their physical location and scheduling. One NP working in the same practice for 20 years said, "We don't always coincide to be physically in the same place at the same time."

An NP in a private practice found that the time primary care teams spend together is considerably less than that of intensive care unit (ICU) teams. "When they [ICU teams] rounded, I used to look at ... the questions I could ask. ... I don't feel like there's any time in primary care for that to happen." Despite needing more time to collaborate, 26% of surveyed NPs reported not having adequate time to spend with their patients, making it even more challenging in such an environment to find time for collaboration.

Task-shifting among team members is one of the processual domain factors. Several NPs spoke about frequent NP/staff task-shifting. Often NPs performed tasks typically delegated to registered nurses (RNs) or medical assistants, such as preparing patients for a scheduled visit. An NP in a family practice said, "I do a lot of the stuff that the medical assistants do." Such task-shifting resulted from a lack of understating of the NP role. An NP employed in

internal medicine practice for 8 years explained that administrators tend to have a hard time differentiating between an NP and an RN. She said, “I don't think they [administrators] felt necessary to have a nurse assisting another nurse.” One NP working in a university-affiliated clinic noted, “In the electronic medical record I'm listed as the nurse.” She further described confusion and tension between NPs and RNs, especially with more experienced RNs. “Nurses think that they know more than I do because they've been there longer.”

A significant amount of task-shifting also took place between NPs and physicians, and NPs referred to it as “comanagement.” NP-physician comanagement of patients allowed the team to care for patients in a timely manner. One NP working at a medical center described comanagement in this manner:

They [patients] usually see either the doc or the NP on their team ... I'm paired with one or two physicians and I usually see a lot of their patients. When [patients] call up and the physician is not there ... and want to see someone ... they are placed with that team ... we all kind of share patients.

Another NP in a large health system-affiliated practice stated, “I work with a physician who has gone to less than half-time status with a full panel of patients who I co-manage ... whatever conditions they have.” This NP further described comanagement:

Because he's [physician] still there, I don't think patients fully have given him up as their PCP, but they don't ever see him so that's what I mean by co-manage ... so I will see them for their annual evaluations, their comprehensive evaluations.

Majority of the surveyed NPs reported practicing as team with physicians, and only about 11% reporting not practicing as a team.

Contextual domain—Contextual domain factors were discussed by NPs participating in the interviews. Two factors emerged as important for teamwork: scope of practice regulations and capturing the economic impact of NP care. The scope of practice regulation in Massachusetts required NPs to have a collaborative practice agreement with physicians to deliver care. An NP from a private physician practice explained, “He's [physician] supposed to review my charts, review my prescription. We have a contract saying he's doing that. ...” Some NPs reported that physicians and NPs perform similar responsibilities, and this regulatory requirement is unnecessary. A geriatric-certified NP who has been practicing for 20 years elaborated: “At this point in my career, I don't see any need at all for any kind of collaborating physician.” Such legislative factors created confusion regarding NPs' responsibilities and their abilities to deliver care. An NP from a private practice said,

It's an office practice that didn't work with nurse practitioners ever and has no idea what we can do ... I tell them ... I've done this before. I feel very comfortable doing this but I'm not allowed in this role.

Despite this state requirement, the survey data showed that the majority of NPs practice independently. Only about 9% of NPs reported not practicing independently.

One particular economic issue discussed by NPs was the financial gains practices have from NP care. For example, one NP who has been in her practice for about 8 years said, “[billing staff] bill under his [physician] name ... probably 99.9% of the time so they never bill at the 85% rate; they always bill at his [physician's] rate.” An NP working in a family practice explained, “The organization decides that they want to do incident to billing [NP services billed under the physician name] because you get better payment reimbursements.” This approach did not allow explicit evaluation of NPs' economic contributions since NP care is hidden under physician care. A family-certified NP provided an example:

If I had my own panel you would ... be able to say she does not prescribe any top tier medications. She only prescribes generics. Look at the cost savings ... look at the impact she has on health care.

NP practices were not characterized with structures to explicitly capture and measure the economic impact of NP care. Fifteen percent of the surveyed NPs reported that there is no system in place to evaluate NP care, and 30.4% reported not receiving feedback about their performance.

Discussion

Using a mixed-methods approach, we explored NP perspectives of their practice characteristics that may promote or hinder effective interprofessional teamwork in primary care. We found that, in general, practice characteristics appear to be conducive of teamwork; however, certain aspects of NP practice should be modified to promote optimal teamwork. As the primary care landscape is changing and more emphasis is given to team-based care, the findings of this study provide important insights for practice and policy change.

We have identified a number of practice characteristics that are conducive to effective teamwork including favorable relationships with physicians and staff. Our findings demonstrate that physicians are supportive of NP practice and trust and respect NP decisions. It appears that this relationship evolves over time, and the longer NPs and physicians practice together, the more they develop similar care practices and effective collaboration. However, NPs practice in settings characterized by limited opportunities to collaborate with physicians due to time and space constraints, which potentiates a challenge to the success of team-based care models. Practice leaders can focus on creating environments that encourage teamwork.

Similarly, NPs reported good working relations with staff and RNs. The relationship between NPs and RNs emerged briefly within the qualitative data, with some NPs reporting challenges in differentiating the boundaries between NP and RN roles. The survey data did not capture the aspects of NP-RN relations, identifying a critical gap that should be addressed to help further understand the composition of effective primary care teams. Given the expansion of both nursing roles in primary care, a more thorough investigation is warranted. Future work should focus on investigating NP-RN relationships in primary care teams to ensure these nurses have effective collaboration and practice within their respective scopes of practice that vary for RNs and NPs.

Organizational support and NP representation and advocacy were factors from the organizational domain. Many surveyed NPs reported having organizational support for care delivery. However, the qualitative data highlighted instances where support was not readily available to NPs when needed. The uneven distribution of resources between different types of PCPs is often instigated by the administrators who lack understanding about NP skills and competencies. As the NP role expands in primary care and more NPs take on PCP roles, it is important for NPs to have similar access to resources allocated to other PCPs. Increasing awareness of administrators about NP education and competencies may promote NP-administration relationships and help administrators better understand the support and resources NPs need to deliver high-quality safe care.

NPs also are not represented in the organizational governance, and there is a lack of advocacy for the NP role within practices. Leadership within practices can play a vital role in reaching out to NPs to involve them in organizational committees or creating infrastructures for NP involvement to ensure NP issues are brought up and addressed at the practice level to promote better teamwork and patient care.

Our findings show a significant amount of task-shifting between team members. Task-shifting between NPs and physicians seems to help the practice to meet the demand for care. On the contrary, lack of clarity around the NP role often results in NPs taking on tasks that traditionally are performed by RNs or medical assistants, and such task-shifting raises concerns of not effectively using NPs' advanced skill set and undermines their productivity and efficiency. Clinicians and administrators should pay more attention on how to effectively utilize all team members in order to meet the growing demand for care and promote quality and safety. Research is needed to better understand the delineated roles and responsibilities of each team member and best forms of task-shifting among them for optimal patient outcomes. Meanwhile, practice administrators can create organizational support structures for NPs to ensure effective utilization of their advanced skills.

Our findings highlight that NP scope of practice regulations in Massachusetts, which required NPs to have collaborative relationships with physicians, created confusion regarding the professional boundaries in the teams and challenged teamwork. On the contrary, it seems that in daily practice, organizations played the key role in determining NP scope, as the vast majority of NPs from the survey reported practices promoting their independence. Ensuring that state regulations and those in practices are aligned and promote best care delivery is a major policy and practice priority. Removing restrictions on NP practices that do not match the NP expertise and competencies as well as needs of primary care practices is important; new policies should encourage such effective NP practices to promote teamwork, especially when expanded NP scope of practice increases primary care capacity by allowing NPs to see more patients (Kuo et al., 2013).

We also found that practices often use Medicare's "incident to" billing (Department of Health and Human Services, Centers for Medicare & Medicaid Services, 2002) to bill for NP services under the physician name, as NPs are reimbursed at a 85% of physician fee rate if they bill for their own services. Such billing is financially beneficial for practices, but it prevents the visibility of NPs' economic contributions and prevents exposure of NP quality

of care, performance, and productivity. It is necessary to create systems to capture care of all providers to ensure safe and accountable care.

Limitations

This study has several limitations. Both survey and interview data were collected for different purposes, a typical limitation for secondary data analysis (Clarke & Cossette, 2000). We were limited to the questions in the survey and could not explore other factors. The original survey relied on self-reports of NPs, and low response rate might be an issue. We do not know if the NPs who participated in the interviews also completed the survey. Furthermore, the data were collected in Massachusetts and NPs from other states might have different perspectives. Finally, no data were collected from physicians to understand their perspective on teamwork.

Conclusion

This study analyzed both quantitative and qualitative data to explore primary care NP practice characteristics that may promote or hinder interprofessional teamwork. Clarity of the NP role, support for their practice, and favorable relationships with physicians and staff were conducive for teamwork, whereas disparate access to organizational NP support, limited opportunities for collaboration, and absent advocacy for the NP role create barriers. These findings highlight the need for administrators and policy makers to focus on these factors to promote effective utilization of all team members. Research on the perspective of team members from other disciplines and effective composition of teams is brk recommended.

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Figure.
Interprofessional Teamwork for Health and Social Care Framework.

Table 1
Nurse Practitioner Demographics and Work Setting

	Interview Participants (N = 16)	Survey Respondents (N = 314)
Age, y		
Mean (SD)	48.3 (9.2)	49.3 (11.1)
Range	28-58	26-71
Sex, n (%)		
Female	16 (100.0)	291 (97.3)
Race, n (%)		
White	15 (93.8)	280 (93.3)
Highest nursing degree, n (%)		
Master's	16 (100)	279 (92.1)
Main practice site		
Physician office	5 (31.3)	123 (41.3)
Community health center	2 (12.5)	85 (28.5)
Hospital-affiliated clinic	4 (25.0)	50 (16.8)

Table 2
Factors Important for Teamwork

Relational
NP role
NP-physicians relationships
NP-administration relationships
NP-staff relationships
Organizational
Organizational support
NP representation and advocacy
Processual
Time and space for teamwork
Task-shifting among team members
Contextual
Scope of practice
Economic impact

Abbreviation: NP, nurse practitioner.

Table 3
Nurse Practitioners' Responses on the Survey Items

Items	Disagreement, %
Relational domain	
NP role understood	10.5
NP competencies understood	16.3
Do not discuss patient care details with physicians	1.3
Physicians value NPs	7.3
NPs and physicians collaborate	4.8
Physicians trust NP decisions	0.6
Physicians seek NPs' input	22.2
Ongoing NP/administration communication	46.1
Administration keeps NPs informed	28.2
Administration treats NPs and physicians equally	59.4
Administration open to NP ideas	17.7
Staff understands NP roles	12.8
Organizational domain	
Adequate resources	6.4
Similar support for physicians and NPs	18
Equal sharing of information between NPs and physicians by administration	40.4
NP representation in committees	30.2
NP concerns taken seriously by administration	23.8
Processual domain	
Enough time for patient visits	26.0
Staff prepares patients	15.3
Administrative efforts to improve NP working conditions	31.9
Physicians and NPs as a team	11.9
Contextual domain	
I practice independently	9.3
A system to evaluate NP care	14.5
Receive performance feedback	30.4

Abbreviation: NP, nurse practitioner.