The Journal for Nurse Practitioners 20 (2024) 105086

Contents lists available at ScienceDirect

The Journal for Nurse Practitioners

journal homepage: www.npjournal.org

Original Research

Opportunities and Challenges of Interprofessional Education: Postgraduate Nurse Practitioner and Physician Residency

Carissa Singh, Kristin E. Palladino, Jurgis Karuza, Luzann Ampadu, Colleen T. Fogarty

Keywords:
collaboration
interprofessional education
nurse practitioner
nurse practitioner residency
team-based care

A B S T R A C T

Interprofessional teams improve patient outcomes and job satisfaction, yet placing health care professionals together does not produce effective collaboration. A qualitative study was conducted to evaluate the success and challenges of an interprofessional nurse practitioner (NP) residency. Key stakeholders were interviewed to determine the perceived success and challenges of an interprofessional-based NP residency. Qualitative thematic content analysis revealed 6 themes, including a high level of satisfaction among key stakeholders. Results suggested formal interprofessional training/interprofessional team-based care is effective and leads to improved relationships; however, because of perceptions of hierarchy and role confusion, interprofessional education may have to span longer than the current 1-year postgraduate NP residency.

The development of nurse practitioner (NP) residencies has provided an excellent opportunity for new NPs to gain confidence and competence upon entering practice. Advances in health care through initiatives such as the Affordable Care Act and the patient-centered medical home model have promoted interprofessional (IP) collaboration through team-based care. IP teams have demonstrated improved patient outcomes and increased job satisfaction.[1] To have an effective IP team, training programs must incorporate interprofessional education (IPE) into their curriculum. NP residencies are an opportunity to provide education and clinical training on IP teams. A qualitative study was conducted to review the successes and challenges of implementing an NP residency colocated with a family medicine residency, with the intent of providing an IP learning experience.

Background and Significance

IPE and team-based care are essential to identify health disparities and deliver high-quality patient care.[1,2] Although the literature supports IP team-based care, placing health care professionals together does not produce effective collaboration. Health care professionals are educated in silos with little opportunity to work as an integrated team. Collaboration and teamwork are learnable skills. To achieve effective IP team-based care, training programs must incorporate IPE into their curriculum. IPE should build awareness regarding the roles of health care professionals, teach communication, and provide IP team-based clinical experiences.

Literature Review

Ineffective IP teams result from miscommunication and/or misunderstanding the scope of practice and expertise of team members. Without IPE training, Gergerich et al[3] found physicians were viewed as the team leaders, resulting in other health care professionals feeling marginalized. IPE for NP students and resident physicians has been shown to improve attitudes and beliefs toward one another's professional roles.[4] Studies for implementing formal IPE have demonstrated mixed success in improving effective collaboration.[5-9] However, effective IP teams have demonstrated improved satisfaction, leading to health care professionals incorporating IP teams into their practice.[7-10]

The development of curricula to train and support IPE remains a challenge. Some researchers have developed a didactic-based curriculum,[11,12] whereas others have developed an experiential curriculum.[13-15] Schwartz et al[12] found that participants who engaged in an IP didactic workshop had a better understanding of one another's profession and applied that knowledge to a clinical reasoning case. Agreli et al[11] evaluated the effects of IPE on teamwork and knowledge of chronic disease management, which demonstrated improved patient care, with no effect on overall collaboration. Johansson et al[14] developed an experiential IP curriculum that demonstrated effective IP teams in a rural setting.

There are clear benefits to IPE and collaborative practice. With the support of a Health Resources and Services Administration Primary Care Training and Enhancement grant (#T0BHP28587), this research implemented an innovative model of IPE that incorporated an NP residency within an existing family medicine

https://doi.org/10.1016/j.nurpra.2024.105086
1555-4155/

Table 1
Illustrative Responses From the Theme of Satisfaction With the Interprofessional Nurse Practitioner Residency Program

Can't see how one transitions from graduate training without a residency. (NPR)
Effective. It is an effective way to prepare NPs clinically. The residency was overwhelming at first and it is good to have support available. Just a general concern about leaving the residency, we will miss the support. (NPR)
Program is well-organized. Impressed with the culture − it's dedicated to education and clinical excellence. It is very effective. (NPR)
Worked well. Helps when working with physicians to see how they were trained, and vice versa. (NPR)
Great model. This is the future of health care, working collaboratively. (FMR)
We feel invested in the program and want it to be successful. (FMR)
Phenomenal success. NPRs have been successful after the residency. They are much more ready to practice. It is an easier transition into clinical practice. (Clinical/Supervisory Staff)
It's great, effective. Staff enjoys it; would like to see the NP residency grow. (Clinical/Supervisory Staff)
Great. Win-win. Training for residents and more access for patients. (Clinical/Supervisory Staff)

NP = nurse practitioner; NPR = nurse practitioner residency.

residency. This qualitative study aimed to evaluate the opportunities and challenges associated with implementing this innovative model.

Description of NP Residency

The NP Residency is a 1-year postgraduate program that was incorporated into an already existing 3-year family medicine residency. The NP and family medicine residency are separate programs, with the ability to collaborate for IPE and patient care.

The NP residency has 4 major components to support the transition of new NPs into family medicine: clinical practice, knowledge acquisition, specialty rotations, and professional development.

The nurse practitioner residents (NPRs) clinical practice site was in New York State. This study took place between 2016 and 2020. During this time, New York State had restricted practice authority for NPs. Therefore, NPRs have a collaborative agreement with physician colleagues; however, clinically, NPRs operate with autonomy, managing a panel of approximately 150 patients. Throughout the 12-month residency, NPRs see patients independently with the support of a dedicated preceptor. NPRs' clinical sessions progress in a ramped-up fashion, gradually increasing the number of patients they see per session and the number of sessions worked per week, ultimately achieving a full NP schedule by the end of the 12-month residency. To also support the transition of NPRs, residents shadow specialists to learn the initial workup for common conditions seen in primary care, as well as build relationships with clinicians in the community.

Knowledge acquisition occurs through didactic lectures and hands-on workshops. For the entire 12-month residency, NPRs attend a weekly didactic session with the family medicine residents (FMRs) known as "CORE Teaching." These weekly lectures are always changing but commonly involve working as an interdisciplinary team to solve "mystery cases" or reviewing common bread-and-butter topics of primary care. In addition, some hands-on workshops include learning to interpret electrocardiograms or learning how to place/remove long-acting reversible contraception.

Aside from CORE teaching, NPRs also attend 2 other didactic learning series with the FMRs: "P2" and "Practice Management." P2 is a 6-month psychosocial curriculum with the second-year FMRs, whereas Practice Management is a biweekly curriculum with the third-year FMRs. Unfortunately, given the time constraints of the NP residency, NPRs do not attend the full P2 and Practice Management curriculum. Instead, NPRs attend the most pertinent lectures, which are decided by the NP residency program director.

The final component of the NP residency is professional development. NPRs are part of an interdisciplinary team within the practice. NPRs attend biweekly team meetings to discuss patient care or work on quality improvement projects. NPRs are also encouraged to join interdisciplinary committees within the practice (eg, the diversity committee or wellness committee).

Methods

A qualitative study was conducted to evaluate the new NP residency program by interviewing key stakeholders including NPRs, FMRs, and clinical/supervisory staff. A semistructured interview guide was used to evaluate the perceived success and value of the residency, to identify key factors that contributed to the success, and to identify areas of concern with implementing the residency. A total of 7 NPR, 23 FMR, and 34 clinical/supervisory staff were interviewed over 4 years.

Data Collection

Individual stakeholders were interviewed from 4 NP residency cohorts between 2016 and 2020. The interviews were conducted individually in nearly all cases. An open-ended interview guide was created to highlight key areas for evaluation. Interviews lasted 1 hour. The evaluator took notes, which were later transcribed into an anonymized database. The role of the respondent was the only identifying information included. Data were aggregated for each of the NP residency cohorts for analysis.

Table 2
Illustrative Responses From the Theme of Value of the Nurse Practitioner Residency Program for Nurse Practitioners

Feel we are better prepared compared to a NP graduate with no residency experience. Helps with first job entry. Not sure I would be fully prepared without the residency. (NPR)
Residency made us appreciate primary care more. Without the residency, I do not know how I could do primary care. (NPR)
When novice NPs start their primary care practice, they are more stressed. They do not have the support system I had as a NPR. NPR support is beneficial for longevity in primary care. (NPR)
NP residency gives the residents a better understanding of primary care, which helps the NPRs stick with primary care. (Clinical/Supervisory Staff)
Residency prepares NPs for more independent work. Gives NPs greater confidence and comfort in collaborating. (Clinical/Supervisory Staff)
NPs who have done a residency are more confident and are better integrated into the care team. NPs are better prepared after their residencies. (Clinical/Supervisory Staff)

NP = nurse practitioner; NPR = nurse practitioner residency.

Table 3
Illustrative Responses From the Theme Impact of Nurse Practitioner Residency Program on the Nurse Practitioner Residents

It had a very high impact on my clinical skills and my confidence level. It broadened my differential knowledge. (NPR)
Now I know where to look for answers, or who to ask. A traditionally trained NP would not know how to do this. (NPR)
Stop with I don't know. Appreciate a certain amount of clinical ambiguity, now we have skills to work it through. NPRs are ok with not knowing everything. We now know how to ask questions. (NPR)
Learning curve is steep, but the NPRs did well. Their confidence, decision-making, and interview skills increased over the year. They look more competent. (FMR)
NPRs appreciate how physicians approach problems and how they problem-solve. (FMR)
NPRs function more independently, are more confident, and are more skillful in precepting. "They move from novice to expert NPs." When NPs were RNs they were at the top of their game, when they start as NPs they are at the bottom. (Clinical/Supervisory Staff)
Increase in confidence and independence of the NPRs over the year. They start out being timid and in the end, become part of the team. (Clinical/Supervisory Staff)
IPE provides the NPRs with confidence in knowing when to ask questions. The NPRs go from "I can't do this to I am confident, and I can do this." They go from asking for an answer to giving an answer. (Clinical/Supervisory Staff)
In the end, the NPRs became stronger and better able to handle complex patients than novice NPs with comparable time on the job. They expanded their skills faster than a novice NP. They are more open to new things. NPRs start to take more clinical ownership. Less ask more tell. (Clinical/Supervisory Staff)
NPs not ready to hit the ground running, this provides an impetus for the NP residency as a bridge program. The residency offers opportunities to enhance skills, comfort level and learn team-based care, especially with difficult patient populations. NPRs' anxiety lowered over time and found their voice in meetings. (Clinical/Supervisory Staff)

FMR = family medicine resident; NP = nurse practitioner; NPR = nurse practitioner resident.

Data Analysis

A general inductive and deductive approach to thematic content analysis was used to analyze data. Thematic content analysis allowed the researchers to learn about the NP training while simultaneously uncovering what was unknown about the topic. A codebook was developed based on a priori codes; we systematically coded the interview data, and additional codes were identified during the analysis process.

Ethical Considerations

The University of Rochester Institutional Review Board reviewed the study and determined it was exempt from review.

Results

The qualitative thematic content analysis revealed high satisfaction with the NP residency across the 4 cohorts, with uniform positivity for all key stakeholders (Table 1). All key stakeholders also found the residency to be highly successful.

A second theme emerged regarding the value of the IP residency (Table 2). First was the belief that the IP NP residency facilitated the NPR to continue careers in primary care, rather than pursuing specialty practice. Second, the NP residency increased the clinical competency of NPRs compared with non–residency-trained peers.

A third theme that emerged was the perceived impact of the NP residency on the NPRs (Table 3). Throughout the residency, the NPRs became more confident, independent, and comfortable in IP patient care. The clinical/supervisory staff reported a major shift in the comfort level of the NPRs in knowing when to ask questions and how to go about finding answers. As seen in Table 3, 1 supervisor noted, "IPE provides the NPRs with confidence in knowing when to ask questions. The NPRs go from 'I can't do this to I am confident and I can do this.'"

A fourth emergent theme was the impact of the NP residency on the IP relationships between NPRs and FMRs (Table 4). FMRs reported both unfamiliarity with the NP training and confusion regarding the scope of practice. Both FMRs and NPRs felt that interacting in an IP context enabled them to understand the differences and similarities between NP and physician training. Respondents also believed that NPRs and FMRs learned from each other during training. Specifically, FMRs learned more about the psychosocial approach from NPRs, whereas NPRs learned medical information and patient management from FMRs. There was consensus among the stakeholders that IPE allowed NPRs to become familiar with physicians' clinical perspectives and approaches, including how to think systematically about clinical problems.

A fifth theme emerged regarding the importance of embedding the NP residency in a culture of communication, support, and openness, which starts with the faculty and staff and is passed down to the residents (Table 5). A collaborative IP spirit, a respectful culture, a commitment to excellence in patient care, strong precepting, and administrative leadership were seen as strengths of the program. There was a unanimous feeling that FMRs, faculty, and

Table 4
Illustrative Responses From the Theme Impact of the Nurse Practitioner Residency Program on the Interprofessional Relationships Between Nurse Practitioner and Family Medicine Residents

I am not sure how much the FMRs know about NP training. They seem to know the nursing role better. NPs have a different perspective from physicians, we reinforce the biopsychosocial model. (NPR)
Recognize that sharing knowledge of the evidence is a two-way street. FMRs and NPRs can learn from each other. (NPR)
NPRs and FMRs don't know about each other and their training. Don't have an idea of NP competence levels. They get to know each other on an individual level, not formal exposures. (FMR)
FMRs learn technical skills, but they learn about compassion from the nursing background. (FMR)
Medicine residents learned about differential diagnosis, management plans, comprehensive care planning, wound care. NPs learned about physician's viewpoint, seeing the big picture, making sure one does not miss stuff that relates to hospital time, surgery, and specialized care. (FMR)
It is important to understand NP training. We don't know what they study and assume a level of clinical practice that they do not have. (Clinical/Supervisory Staff)
FMRs pick up the nursing approach from the NPR. NPs help nurture the biopsychosocial approach and how to establish relationships with patients. FMRs have different training. They can share complex disease management with NPRs. (Clinical/Supervisory Staff)
FMRs are in their own bubble and they do not know what other disciplines do. NPRs help the FMRs know the similarities and differences between the disciplines and their education. Residents learn the importance of collaboration. Residents learn about the differences between NP and medical training. NPRs understand better how physicians think. NPRs are more comfortable with being collaborative and serve as good role models for the FMRs. FMRs take a while to notice how to be truly collaborative. (Clinical/Supervisory Staff)

FMR = family medicine resident; NP = nurse practitioner; NPR = nurse practitioner resident.

Table 5
Illustrative Responses From the Theme Importance of a Culture of Openness and Respect

Program Director helps when I have self-doubts. She checks up with me if I had a rough day. She is there all the time. (NPR)
Program Director was completely comfortable, supportive. Highly perceptive skilled clinician, good educator, always patient. (NPR)
Great, well-organized, physicians are collaborative and open. Program is very supportive. Program is good training for NPs going into practice. (NPR)
Communication, approachability, and openness seem to start with the faculty and are passed down to the residents. (NPR)
We all are willing to put in more effort to make the NPRs more comfortable, less intimidated. Old hierarchy is preserved in the mind. This leads to intimidation. (FMR)
Case-based model helps further interprofessional teams. Participants learn respect, understand commonalities and differences in how problems are approached. Move away from "superiority attitude" that was common in medical education in the past. (Clinical/Supervisory Staff)
We believe in IPE. We now try to incorporate NPRs and FMR in more intentional ways, to enhance IPE. (Clinical/Supervisory Staff)
Everybody bounces off everybody. Good environment and rapport between FMR and NPR. (Clinical/Supervisory Staff)
Proud to be part of the program. Keep it going. Staff appreciates the program as innovative. Staff appreciates the teaching environment and thrives on it. (Clinical/Supervisory Staff)

FMR = family medicine resident; IPE = interprofessional education; NP = nurse practitioner; NPR = nurse practitioner resident.

staff were supportive of NPRs and appreciated their value to clinical care.

A sixth emergent theme was the presence of a perceived intimidation factor for NPRs (Table 6). Early in the residency, NPRs were less likely to take an active role in IPE, resulting in the perception that NPRs were intimidated. Throughout the residency, NPRs became more involved and comfortable asking and answering questions, a perspective shared by all stakeholders. The personality of the NPRs was seen as an important moderating factor. NPRs with more open and outgoing personalities contributed to the openness and respect of the program, whereas residents with shy or quiet personalities contributed to the perceived "intimidation factor" in the IP interactions.

As seen in Table 7, 2 main concerns were raised that might impede the successful implementation of an IP NP residency program. There was a sense that the program as a whole needs to commit to interprofessionalism and foster more intense IP contact between NPRs and FMRs. The second emerging concern was regarding the scope of practice of NPRs and FMRs. Some FMRs and family medicine faculty expressed concerns about the preparation of NPs to manage complex patients. Some respondents had "mixed messages" regarding whether family medicine and NP scopes of practice were essentially the same or different and complementary. There was an agreement among the stakeholders that it is important to send a clear message about the scope of practice and to clarify the roles of NPRs and FMRs at the start of the residency.

A more mundane concern was the implications of the discrepancy in the number of NPRs and FMRs (2 NPRs vs 30 or more FMRs per cohort) in fostering true IP contact and promoting cohesion between the NPRs and FMRs. Several suggestions were made to encourage more IP interaction, including developing a coresidency "buddy system." Also, increasing the NP cohort to 4 or 5 residents was suggested as a strategy to promote IP contact and cohesion.

Discussion

This is the first study to evaluate an innovative model of IPE that incorporated an NP residency within a long-standing family medicine residency. This research focused on highlighting the opportunities and challenges of this innovative IP postgraduate training program.

The study demonstrated the successful implementation of an NP residency within an existing family medicine residency; this was built on a culture of communication, support, and openness at all levels of care. The residency provided the support NPRs needed to build confidence and competence to continue a career in primary care. Although there was concern regarding the perception of intimidation among NPRs learning alongside their physician colleagues, this seemed to dissipate with time. The data show that throughout the residency, NPRs became more confident, independent, and comfortable in IPE and IP patient care. As noted in prior research, physician residents have unfamiliarity with the scope of practice and training of NPs. Both FMRs and NPRs found the IPE helpful in understanding the differences and similarities in their training. Also, both FMR and NPRs valued the ability to learn with and from one another during IPE.

A few concerns emerged, including the perception that NPRs' personality impacted IPE. Also, key stakeholders suggested that balancing the ratio of NPRs to FMRs would help foster IPE. It was also noted that the program as a whole needed to commit to interprofessionalism and foster more intense IP contact between NPRs and FMRs. Confusion on the NPRs' scope of practice persisted because some doubts were raised among the FMRs and family medicine faculty about the preparation of NPs to manage complex patients. There was agreement among the stakeholders that it is important to send a clear message about the scope of practice and to clarify the roles of NPRs and FMRs at the start of the residency.

Some recommendations emerged for future cohorts or postgraduate programs incorporating IPE into their curriculum. It was

Table 6
Illustrative Responses From the Theme Impact of a Perceived Intimidation Factor for Nurse Practitioners

Clarify what defines NPs and FM physicians. Talk about the difference in clinical hours of training. This may be a source of intimidation between the disciplines. (FMR)
The NPR and FMR roles are not clearly defined. This contributes to the "intimidation factor." (FMR)
There is a need to work on the "intimidation factor" of NPRs compared to FMRs. There seems to be a disconnect between the feedback from the NPRs and the chief residents' impressions of the NPs. The NPRs say they love it, but they do not speak up, they are late, they don't show up. This may be a personality factor. (FMR)
FMRs structured the teaching in meetings, but over time NPRs took more teaching responsibility, they became more vocal. NPRs initially were intimidated, feeling outnumbered, but they worked it out. (FMR)
NPRs may feel intimidated. Could be a personality thing. NPRs were initially very quiet but we want them to participate. (FMR)
NPRs were quiet, due to their personality. It helps that the NPRs don't feel separate. In the education sessions, it was nice to have NPRs. In small groups they were shy. Case studies can help NPRs interact with everybody. (FMR)
More NPR involvement in didactics is needed. It is intimidating being one NPR among all the FM residents. (Clinical/Supervisory Staff)
Wanted to see more growth in comfort and confidence. Introverted personality plays a huge role. (Clinical/Supervisory Staff)

FM = family medicine; FMR = family medicine resident; NP = nurse practitioner; NPR = nurse practitioner resident.

Table 7
Illustrative Responses from the Theme Concerns Raised

There is limited overlap between FMRs and NPRs. This leads to difficulties for the residents to know each other. The residency seemed to be "adjacent not combined." This got better. (FMR)
Need to facilitate more the family medicine NPR collaboration. Need to foster a bond. Need to have more conversations. (FMR)
What is the ideal relationship between NPs and physicians still needs to be teased out. This has implications for interprofessional interactions. We are not doing a good job in providing this education. We need to better understand the difference between NPs and physicians and need to more effectively bridge the gap between physicians and NPs. (FMR)
We do not make the distinction between NPRs and FMRs providing primary care. "We more or less do the same thing. We are all residents." We all learn from each other. We share information to provide good care. It goes both ways. (FMR)
It is confusing when residents are told NP=FM, when in fact there are differences. NPs are fantastic providers but different, their scopes of practice are different. It is important to have this discussion upfront. (FMR)
Do not pay lip service to interprofessionalism. If it is important, then medicine must support it. Need to have more reflection, communication, and more hard conversations. There needs to be more support for interprofessionalism at the systems level. FMRs are supportive, and physicians here go above and beyond to shape a supportive culture. We believe in IPE but how to implement it is a problem. (Clinical/Supervisory Staff)
Not sure what NPs should know or what is beyond the scope of practice for NPs. Not knowing the expectancies for sharing care. Don't know what to do with shared care. (Clinical/Supervisory Staff)
What does the word "resident" mean? FMRs put in much more clinical time than the NPRs. There is a huge difference between NPRs and FMRs in the spectrum of patients they see. Seeing a spectrum of patients allows one to know who is sick, how aggressively to treat, and when to send to the emergency department. (Clinical/Supervisory Staff)
For a while, it was said that NP=MD. Now it is said that NPs and physicians are competent practitioners but different. (Clinical/Supervisory Staff)
Clarify the roles of NPRs and FMRs. Need to have realistic view of each. They are different but complementary. NP is not a replacement for physicians. (Clinical/Supervisory Staff)

FMR = family medicine resident; IPE = interprofessional education; NP = nurse practitioner; NPR = nurse practitioner resident.

recommended that a formal IP lecture occur at the start of the residency program to highlight the scope of practice for various learners to eliminate confusion. Also, there was concern that NPRs had an intimidation factor learning alongside their physician colleagues. Although this did appear to dissipate with time, to help alleviate this intimidation, stakeholders suggested developing a coresidency buddy system. Also, there were approximately 30 FMRs to 2 NPRs. By expanding the NP residency to 4 or 5 NPRs, this may also help to diminish the intimidation factor. Finally, stakeholders agree that the NP residency and IPE were successful due to support of the organization as a whole.

Areas of Future Research

Although prior research demonstrates the benefits of IPE on patient outcomes, there are limited studies on IP curriculum and a lack of IPE educators. Future directions should increase engagement of preceptors/educators by providing them with the training needed to address challenges and barriers that may occur within an IPE curriculum. Shrader et al[16] developed an IP objective structured teaching experience for preceptor development with emphasis on "all voices included" and "intentionality," which created an open environment and led to "dismantling hierarchy." Implementation of a similar preceptor-targeted curriculum within the colocated residencies would not only benefit the programs but also add to the existing literature.

Study Limitations

This study is limited by the small cohort of NPRs compared with the larger number of FMRs and other key stakeholders; thus, the perspective of the NPR is, perhaps, underrepresented compared with other colleagues interviewed. This study was also limited to family NPRs and FMRs. Finally, data from this study were collected between 2016 and 2020. The final cohort included in this study experienced changes in IPE because of the coronavirus disease 2019 pandemic. Before the pandemic, all IPE was in person. At the start of the pandemic, IPE education was either canceled or transitioned to a remote synchronized meeting, which likely impacted the results of this study.

Conclusion

The Health Resources and Services Administration Primary Care Training and Enhancement grant (#T0BHP28587) allowed the opportunity to implement the first combined postgraduate trainee program for NPs and physicians. This research demonstrates the effectiveness of providing IPE within this innovative residency model, highlighting the strengths, as well as identifying challenges.

CRediT authorship contribution statement

Carissa Singh: Writing – review & editing, Writing – original draft. **Kristin E. Palladino:** Writing – review & editing, Writing – original draft. **Jurgis Karuza:** Writing – review & editing, Writing – original draft. **Luzann Ampadu:** Writing – review & editing, Writing – original draft. **Colleen T. Fogarty:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

In compliance with standard ethical guidelines, the authors report no relationships with business or industry that may pose a conflict of interest.

Funding

This work was supported by the Health Resources and Services Administration Primary Care Training and Enhancement grant (#T0BHP28587).

Acknowledgments

We thank senior leadership for their work in obtaining Health Resources and Services Administration funding to support the development of this NP residency. We thank the entire family medicine residency for their programmatic support and guidance in implementing our NP residency. We thank our NPRs and the interprofessional team; without support from the entire practice, our residency could not have been successful. Finally, we thank the Consortium for Advanced Practice Providers for their guidance and validation of program rigor.

References

1. Centers for Disease Control and Prevention. Patient-Centered Medical Home (PCMH) model. 2021. Available at: https://www.cdc.gov/cardiovascular-resources/php/pcmh-model/?CDC_AAref_Val=https://www.cdc.gov/dhdsp/policy_resources/pcmh.htm
2. Schapmire TJ, Head BA, Nash WA, et al. Overcoming barriers to interprofessional education in gerontology: the interprofessional curriculum for the care of older adults. *Adv Med Educ Pract.* 2018;9:109-118. https://doi.org/10.2147/AMEP.S149863
3. Gergerich E, Boland D, Scott MA. Hierarchies in interprofessional training. *J Interprof Care.* 2019;33(5):528-535. https://doi.org/10.1080/13561820.2018.1538110
4. Hanyok LA, Walton-Moss B, Tanner E, Stewart RW, Becker K. Effects of a graduate-level interprofessional education program on adult nurse practitioner student and internal medicine resident physician attitudes towards interprofessional care. *J Interprof Care.* 2013;27(6):526-528. https://doi.org/10.3109/13561820.2013.790881
5. Chou C, DeVries C. Assessing interprofessional interactions of primary care practitioner trainees. *MedEdPORTAL.* 2016;12, 10490. https://doi.org/10.15766/mep_2374-8265.10490
6. Tsilimingras D, Gibson-Scipio W, Clancy K, et al. Interprofessional education during an autism session. *J Commun Disord.* 2018;76:71-78. https://doi.org/10.1016/j.jcomdis.2018.09.002
7. Boland DH, Scott MA, Kim H, White T, Adams E. Interprofessional immersion: use of interprofessional education collaborative competencies in side-by-side training of family medicine, pharmacy, nursing, and counseling psychology trainees. *J Interprof Care.* 2016;30(6):739-746. https://doi.org/10.1080/13561820.2016.1227963
8. Hulen E, Edwards ST, Poppe AP, et al. Creating change, challenging structure: graduate and faculty perspectives on the implementation of an interprofessional education program in veterans affairs primary care. *J Interprof Care.* 2019;34(6):756-762. https://doi.org/10.1080/13561820.2019.1676706
9. Moyer AR. Empowering patients, engaging teams: an interprofessional continuing education pilot. *J Contin Educ Nurs.* 2016;47(9):421-426. https://doi.org/10.3928/00220124-20160817-09
10. Weinstein AR, Dolce MC, Koster M, et al. Integration of systematic clinical interprofessional training in a student-faculty collaborative primary practice. *J Interprof Care.* 2018;32(1):104-107. https://doi.org/10.1080/13561820.2017.1355296
11. Agreli HF, Peduzzi M, Silva MC, Mascarelle RCV, Espinoza P. Effects of interprofessional education on knowledge of chronic conditions management. *Rev Lat Am Enfermagem.* 2019;27, e3203. https://doi.org/10.1590/1518-8345.3095.3203
12. Schwartz AW, Hawley CE, Strong JV, et al. A workshop for interprofessional trainees using the geriatrics 5Ms framework. *J Am Geriatr Soc.* 2020;68(8):1857-1863. https://doi.org/10.1111/jgs.16574
13. Dulay M, Saxe JM, Odden K, et al. Promoting quality improvement in primary care through a longitudinal, project-based, interprofessional curriculum. *MedEdPORTAL.* 2020;16, 10932. https://doi.org/10.15766/mep_2374-8265.10932
14. Johansson P, Nickol D, Maloney S, et al. Health professions students' assessment of an interprofessional rural public health-focused rotation: a pilot study based on the community-oriented primary care approach. *J Med Educ Curric Dev.* 2020;7:1-7. https://doi.org/10.1177/2382120520932549
15. Mecca MC, Thomas JM, Niehoff KM, et al. Assessing an interprofessional polypharmacy and deprescribing educational intervention for primary care postgraduate trainees: a quantitative and qualitative evaluation. *J Gen Intern Med.* 2019;34(7):1220-1227. https://doi.org/10.1007/s11606-019-04932-9
16. Shrader S, Zaudke J, Jernigan S. An interprofessional objective structured teaching experience (iOSTE): an interprofessional preceptor professional development activity. *J Interprof Care.* 2018;32(1):98-100. https://doi.org/10.1080/13561820.2017.1373081

Carissa Singh, DNP, FNP-C, is a Clinical Director, NP Residency, Kristin E. Palladino, DNP, FNP-C, AAHIVS, is a Former NP residency director and site visitor and accreditation commission member for the Consortium For Advanced Practice Providers, Jurgis Karuza, PhD, is an Adjunct professor of medicine, Division of Geriatrics and Aging, Department of Medicine, Luzann Ampadu, DNP, FNP-C, is an Academic Director, NP Residency Program, and Colleen T. Fogarty, MD, MSc, is a William Rocktaschel Professor and Chair Department of Family Medicine University of Rochester, are affiliated with the University of Rochester in Rochester, NY. Dr. Singh can be contacted at carissa_singh@urmc.rochester.edu.