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Orthopedic Nurse Practitioner as a Subspecialty: A Case Study

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ORTHOPEDIC NURSE PRACTITIONERS AS A SUBSPECIALTY: A CASE STUDY

by

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Abstract

Purpose: The overall purpose of this study was to describe the ONP role by exploring how and why NPs are utilized in orthopedic health care settings. Two problems associated with the evolving ONP role were addressed: the concomitant decrease in the supply of and increased demand for orthopedic patient care services and the nursing profession's unmet challenge to keep pace with that increased demand and protection of the public and nursing profession through credentialing of ONPs and programs providing certification and training for ONPs.

Approach: This study employed a single-embedded case study research approach to answer the research questions and interpret the results through analysis of interview data, participant observations, and document surveys.

Findings and Conclusions: The analysis of the ONP role through the lens of Style's conceptual model, *Nursing as a Social System*, and the PEPPA-Plus framework revealed the ONP role lacks the maturity required for long-term sustainability, thereby threatening the viability of the role. Highly specialized knowledge and skill are required for the ONP role and currently the means for supplying adequately trained and/or experienced ONP job applicants is ineffective. The development of the ONP role is contingent upon trusting professional relationships with individuals or groups of orthopedic surgeons, a necessary component of the ONP role. The highly specialized ONP role varies significantly from the general NP role in which it emerged suggesting new methods for training and evaluation may be indicated. Lastly, environmental conditions contribute to the decisions by orthopedic surgeons and health care organizations to employ ONPs. This study identified environmental conditions consistent with those in both Style's and the

PEPPA-Plus models suggesting these models are useful frameworks for ONP-role analysis.

Relevance: Findings from this study may influence and inform policy makers to improve and enhance the orthopedic-patient care provided by ONPs and theory development regarding the role and utilization of subspecialty NPs. This in turn may influence the eventual establishment of evidence-based standards for orthopedic education, training programs, and fellowship accreditation.

Dedication

I dedicate this endeavor to my supportive, encouraging, and patient family: to my husband, Tom, and children, Jeremy, Tomra, and Tom; and to my friends and colleagues. Your belief in me, willingness to listen to me, and to share this journey aided in my ability to persevere. I am truly grateful and appreciative of your support and many prayers. To my fellow orthopedic nurse practitioner colleagues and faculty, it is you who have fueled my passion in this pursuit. Thank you.

Finally, I dedicate this to the memory of Dr. Robert Colgrove, the orthopedic surgeon who inspired, encouraged, and supported me in my journey as an orthopedic nurse practitioner. He would be pleased with this accomplishment.

Thank you all for seeing me through this chapter of my life.

Acknowledgments

To the gracious informants who participated in this study: I sincerely thank you for sharing your life experiences, beliefs, perceptions and knowledge with me. It was an honor and privilege to be trusted by you. I valued the time we spent together as you revealed your understandings.

To my committee chairperson, Dr. Jane Georges, your guidance and challenges to view the whole picture has been treasured. I am most appreciative of the freedom you provided for me to discover that which was necessary for this journey and for me to understand of the researcher role. Your teaching and scholarship has inspired and motivated me as faculty and in my research. Your gentle nature, discernment, knowledge, and guidance through this process is most appreciated.

To the other members of my dissertation committee, Drs. Connelly and Macauley, it has been my honor to have you on my committee. Thank you both for your encouragement, especially during the proposal defense. I value all that you have given me in this process.

Dr. Patricia Roth, your gracious extension of kindness, consideration, and direction through the years since 1985 have been exemplary. My memories of you will always be held in high regard. Compassion and understanding shine through all that you do whenever interacting with students. Thank you!

Thank you, Donna Agan, my editor, and also to the extraordinary friends, colleagues, fellow students, and extended family in my life who have encouraged me at all phases of this journey. This includes Azusa Pacific University, the University of San Diego, and my friends from church.

My heartfelt thanks to each and everyone who have encouraged and helped me reach this major accomplishment. I am especially grateful for my PhD colleagues, Dr. K. Sue Hoyt and Dr. Rhoberta Haley. Truly, no PhD is completed without a village to support its completion.

In conclusion, I give thanks to my higher power, God and creator who has sustained me through trials along the journey.

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Chapter 1: Introduction

To paraphrase George Santayana (1905), "Those who fail to learn from the mistakes of their predecessors are destined to repeat them" (p. 284). The nurse practitioner (NP) role spans both nursing and medicine (Buppert, 2015) thereby being positioned to learn from its predecessors in both disciplines. From medical education research in the 1960s, policymakers developed standards and credentialing requirements forming current medical education systems and policy decisions for the purpose of protecting the public and enhancing safety (Flexner, 1910; Irby, Cooke, & O'Brien, 2010; Ziem, 1977). Orthopedic NPs (ONPs) occupy a unique niche in a rapidly changing health care system and play a major role in providing care to patient populations with orthopedic needs. Thus, findings from this study are intended to influence and inform policy makers to improve and enhance the provision of orthopedic patient care provided by NPs and theory development regarding the role and utilization of subspecialty NPs.

This study begins with a statement of the problem, study purpose, and specific aims. Subsequently, background and significance, a rationale for the use of the Yin's (2014) case study research method, and data collection/analysis methods are presented.

Statement of the Problem

ONPs are credentialed NPs in either a family, adult, or pediatric specialty with substantial knowledge of musculoskeletal (MSK) anatomy, physiology, pathophysiology, and clinical expertise in nursing and medical/surgical orthopedics. They have at least master's degree preparation and participate in a team of orthopedic health care providers in the provision of health care to patients with MSK disease, injury, or infirmary. This definition of an ONP was developed in part from the Advanced Practice Registered

Nurse (APRN) consensus document (APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee, 2007) and the National Association for Orthopedic Nurses (NAON; n.d.). As part of a dynamic and evolving nursing profession, NPs respond to the needs of the public while adapting to the advances in health care technology.

This study will address two primary problems associated with the evolving role of the ONP. The first is the concomitant decrease in the supply of and increased demand for orthopedic patient care services. The second problem is the nursing profession's unmet challenge to keep pace with the rising need for subspecialty credentialing of NPs. In particular, there is currently a dearth of postgraduate training programs for ONPs supported by evidence-based, nationally recognized criteria as exists for other specialty NP certifications and program accreditations.

Factors associated with the imbalance of supply and demand for orthopedic services include an increase in older adults, access to healthcare insurance, a decline in the orthopedic surgeon workforce role (U.S. Bone and Joint Initiative 2014; Hale & Hill, 2006), and advances in technology. According to Hansen and Bozic (2009), technological advances include an increase in orthopedic diagnostic imaging studies, surgical interventions, the use of electronic medical records for orthopedic decision support, and the increased supply of NPs. Combined, these factors have shaped the evolution of the ONP role.

Ensuring public safety has traditionally been met in medicine and nursing through the development of accredited, evidence-based training methods and subspecialty certifications (American Nurses Credentialing Center [ANCC], 2017; Styles, Schumann,

Bickford, & White, 2008; Ziem, 1977). Development of evidence-based postgraduate NP specialty training and evaluation methods ensuring patient safety has not kept pace with the increased demands for ONP care as well as subspecialty NP practice in general (Benham, & Geier, 2014; Bush, 2014; Day, Boden, Knott, O'Rourke, & Yang, 2016; Sciacca, & Reville, 2016). Additionally, the utilization of subspecialty NPs has grown faster than the NP profession's ability to standardize and regulate subspecialty NP practices through the certification and accreditation process (Coombs, 2015).

Study Purpose and Specific Aims

The overall purpose of this single, embedded case study is to describe the ONP role, exploring how and why NPs are utilized in orthopedic health care settings. The specific aims of this study are to:

1) Describe the singularity of the ONP role as a contemporary phenomenon

2) Explore how and why NPs are utilized in orthopedic care settings

3) Explore the context in which ONPs are situated, including social processes such as educational preparation and professional organizations.

Background and Significance

The United States healthcare system is challenged with meeting increasingly more complex and specialized healthcare needs in a population that has outpaced the supply of available specialists. This is especially true for patients who seek orthopedic care, also known as MSK care. Several factors contributed to this challenge; most notable are the dramatic increase in the number of older adults and prolonged life expectancy, greatly increasing the likelihood of developing MSK/orthopedic conditions (U.S. Bone and Joint Initiative, 2014) and increasing the demand for orthopedic care (Canin & Wunsch, 2009;

Iobst, Arango, Segal, & Skaggs, 2013). The increase in patients eligible for insurance can be attributed to passage of the Affordable Care Act (Democratic Policy Committee, 2011; Healthypeople.gov, 2016; Patterson et al., 2014).

NPs have assumed increasingly complex roles outside of the domain of primary care, often in subspecialty practices where the demand for those services exceeds the supply of physician providers (Chattopadhyay, Zangaro, & White, 2015). A study by Mehortra, Forrest, and Lin (2011) reported that 50% of all outpatient visits were specialty consultations. A search of the NP workforce in specialty care revealed between one-third and one-half of all NPs practice in specialty settings (American Association of Nurse Practitioners [AANP], 2015a; Agency for Health Care Research and Quality, 2014; U.S. Department of Health and Human Services, Health Resources and Services Administration, National Center for Health Workforce Analysis, 2014). These findings were consistent with Sargen, Hooker, and Cooper (2011), who predicted 33% of NPs would choose to work in subspecialty settings. They also suggested this would not be sufficient to meet the future demands for specialty care given the overall projected shortages of providers, NP faculty, and training sites; all of which are barriers to increasing the supply of subspecialty NPs.

According to Fairman (2008), a leading historian on the subject of NPs, the evolution of the NP role helped to create and influence foundations for health policies that evolved at the end of the 20th century. Examples included expanded interest in health awareness, disease prevention, consumer-based services, and the evolution of health maintenance organizations (HMOs). Fairman's historical analysis included an examination of the healthcare provider environment that included the context in which

the NP movement emerged, how large social and political movements influenced it, and how it contributed to the changing understanding of what constituted medical care. While much is known about the 50-year evolution and utilization of the NP role (Fairman, 2008) and the reported effectiveness of APRN's roles in providing high quality and cost effective patient care (Donald et al., 2015; Newhouse, Stanik-Hutt et al., 2011), there is limited information about ONP utilization or levels of preparedness and competencies required of the ONP to provide quality, safe, and competent care (Benham & Geier, 2014; Day et al, 2016; Bush, 2014; Sciacca, & Reville, 2016). To highlight this point, the National Association of Orthopedic Nurses' (NAON; 2017) current strategic plan identifies development of APRN competencies as an objective to be accomplished between 2018 and 2019. Additionally, there is little empirical evidence associated with healthcare policy's effects or influences on the development, utilization, evaluation, credentialing, and outcomes of ONPs in public and private health care sectors.

As a profession, nursing is responsible for regulating its specialties as a means of promoting and recognizing advanced skills and knowledge to ensure continued, orderly development of the discipline and to assure the public of safe, competent, specialized care. Traditional NP population-based specialties, such as family practice and pediatrics, offer national certifications and program accreditation guidelines that have paved the way for subspecialty roles (Styles et al., 2008). Currently, all subspecialty NP roles are evolving without the benefit of empirically-based, consistent, nationally-recognized credentialing standards and regulations beyond the basic NP certification and NP educational program accreditation. At the recommendation of the APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory

Committee (2008), credentialing standards for subspecialty practice beyond the NP role are left to the discretion of professional nursing specialty organizations. Currently there is incongruence between this recommendation and current NP subspecialty role credentialing practices.

The choice to become certified as a subspecialty NP is voluntary, as is the decision of subspecialty NP education and training programs to become accredited by a national accreditation body. Subspecialty NP certification is granted by a multitude of nursing and non-nursing-affiliated organizations (Styles et al., 2008). Two agencies providing accreditation to postgraduate NP subspecialty education and training programs are the National Nurse Practitioner Residency and Fellowship Training consortium (NNPRFTC; 2015) and the Practice Transition Accreditation Program (PTAP) affiliated with the American Nurses Credentialing Center (ANCC; 2016a). Residency programs educate and train NPs prior to NP licensure, whereas fellowship programs provide education and training for credentialed NPs interested in advancing their career in either primary care or a subspecialty field (Nurse Practitioner Roundtable, 2014). To date there is one ONP Fellowship program that is not accredited by either of the two accreditation bodies. The PTAP is recognized nationally by the Accreditation Board for Specialty Nursing Certification (ABSNC), formerly known as the American Board of Nursing Specialty. This organization ensures program accreditations meet rigorous standards to protect the public (Accreditation Board for Specialty Nursing Certification [ABSNC], 2017). In 2016, the first primary care NP residency program was officially granted national accreditation status (ANCC, 2016a). To date, there are no accredited fellowship programs. National ONP certification examinations began in 2007 (Orthopaedic Nurse

Certification Board [ONCB], 2017), yet there are no nationally recognized education and training standards to prepare the NP for certification in orthopedics. Few master's level education and training programs offer ONP education and training courses and one ONP fellowship program admits one or two selected students annually as part of a post-master's NP or doctor of nursing practice (DNP) program (National Nurse Practitioner Residency & Fellowship Training Consortium, 2017; University of North Carolina at Chapel Hill, n.d.).

Significant inconsistencies have been found amongst post-graduate subspecialty NP education, training, entry level experience, and credentialing requirements to practice in subspecialty settings (Styles et al., 2008). Additional inconsistencies in minimal standards to become certified and/or employed as a NP subspecialist exist between specialties (National Nurse Practitioner Residency & Fellowship Training Consortium, 2015) and within specialties. For example, within the Emergency NP (ENP) subspecialty, ENPs have the option of becoming certified through either the American Nurses Association certification arm through the ANCC or the American Academy of Nurse Practitioners Certification Board (AANPCB; n.d.) which is recognized as an independent certification body affiliated with the American Association of Nurse Practitioners (AANP). Of the two ENP certifying bodies, ANCC is the only one recognized by the ABSNC (2016).

Summary

From the above description of the background and significance of the research area, it can be posited that the increasing need for ONP education and practice exist concurrently with a comparative lack of post-graduate training programs when compared

with other subspecialty certifications and NP postgraduate education and training programs. This study explores this singular contemporary phenomenon that remains unstudied using an approach designed specifically to reveal the social processes and context in which it occurs.

Rationale for Case Study Method

Yin (2014) defined case study research as "an empirical inquiry that investigates a contemporary phenomenon in depth and within its real world context, especially when the boundaries between phenomenon and context may not be clearly evident" (p. 16). This study met three requirements for choosing Yin's (2014) method as a research approach: it was designed to focus on a contemporary event, to answer a how or why question, and the researcher was not required to control behavioral events. The study design should provide insight into what is known about the emerging ONP subspecialty role and how or why decisions are made to utilize ONPs in the orthopedic workforce. Evidence was searched to identify contemporary ONP practice and its boundaries, which separate the case from contextual factors, such as preparation and utilization. Additionally, evidence about the context in which ONPs have evolved as well as the services they provide to meet the needs of orthopedic patients and health care institutions was also identified and analyzed. The inclusion of context, such as socio-historical factors, added richness and meaning to the study (Keen & Packwood, 1995). The use of multiple sources and data collection methods provided a more convincing and accurate case study (Yin, 1994a, 2014) and a more holistic view and grander picture of events due to the use of multiple sources of evidence (Noor, 2008). Thus, the use of Yin's (2014)

case study method would contribute to a robust and nuanced approach in exploring the contemporary singularity with describing the ONP.

Research Questions

This study endeavored to answer the following research questions:

1) What is the singularity of the ONP role as a contemporary phenomenon?
2) How and why are ONPs utilized in orthopedic care settings?
3) What is the context in which ONPs are situated, including social processes such as educational preparation and professional organizations?

The search for answers to the above questions revealed information about a relevant, current topic in nursing. Answers to these questions shed light on development and utilization of ONPs in meeting individual patients- and organizational needs for orthopedic health care. Study results could provide both the orthopedic health care industry and the nursing profession with baseline data to aid in the development of competency standards for ONPs to practice in the orthopedic health care workforce. Study results also could aid nursing academic and training institutions in the identification of orthopedic workforce requirements and subsequent training needs. In turn, this might influence the eventual establishment of evidence-based standards for orthopedic education and training programs and fellowship accreditation.

Data Collection and Analysis

Case study research method was employed in this study. Data was collected from three sources: 1) a review of the literature and documents reflecting the evolution, implementation, and utilization of NPs in orthopedics; 2) participant observations of ONP practice; and 3) exemplar interviews of orthopedic provider's managers and

administrators familiar with the ONP role. The strategies of observation, narrative analysis, and document survey were used in this case study inquiry to analyze the sources of data. As typical of most case study research, the researcher has prior experience and familiarity with the context of the study (Holloway & Wheeler, 2010) and is therefore a participant in the research. Patterns and themes identified in the literature review provided concepts analyzed throughout the study, constructing a reality associated with the phenomenon of the ONP. In this approach, theoretical propositions guided collection and analysis of data using multiple sources of evidence; a key features of case study research (Yin, 2014). For the purposes of this study, the theoretical propositions contained in the Participatory Evidence-Informed Patient-Centered Process for APRN Role Development (PEPPA-Plus) model were used to guide data collection and analysis (Figure 1).

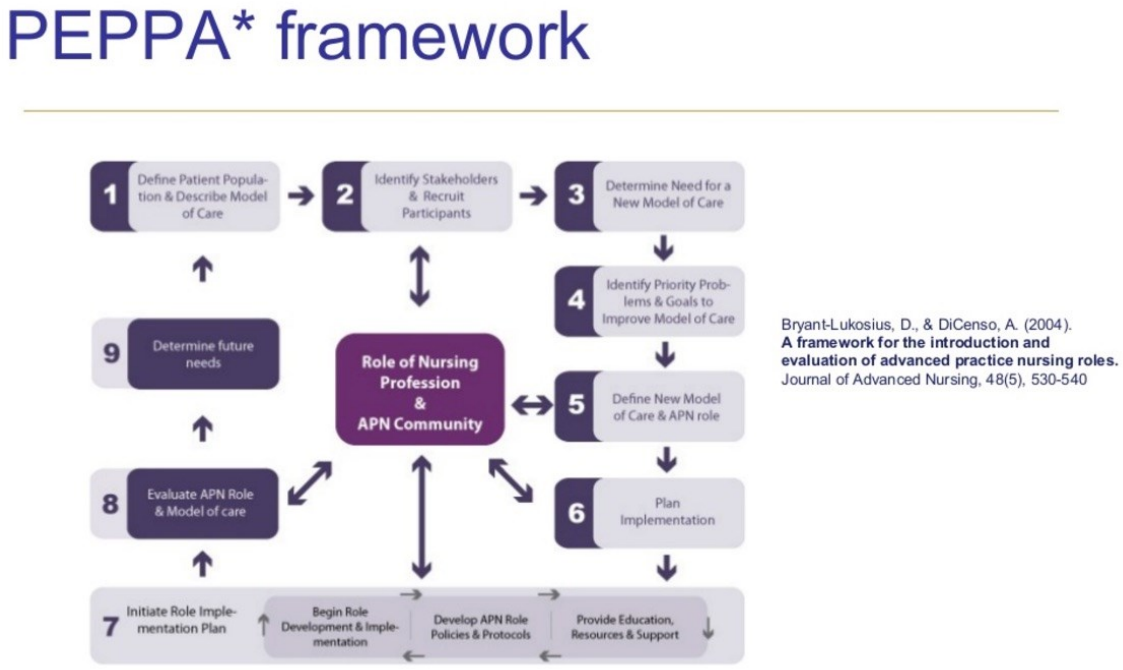

Figure 1. PEPPA* framework. Adapted from "Framework for evaluating the impact of advanced practice nursing roles," by Bryant-Lukosius et al., 2004, *Journal of Nursing Scholarship, 48*, 204, Copyright 2004 by Journal of Nursing Scholarship.

The PEPPA framework, a foundation for the PEPPA-Plus Model, is a widely used, robust framework developed to provide APRN researchers with the optimal development, implementation, and evaluation of advanced practice nurse (APN) roles. The seven-step process consists of concepts key to examining the ONP role: model of care, stakeholders, APN role, and implementation strategies. This framework was further designed to evaluate the effective utilization of various APRN roles as they evolved to meet dynamic population health, practice setting, and health system needs. It included a matrix of concepts used to guide role evaluations across stages of APRN role development. Each stage included evaluation objectives and questions for examining role structures, processes, and outcomes from different stakeholder perspectives.

The theoretical propositions that informed the PEPPA-Plus framework directed the collection and analysis of data from literature review, participant observations, and exemplar interviews (Bryant-Lukosius et al., 2016).

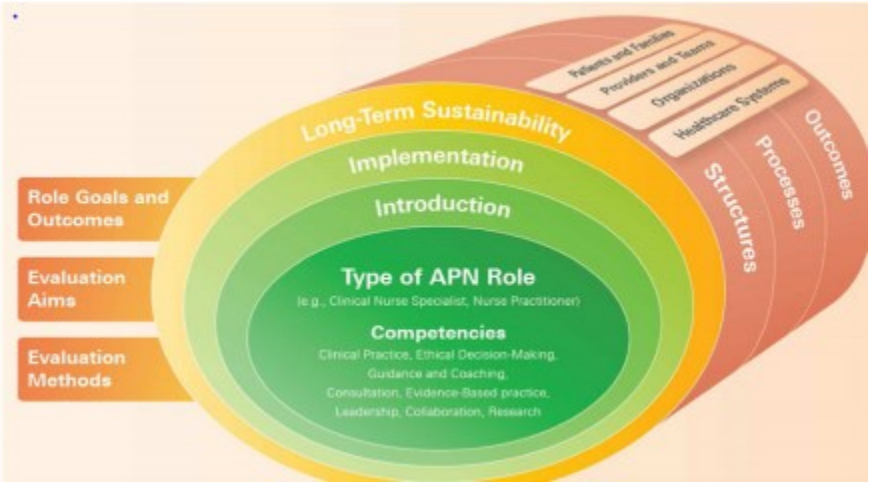

Figure 2. The PEPPA-Plus model. Adapted from "Framework for evaluating the impact of advanced practice nursing roles" by Bryant-Lukosius et al, 2016, *Journal of Nursing Scholarship, 48*, 204 Copyright 2016 by the Journal of Nursing Scholarship.

Protocol

The researcher conducted an in-depth literature review in this area of study prior to developing the study protocol. During the summer of 2017, IRB approval for the study was obtained (Appendix A). Following informed consent (Appendix B), the researcher engaged in five participant interviews lasting 40- 60 minutes, sufficient to capture the depth of current ONP practice within five selected settings. Field notes were utilized with the researcher using standard qualitative methods of recording both social processes and content of interactions in a written record. The researcher identified orthopedic providers, including physicians, ONPs, and clinical managers who were interested in participating in private interviews. The open-ended, qualitative interviews were digitally recorded. The

following interview questions served as a starting place to encourage the participants to explore the nature and context of ONP practice in congruence with the specific aims of the study:

1) Tell me what the ONP role means to you. Be as broad or specific as you like, thinking about contemporary health care.
2) How and why are ONPs are utilized in orthopedic care settings?
3) Tell me about the context in which ONPs exist, including their educational preparation and professional organizations.

Data Analysis

Following the collection from the three data sources (i.e., literature review, participant observations, individual qualitative interviews), data were examined using Yin's (2014) method for analyzing case study evidence. Yin (2014) posited that four general strategies existed for analyzing case study data depending upon the type and time sequencing of the data. For the purposes of this study, Yin's strategy of relying on theoretical propositions that led to the case study were used. Specifically, the theoretical propositions underlying the PEPPA-Plus framework were used as an orientation to guide case study analysis. Explanation building occurred as an iterative process in order to explore the phenomenon of contemporary ONP practice. Simply put, Yin (2014) posited that multiple data sources were used to explain the how or why something happened. Explanation building was performed and presented in a narrative form. The final explanation for the phenomenon under study (i.e., contemporary ONP practice) emerged as the researcher performed continuous comparative narrative analysis of data resulting in an inductive process in a midrange theory.

Rationale, Significance, and Scope of the Study

The rationale for this study emanated from the researcher's prior experience as an ONP and current role as a NP educator. The study also was in alignment with research priorities identified by the Nurse Practitioner Research Agenda Roundtable (Fellows of the American Academy of Nurse Practitioners, 2010). According to this research agenda, research about NP practice models and workforces, such as NPs in orthopedics, assisted the profession in prioritizing NP education goals to meet NP workforce needs. The researcher's underlying belief was that the role of the NP was well suited in meeting the rising workforce demands for subspecialty patients, especially in orthopedics. Through the examination of multiple sources, results from this study provided important information at a critical juncture in American health care policy and the in the further development of the NP subspecialty role in meeting the ever-increasing needs of orthopedic patient populations. Potentially, results from this study could form the basis for further studies in NP subspecialties other than orthopedics and the advancement of the NP subspecialty role in meeting patient and organizational needs. Lastly, the results might be used to shape health care policy decisions regarding the use of NPs in subspecialty care and development of curricula in post-graduate ONP specialty education and training programs.

Chapter 2: Literature Review

This literature review examined evidence regarding the ONP's role, practice, and boundaries. The literature was searched for descriptions of the ONP role, its evolution and utilization in the health care work force, and a theoretical framework. The review was limited to studies published in the United States between 2000 and 2017. An ongoing review of the literature was conducted throughout the study to compare and contrast the data emerging from this study and its evolving conceptual framework. Databases included CINAHL, Medline, and Academic Premier utilizing relevant terms (i.e., nurse practitioner, NP role, specialty, subspecialty, utilization, workforce, orthopedic, orthopaedic, conceptual framework, theoretical framework). Definitions for the search terms are in Appendix C. For consistency, the term NP will be substituted for APN throughout this review.

Theoretical Frameworks

Two theoretical frameworks with separate and overlapping theoretical propositions were identified to serve as a lens for viewing evidence; a summary of their theoretical propositions is in Appendix D. The PEPPA-Plus model (Figure 2) was designed to evaluate APRN roles across specialties and geographies. Additionally, it aided in informing decisions about effective integration and utilization of APRNs into health care systems (Bryant-Lukosius et al., 2016). Within the PEPPA-Plus model, APN roles evolved in three stages: introduction, implementation, and long-term sustainability. The introductory and implementation role stages included the process of identifying needs that could be met by the NP and the process of matching the NP role competencies and scope of practice with identified needs. The stage of long-term sustainability was

associated with monitoring NP trends and evaluating NP-, patient-, and system outcomes. All three role stages were related to educational, professional, organizational, and health-care-system policy decisions that allocated funds and resources supportive of integrating NPs into health care settings and in the perceptions of policymakers in key stakeholder positions.

The second theoretical framework provided a contemporary understanding of NP specialization and sub-specialization derived from a conceptual model entitled, *Nursing as a Social System: A Framework for Analysis* (Styles, 1989), also known as the Styles model (Figure 3). The Styles model provided a basis for the American Nurses Association (2015) criteria for recognition as a nursing specialty and the foundation for the Consensus Model for APRN regulation: licensure, accreditation, certification, and education.

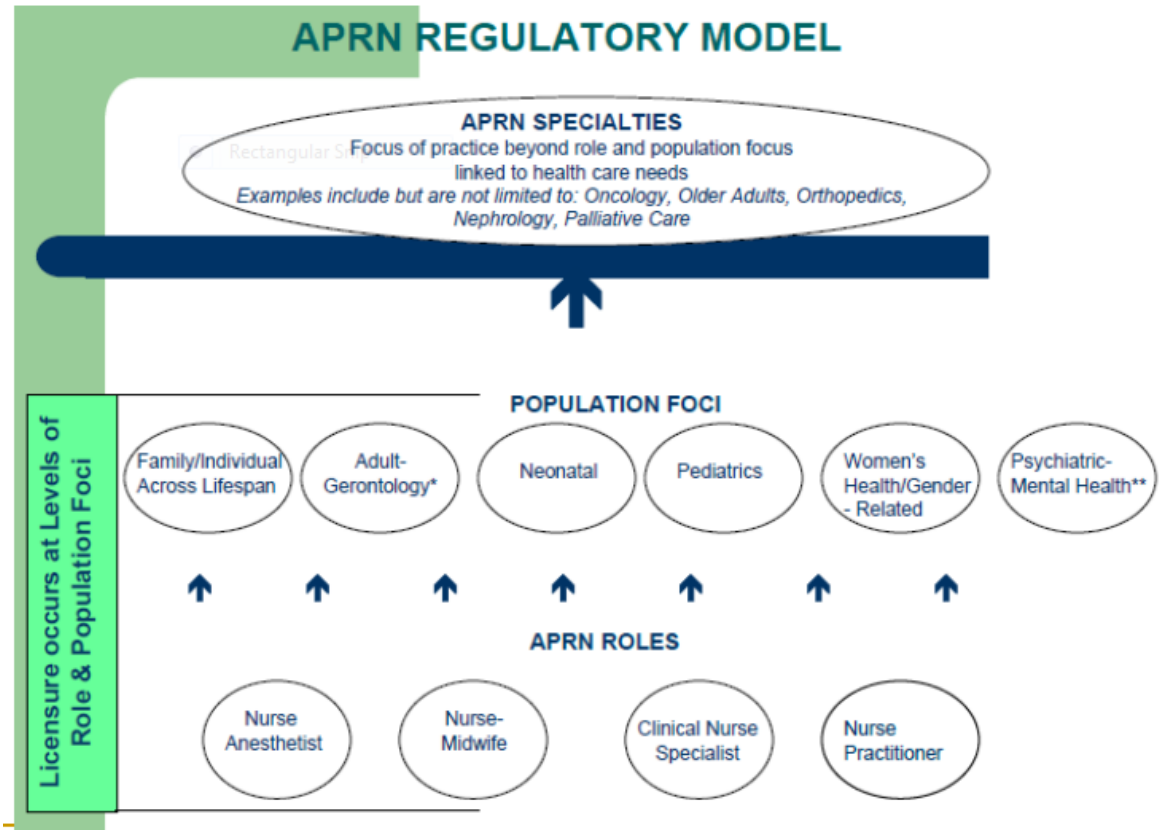

Figure 3. Consensus model for APRN regulation: licensure, accreditation, certification & education, also known as the LACE model. Adapted from "Consensus model for APRN regulation: Licensure, accreditation, certification & education," by APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee, 2008, p. 9.

Styles' model evolved from concepts found in systems theory, the sociology of work, and conflict theory. Styles et al. (2008) reported a distinction between specialty and subspecialty roles. Specialty NP roles entailed a broad focus of study and practice that encompassed problems commonly associated within a patient population and built on core knowledge of a patient population and competencies. Six NP population-focused specialty roles were recognized within the APRN consensus model. Subspecialty NP roles incorporated a narrower focus of study and practice within a subspecialty field of disease or treatment and were built on a common core knowledge. Orthopedic nursing

was recognized as a subspecialty NP role within the APRN consensus model. NAON is the professional nursing specialty organization that represents the orthopedic specialty and determines conditions specific to the role (Appendix E is a summary of these models).

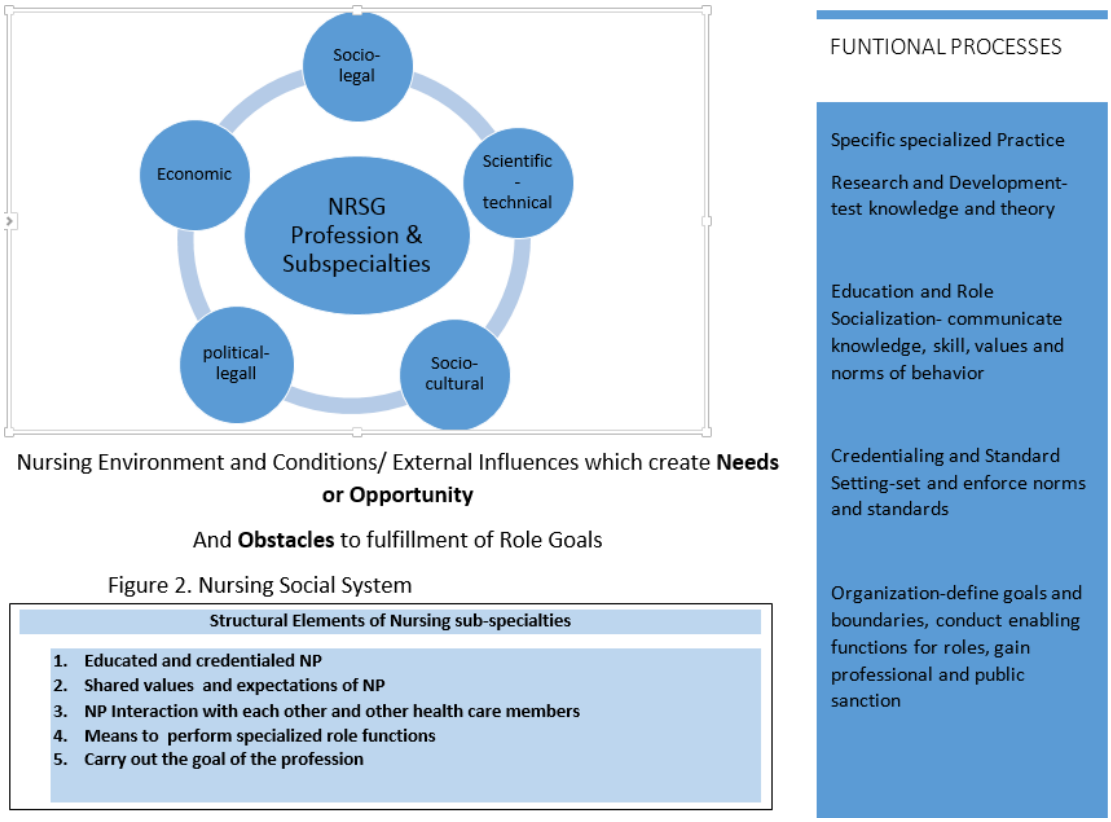

Figure 2. Nursing Social System

Figure 4. The Styles model: Environmental conditions influencing the structure and function of a profession. Adapted from "Nursing as a social system: A framework for analysis (Chapter 2) by M. M. Styles, *On specialization in nursing: Toward a new empowerment*, p. 110. Copyright 1989 by W. B. Saunders.

Orthopedic Nurse Practitioner Role Introduction and Implementation

Successful ONP role introduction and implementation requires the match of role competencies to the identified needs of patients, health care providers, settings, and organizations. The literature review for this study identified the following conditions as necessary for transition into new roles: role definition; strategic plan for recruiting,

hiring, training, and support (Simone, McComiskey, & Anderson, 2016). Missing from the literature was a clear definition for ONP and recommendations for post-graduate ONP education, training, or role transition. Several partial definitions for ONP were combined contributing to the definition of ONP found in Chapter 1 (APRN Concensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee, 2008; National Association of Orthopedic Nurses [NAON], 2013, 2017; Orthopedic Nurse Certification Board, 2017). The ONP phenomenon is relatively new; the first study referencing the ONP was published 20 years ago (Pastorino, 1998).

Competencies and competency-assessment measures for ONPs have yet to be developed. According to NAON, the goal to develop ONP competencies is embedded in their most recent strategic plan (NAON, 2017).

Nursing-based standards for measuring NP competencies, whether entry level practice or specialty practice, were lacking in the literature (Holly, 2014). This void has led to the use of physician-based competency measures when NPs care for patients in hospitals accredited by The Joint Commission. Consequently, a need was identified for developing hospital-based fellowship training programs and standards for assessing inpatient NP competencies (Furfari, Rosenthal, Tad-y, Wolf, & Glasheen, 2014). The Veterans Administration's Office of Academic Affairs developed a residency-competency tool that combined NP and medical education competency measures with core competencies for inter-professional collaborative practice and standards from the National Committee on Quality Assurance in patient-centered medical homes (Rugen, Speroff, Zapatka, & Brienza, 2016). Since the NP profession overlaps medicine and

nursing, combining the skill sets of both professions was a reasonable expectation (Buppert, 2015; Hamric, Hanson, Tracy, & O'Grady, 2014).

Benham and Geier's (2014) report on the primary care NP's orthopedic knowledge made a distinction between the knowledge of common, chronic, non-surgical orthopedic conditions routinely treated in primary care and the knowledge of more complex, orthopedic conditions often requiring surgery and were treated outside of the primary care setting. NAON's (2013) description of orthopedic nurse clinical settings included (a) hospitals, (b) acute and extended care facilities, (c) medical offices, (d) clinic settings, and (e) home environments. Based on Benham and Geiers' observations, more information is needed to clarify the relationship between orthopedic practice settings and the NP's educational and knowledge needs in primary care and orthopedic-specific settings.

Standards in specialty NP practice. The ABSNC (2017) offers specialty certifications as a means of ensuring professional, specialty competence and protection of the public utilizing the accreditation process. ABSNC has accredited the Orthopaedic Nurses Certification Board (ONCB) program for national NP certification in orthopedics and signified by the title ONP-C. ABSNC-accredited certification programs for APRNs must comply with the National Council of State Boards of Nurses criteria for APRN certification. According to the ABSNC, documented evidence of a specialty in orthopedics added value to health consumers and clinicians; however, no research on the ONP role or its value to healthcare consumers and clinicians was required for the accreditation of ONP certification programs. Three subspecialty certification programs for NPs, including the ONP-C, have been recognized and accredited by the ABSNC.

However, over 30 other subspecialty NP certifications have not been recognized by the ABSNC. The ONP-C examination is evidence based with content derived from role delineation studies and written in collaboration with experienced ONPs. Certification as a NP in pediatrics, family, or adult-geriatric patient population is required prior to ONCB certification. Accreditation of NP certification programs in these populations are offered through the ANCC and, more recently, the AANPCB (2017). Of these two agencies, ANCC is the only one accredited by the ABSNC (2017) and affiliated with the American Nurses Association. In 2015, the AANPCB granted its first accreditation of a subspecialty certification program for Emergency NPs. Emergency NP certification is also offered through the ANCC. Neither of the Emergency NP certification programs are accredited by the ABSNC. The ANCC has accredited two NP subspecialty certification programs, Holistic Nursing and Hospice and Palliative care (ANCC, 2017).

Orthopedic NP (ONP) education and training. Limited options for formalized NP orthopedic education and training led to on-the-job training or apprenticeship models for most NPs working in orthopedic-specific practices (Day et al., 2016). The Institutes of Medicine (2010) study on the future of nursing recommended post-graduate training for NPs transitioning into specialty practice as a means to improve patient safety, quality of care, and the confidence and competence of NPs transitioning into practice. A survey of orthopedic surgeons who employed NPs suggested on-the-job training of 6 months or longer was necessary for NPs to be contributors in an orthopedic practice. Seventy five percent of those surveyed identified both a need and surgeon support for the collaborative development of a MSK curriculum and/or fellowship program for post-graduate NPs (Day et al., 2016). One such program is the Orthopedic Nurse Practitioner Fellowship at

the University of North Carolina at Chapel Hill; however, the first candidate has yet to graduate from the 2-year program. A literature search of practice transition programs (PTP), their designs, and methods revealed little knowledge about this recent phenomenon (Sciacca & Reville, 2016). Sciacca and Reville's findings identified a need for consensus on definitions, theoretical frameworks, methods for evaluating and assessing capabilities, and competencies of PTP graduates. Bush (2014) suggested a gap in the literature existed in identifying models to guide the transition and development of NPs into new roles and clinical setting. Further, Bush suggested nurse executives be a part of the solution by "standardizing the content of programs, objectives and clinical outcomes across hospital settings" (p. 626).

In the past 2 years, two models for national accreditation of PTPs have surfaced in the literature: The PTAP accredited by the ANCC Commission on Accreditation (2016b) and the NNPRFTC (2015), an independent accreditation agency. The PTAP is grounded in the novice to expert model by Benner (1984) and the NNPRFTC is based on Meleis' Transition Theory (Meleis, Sawyer, Eun-Ok I., Hiltfinger Messias, & Schumacher, 2000). Both accreditation models utilize an expert consensus model in the development of their accreditation standards. The PTAP incorporated expert consensus within the nursing community and the American Nurses Association. The NNPRFTC model was developed in collaboration with experts in graduate medical and nursing education. The NP Roundtable on Postgraduate NP Education defined the terms *residency* and *fellowship* as they applied to NP transition-to-practice programs. According to this document, the term *NP residency* has been reserved for NP pre-licensure programs while fellowship applied to postgraduate and post licensure NP programs in primary or specialty care. This

distinction was made to avoid confusion, as new programs were developed as well as to be more in alignment with medicine's use of the terms. The concept of APRN residencies, fellowships, and accreditation for these entities is a contemporary phenomenon. To date, three subspecialties and one primary care NP PTP have been accredited by the PTAP (ANCC, 2017) and none by the NNPRFTC (2017). In Summer 2017, a 12-hour training workshop was offered by the PTAP to approximately 35 participants interested in the accreditation process and means of achieving accreditation for residencies and fellowship programs. The second accreditation program, NNPRFTC, offered a similar training workshop in October 2017.

ONP Role Implementation to Meet Needs

Commonly reported needs met by subspecialty NPs included the need to improve access to patient care, contain costs, and improve patient outcomes (Greene & Dell, 2010; Hansen & Bozic, 2009; Lucatorto, Watts, Kresecic, Burant, & Carney, 2016). Implementing subspecialty NP roles decreased patient hospital length of stay (LOS) and readmissions rates (Coyne et al., 2016). Hansen and Bozic (2009) suggested the ONP role in orthopedic surgical practice evolved as a response to the expansion of NP and physician assistant (PA) training programs and conditions that increased access needs: technology advancements in point-of-care diagnostic studies, surgical implants and techniques, increases in ambulatory surgery centers, the rise in direct-to-consumer advertising of orthopedic surgeries, and shifts in patient and orthopedic surgeon populations. Three studies examining orthopedic patient LOS and hospital cost pre- and post-introduction of the NP role found significant decreases in LOS, indirectly decreasing costs to patients and payers (Hiza, Gottschalk, Umpierrez, Bush, & Reisman, 2015;

Holte, Sems, & Fruth, 2015; Horn, Badowski & Klingele, 2014). The 6-year study from Holte et al. (2015) examined 2,497 hip fracture patients in the Midwest revealing a significant decrease in LOS ($p < .001$) with no increases in mortality or 2-week readmission rates after adjusting for surgery type, patient age, and gender. The Hiza et al. (2014) study of 1,584 orthopedic trauma patients reported a reduction in wait time to surgery and improved communication between team members as well as patient-to-surgeon communication with the use of advanced practice providers. An interventional study assessing outcomes of 571 patients scheduled for orthopedic surgery identified the use of an ONP-led preoperative assessment clinic resulted in fewer surgery cancellations, improved patient care coordination, and more cost-effective care (Sebach, Rockelli, Reddish, Jarosinski, & Dolan, 2015). Similarly, the interventional study reported by Horn et al. (2014) reported that an NP-led pediatric orthopedic clinic increased the number of patient visits, clinic revenue, patient surgeries, patient satisfaction, and improved overall access to the clinic. The inclusion of the NP role in hospital and outpatient neurology settings and obstetrics and gynecology clinics contributed to improved accessibility to specialists, improved communication with patients, and more effective utilization of the specialist; a similar finding to the previously-mentioned orthopedic study (Hermann, & Zabramski, 2005; Pinto, Rochat, Hennink, Zertuche, & Spelke, 2016). A 4-year interventional study comparing pre- and post-implementation of the NP role into occupational health settings in five manufacturing plants in the southern United States reported that the average cost per claim decreased after NP role implementation (Chenoweth, Martin, Pankowski, & Raymond, 2008).

Absent from the majority of these previously mentioned studies was information about education, training, and certification requirements for implementing NPs into subspecialty settings. This absence was also noted in Tintinalli's (2014) study examining the role of NPs in emergency departments (EDs). The study suggested a need for further exploration of the NP workforce, educational needs, and integration with the physician role. These findings echoed those of the NP Roundtable on the APRN research agenda that cited significant gaps in the literature related to APRN practice, education, training, and the utilization of NP roles in the workforce to meet patient needs (Roberts & Goolsby, 2017).

Access demands have been associated with population shifts and provider shortages. A growing demand for members in the MSK workforce has been projected to increase 30% from 2015 to 2020 and 50% by 2030 considering increases in the population over age 65, a group in the United States who tend to be higher utilizers of orthopedic care (Kurts, Ong, Lau, Mowat, & Halpern, 2007). Federal regulations limiting orthopedic resident work hours stimulated the use of NPs in hospitals without clear practice expectations or standards for implementing NP roles into the hospital. This prompted the need for developing hospital fellowship training programs and standards for assessing NP competency (Furfari et al., 2014). In summary, NPs roles have been implemented in orthopedic hospitals and clinics with demonstrated benefits while meeting individual and organization needs in the provision of MSK health care.

Orthopedic Nurse Practitioner Role Sustainability

The long-term sustainability of the ONP role remains uncertain. Several key conditions for sustainability are missing. The first component is a universally accepted

role definition and consensus-based methods to assess ONP role competency. Secondly, there was no evidence identifying the specific needs of patients, surgeons, or healthcare organizations for ONP practice. This lack of information hampers the ability to monitor and evaluate ONP practice. Indirect connections have been published relating the NP role to decreased costs and improved access in small descriptive studies. Many studies have monitored the ONP role in various orthopedic settings, including pediatrics (Horn et al., 2014), spine consultation clinics (Sarro, Rampersaud, & Lewis, 2010), pre-operative evaluation clinics (Sebach et al., 2015), arthritis care (Voon et al., 2013), and osteoporosis clinics (Dell, Green, Anderson, & Williams, 2009; Seuffert, Sagebein, Mc Donnell, & O'Hara, 2016). NPs appear to meet a hospital's organizational needs more so than in outpatient settings. Reported barriers to an NP's ability to meet patent needs were related to health care policy decisions limiting full practice authority and third-party reimbursements for ONP care (Barnes et al., 2016; Hain & Fleck, 2014; Newhouse, Weiner et al., 2012; Safriet, 2010). As an exemplar, when comparing NP practices across 252,657 ambulatory care settings between states, NPs were 13% more likely to be working in primary care in states with full scope of practice as compared to states with restricted practice laws and 20% more likely to work in states that paid NPs 100% of physician Medicaid fee-for-service rates (Barnes et al., 2016). Additional reported barriers included a lack of physician knowledge regarding NP scope of practice and NP roles (Hain & Fleck, 2014). Studies reporting successful role utilization applied new health care models embracing collaboration between NPs and physicians to improve individual patient safety and quality outcomes (Hermann & Zabramski, 2005; Pinto et al., 2016; Sarro et.al., 2010).

Summary

PEPPA (Bryant-Lukosius et al., 2016) and Styles' models (Styles et al., 2008) were beneficial aids for identifying ONP properties and processes associated with the role and served as a lens for viewing the evidence. The literature review identified ONPs as members of the MSK workforce providing orthopedic patient care services in multiple health care settings. Consistent with NP roles in primary care, the evidence revealed relationships between the implementation of the ONP role and meeting the needs of orthopedic patients, surgeons, hospitals, and outpatient clinics; however, the majority of studies were descriptive with few participants or were not generalizable across settings and patient populations. The economy, culture of consumerism, and advances in orthopedic diagnostic and surgical technology were identified as influencers of ONP role development, affirming the Styles model (Styles et al., 2008) conditions that influenced role development. Nevertheless, there were no studies connecting political-legal or educational conditions that influenced ONP role development. This suggests a need for policy development and educational research studies related to ONP practice in order to promote the sustainability of this role. Of equal importance was the paucity of studies revealing the perceptions of ONPs and surgeons, managers, or administrators regarding the ONP role or the utility of implementing this position to meet organizational needs. Both the PEPPA (Bryant-Lukosius et al., 2016) and Styles' models (Styles et al., 2008) suggest these are necessary elements for successful NP role integration. Furthermore, there is a lack of information regarding collaboratively approved competencies, standards, and certifications for ONPs among APRNs, NAON leaders, and orthopedic surgeons. Styles' model (Styles et al., 2008) identified these elements and relationships as

key structures of a subspecialty nursing system necessary for role development. The process of gaining public and professional sanctions, a necessary process in developing specialty roles, has begun as exemplified in the APRN consensus on licensure, accreditation, certification, and education (LACE) and the development of two new PTP accreditation agencies with similar but distinct PTP accreditation standards. Further evidence is needed to identify key stakeholder perceptions of the role as recommended by the PEPPA-Plus model (Bryant-Lukosius et al., 2016). Additionally, information is needed to clarify and/or develop additional standards for the subspecialty NP roles identified in the APRN consensus model and the development of a consensus model for postgraduate subspecialty PTPs and their accreditation.

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Chapter 3: Methodology

The evolution of the NP role in the United States culminated into a common understanding in 2008 with the publication of the *Consensus model for APRN regulation: Licensure, accreditation, certification & education* (APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee) and a plethora of studies identifying NP roles, outcomes, cost effectiveness, and contributions to healthcare. Standards for NP licensure, accreditation of NP educational programs, individual NP certification in six specialty roles, and minimum education requirements have been developed to enhance quality of care and protection of both the public and the profession.

In response to the changing demographics in the United States and heightened need for orthopedic care, the NP role continues to evolve; however, little is known about this current phenomenon; the ONP. Evidence is lacking regarding the context of the ONP role such as role preparation, evaluation, setting, and position within the healthcare team and key stakeholder perceptions of the role.

In summary, confusion surrounds the ONP role in today's health care environment. This study seeks to understand the utilization of NPs across orthopedic healthcare settings. The following research questions guided the study:

1. What is the singularity of the ONP role as a contemporary phenomenon?
2. How and why are NPs used in orthopedic care settings?
3. What is the context in which ONPs are situated (e.g., educational preparation, professional organizations)?

This chapter discusses the research methodology used to understand the ONP role and the context surrounding this phenomenon. The specific type of case study design, single embedded case study, is described along with qualitative research methods employed in data collection and analysis. Strategies for recruitment of research participants and protection of their confidentiality in the study follows (need to finish sentence). Positionality relative to this research is also described. The conclusion provides an overview of the data collection and analysis process.

Research Design

Case study research is a form of social science research and a preferred method when (a) the main research questions are how and why questions, (b) the researcher has little control over behavioral events, and (c) the focus of inquiry is a contemporary phenomenon (Yin, 2014). This study utilized the work of two prominent scholars in the field of case study research methods; Yin (2009, 2014) and Stake (1995, 2005). Yin (2009, 2014) stated case studies could be descriptive, exploratory, or explanatory depending on the nature of the research question. In this study, combinations of these three types provide a focus for explaining processes associated with the ONP role. Yin further described four case study designs, categorized as being either holistic or embedded. Within each of these categories lays either a single or multiple case design (Yin, 2014).

Stake (2005) classified cases as collective, instrumental, or intrinsic. The differences among these types relied on the purpose of the case study (Luck, Jackson, & Usher, 2006). Yin (2014) described several circumstances in which the single case study was appropriate, including when the case was critical, unusual, common, revelatory, or

longitudinal in nature. A single case study design was chosen rather than multiple case design for three reasons: (a) This was a critical case with elements found in a theoretical framework about APRN, the PEPPA-Plus Model described in Chapter 2; (b) This was an example of a common case capturing the circumstances and conditions of an everyday, ordinary situation of the ONP and examining lessons about social processes related to or associated with the ONP; and, (c) The revelatory nature lies in the researcher's insider status within the population of ONPs. As an ONP, the researcher has had the opportunity to observe this ONP phenomenon from a more advantageous perspective than researchers outside of this social group. Experience as an ONP with 30 years of leadership in the orthopedic nursing community brings both longitudinal knowledge of the phenomenon under study as well as the trust of members within the ONP community.

Stake's (2005) collective case study design examined more than one case to study a phenomenon or a population (Casey & Houghton, 2010), similar to Yin's (2014) multiple case study. This study employed Yin's case study/single embedded analysis design that equated to Stake's instrumental case. Yin defined case study as "an empirical inquiry that investigates a contemporary phenomenon in depth and within the real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (p. 6). This study sought to understand the evolving role from the NP into subspecialty NP role in the orthopedic setting, a contemporary phenomenon influenced by current events (e.g., Patient Protection and Affordable Care Act, rising costs of healthcare, expanding patient population requiring orthopedic services). Yin (2009) indicated that, by utilizing the individual case study design, scholars contributed to knowledge of whatever unit of analysis was selected, while also allowing investigators

to retain the meaningful characteristics of the subject of study. In this single embedded case study (Figure 5), the case and main unit of analysis is the ONP workforce. In an embedded design, the main unit of analysis is further divided into subunits. Subunits of analysis included the primary research participants; ONPs, an orthopedic surgeon, orthopedic administrators and managers, and the transcripts of their interviews. Additional subunits of analysis included documents and participant observations as recorded in researcher field notes and analytic memos. The participant stories were examined, first individually and then through a comparison among participants. The case study method allowed all interviewed participants in this study to share their personal journeys and experiences as orthopedic health care providers or administrators; to facilitate reporting of their perceptions, values, attitudes and beliefs about the ONP role; and to evaluate the context in which it is situated. The comparisons among participants focused on their similarities and differences. Factors influencing role development, utilization, and evaluation were analyzed and served to develop hypotheses for further study relative to the factors that influenced subspecialty NP-role development specifically within the orthopedic specialty.

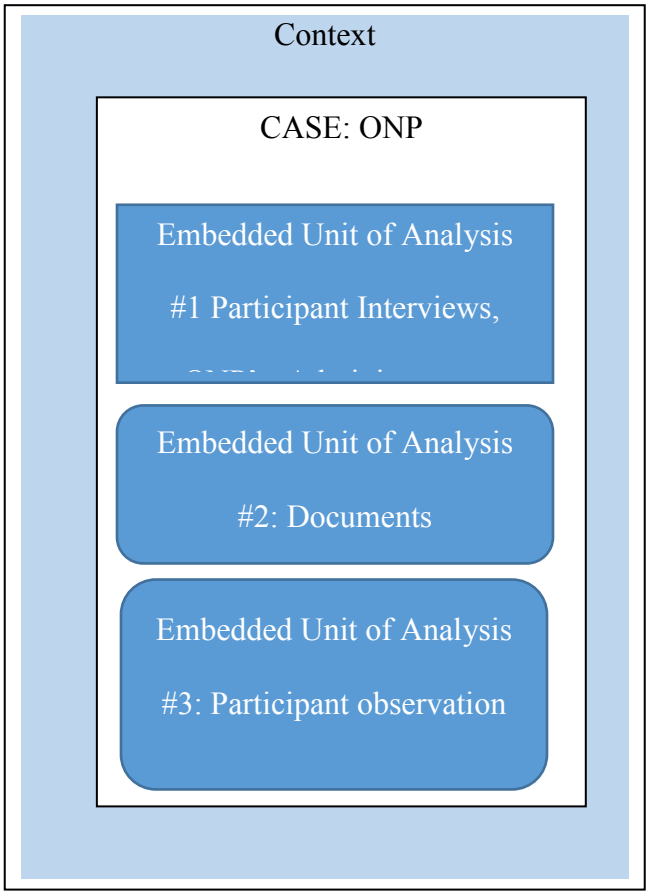

Figure 5. Types of designs for case study research: Single embedded.

In addition to a single case study/embedded design analysis, this study also employed qualitative research methods from the interpretivist paradigm and is both explorative and explanatory in nature (Yin, 2009). The interpretivist paradigm for this study was relevant as the focus of the study was on exploring subjective entities (e.g., meanings, participant viewpoints, experiences) in relation to the ONP workforce. The merits of qualitative inquiry are discovery and exploration (Patton, 2002) with exploration being one of three central themes in Yin's (2009) case study method. This study's exploratory nature was due in part to the researcher's desire to further understand the phenomenon and develop relevant hypothesis and propositions for the study of ONP

utilization in the orthopedic workforce. According to Stake (2005), this study was also instrumental as it provided general insight into the role of the subspecialty NPs and ultimately a more specific understanding of the phenomenon of the ONP.

Participant and Site Selection

The method of research participant selection utilized a purposeful and snowball sampling strategy to select participants with current knowledge of the ONP role who had at least 5 years of experience working in one or more orthopedic settings employing NPs. Patton (2002) identified purposeful sampling strategy as deviant or extreme-case sampling that "involves selecting cases that are information rich because they are unusual or special in some way, such as outstanding successes or notable failures" (pp. 230-231). The settings in which participants were recruited had a long history of employing NPs in multiple orthopedic subspecialty practices, including inpatient and outpatient orthopedic settings. Approximately 2% to 3% of all NPs self-identified as practicing in orthopedic-specific settings across the United States with varying state scope-of-practice laws governing NP practice. The intent in selecting participants was to examine the perceptions of ONPs, surgeons and/or their managers with knowledge of multiple orthopedic practice settings, both with and without scope-of-practice limitations. Therefore, participants were selected from a large California metropolitan community who practiced in or were familiar with the NP role in the orthopedic workforce in either an academic medical practice setting, HMO, community hospital, or private practice medical setting bound by state laws limiting NP scope of practice. Additionally, a participant from the Veterans Health Care Administration (VA), no longer bound by laws limiting NP scope of practice, was selected to represent a perspective of the ONP

experience with full practice authority or absence of barriers limiting NP scope of practice. Academic practice settings typically include orthopedic provider practice within both hospital- and outpatient medical settings. Snowball sampling, seeking further participants from the recommendations of participants already recruited into the study (Richards & Morse, 2013), resulted in selection of the second ONP into the study. The first two participants recommended several physicians who were unsuccessfully recruited into the study. The fourth participant was recruited for her perspective as an orthopedic department administrator within an HMO with a 30-year history of employing NPs across geographic and orthopedic settings. The fifth participant was recruited for his perspective as an orthopedic surgeon who has worked in three organizational settings employing ONPs: Department of Defense (i.e., military hospital), a large HMO, and a private-practice orthopedic medical office affiliated with a community hospital where he serves in a leadership role as chief of orthopedics. The surgeon was a personal acquaintance through my employment as an NP approximately 15 years prior to the study.

Consent forms approved by the Institutional Review Board (IRB) were signed by all participants (Appendix B). The University of San Diego's IRB granted approval for the study (Appendix A)

Interviews took place between August 1, 2017 and September 23, 2017. Participants included a nurse manager, two ONPs with clinical and supervisory roles, an orthopedic surgeon, and administrator trained in managing health care personnel. The NP perspective included experience in an academic medical center (AMC) setting. One participant's role, with over 30 years of experience as an ONP, evolved to include clinical practice in the care of primarily orthopedic spine patients and participation in the hiring

and evaluation of NPs within the department. The second ONP's role included 10 years of clinical practice in the care of multiple, subspecialty orthopedic patients and administrative duties that included supervision, training, and evaluation of NPs in the orthopedic department.

The RN manager with 30 years of experience overseeing NP practice in multiple medical and surgical departments, offered the perspective of the ONP within the VA, a federally funded national organization no longer bound by laws restricting NP scope of practice. Participants were interviewed in a large metropolitan community, in person, and in their chosen setting; their workplace. Interview times ranged from 40-60 minutes. Copies of interview transcripts were provided to the participants for review, commentary, and final approval to enhance validity of the data.

Data Collection

Glesne (2006) opined, "In qualitative case studies, data tend to be gathered through participant observation and in-depth interviewing" (p. 13). Patton (2002) stated that the purpose of a case study was to collect "comprehensive, systematic, and in-depth information about each case of interest" (p. 447). Yin (2014) discussed case study analysis benefits from the inclusion of multiple sources of data including participant interviews. To begin comprehending the life experiences and perceptions of those familiar with the ONP workforce, participants offered the primary source of data through personal interviews. According to Stake (2005), the researcher was provided with unseen details through recorded interviews and transcriptions documenting the event. These interviewees served as research participants for this study. Finally, examining wide-ranging documentation on the subspecialty NP, the ONP role, and the context of the ONP

delivered valuable insight and information in constructing this single case study. A thorough search of peer-reviewed empirical studies and current websites afforded documents featuring information about the subspecialty and ONP. Research participants provided rich depictions of ONP job descriptions and performance reviews and socialization into the role.

Interviews. The decision to employ interviews as a method of data collection was appropriate for this exploratory case study. Kvale and Brinkmann (2009) identified interviews as a well-suited process in studying meanings for "clarifying and elaborating their own perspective on their lived world" (p. 116). Through exploratory interviewing, the researcher was able to probe into the participants' experiences in the orthopedic workforce and perceive how they articulated and discussed their personal beliefs, assumptions, and general ideologies; all elements gleaned from the interview process (Kvale & Brinkmann, 2009). Responsive interviews were conducted using an open, semi-structured interview guide (Appendix F) to generate primary sources of data for constructing the case study. The use of an open interview with little preplanned structure aided in discovering new dimensions of the research topic (Kvale & Brinkman, 2009). Rubin and Rubin (2012) described responsive interviewing based on forming relationships with the interviewees. The interviewees and I worked out answers to research questions together, a joint activity based on respect. Early in the interview, I shared professional information about myself as an experienced ONP in the community and as a member of professional orthopedic and NP organizations. Being forthright about my ONP role enhanced gaining acceptance and trust of participants. The degree of trust and acceptance of my role by the participants directly influenced the quality of the data

and the study (Richards & Morse, 2013), which is why I chose to reveal my ONP background. Once names of known colleagues entered into conversation, I sensed an increased comfort level and more relaxed attitude during the interviews. Recruiting surgeons for the study proved difficult; most did not acknowledge my email invitation to participate, including those recommended by participants in the study, or they declined my in-person invitation to participate. This may in part be the result of their busy and demanding schedule or my outsider status to those whom I did not know personally. My last and successful attempt at recruiting a surgeon was the result of asking one for whom I had personal contact information as well as a prior professional relationship.

According to Patton (2002), the use of a general interview guide ensured consistency in the line of inquiry pursued with each participant interviewed. Additionally, it provided topics of subject matter within which the interviewer could freely explore, probe, and ask additional questions to evoke further explanations regarding the research topic. Open-ended prompts (e.g., *Please tell me want you know about orthopedic nurse practitioners*) revealed participants' perspectives related to the ONP and the context surrounding ONPs. New, expected, and unexpected factors associated with the ONP role emerged in the stories they told; some, but not all, were consistent with my understanding of the subject. As expected, in open-ended qualitative interview styles, new information revealed unanticipated facets of the study topic (Kvale & Brinkmann, 2009). However, when queried about the NP role, participants reported similarities in the role to that of a PA. When the similarities were not addressed in the open-ended initial question, further inquiry probed into making these comparisons. To clarify and augment data from the face-to-face interviews, follow-up emails were sent offering the interviewees the

opportunity to review the interview transcriptions and offer edits or changes to ensure accuracy of the content. All primary-research-participants' interviews were audio recorded digitally and subsequently transcribed verbatim (Patton, 2002). Participants recommended four additional associates and colleagues who could provide valuable insight about the utilization of NPs in orthopedics; one clinical ONP with administrative duties and three orthopedic surgeons within the academic medical setting. Supporting research participant interviews from physicians would have afforded additional insight and perspective on the ONP and its relevant context; however, these supporting research participants were unsuccessfully recruited after multiple attempts via email, telephone, and offering the general interview guide in advance (Appendix F).

Document review. In association with the participant interviews, I performed an extensive document review of various forms of information related to subspecialty NPs and ONPs to gain greater insight into as well as distinguish among perspectives of their experiences and careers. Data included public media sources, and private documents from healthcare institutions, professional associations, and websites.

Documents encompassed NP job descriptions, evaluation tools, and websites with information about NP subspecialty education and training programs as well as peer reviewed journal articles about NPs in specialty practice, education, and training. Information gleaned from these sources served to inform the interview questions and to develop a more comprehensive and detailed case study. Despite a thorough literature search and review of professional websites about subspecialty NPs and ONPs, insufficient information was provided to develop a complete case study for the ONP workforce. The reviewed documents revealed little information about ONP standards of

practice, competencies, and recommended education and training to gain entry into the role. Most studies identified on-the-job experience or internships as the primary course of entry into ONP practice. Nevertheless, document review enhanced understanding of the general concept for subspecialty NP postgraduate education and training, referred to in the literature as the postgraduate NP fellowship (Martsolf, Nguyen, Freund, & Poghosyan, 2017).

Data Analysis

Case study research is considered both a product and process of inquiry and it includes a variety of data sources related to the case of interest (Yin 2014; Patton 2002; Stake 2005). The process of data collection and analysis occurred simultaneously. As interview transcriptions were reviewed, I wrote memos about my thoughts during the original recoding, informing further lines of questioning in subsequent interviews. This review of recordings, transcripts, and coding immediately preceded the subsequent interviews while information and thoughts were easily recalled. Utilizing multiple sources of data enhanced study accuracy and believability (Yin, 1994b, 2014). This case study was the result of melding, distilling, and triangulating all the information collected from the main participants/interviewees and subunits of analysis. Document survey, participant observations recorded in a journal, and memos analyzing the coding process comprised the subunits of analysis. Historical information offered relevant context about the evolving subspecialty and ONP roles as identified on professional nursing websites. Moreover, analysis of study-participant interviews produced comparisons by setting and interviewee demographics.

Evaluating Case Study Research Design

Four tests establish the quality of empirical social research: construct validity, internal validity, external validity, and reliability (Yin, 2014). This study utilized multiple sources of evidence and an established chain of evidence to enhance construct reliability during the data collection phase. Internal validity was optimized through pattern matching and building of explanations and meanings in the coded and analyzed interviews. The use of a single case and underlying theoretical framework in the research design phase promoted external validity. Reliability was improved with a case study protocol and semi structured interviews during the data collection phase.

Triangulation provided research rigor. As defined by Yin (2014), triangulation was "the convergence of data collected from different sources, to determine the consistency of a finding" (p. 241). This process enhanced the value of the research and strengthened the construct validity of the case. According to Patton (2002), triangulation consisted of four elements: data sources, methods, investigators, and theory. Patton stated, "it is in data analysis that the strategy of triangulation really pays off, not only in providing diverse ways of looking at the same phenomenon but in adding to credibility by strengthening confidence in whatever conclusions are drawn" (p. 556), with the utilization of any combination of triangulation types in the analysis of the data.

This study employed three types of triangulation to increase the accuracy and credibility of findings: data, investigator, and methodological (Patton, 2002; Stake, 1995). Data triangulation occurred through personal interviews with five participants from four unique settings along with additional sources of data, document review, supporting participant interviews, and my observations as an experienced ONP.

Transcripts of the interviews were shared with interviewees to ensure transcript accuracy; interviewees could add comments or offer clarifications to enhance their meaning and perspective. Transcripts were coded and meanings analyzed independently by the researcher. Method triangulation occurred utilizing three methods to analyze data, document review, participant observation, and the interview process.

Case study analysis was conducted in two consecutive stages that Polkinghorne (1995) referred to as *narrative analysis* and *analysis of narrative*. The first stage utilized narrative analysis to construct individual participant interview transcript analysis for each of the participants. The second stage explored and compared the case through analysis of narrative, exploring and identifying similarities and differences along categories within the case. Finally, hypotheses emerged from the case study data that might influence or guide subsequent studies. I offered personal reflection through the process of analytic memoing, further contributing to credibility of findings and accuracy in this study. This reflection will be elaborated in Chapter 4.

First Stage Analysis

The narrative analysis strategy allowed for the most vivid depiction of the life experiences of these skilled ONPs, managers, and surgeon. Polkinghorne (1995) described narrative analysis by stating, "the analytic task requires the researcher to develop or discover a plot that displays the linkage among the data elements as part of an unfolding temporal development culminating in the denouement" (p. 15). In this case, the anticipated denouement was an enhanced understanding of the role of NPs in the orthopedic work force.

The case study analysis process began with questions including: (a) How are NP's utilized in orthopedics? (b) Why are NP's used in orthopedics? According to Sykes (1998), seven procedural steps should be employed in developing the narrative from the data: (a) specify the intended outcome of the narrative, (b) arrange the data chronologically, (c) identify which data elements contribute to the outcome, (d) develop an outline for the plot, (e) expand the outline using detail from the collected data, (f) adapt outline to fit the data, and finally (g) collect any additional data to fill in deficient areas of the story. These steps guided the construction of the case.

The process of thematic coding of transcripts provided a way to understand and organize data into deeper meanings. The use of NVIVO, a computer-assisted qualitative data analysis software program was employed to store, categorize, and retrieve transcript data from the interviews. Manual coding facilitated the coding process and included interview transcripts, analytic memos, and audio interviews (Saldaña, 2009).

In the first stage of analysis, the first cycle of coding was conducted. This process, explained by Saldaña (2009), identified seven straightforward, first-cycle coding methods. Of those first-cycle coding methods, this study employed *structural* and *simultaneous coding* in multiple iterations. Saldaña stated "structural coding is designed to start organizing data around specific research questions" (p. 51). Structural coding demonstrated its effectiveness in this exploratory study that included five participants and utilized a standardized, semi-structured interview protocol. Furthermore, the data proved appropriate for engaging in simultaneous coding, allowing multiple code assignments simultaneously within the body of qualitative data (Saldaña, 2009). Simultaneous coding

was necessary because "the richness or complexity of an event or participant's story makes it difficult for a researcher to assign only one major code to the datum" (p. 64).

The first stage of analysis culminated in developing the case study. This occurred over the course of multiple iterations in first-cycle coding initially based on the overarching research questions and questions in the interview guide, then on the actual data collected. The resulting broad categories had multiple subcategories as described in Chapters 4 and 5.

Finally, the case study developed through the identification and application of four codes. Throughout writing, the case similarities and differences surfaced, consistent with findings in literature and on professional web sites related to specialization, role preparation and evaluation, rational for the role, professional organization effect on the role, and role outcomes.

Second Stage Analysis

Second stage analysis included the paradigmatic analysis of narrative that "seeks to locate common themes or conceptual manifestations among the stories collected as data" (Patton, 2002, p. 13). The purpose of this stage was to identify data from different sources to facilitate grouping into patterns, themes, or concepts to eventually provide answers to the research questions (Patton, 2002; Saldaña, 2009). Polkinghorne's (1995) paradigmatic analysis of narrative could be used as a method of data analysis, both within and across cross-case studies.

First cycle codes developed to provide a sense of "categorical, thematic, conceptual, and/or theoretical organization" (Saldaña, 2009, p. 149); this required rigorous analytic skills and, hence, proved to be challenging to this novice researcher.

Two methods utilized in the second cycle were *pattern* and *focused coding*. Pattern coding identified similar first-cycle codes and grouped them, reducing the potential number of initial codes. Three categories emerged through this process. What followed was focused coding to identify the similarities and differences among participants in these categories.

Analytic memos. Reflective and thoughtful journaling and memo writing during the conduction of the study contributed to the analysis of data. Documenting these thoughts and insights through journals, notes, or memos assisted in critical thinking about the data being collected as well as challenged my understanding and assumptions about the case. Glesne (2006) stated, "analytic noting is a type of data analysis conducted throughout the research process; its contributions range from problem identification, to question development, to understanding the patterns and themes in your work" (p. 59). Analytic memos were drafted throughout the study in an effort to identify gaps, similarities, and differences in the data relative to the identified categories, emergent themes, and individual participant. According to Saldaña (2009), memos were an additional source of research data that could be coded, categorized, and linked for consideration in the narrative inquiries. Through this process, common themes of *necessities* and *how ONPs are viewed* emerged. Through memoing I decided to reverse questions and ask the opposite of why are ONP used? Instead I asked, why are ONPs not used? This contributed to my search in the data for reasons in which NPs were not used, contributing factors, and barriers to the use of NPs in orthopedics.

Confidentiality

Participants in the study were assured confidentiality regarding their identity for the purposes of this research and the development of this case study. Accordingly, transcribed interviews were devoid of identifying information for the five participants. The transcription service ensured privacy using encrypted software when transmitting documents electronically. The University of San Diego IRB approved this study protocol.

Positionality

Researchers ought to continually assess their own subjective beliefs throughout the entire research process. Peshkin (1988) explained that "the purpose of doing so is to enable researchers to be aware of how their subjectivity may be shaping their inquiry and its outcomes" (p. 17). Peshkin also asserted that a researcher's subjectivity, if consciously managed and monitored, lessened liability. He argued "by monitoring myself, I can create an illuminating, empowering, personal statement that attunes me to where self and subject are intertwined" (p. 20). As noted in Chapter 1, I am an experienced ONP therefore possessing significant insight into the ONP role along with a passionate interest in understanding how NPs are utilized in the orthopedic workforce. This insider status was apparent, as I was attentive in acknowledging how and where my subjectivity appeared through the journaling process and writing memos about personal observations and beliefs throughout the research process. This assisted in identifying occasions when biased thinking might have influenced my actions during the research process. While interviewing the participants, I sought to consciously manage personal understandings and biases in order to avoid influencing and leading the interviewees in their answers and conclusions. Additionally, I reminded the participants whom I knew personally of the

importance of setting aside feelings about our personal relationship during the interview in an effort to obtain their perspectives not influenced by our relationship.

This case study design analysis was supported by qualitative research methods used in this study contributing to the understanding of the ONP role and position in the orthopedic workforce. In Chapter 4, evidence is provided for this case study; the phenomenon of the ONP in the orthopedic workforce developed as a result of this methodology. The case begins with a brief narrative analysis of the participant experiences or journey in the ONP workforce followed by their perceptions of the ONP role, its development, utilization, and the effect of the role in the orthopedic work force.

Chapter 4: Results

Introduction

The purpose of this single embedded case study was to describe and explore the role of the ONP with a sample of key informants. This examination included their perceptions of how and why NPs have been used in the orthopedic workforce. An enhanced understanding of this phenomenon will assist policy decision-makers in both the orthopedic workforce and academia in developing NP roles and training programs to prepare ONPs for work in orthopedic-specific settings. This chapter presents the key findings obtained from five interviews, supportive documents, and participant observations. Five major findings emerged from this study; all five findings are supported by the interviews and the fifth finding is reinforced with results from the survey of documents.

1. The evolving ONP role is dependent on an insufficient source for supplying adequately trained and/or experienced ONP job applicants. The majority of participants expressed the difficulty in finding experienced or properly-trained NPs to work in orthopedics settings
2. NPs in orthopedics are required to have advanced orthopedic knowledge in one to two orthopedic subspecialties. All of the participants described knowledge in an orthopedic subspecialty as a requirement in the role. Subspecialty practices were those recognized in orthopedics as surgical specialties.

3. ONPs work in teams or partnerships with an orthopedic surgeon. Unlike the general NP role, there was no place for ONP solo practices with or without full practice authority.
4. The necessary, complementary balance between the medical and nursing models in orthopedic subspecialty NP roles is different from the general NP role and is often unrecognized in the ONP role. The only participants recognizing elements of the nursing model in the ONP role were NPs.
5. The ONP role is complex and influenced by changes within health care systems, the economy, the political environment, and the cultures of nursing and medicine.

Interviews

Qualitative, open-ended questions in the semi-structured interview guide asked for opinions, perceptions, and/or beliefs about the ONP role. Examples of ONP settings, services, and roles were described along with requirements for role preparation. Rationale for either employing or choosing to not employ NPs was also included. Participant responses were similar for ONP settings and services with some variations among participants. All participants were receptive, responsive, willing to relay their perceptions, and provided responses with specific knowledge and sharing of personal examples to qualify their responses.

The interview conversations were broad in perspective as they answered Question 1 in the interview guide, followed by more focused and specific conversations responding to the remaining questions. The overarching research questions in the study were reflected in Questions 2 and 3, which inquired about how and why NPs were used in

orthopedics. Answers to the third overarching research question, *What is the context in which the ONP is situated?* were elaborated upon in the remaining interview-guide questions. Question 4 initiated the conversation about role preparation whereas Question 5 sought information related to professional, organizational influences on the ONP. Answers to Question 6 reflected perceptions about evaluating the ONP role. The last question inquired about individual participant demographics and relationships or experiences with ONPs.

Open-ended questions requested any information that the participants felt should be known. Additionally, thematic data and aggregated replies to each question from all interviews were analyzed. Each of the seven interview questions were coded as numbers representing research questions. Numbers 1 through 7 initially served as the main codes, a process referred to as structural coding (Saldaña, 20013). Aggregated data corresponding to each numbered code were queried for categories and themes. The following seven themes emerged from the aggregated replies to how and why NPs are used in orthopedics: settings, services, roles, access, economics, team effectiveness, and policy decisions.

A search for relationships or links among the themes within and among interviews resulted in the identification of patterns noting similarities, differences, conflicts, and temporal relationships within the emerging data. Perceptions of the ONP role varied as evidenced by the assortment of descriptors used by the participants in describing ONPs: orthopedic provider, independent provider, helper, team support, physician extender, midlevel, and patient advocate. The differing descriptive terms suggested tension or struggle between the participants and their perceptions about the ONP role. This belief

was reinforced as the only mention of the nursing model or its constructs was by the NP participants. As an ONP, I have been confronted by colleagues with the notion that subspecialty NPs provide medical care, not nursing. On occasion, as both NP faculty and as a clinician, I have defended the position of dual roles: maintaining the nursing perspective of the patient as a holistic being and my role as an advocate for the patient, family, and/or community differed from my role in providing advanced medical knowledge. Both foundations are essential elements to the NP role. I have on occasion struggled to find balance between the medical and nursing model, forcing me to examine whether I was projecting my own biased perceptions in formulating an understanding of the data. This concern was visited as I searched through the transcripts and later additional documents looking for new meanings for these observations.

Settings. All participants reported similar ONP settings: outpatient clinics, hospitals, and operating rooms. Other settings included ED, primary care, and virtual settings (i.e., telemedicine). The ED was described as a setting for "taking call for the surgeon" and the virtual setting emerged as a place where NPs could provide consultation to primary care physicians (PCPs). Within the virtual setting, the ONP role as a resource to PCPs emerged as new role in the general NP who became a subspecialty NP. This important finding noted a difference between the general NP and subspecialty NP as an expert resource to the PCP regardless of the setting. I pondered whether the data would continue to relate in a meaningful way to the subspecialty NP role in orthopedics. The participants described differences between non-orthopedic settings and orthopedic-specific settings as places where ONPs practice. The surgeon described orthopedics as a

surgical orthopedic department. Non-orthopedic settings are referred to as places where NP provided non-surgical care and were also described as primary-care orthopedics.

Services provided. Four ONP services were identified across all interviews: direct patient care as a subspecialty, education, care coordination, and the provision of patient-care continuity across and between settings. All participants identified the provision of an orthopedic subspecialty service as the primary component of the role. This primary component makes the subspecialty ONP role uniquely different from the role in which it emerged; the family NP (FNP) or adult gerontology NP. Possessing subspecialty orthopedic knowledge and skill changed the general NP to a subspecialty NP. With this change came new roles and responsibilities as a professional and were discussed in the interviews. One example was the change in NP role to that of an educator and consultant or resource person to primary care, specialty physicians, and NPs. With this new understanding, further questions surfaced regarding relationships with physicians, subspecialty NPs, general NPs, and the process of role preparation. Traditionally, the PCP mentored the NP; a role valued for its expertise. As a resource to the PCP, the relationship dynamics has changed. Additionally, the underlying specialized orthopedic knowledge and skill defining the ONP role is based on orthopedic medicine. As earlier mentioned, the NP role has emerged incorporating both the APN and the medical profession. This newly emerging role calls into question whether role preparation ought to include elements from both professions and how that might look. With these queries in mind, the interviews were re-examined for answers. Unsatisfied with the results, the search was expanded to documents in the literature and professional-organization websites related to orthopedics, NP role, and APN education and training.

Answers to the question, *Why are ONPs used?* revealed four primary themes for further analysis: specialized MSK knowledge, patient access, economy, and team effectiveness. Additional themes related to contextual influences contributing to the ONP role included policy decisions and technology. In search for deeper meaning, the study question was reversed to, *Why are NPs not used in orthopedics?* The data revealed two answers: an inadequate supply of *qualified applicants*, NPs with specialized knowledge and experience, and the availability of PAs with orthopedic education, training and/or experience.

Subsequent to identification of patterns and themes, results were categorized as being related to structure, process, or outcome. Key concepts in the Donabedian's model for evaluating health care organizations were utilized and served as the bases for the PEPPA model (Bryant-Lukosius et al., 2016). A description of the five study participants and the study settings will ensue, along with the discussion of findings to enrich the reader's understanding of the case.

Participants and Settings

In-depth interviews were conducted with two NPs, two NP managers, and an orthopedic surgeon over 4 weeks in August 2017 and September 2017. All participants had from 10 to 30 years of experience working with NPs in multiple orthopedic settings. Participant perceptions about the NP role were those of the individuals, not organizational perceptions. Comparisons among participants and across settings are included in the analysis and presumed to be influenced by the organizations in which they work.

Nurse Practitioner KT. Interviews included two NPs employed in the same AMC. Both described their role as direct care provider and supervisor of NP coworkers within the orthopedic department. Their primary role was in the outpatient clinic; however, both saw patients in the hospital as well. The second participant, referred to as KT, was the first to accept the request for study participation after referral by two respected NP educators in the community. KT referred the second participant, SL. KT appeared to be in her mid- to late 30s. She carried herself with confidence wearing her long hair in a ponytail and dressed in scrubs, a lab coat, and a name badge that included her educational credentials: DNP and FNP. The interview was held at the end of her clinic day, 3:30 p.m., in front of the AMC's outpatient orthopedic clinic. She directed me through a quiet, dark hall to the first available examination room and apologized for the meager surroundings, as she did not have her own office. She reported her usual practice included traveling across town to various orthopedic clinics within the organization for orthopedic consultations exclusively with Medicaid patients. The following statement highlighted the variability of geographic settings: "I'm only here for now based on like we're having some new providers coming in so, depending on where clinic space is *available*, I may go to different spots, but the other NPs here go to different locations[too]."

In addition to physical settings, she provided virtual consultations through an intranet service, referred to as an e-consult, to PCPs seeking guidance with their orthopedic patients as an official, billable, orthopedic patient consultation. Our experiences as orthopedic consultants to PCPs were similar; however, my experience as an ONP consultation took place in the orthopedic department over a special phone line

available to all physicians in the system: primary care, ED, and other specialties. This new software program for e-consults could be much more efficient in tracking the number of consultations and explained how she was able to bill patients for this service.

Collegial trust was immediately established with this subject as she relayed her first ONP position working with a foot and ankle surgeon; similar to the researcher's own NP journey. KT described how she screened all general orthopedic consultations for Medicaid patients, provided non-surgical follow up management when indicated, and referred potential surgical patient to subspecialty orthopedic surgeons within the orthopedic department. She reiterated the importance of objectivity in this study and cautioned the researcher to not over-identify with her as a subject. KT was the only participant to acknowledge the national certification examination for ONPs and reported her current study for this exam. She was the only participant to identify the AANP as the professional organization associated with ONPs and attended orthopedic specialty conferences offered by them. As a podium speaker for AANP and participant in the development of the ONP national certification exam, I had an instant connection but consciously withheld this information from her to avoid the potential of influencing her responses.

When compared with other interviews, KT's distinctive communication style included speech was fast, passionate, and at times difficult to follow. After analyzing her transcript for frequently used words, I noted the word *like* rose to prominence followed by *patient.* Her answers were very personal and, on two occasions, she hesitated in her reply for what appeared to be concern that she had revealed too much information. This occurred in the context of describing how physician- and NP productivity was monitored

within her organization. Her dilemma in sharing this information was known to the researcher as I had also experienced organizational monitoring of provider productivity between physicians and NPs and was aware of the emotional nature of the subject. Therefore, KT was assured that her responses would be confidential and identifying data would be removed from the transcript.

The controversy surrounding productivity is in identifying a fair and equitable method that adequately measures provider productivity. One example would be how providers ought to be credited when seeing patients when they were not the provider of the care identified from a billing perspective (e.g., NP visit billed under the physician's license). In this researcher's experience, one common practice has been to establish the clinic under one provider's name while two providers, the NP and the surgeon, see patients simultaneously or independently. The name of the provider listed at check-in is the provider of record and typically credited for the visit for productivity and, in some cases, billing purposes. KT did not retract her statements but halted further discussion of the topic until later. When describing how NPs work with residents she stated,

> The NPs have, they will be in a clinic with the attending for like and the fellow and residents and they will see like consultations and follow-ups as part of that whole clinic, but then we all have our *own independent* clinics in which we will see consults, like kind of pre-screened consults.

Nurse Practitioner SL. Labeled Interviewee Number 1, SL was recruited upon the recommendation of KT in the e-mail reply to my invitation to participate in research. SL and KT are colleagues within the same organization yet seldom work together; they care for different patient populations. Due to a planned vacation, she accepted the

invitation to participate 4 weeks prior to the actual interview. The 9:30 a.m. meeting lasted 40 minutes and was held in SL's office within the orthopedic outpatient clinic on the first day she returned to work. The setting was approximately 20 miles away from KT's interview site. SL was in her office awaiting my arrival when her receptionist escorted me in. She dressed in slacks, a blouse, and sweater, and greeted me with a warm welcoming smile as she reached out to shake my hand. She appeared close to my own age, late 50s to early 60s. Her credentials included experience as an RN in orthopedics during the 1980s followed by 30 years of ONP experience within the same AMC. Her certification was as an FNP and she had earned her Master's degree in Nursing (MSN).

Early in the conversation, I recognized SL as the NP who had cared for the mother of an NP colleague; that colleague identified SL as an expert spine NP. This information was not disclosed to SL in order to avoid influencing her responses and to focus on the topic. Once again, there was a sense of connection with this interviewee as a peer.

In discussing the NAON and their influence on ONP practice, names of ONPs known to both emerged giving rise to a sense of connectedness between us and my entre into her world as an ONP. This in turn promoted trust and comfort to use our common orthopedic language as the conversation unfolded. At the conclusion of the interview, she requested that I share the results with her as she valued this research.

Manager in the Veterans Administration (CAC). The third participant, referred to as CAC, was recommended by a fellow PhD-NP colleague employed at the VA. This colleague forwarded the research participant invitation to CAC by email and a positive reply followed shortly thereafter. The decision to recruit from the VA was intentional as

it promised rich perspectives from individuals experienced in a system without NP scope-of-practice barriers. An inquiry about NP practice without barriers required a participant either from a state with full scope of practice for NPs or recruiting from the VA; an organization that recently eliminated NP scope-of-practice barriers and allowed NPs to practice to the fullest extent of their education and training without the legal requirement for physician oversite.

This 55-minute meeting was held in CAC's office within the campus of the Veterans Administration Medical Center, located six blocks from the parking structure. I was escorted to her office by a receptionist and passed through three security doors. Her office was near the neurology, psychiatric mental health, and orthopedic outpatient clinics. Upon arrival, I was instructed to have a seat in her office while she completed a phone conversation; approximately 5 minutes. During the phone conversation, she glanced across two large computer screens while typing on her keyboard. The nature of the call was related to the NP vacation schedule and the needs of the department. The conversation brought back memories of similar conversations I had as a NP with my department manager. Therefore, I immediately felt a kinship with CAC, recognizing her sincerity in meeting the needs of her NP employee while balancing the needs of the department. CAC was dressed in casual business attire. She was warm and engaging in conversation. Her office was crowded with several family photos, a large collection of memorabilia, and several stacks of documents. She explained her role as administrator and supervisor of NPs in five outpatient clinical settings, including orthopedics. CAC had 30 years of experience in her current setting and her credentials included a Master's degree in Nursing Administration. She has shared responsibilities for recruiting, hiring,

and supervising NPs within the nursing department. When describing the NP role, she stated they were

> Just as a, like an orthopedic provider period . . . Mainly they handle new patients, follow-up patients and a lot of the H&Ps for initial evaluation to clinics, mainly spine and general consultations . . . the way the service wants to use our current NPs for general and spine. They *used to have everything,* but with the PAs, they kind of divided it. I think the PAs are doing the [hand] clinic . . . and I have a nurse practitioner doing the total joints.

This response was the same as SL in the AMC; NPs were used mainly for outpatient care in spine service and general orthopedics. In describing the NP, she indicated they were used the same as a PAs, "as providers in collaboration with the physician;" however, PAs were assuming more patient care previously provided by NPs. PA supervision was performed by medical staff in the Department of Medicine, not by nursing as was the case with NPs.

CAC's role included annual- and new-hire NP employee evaluations as well as informing departments about NP practice. Evaluations of NPs were completed using criteria similar to RN evaluations. The NPs and RNs at this VA recently became members of a union or collective bargaining agency, as was the case of the NPs at the AMC mentioned earlier. The researcher's experience as an NP in the same community also included union membership.

When physicians requested additional NP clinical hours or patient clinics staffed by NPs, CAC was consulted for her recommendations. A recent change in veterans' care allowed VA services to be provided in local community clinic settings outside of the VA.

This was done to improve timely access to specialty care. The use of voluntary NPs in the community clinic settings outside of the VA made this possible and, in some cases, improved commute times for NPs. The concept of NP travel between clinics to meet patient and organizational needs was also noted in the KT interview and will be described in the following interview with TJ.

HMO Department Administrator (TJ). TJ was recruited for her long-standing experience with the ONP role and her perceptions of NPs working within a fully-integrated HMO. Through my personal relationship with TJ and with the organization, I was aware of the uniqueness of this orthopedic setting. Through my informal survey of ONPs across the county while attending orthopedic and NP conferences and experiences organizing a ONP special interest group in the state NP organization, I believe that few, if any, organizations utilize NPs as the HMO employing TJ. Of the five participants interviewed, TJ was the only one to report using NPs, not only in the hospital inpatient setting, clinic, and operating rooms, but also in the ED and throughout the entire hospital to take call for orthopedic surgeons, provide consultations, and for the non-surgical management in consultation with the offsite surgeons by telephone.

Our interview occurred over the lunch hour with less than 1-days' notice after the third inquiry yielded a meeting date. She was recruited through e-mail and the U.S. Postal Service using a recruitment flyer and agreed by phone to participate. Scheduling a meeting took 4 weeks after her agreement to participate as it was difficult for her to find the time; her organization recently opened a new hospital and surgery centers requiring extensive recruitment and hiring of new NPs and PAs. This interview likely would not have happened but for a 25-year history of working with her. As my former department

manager and supervisor, she was aware of my insider status and, perhaps, was a more willing participant as a result.

As a fellow employee, I felt a connection beyond that of typical coworkers as I had encouraged TJ early in her career to seek further education, celebrating with her when she earned a Master's degree in Health Care and Human Relations. As the interview began, I stopped and acknowledged our personal history and asked that we keep our thoughts and discussion on the topic of inquiry, to focus on her personal knowledge and beliefs, and to try and avoid that personal history. I elucidated the need that her perceptions be the focus of the interview and aside from any prior personal history between us within the department. Our meeting ensued after clearance by reception staff and escort through a locked door. Her office was crowded, requiring the rearrangement of items in order to sit comfortably. She was dressed more formally than the prior three interviewees had been, wearing a business suit and high heels. As with all of the interviewees, I sat directly across from her in an effort to gage her expressions and achieve a clear recording of the conversation. Her assistant interrupted us once during the interview. At the conclusion of our interview, she spent a few minutes searching for the personal e-mail address of a former chief of surgery who had recently retired and could be a potential research participant. She was unable to locate it and indicated that all of the current surgeons were likely too busy to schedule time for the study.

Orthopedic Surgeon (MAC). Recruiting a surgeon participant was the most difficult of all participants. Recruitment attempts included e-mailing the author of an article about NP-orthopedic surgeon relationships, contacting surgeons referred by the NP participants, and surgeons known to me. As with recruiting TJ, my prior relationship

with the surgeon participant was the most likely reason for securing an orthopedic surgeon to interview.

MAC was recruited as a former surgeon colleague with experience in orthopedic leadership in a professional orthopedic organization and as chief of orthopedics in local community hospitals. We worked together 15 years earlier in an orthopedic department and again in 2009 when I served as a short-term ONP volunteer in his private practice. This arrangement afforded an opportunity to collect orthopedic patient clinical hours as a requirement to maintain national certification as an ONP through the ONCB. Our last encounter was in 2014 where we discussed a possible research project using his practice outcomes. This mutual professional respect provided entree into his world as a surgeon. I queried him using a text message for his availability to meet for an interview, stressing the need to include the surgeon's perspective in the study. He agreed to meet the next morning at a restaurant on a Saturday after completing inpatient rounds at the local community hospital. Due to a patient emergency, the meeting was rescheduled to a coffee shop in the hospital where his emergency patient was being seen.

MAC's experience working with ONPs and PAs extended over 25 years and included work in military hospitals, HMOs, and private orthopedic practices affiliated with small community hospitals. He also volunteered with the local medical society to improve patient access to orthopedic services by coordinating teams of volunteer surgeons, NPs, PAs, and other providers offering orthopedic surgeries to uninsured patients. His experience has been focused in orthopedic trauma care and elective total joint replacement of the hips and knees. In private practice, he has employed three PAs and one family practice NP, primarily to see patients in the outpatient setting. When

asked about his perceptions of the ONP role, he described the ONP role in various settings and discussed the benefits of this role in improving effectiveness, efficiency, and patient access to surgery.

> Well, in general, I think of nurse practitioner . . . role is expanding because of opportunities that have been created, but more so because of needs that are present . . . I think particularly access to knowledgeable musculoskeletal care . . . is harder than you might think, despite the number of orthopedic surgeons in the country. So our primary care doctors see massive numbers of musculoskeletal complaints, but they really *aren't trained* or focused enough to do, for the most part, *not effective musculoskeletal evaluations* and develop conservative treatment plans, nonsurgical treatment plans that are consistent with that, an orthopedic surgeon . . . So the other roles are more of a hospital based or clinic based.

The interview began 30 minutes after the rescheduled start time. MAC was dressed in denim jeans, white button-down shirt, and navy-blue sport jacket. He looked 20 pounds lighter than on a previous occasion. He stopped to greet a patient and another male in a lab coat in route to the coffee counter where he ordered a latte. After an extended wait time, he made his way to our remote table. I stood up and we embraced lightly as we greeted one another; I thanked him for making time for the interview. The recorded interview was 1 hour, followed by an additional 20 minutes discussing the state of the insurance industry, how that affected the orthopedic surgeon's practice, his experience spending over 1 year training a new-graduate NP to work in his practice only to have her quit after 2 years and hired at nearby HMO. As he expressed frustration and understanding of her need to work where she could get higher pay and benefits, it seemed

odd that he did not bring this experience up during the interview. Perhaps it was because he was he trying to spare me any uncomfortable feelings concerning his difficult experience with another NP. After transcribing his interview, I made the following connection between small private practice settings and large HMOs from TJ's interview:

> TJ: It would be a good idea to go to a smaller practice somewhere to kind of get some orthopedic experience and a specialty you're interested in. So if you were interested in total joints, maybe if you work with a private office for total joints and really work with them, go to the OR with them and get some experience that way, I think it would be helpful.

I wondered why small, private-practice surgeon settings without organizational support would be considered the training ground for ONPs who move into positions benefiting large HMOs. This phenomenon could save training costs and avoid lost revenue during training for the HMO. Perhaps it could relate to the volume of patients seen or the complexities of care offered between settings. Another consideration could be risk management by organizational legal counsel. The presence of a union or collective bargaining agent could affect that decision. Perhaps it is an organizational leadership preference. This insight during the earlier interviews could have enriched the discourse on NP orientation and training needs.

Findings

The following is a discussion of the findings with details explaining and supporting each finding. A broad range of experiences were documented to provide a better understand of the realities of the participants. This narrative allowed the participants' words to speak for themselves. Multiple participant perspectives are

captured in a selection of quotes representing the complexity and richness of the data. Participant observations and critical incident data is interwoven with the interview data when appropriate to augment and support the discussions.

Finding 1: The evolving ONP role is dependent on an inefficient source for supplying adequately trained and/or experienced ONP job applicants. The majority of participants discussed the difficult in finding experienced or properly trained NPs to work in orthopedics settings.

Several organizations that pioneered the ONP role have begun filling those positions with PAs rather than NPs. This practice was shared by the surgeon, both NPs in the AMC, and the mangers at the VA and HMO. TJ enlightened this trend: "I've been in this department since 1990 . . . When we started with, there was only three NPs and it just kind of grew to, I think we're almost at 30 PAs and NPs altogether now." After the interview, she indicated her department employed three NPs and 27 PAs, a ratio of 1:9 NPs to PAs in the department. Her explanation for the shift to hiring mainly PAs:

> We're just not seeing that many coming forward to us like we are with the physician assistants. They're pounding on our door, but the NPs just aren't. From what we can see, because we posted positions as NP or PAs. So they're interchangeable, but we don't seem to get a lot of applicants from NPs. We tend to get a lot of PA applicants, but very, very few NP applications . . . So it's not that we're selecting not to have them; they're just not applying.

In probing for explanations for this trend, TJ's interview was directed towards the hiring requirements for NPs and PAs.

> If it's a physician's assistant, we'd like them to have gone through an orthopedic program because then they have more knowledge of orthopedic systems . . . For the PAs, I'm not sure about the NPs, there's actual programs that focus just on orthopedics. It's like an extension, somewhat like an internship, but those things are extremely valuable. We're getting actually references from those schools now that when we're looking to hire, we kind of reach out and say do you have any candidates or anything . . . NPs, we really look for recent acute orthopedic care, 2 years of experience within the last 4 years.

The VA nurse manager, CAM, shared a recent decision to re-allocate her budget to a PA in order to fill a position originally designated for an NP:

> When we recruit, we are looking for experience in the orthopedic and it's really difficult to find it. Any specialty NPs are so difficult to recruit because it really requires either experience in that field and if they don't have it, the question comes to us are we willing to train and hire and in the beginning, we did because we had no other options on how to recruit.

This study was conducted in a state that offers one of the two Orthopedic Physician Assistant Residency programs in the country; the source of employee recruits mentioned by TJ. Of the five participants interviewed, not one was aware of the ONP fellowship program in North Carolina or two universities offering master's degree-level ONP education and training, one of which is offered in the study's own state. KT was the only participant expressing awareness of the certified ONP credential requirement for 2,000 hours of NP experience in orthopedics. This may reflect her recent DNP education,

personal motivation to acquire this knowledge, or the timing of her entry into the NP profession and/or orthopedic settings.

Several participants expressed a preference for hiring NPs over PAs and disappointment over the lack of NPs to choose from with orthopedic experience. Several reasons were given for the preference: more independent, more flexible, and in the words of MAC,

> Their ability to function independently without direct supervision has an appeal . . . And a standard nurse practitioner is going to be more beneficial than an untrained PA because of their ability to manage more things with less supervision. However, a PA who's got extensive orthopedic *exposure* and experience will be much more beneficial to an orthopedic surgeon than a nurse practitioner without.

Finding 2. NPs in orthopedics are required to have advanced orthopedic knowledge in one or two orthopedic subspecialties. All of the participants described knowledge in an orthopedic subspecialty as a requirement in the role.

Throughout the interviews, the term, orthopedic subspecialty, was used and described as one of the services NPs in orthopedics provide. As the researcher was familiar with the concept of orthopedic subspecialties, it was easy to glide past this finding without searching for a deeper meaning. My first role was in the foot-and-ankle subspecialty working with patients and a foot-and-ankle surgeon. The direction was to hone my knowledge and skill in this subspecialty while becoming expert enough to participate in all aspects of foot-and-ankle care in addition to surgery. This allowed for the supervising surgeon to spend more time in the operating room, taking call, and

conducting research while the ONP saw his consultations, non-surgical follow-up patients, and providing pre-and post-surgical care of his surgery patients.

Further inspection of the interview transcripts garnered a greater understanding of what the orthopedic subspecialty means for the ONP role. To be knowledgeable in a subspecialty of orthopedics renders the NP an expert in the subspecialty when compared with a PCP, general NP, other physician specialist, and in some cases, other orthopedic surgeons with different subspecialty experiences. This was true of the NPs and PAs at a former place of employment who were called upon to be a consultant to ED physicians, PCPs, other specialty physicians, and unofficially as a consultant to other subspecialty orthopedic surgeons. This was made possible in part through a dedicated telephone line for physicians with orthopedic questions. Providers would call to obtain orthopedic advice from any member of the orthopedic department, depending on availability. A similar finding was noted in the interview with KT when asked to describe the use of technology in providing a consultation to a PCP. In her words "that's usually from a primary care to us so the primary has a question. We e-consult back saying this is what we think or bring them [the patient] in."

Participants described two types of ONP practice: within the surgical orthopedic setting working with a subspecialty orthopedic surgeon and outside of the orthopedic-specific setting providing non-surgical orthopedic care, commonly referred to as primary care orthopedics. According to KT, there was a need for "nurse practitioners that are specialized in ortho maybe combined with primary care clinics so that there is easier access for patients to basic musculoskeletal care that they are not able to get with their primary care provider." MAC described why this was necessary:

> Our primary care doctors see massive numbers of musculoskeletal complaints, but they really aren't trained or focused enough to do, for the most part, not effective musculoskeletal evaluations and develop conservative treatment plans, nonsurgical treatment plans that are consistent with that, an orthopedic surgeon.

NPs in the orthopedic-specific setting were identified as having an orthopedic subspecialty in one or two areas. All of the participants identified the following examples of orthopedic surgical subspecialties practices: total joint replacement, hand, and spine. Three additional subspecialty practices – sports medicine, foot and ankle, and hand – were identified individually. In the practice of orthopedic medicine, subspecialty surgeons are often specialty trained in an orthopedic fellowship program after completing a general orthopedic residency. The surgeon expressed his opinion regarding the two ONP roles:

> I think that the issue with nurse practitioners are how you're going to train them to specialize and then whether they are going to be primary care orthopedics as a standalone or whether they're going to integrate into orthopedic practices. The PAs have a model where they *have* to be integrated whereas there's this uncertainty where the nurse practitioner fits in or should fit in.

There was no uncertainty regarding the requirement for ONPs to be trained in a subspecialty if they were integrated into an orthopedic setting. Increased expertise in practice had the benefit of enhancing efficiency and cost effectiveness whether one was a surgeon or an ONP. The concept of matching the expertise level of the provider to the needs of the patient was raised by a few of the participants as beneficial for keeping cost down, utilizing practitioners efficiently, and for enhancing access to care. This was

discussed with the HMO manager who described caring for a patient with a hand fracture that did not require surgery:

> TJ: You know in the cost of healthcare today, you have to get our patients taken care of at the least scope of practice. So somebody who can do it, we should be having them do it instead of having a surgeon take care of a patient that has a boxer fracture, for example. A PA or an NP can do that and we should use them to the full scope of their practice.

Finding 3. ONPs work in teams or partnerships with orthopedic surgeons. All participant descriptions of the ONP included the context of a one-on-one relationship with a surgeon or membership within a team of surgeons in an orthopedic setting.

The search for similarities and differences in the data revealed the ONP role was different than the general NP role in family or adult geriatrics or all advanced practice roles described in the PEPPA-Plus model for evaluating APRN utilization. The original construction of interview questions had been partially supported by concepts found in the PEPPA-Plus model. The findings suggest that this model may be incomplete when viewing subspecialty NP roles. The interviewees all described the ONP within the context of the NP-surgeon relationship. Participants from the three settings (i.e., AMC, VA, HMO) made references to their relationships with surgeons using some of the following terms: mentoring surgeon, attendee, and supervising surgeon. In some cases, there were monetary benefits in a good relationship with one's supervising physician, as suggested by SL in the following statements discussing her continuing education costs.

> You get like two or three paydays a year for your education, depending on your attending and depending on who you're working for. Like my attending covers

> my trips for me, but it comes out of his pocket . . . Out of their salary or out of their educational funds and he will credit to me and I think all the doctors probably do that for their nurse practitioners, but we don't talk much about it. It's kind of quiet.

The development of social and collegiate relationships within health care settings was identified as a contributor to the ONP role. One example, suggested in the following quote from SL in the AMC, described her relationship as a RN with orthopedic surgeons prior to her ONP role. "I've been with my supervising physician since '92 as a nurse practitioner . . . we have been together 25 years, yeah, and I've known him since 1984." The next example was from MAC about a surgeon relationship with a RN evolving into a NP-surgeon relationship.

> I've worked with nurse practitioners who are first assists in the OR, very knowledgeable in the OR. Previous OR nurses became nurse practitioners and were really like working in surgery were super first assist. I've worked with like our trauma team here with nurse practitioner.

Additional relationships contributing to the ONP role include those between NPs and PCPs who have primary care orthopedic experience, as noted in the observation by TJ, the HMO administrator describing the qualifications of a recent new hire. "Our recent hires have history with sports medicine so we're trying to put them with the sports medicine people in orthopedics."

Relationships within teaching hospitals were also described as contributors to the ONP role as evidenced by the young NP's statement, "I've always worked in teaching hospitals, so it's been really comfortable to be in this like teaching and learning

environment." Her colleague's comment below suggests the nature of the teaching hospital environment was a contributor to the ONP role because it required surgeons to educate and train orthopedic residents, making them less available for patient care.

> I think trauma has hired so many nurse practitioners because as a teaching institution, the residents and the fellows and the attendings, they're always doing something else and then the patient sits there so that's why we're getting into this inpatient role and the same thing on the outpatient role. Our attendings are booked 2 to 3 to 4 months in advance because they're highly sought after.

All participants described their historical knowledge of the ONP role evolution starting as "on-the-job training experience" with a mentoring orthopedic surgeon in a subspecialty lasting approximately 1 year. Both KT and SL were socialized into their role in the AMC by an attending physician mentor; KT with a foot surgeon and LS with a spine surgeon. Within the VA setting, CAC stated, "When we first developed the NP program, we didn't have a standard practice or guidance. They had the family practice as a part of the certification and they got on-the-job training." The surgeon shared his experience as a mentor to a new graduate NP as lasting 1 year when specializing in care of patients with hip and knee surgery.

The following statements by MAC described why ONPs have been beneficial to surgeons.

> The patients really like to have always, they always want somebody available and sometimes for 40%, 50% of the week you're really not available as a surgeon . . . Physician assistants, nurse practitioners are incredibly helpful at helping offices stay more efficient and provide better quality of care.

Although he included PAs in his comment, MAC later stated, "Here . . . the trauma service makes liberal use of physician extenders and they prefer nurse practitioners in that role." Another example from the VA manager shared a similar point when describing the use of NPs as coordinators of care in the absence of surgeons.

> They're here, they're full-time and they're seeing the patient as 5 days a week versus their surgeons are not here all the time so sometimes they would follow up if a provider or the surgeon's not there, the NP will take over. That is one of the biggest reasons why our providers have been asking for NPs too because they help with that collaboration and coordination of care.

Finding 4. The necessary complementary balance between the medical and nursing models in orthopedic subspecialty NP roles is different from the general NP role and is often unrecognized in the ONP role. The only participants to identify elements of the nursing model when sharing their perceptions of the ONP role were the NPs, as noted in KT's comments.

> I look . . . at the whole patient holistically like I would in any specialty or even primary care, looking at how to help that patient have the highest function that they can have and that could be physical and have lower pain or some of it even I address like stress and anxiety as part of my job. So it still is looking at the whole patient with the focus on the bone and joints, but that treatment isn't always the treatment that we recommend for the patient . . . I think of our nursing model education and things like that rather than just following everything in the medical model. We are nurses first and we really connect with the patients, we are really

> focused on the whole patient and are really like the continuity of care and the follow-up.

SL made a similar comment about the ONP role, focusing on elements from the nursing model, holistic, and patient-centered care.

> Being that patient advocate for sure, Number 1, but really getting down to the education of what their condition is and how to take care of themselves in the future and to allay a lot of fears they have about their problems and their pain.

Elements of the nursing culture or nursing model as an influence in the ONP role were reported primarily by nurses and not mentioned by non-nurse interviewees when describing their perceptions about the ONP role. CAC described the evaluation of ONP outcomes or annual performance using a nursing-evaluation model. Non-nurses in the study focused on elements of the medical model, specifically the provision of specialized orthopedic services. MAC explained the difference between the RN and the NP when highlighting the NP's medical knowledge stating:

> Nurses have a good insight . . . but in terms of the medical management, the real medical management like a physician would manage them in a post-op setting, the nurses are, of course, nurses whereas a nurse practitioner can kind of bridge that easily.

MAC implied that specialized orthopedic knowledge assisted in care management. This statement identified MAC's understanding of the ONP's medical knowledge and misses the less obvious NP competencies that undergird medical practice in the NP role. Many descriptions of the ONP role included subtle comments suggesting behaviors found within the nursing model. In MAC's description of working with NPs on the trauma

team, an interesting perception of the NP emerged as noted in this sentence, "Basically**,** shepherds patients who are being seen by multiple consultants typically through their care." Without realizing it, he described nursing care as analogous to the shepherd's act of care, guidance, and protection of each individual sheep.

Finding 5. The ONP role is complex. It is influenced by changes within healthcare systems, policies, the economy, and the cultures of nursing and medicine.

General NP- and orthopedic subspecialty roles have similarities; however, the ONP role has evolved into a new entity shaped by a multitude of changes. The first change has been the increased population of orthopedic patients, specifically elderly patients requiring MSK health care services for spine and joint conditions. The managers in both the VA and HMO identified fluctuations in patient populations, defined as increased "workloads" and increased "membership" as reasons for hiring more NPs and or PAs. The comments provided evidence regarding the institutional justification for budgeting support for additional NPs and or PAs.

Although the interviewees do not specifically mention the rise in elderly patient populations, they all indicated NPs have been and continue to be used to provide care for "spine and total joint." Within orthopedic practice, it is common knowledge that spine and total joint patients requiring injections and/or surgery have usually been the result of degenerative joint disease, a process seen with aging. The NP in the AMC and the surgeon identified Medicaid and Medicare patient populations, patients over 65 years, permanently disabled, or of low income as actual and recommended recipients of ONP services. The surgeon stated "Obamacare" had resulted in an increase in orthopedic patients stating:

> Those patients had a hell of a time getting access to orthopedic care and I really think that if you wanted to make a real headway in terms of establishing strong roles for nurse practitioners in musculoskeletal care, it would be in those type of clinics is where you can make your biggest impact**.**

Another example of the Patient Protection and Affordable Care Act influencing the ONP role could be found in comments made by KT in the AMC:

> When more patients had insurance after the Affordable Care Act was put into place, we were getting so many referrals from these patients that hadn't had care in a while, many . . . more referrals for primary care providers who didn't, patients didn't usually need surgery at that visit. They needed some non-operative care or maybe they did need surgery, but . . . so my role was created to see like as many of those referrals so that they could have quicker access to an orthopedic specialist.

Both of the AMC NPs identified requirements of hospitals to provide timely access as an influencing factor for using NPs, as suggested in KT's statement:

> There are hospital standards for how quickly they want the patients, the referrals scheduled, within 10 business days or 7 business days. Mine is like at 20 business days, so when I asked about that because I'm like, great, this is a great reason we can look at the data and maybe hire another NP because we have enough referrals and we could get that number better and they were like, oh no, it doesn't matter for your patients. They're not even looking at that data.

At this point in the conversation, the participant was asked if it was because they were Medicaid patients. Her demeanor, posture, and expression changed immediately,

suggesting she was uncomfortable with the discussion. She answered, “I don’t know. I think they’re looking, wait, this is really bad. I can’t believe, this is not going like . . .” at which time I assured her of confidentiality and she relaxed a bit. The implication in the conversation seemed to be that there were different access standards for Medicaid patients compared to patients with insurance.

Additional comments regarding governmental influences contributing to ONP role development were made by SL.

> For hospital goals and all the CMS requirements, all the mandates that are coming down from the government to look at patient process and getting patients in . . . out and lower infection. So I think a lot of what we’re doing at U of XXX and which I think everybody’s doing and I know that’s why all these programs are being developed is to decrease the length of stay to decrease the cost.

Containing costs was described as the primary reasons why the NP was scheduled to only see Medicaid patients and the reason for evaluating NP productivity and income generation within the AMC. Additionally, when asked why NPs were used at the VA, CAC responded, “Cost effective, That’s really the bottom line.” As mentioned earlier, MAC also recommended using NPs in “those kind of clinics,” referring to Medicaid patient-specific clinics to improve access and, indirectly, costs.

To explore the effects of a professional organization on ONP roles, only one NP and the surgeon referenced a professional organization. The NP, KT suggested the AANP provided necessary orthopedic education that she participated in to maintain her national certification in family practice. None of the participants brought up the organization known as NAON, the primary orthopedic professional organization for orthopedic nurses.

The surgeon said he knew there was an organization for NPs but did not name it. He indicated that the national orthopedic association for surgeons had relationships with PAs. KT identified an orthopedic certification examination that was administered by the Orthopedic Nurse Certification Board. However, she indicated she was not convinced certification reflected excellence in practice.

Document Analysis

Several documents related to NP practice and orthopedics were identified within professional nursing websites and surveyed for information related to the research questions and exploration of evolving themes within the study. The chosen websites were also mentioned in the interviews. The following is a summary of relevant findings that provided context to the ONP role.

National Association of Orthopedic Nurses (NAON) Website. Information gleaned from the NAON website could be distilled into four topics: ONP jobs and employment requirements, a strategic plan to develop standards and competencies for ONP role, recommendations for ONP curriculum within a NP program, and organizational affiliations. Little information was specific to the NP role in orthopedics; however, minimum required ONP qualifications associated with license, certification as a NP, hours of ONP experience, and education within the general NP training program was identified. Additionally, core competency from the MSN and DNP Essentials were identified along with recommended focused orthopedic activities (NAON, 2013). The executive summary, mission, and vision statements and position statement on the value of the Orthopedic nurse (NAON, n.d.) made no distinction between nurse, APN, and NP (NAON, 2017). Professional associations recognized by or affiliated with NAON

included two orthopedic physician organizations, RN operating room association, and professional organization for orthopedic technologist. No indication of an affiliation or relationship with a professional organization representing NPs was listed. There was, however, an affiliation with the ONCB (2017) that provided information regarding requirements for NPs to become certified in orthopedics.

NAON's most recent strategic plan, crafted in 2016, was posted as an Adobe file. Goal 4, "NAON will define specialty roles and competencies within orthopaedic nursing across all settings to impact positive patient outcomes" (p. 9). Objective 2 of this goal stated, "NAON will develop a role delineation statements for the orthopaedic advanced practice nurse (APN) in an orthopaedic setting by December 31, 2018" (p. 10). According to the ONCB website (2017), ONP role delineation studies preceded the development of the first ONP certification examination in 2007 and are updated regularly. The third objective to support Goal 4 attainment stated, "NAON will develop practice competencies for the orthopaedic nurse, orthopaedic nurse navigator, and APN in any orthopaedic setting by December 31, 2019" (p. 11).

NAON has plans to develop ONP competencies that are in alignment with recommendations by the orthopedic physician community, as reported in Chapter 2 of this study. "Seventy five percent of those surveyed identified both a need and surgeon support for the collaborative development of a musculoskeletal curriculum and/or fellowship program for post-graduate NPs" (Day et al., 2016, p. e462). However, there was no mention of how the collaborating stakeholders would contribute to developing ONP standards and competencies.

Dissonance was found on the NAON (2017) website *Careers* tab that offered NAON members access to a job board, including positions for ONP positions across the United States. ONP job postings were searched for answers to the three overarching research questions and information related to previously identified themes. Several comparisons were made among 15 postings from 12 states. Additionally, information between states with and without full practice authority protection were searched for similarities and differences. Forty percent of the job postings on June 15, 2017 were from states with full practice authority. For postings on May 15, 2017, 33% required 1 to 2 years of ONP experience. One advertisement for a NP as clinic manager required 6 years of combined ONP and supervisory experience. An additional five postings stated ONP experience was preferred, suggesting applicants may be considered for on-the-job training. Three postings required general NP experience with preferred ONP experience, suggesting no new graduate NPs would be considered, and two postings did not specify experience requirements. The majority of postings, 8 out of 15, were for positions in combined hospital and clinic settings. Three postings were for clinic-only settings and one was for a hospital-specific position requiring 50% night-call. Of the 15 postings, 6 out of 15 (40%), included on-call work in the ED providing emergency consultations, one-third mentioned the operating room, and one position required certification as an RN first-assistant in the OR; three required a Drug Enforcement Administration license.

Minimum education requirements for job applicants ranged from a bachelor's degree to master's degree; one AMC posting in California stated master's or DNP degree. Another hospital posting from required BS degree as minimum requirement with MSN preferred. The national standards for NP certification required a master's degree and all

but two states require national NP certification. The postings that required a bachelor's degree were from states requiring national certification, West Virginia and Pennsylvania. This suggested confusion in the health care industry regarding NP standards.

All except one employer posting NP positions on the NAON job board required NP certification without specifying which NP certification and one identified an FNP certification. Of the 15 postings, only one required national accreditation of the NP educational institution and NP education program. One employer required NP certification by either AANP or ANCC.

In addition to the above-mentioned ONP job postings, a posting from the employer of one NP interviewee was surveyed. The position was described as support for the hand transplant team, hand surgeon, and sports medicine subspecialty surgeons. The work setting included the outpatient clinic, hospital, and operating room. In addition to the orthopedic management of patients as the primary duty, the NP would provide patient education, assist with clinical research, collaborate with all members of the health care team, and participate in department community outreach activities. A minimum of 1-year NP experience in orthopedics was recommended with 2 years being preferred. Additional requirements included proficiency to serve as assistant in the operating room, clinical research experience, ACLS certification, and the ability to obtain medical staff privileges.

Orthopedic Nurse Certification Board (ONCB). A review of the ONCB (2017) website proved useful in defining requirements for ONP certification, background information about ONCB, and preparation materials recommended for the ONP certification examination. This information was also found in a position statement on *Orthopedic Nurse Certification* by NAON (n.d.) on their website. The certification

examination was developed from the established role of NP as described by the American Association of Colleges of Nursing. ONCB is accredited as a certification program offering NPs the means to be recognized as experts in their profession. The certification process also helps to protect the public and the profession by identifying competent ONPs.

Certification applicants are required to meet the following criteria: RN license, 3-years RN experience, MSN, national certification as a NP, minimum clinical experience of 2,000 hours as either a FNP, AGNP, or pediatric NP caring for patients with MSK conditions. The NAON website cited 2,500 ONP clinical hours as minimum for clinical experience of the ONP role.

In the researcher's experience as a former item writer for this examination, the option to be certified as a pediatric NP was perplexing; the ONCB examination covers birth-to-old age and would be difficult to pass with only pediatric NP experience. Applicants for certification can apply their clinical hours from an orthopedic-specific post-graduate NP education and training program. Recertification is every 5 years and requires 1,500 hours of NP practice, 100 hours of advanced practice orthopedics education, and 25 hours of general nursing education.

The Accreditation Board for Specialty Nursing Certification (ABSNC). The ABSNC, the only organization accrediting specialty nursing certification programs, is the accreditation body for the ONCB certification program and one of the two FNP certification program accreditation boards. Further information regarding accreditation of certification programs and post-graduate specialty training programs were discussed in Chapter 2: Literature Review.

Recommended study materials for passing the ONP examination were provided on ONCB's website; however, recommendations for accessing on-the-job training, either in an informal network or through a formal post-graduate ONP training programs, was absent from the site. The 2,000-hour requirement for ONP experience as a requirement to sit for the examination requires opportunities for clinical experience and knowledge of where to seek such experience. This omission likely represents the absence of orthopedic programs or networks designed to match interested candidates with identified organizations in need of orthopedic providers.

American Association of Nurse Practitioners (AANP). Two documents, a job board and a forum, were identified on the AANP website as potential sources of information contributing to the ONP role. Additional information identified on their website included a description of *NP standards of practice* (AANP, 2013a) and a position statement on *Nurse practitioners and team based care* (AANP, 2013b). Conflicting information was identified between these documents. The job board included job postings for ONP positions. The members-only forum for NPs interested in orthopedics afforded the opportunity for NPs to communicate with one another regarding orthopedic clinical practice, education, certification, and employment opportunities.

The following is the NP treatment plan as found in the AANP (2013a) standards of practice.

> The nurse practitioner, together with the patient and family, establishes an evidence-based, mutually acceptable, cost-awareness plan of care that maximizes health potential. Formulation of the treatment plan includes:
>
> - Ordering and interpreting additional diagnostic tests

- Prescribing or ordering appropriate pharmacologic and non-pharmacologic interventions
- Developing a patient education plan
- Recommending consultations or referrals as appropriate. (para. 4)

From the perspective of the ONP, the above-mentioned description is missing a key participant in the treatment plan; the orthopedic surgeon. This finding suggests the NP subspecialty model of care is different from the general NP model of care. According to Hamric, Hanson, Tracy, and O'Grady (2014), this dissonance may hamper widespread adoption of the ONP role by failing to recognize the need for shared knowledge between the ONP and surgeon as well as their overlying experiences that are not exclusive to nursing.

The last characteristic of team based care, according to the *AANP position statement on nurse practitioners and team based care* (AANP, 2013b) identified "Measurable processes and outcomes in the (NP) provision of health care services" (para. 2) as a characteristic of the NP role. This characteristic appears to be lacking in the ONP role, as discovered in the participant interviews and NAON's strategic plan (NAON, 2017). The absence of standards and competencies with which to measure ONP outcomes inhibits team effectiveness. According to the PEPPA-Plus model for evaluating APRN role utility, NP roles need established evaluation tools and outcome measures to sustain the role (Bryant-Lukosius et al., 2016). The absence of outcomes measures also affects ONP-role sustainability.

The AANP member-only website also contained a job board and forums for members within several specialty practices, including orthopedics. Over 600 AANP

members, nearly one-third of the membership, have paid to participate in the Orthopedic forum discussion board. A survey of question and answers on the board in October 2017 included information specific to clinical practice, ONP national certification, and opportunities for orthopedic-specific education and training experiences. Many supportive comments were made regarding ONP certification. Three orthopedic educational opportunities were relayed: an ONP fellowship, master's degree program offering didactic orthopedic-specific coursework, and a DNP program offering a course in primary care orthopedics for NPs. A survey of the job board revealed three positions for an ONP, two of which required experience as an ONP.

Summary

This chapter presented five findings revealed in the study. Data from individual interviews, document analysis, and participant observations identified research participants' perceptions of the ONP role as viewed from their experience working in the orthopedic workforce with ONPs. Extensive samples of quotations from participants were included in the report for illumination. The use of the participants' own words aided in building the reader's confidence in the data by accurately representing participant realities.

The primary finding of the study is that the ONP role is dependent upon an ineffective means for supplying adequately trained and/or experienced ONP job applicants. This finding emanated from the expressed descriptions of all participants as they discussed their perceptions of the benefits and challenges in finding experienced ONPs. In discussing reasons that they felt made it difficult to find experienced ONPs, several participants identified the trend of discontinuing on-the-job training for NPs in

orthopedics. In the large HMO, the availability of PAs trained in orthopedics was also given as a reason for discontinuing on-the-job training for NPs. However, the participants in the AMC and the VA indicated on-the-job training was still an option when experienced NPs and/or PAs were not available to fill positions.

The second finding expressed by all participants was the requirement for ONPs to have advanced orthopedic knowledge in one or two orthopedic subspecialty practices. All participants reported total joint and spine specialties as subspecialty ONP practices. Individual participants identified foot and ankle, hand, and sports medicine as additional ONP subspecialties. Participants in administrative or managerial roles identified placement of an ONP in a specialty practice based upon either prior NP experience in the subspecialty or the needs of the orthopedic surgeon specialists.

The third finding was that ONPs work in teams or partnerships with orthopedic surgeons. This was expressed by participants from all settings, including the VA where there were no barriers to the NP scope of practice. Team-based practice was experienced and described by all participants except the orthopedic surgeon, who described a one-on-one partnership with both PAs and NPs.

Finding Number 4 identified a difference between the general- and subspecialty-NP roles and ability to balance provisions of both medical and nursing models. Orthopedic subspecialty NP roles were different from the general NP; the nursing model was often unrecognized in the ONP role by non-nurse members of the orthopedic team. The only participants to describe elements of the nursing model in the ONP role were the two NPs in the study.

The fifth finding was that the majority of the participants identified numerous conditions and influences on the ONP role, including leadership in healthcare systems, changes in the law, the cost of care, professional nursing organizations, and non-physician orthopedic education. Leadership within health care systems had the greatest impact on the budget for ONPs. Changes in the law included insurance eligibility for orthopedic care and laws allowing NPs to expand their scope of practice in orthopedics. Professional organizations influencing the ONP role included certification bodies (e.g., ONCB, AANPCB). The most influential non-physician orthopedic education was the advent of PA orthopedic residency programs that adversely impacted ONP-role utilization.

Findings from the document survey corroborated the findings from the interviews. A survey of both the AANP members-only job board and orthopedic specialty practice forum on the AANP website (2017) confirmed the need for ONPs and the increased complexity of the role requiring NPs to participate in hospital, clinic, and ED care for those orthopedic patients within a subspecialty practice of orthopedics. Based on questions entered into the AANP forum discussion board, many NPs were searching for opportunities to gain experience in orthopedic settings.

Results from this chapter can be summarized as follows: highly specialized knowledge and skill are required in the ONP role and currently, the means for supplying adequately trained and/or experienced ONP job applicants is ineffective. The development of the ONP role is contingent upon trusting, professional relationships with individual or groups of orthopedic surgeons, a necessary component of the ONP role. The highly specialized ONP role varies significantly from the general NP role in which it

emerged, suggesting new ways for training and evaluating the role may be indicated. Lastly, environmental conditions contribute to the decisions by orthopedic surgeons and health care organizations to employ ONPs. Environmental conditions identified in the study were consistent with those identified in both Style's and PEPPA-Plus models suggesting these models are useful frameworks for analysis of the ONP role.

Chapter 5: Analysis Interpretation and Synthesis of the Findings

This final chapter concludes with a review of the study design, method, and research findings at an aggregate level and discussion of how this data contributes to an overall understanding of the ONP as a phenomenon. The study is reviewed first as a whole beginning with short descriptions of the study purpose, questions, findings, and chosen methodology. The unfolding of the findings and associated meanings during the participant interviews follow with an explanation for how theoretical frameworks were incorporated into the design and analysis of study findings. Study findings were interpreted according to analytic categories and comparisons of the findings to empirical evidence and theory. Researcher insights contributing to the final conclusions will also be explained. The chapter concludes with a discussion of the study's limitations, practical applications of the research, and implications for future research.

The purpose of this single case study was to explore with a sample group of key informants their perceptions of how and why ONPs are used and the context in which ONPs are situated. The intent was that a clear understanding of the participants' perceptions would provide insight into the development and use of NPs in the orthopedic workforce.

This study used naturalistic inquiry to collect qualitative information through the process of interviewing and surveying of document data (Schwandt, 2007). Study participants included five individuals with 10 to 30 years of experience working in orthopedic settings that employed NPs. The data were coded, analyzed, and organized by categories and subcategories using the computer-assisted data analysis software program, NVIVO, to store, categorized, and retrieve the data. The analysis began using the primary

research questions as categories followed by categories derived from answers to questions in the semi-structured interviews. This was followed by identification of subcategories of concepts recognized in the PEPPA-Plus theoretical framework described in Chapter 2. Categories and subcategories (i.e., settings, services, preparation, evaluation, professional organizations) were used to answer the research questions. The study was based on the following three research questions.

1) What is the singularity of the ONP role as a contemporary phenomenon?

2) How and why are ONPs utilized in orthopedic care settings?

3) What is the context in which ONPs are situated, including social processes such as educational preparation and professional organizations?

Analytic categories directly relating to each of the three research questions were used to code the data; findings were presented in Chapter 4. The analysis included a search for patterns within the categories and themes that emerged among categories. A second level of analysis included the application of relevant theory and research findings associated with emerging categories and themes in the study as compared and contrasted with issues raised in the literature.

The purpose of this chapter is to provide interpretive insight into findings reported in Chapter 4. Study findings in Chapter 4 were organized by categories elicited from the interviews and documents and were presented in a readable narrative format. Next will be an attempt to reconstruct a more meaningful understanding of the data through integration and synthesis of five key findings identified in Chapter 4 according to three analytic categories that evolved from the key findings and the literature on subspecialty NP roles, specialization in nursing, and analysis of NP roles. Implications of the findings

are intended to augment the readers understanding of how and why NPs are used in the orthopedic workforce and associated contributing influences on the role. Chapter 5 concludes with a reexamination of assumptions identified in Chapter 1 and commentary on the potential effect of researcher bias in the interpretation of the findings, application of the findings, and implications for future research.

Developing Analytic Categories

The process of developing analytic categories for interpretation of the results began with a reassessment of findings within and across individual interviews and documents that contributed to the five research findings described in Chapter 4. Using Bloomberg's (2010) Analytic Category Development Tool, a comparison identified connections and/or patterns between the five findings of the study and sought additional patterns or themes. The following is a review of previously mentioned key findings.

1. The evolving ONP role is dependent on an insufficient source for supplying adequately trained and/or experienced ONP job applicants. The majority of participants expressed the difficulty in finding experienced or properly-trained NPs to work in orthopedics settings
2. NPs in orthopedics are required to have advanced orthopedic knowledge in one to two orthopedic subspecialties. All of the participants described knowledge in an orthopedic subspecialty as a requirement in the role. Subspecialty practices were those recognized in orthopedics as surgical specialties.

3. ONPs work in teams or partnerships with orthopedic surgeons. Unlike the general NP role, there was no place for ONP solo practices with or without full practice authority.
4. The necessary, complementary balance between the medical and nursing models in orthopedic subspecialty NP roles is distinct from the general NP role and is often unrecognized in the ONP role. The only participants recognizing elements of the nursing model in the ONP role were NPs.
5. The ONP role is complex and influenced by changes within health care systems, the economy, the political environment, and the cultures of nursing and medicine.

Analytic category Number 1. Connections were noted between the first and remaining four findings and were all connected to the first identified analytic category, described as "Recognizing the gap between the need for ONP positions in the orthopedic workforce and actual placement of ONPs in the workforce." Finding Number 2, ONPs are required to have advanced orthopedic sub-specialty knowledge, was related to this first analytic category as few NPs have advanced orthopedic knowledge and skill to meet the requirement for ONP positions. This was apparent in the interviewee comments describing the difficulty in finding qualified ONP to fill positions.

The remaining three findings and their association with analytic category Number 1 will be described next. The third finding, ONPs work in teams or partnerships with orthopedic surgeons, connected to this gap as orthopedic-surgeon mentors were essential to the ONP mentoring process and role development. The fourth finding, indirectly related to the gap as subspecialty NP roles such as the ONP, was an evolution from the

nursing model and moving closer to the medical model rather than toward the general NP role. The concept of NP specializations and subspecialties as described in *Specialization and credentialing in nursing revisited: Understanding the issues, advancing the profession* maintained that nursing is a social system with a tendency to increase in size, with a high probability of reorganization and/or evolution into higher levels of complexity (Styles et al., 2008). General NP roles such as the FNP were rooted in APRN education and credentialing programs as described in the APRN consensus document (i.e., LACE model; APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee, 2008) whereas subspecialty orthopedic education and training has traditionally relied on a combination of the APRN foundation and instruction from within the medical model of the specialty practice.

The fifth finding, the ONP role is influenced by changes within healthcare systems, the economy, the political environment, and the cultures of nursing and medicine, was related to the gap between the need for ONP positions and actual placement of ONPs in the workforce. The response to the first question on the interview guide asked, *What is your understanding or perception of the NP role?* Overwhelmingly, all participants perceive ONPs as highly valued orthopedic team members and often preferred over the role of the PAs. According to participant responses, reasons for the high value placed on the ONP included their flexibility, independence, "connectedness with patients," efficiency, effective collaboration with team members, and their provision of increased continuity of patient care. Several of these traits have been recognized in the nursing profession as NP competencies and have been included in the PEPPA-Plus model for evaluating NP roles.

In spite of the high value place on NPs in orthopedics, the participants also reported NPs were increasingly being excluded as applicants in favor of PA job candidates who had experience or additional orthopedic education and training. This might be due in part to the absence of conditions described as necessary for successful role transition: role definition, training, and support (Simone et al., 2016). Three study participants described the absence of formal orthopedic training and standards when the role was first initiated and currently within their institutions.

For the ONP role to remain relevant and sustainable, a professional consensus regarding the definition of ONP could potentially provide clarity between two distinct NP roles in orthopedics: the primary care ONP and the ONP practicing in an orthopedic-specific setting. Benham & Gier (2014) were the first to describe the primary care ONP who provided non-surgical care for patients with MSK complaints. The distinction between the two roles was also reported by KT and MAC in the interviews. If these role distinctions remain ill defined, "the subspecialty is at risk of being absorbed by or squeezed out by other roles" (Styles et al., 2008, p. 132). The orthopedic PA role as identified in this study was an example of a competing role.

On a broader level, the descriptive terminology or definition for NP appeared to be vague, as noted in the interviews of MAC and SL. The following statement by the SL, the older NP, suggested confusion in what to call NPs. "I'll tell you how NPs and our system works here. All of us as, there's extended-care people or whatever they want to call us, mid-levels or there's practitioners, also physicians assistants." Similar terminology was also noted in the MAC interview, as indicated in the following statement. "I think of nurse practitioners as midlevel." The AANP's (2015) position

statement on terms for describing NPs stated "The use of terms such as 'mid-level provider' and 'physician extender' in reference to nurse practitioners (NPs) individually or to an aggregate inclusive of NPs is inaccurate and misleading. The AANP opposes the use of these terms and calls on employers, policy-makers, health care professionals and other parties to refer to NPs by their title" (para. 1). Definitions were an integral aspect of setting boundaries for a case and without universally accepted definitions for NP and ONP, the boundary for the ONP case was less clear. The apparent disconnect between the desirability of ONP as members of orthopedic teams and actual choice as a job candidate contributed to the first analytic category described earlier.

Analytic category Number 2. The second analytic category evolved and expanded from the first category and was described as "Narrowing the gap between the need for ONPs and placement in the orthopedic workforce." Using the Bloomberg's (2010) Analytic Category Development Tool, I aligned this category with Research Findings 2, 3, and 4. This cross comparison helped me recognize connections between findings. All three findings were connected to the second analytic category, as concepts within the findings easily crossed over into this category. Concepts identified in the findings (i.e., highly specialized orthopedic knowledge, NP surgeon partnerships, collaborative team practices, the complementary and balanced nursing and medical training) all contribute to successful job placements for NPs in orthopedic settings. This has been confirmed in my own observations as well; however, to recognize my biases, I looked further into the interviews, documents, and literature review for evidence to refute or confirm this understanding.

Specialized knowledge. Highly specialized knowledge beyond the level of the general NP role and within the orthopedic surgical specialty contributed to the uniqueness of the ONP role suggesting an evolution into a role different from its originating NP role. Perhaps this difference called for a new way to be educated and trained with contributions from orthopedic surgeons, graduate medical and nursing education, and practice. A change of this type may generate more support by physician for ONPs to be hired in orthopedics. The preference by surgeons to include orthopedic surgeons in the development of ONP competencies was stated in a survey reported in Chapter 2 (Day et al, 2016). The Institutes of Medicine study (2010) entitled *The future of nursing: Leading change, advancing health* recommended post-graduate training for NPs transitioning into new specialty practices as a means of improving quality of care, patient safety, and NP competence and confidence.

The ONP fellowship developed at the University of North Carolina at Chapel Hill (n.d.) was an example of a post-graduate training program in an AMC. As the first recognized ONP fellowship, it had the disadvantage of starting without the proposed development of ONP competencies and standards of practice identified earlier in NAON's (2013) recent strategic plan. However, Tom Bush, Director of the ONP fellowship at Chapel Hill (personal communication, November 11, 2017) indicated to me that the competencies. The Joint Commission based the elements of competency from graduate medical and nursing education. In addition, identified entrusted professional activities were also included in the development of competencies for VA NP fellowships (Furfari et al., 2014). Competencies and standards serve as a critical foundation for developing ONP fellowship curricula. As mentioned in the interview of KT, learning

within an academic medical practice was desirable. As both NPs in the study recognized a lack of standardization for ONP learning experiences, this could provide the ideal model for an ONP postgraduate training program.

According to Styles (2008), subspecialty NP goal attainment included the "communication of specialized knowledge, skill, and behavioral norms within the subspecialty by a collective organized body representing the concerns of the profession" (p. 111). Communication of special knowledge, skills, and behavioral norms was in turn used to establish role functions and standard of performance. Application of Styles' understanding of subspecialty NP role suggested the ONP role was in its infancy, as baseline competencies and performance standards have yet to be established. Additionally, it was unclear as to which collective, organized body would best represent the ONP profession. Perhaps a new professional organization representing ONPs would emerge within or external to NAON similar to the recent development of the American Association of Emergency Nurse Practitioners (AAENP, 2017). Additionally, the ideal accreditation body for ONP certification programs and postgraduate ONP fellowship education and training programs have not been determined by a consensus of ONP leaders. As a participant in the development of the first ONP certification granted in 2007 through the ONCB, I am aware that the certification process did not have the advantage of being guided by evidence-based ONP standards and competencies in collaboration with the orthopedic physician community or graduate medical and nursing academia.

The Emergency Nurse Practitioner (ENP) role represented by the American Association of Emergency Nurse Practitioners (AAENP) is one exemplar of a subspecialty NP role meeting the criteria for a mature subspecialty with a collective

organized body representing the subspecialty NP's concerns and communication of specialized knowledge and skill. This organization developed national standards for specialty NP competency development and performance evaluation. Competencies and standards provided a foundation for curricula development in postgraduate ENP education and training programs. Completion of ENP training programs built upon a nationally recognized set of standards within the subspecialty and preparing NPs to take a national ENP certification examination. This examination was the first-ever subspecialty NP examination accredited by the American Academy of Nurse Practitioner Certification Board. Perhaps this model could further subspecialty NP role development and credentialing. As recommended in the APRN Consensus document/LACE model (APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee, 2008), the emergency nurse specialty organization spearheaded collaboration with emergency physicians to develop standards for subspecialty ENPs. One clear advantage is the existence of a separate professional organization for ENPs. The collective voice at the emergency nurse advanced practice level may have a distinct advantage over the orthopedic subspecialty nursing organization, NAON, that combines APRNs together with RNs, LVNs, and orthopedic technologists

Surgeon partnerships and teams. Successful ONP role implementation has been attributed to participation in health care models embracing collaboration between NPs and physicians to improve patient safety and outcomes in quality measures (Herman & Zabransky, 2005; Pinto et al., 2016; Sarro et al., 2010). In Styles conceptual model of nursing specialties, *Nursing as a Social System,* environmental conditions have to be favorable for the emergence of new specialty roles; the absence of favorable

environmental conditions served as a barrier to subspecialty role goal attainment (Styles, et al., 2008). Numerous environmental conditions influenced role development. In the case of the ONP role, participant interviews and a review of the literature indicated that the economy, laws, technology, and the culture of health care have all contributed to orthopedic surgeon teams and partnerships embracing the ONP role.

As mentioned in the interviews, the NP role was initiated in KT's clinic to contain cost and provide care to the increased number of patients resulting from the Patient Protection and Affordable Care Act. The surgeon interviewee also identified these conditions as rational for embracing the NP role in orthopedics. The passage of legislation eliminating full scope of practice barriers at the VA was given as a reason by CC for the departments' continued use of NPs as providers.

The influence of technology was also described in the interviews as an influential environmental factor contributing to the use of NPs in orthopedics. NPs identified the web-based technology, e-consult, and TJ identified the use of fluoroscopy as contributing to the use of PAs in orthopedics. All participants identified joint injections as one of many procedures conducted by NPs. This procedure often includes the use of technology, either ultrasound or fluoroscopy, to guide the procedure. The expanded use of NPs in surgery, as identified in interviews and job postings, was another example of technology influencing the use of NPs in partnership with orthopedic surgeons.

All of the findings related to environmental conditions influencing the use of NPs were corroborated by Hansen and Bozic's (2009) reporting of ONPs as disruptive innovators. They suggested the ONP role in orthopedic surgical practice evolved as a response to several conditions including the expansion of NP and PA training programs,

conditions that increased access needs; technology advancements in point-of-care diagnostic studies, surgical implants and techniques, increases in ambulatory surgery centers, the rise in direct-to-consumer advertising of orthopedic surgeries, and shifts in patient and orthopedic surgeon populations.

I believe environmental conditions have created a need for surgeons to form partnerships and teams with NPs and PAs equally. Once the partnership is established and the NP or PA role is implemented, several conditions must be met to sustain the role and surgeon partnership. These conditions have been described in both the Styles' model and the PEPPA-Plus model. In the role introductory stage, a successful matching of patient- and health-care-system needs to NP role competencies and scope of practice is indicated (Bryant-Lukosius et al., 2016). According to the PEPPA-Plus model, NP competencies include those of the APRN; however, there is no indication in this model for additional competencies specific to subspecialty NP roles. Yet the model is described by its authors as applicable for evaluating all specialty and subspecialty NP roles (Bryant-Lukosius et al.). Consequently, application of the PEPPA-Plus model might not be sufficient for evaluating the ONP role, as it did not include criteria for ONP competency evaluation and role outcomes.

Once the role has been introduced, successful role implementation, according to the PEPPA-Plus model, is dependent upon three conditions: supportive policy decisions allocating funds and resources, role clarity, and role outcome expectations. Professional, educational, health systems, and organizational policy decisions supportive of the NP role are necessary for continued role implementation. The specific professional, organizational support for ONP roles according to the APRN consensus document is

NAON, the nursing specialty professional organization. Additional organizations supportive of the ONP role include the ONCB, American Academy Orthopedic Surgeons, hospitals, academic institutions, and postgraduate NP accreditation programs. The ONCB is one of several accreditation organizations offering NP certification in a specialty. As mentioned earlier, the AANPCB is another accreditation organization; however, only the ONCB offers a NP orthopedic certification. The American Academy Orthopedic Surgeons offers orthopedic education and training for NPs in partnership with NAON at its annual conference. The University of North Carolina at Chapel Hill (n.d.) and Duke University (n.d.) offer graduate orthopedic education for NPs.

Several studies identified the need for role clarity and clear outcome expectations of a role as conditions for role sustainability (Bryant-Lukosius et al., 2016; Styles et al., 2008). The PEPPA-Plus model identified the need to articulate the expected impact of the role on individual patients, healthcare providers, health care systems, and organization. Through the analysis of documents and interview data, the main patient outcomes affected by the ONP role have been improved patient access to surgeons and orthopedic care, improved patient satisfaction, and, indirectly, reduced cost of care. Interview data identified surgeon-, NP-, and manager beliefs that NPs in orthopedics were beneficial to PCPs, surgeons, and orthopedic departments. Of the four health care systems represented in this study, all benefited by the use of NPs in orthopedic hospital- and outpatient settings. The primary benefits included meeting system- or government-imposed benchmark metrics for improving timely access to orthopedic consultations and or surgery and for reducing patient length of stay in the hospital. Within the HMO and VA organizations, interviewees described the use of NPs as being directly related to

workforce needs; when the need for services increased, the organizations added NP and PA positions to meet the increased demand for services while matching provider (surgeon or NP) competencies to patient needs.

ONP outcomes related to health care providers included orthopedic surgeons, PCPs, orthopedic residents, and RNs. Interview data identified surgeon, NP, and manager beliefs that NPs in orthopedics were beneficial to all of these provider roles.

Mature expert clinicians who shared an interdisciplinary knowledge base with physicians in a specialty practice represented the most advanced stage of specialization within the APRN role (Hamric et al., 2014). This level of specialization evolved to fulfill either the needs of a specific patient population or an organization. Clearly the ONP role met the description for this advanced stage of role evolution. The two NPs interviewed in the study indicated their roles met both the need for patient access to orthopedic care and the need of the organization to substitute the surgeon role with that of the NP to provide more efficient and cost-effective care.

As an NP subspecialty, support from within and external to nursing, along with a clear delineation of potential contributions to health care, was necessary for role evolution and sustainability (Hamric et al., 2014). Outcome evaluations and support through allocation of resources supporting NP roles were identified in the PEPPA-Plus model as concepts to assess when evaluating NP roles (Bryant-Lukosius et al., 2016). Until ONP standards, competencies and outcomes are well defined, it is uncertain what the ONP role contributes. Generic APRN competencies are described in the PEPPA-Plus model for evaluating NP role utilization. Without the addition of subspecialty NP competencies, the current version of the PEPPA-Plus model may need adaptation for use

in evaluating the ONP role. In part, this may explain why all of the participants were unable to clearly define ways in which the ONP is evaluated. Two identified budget and productivity measures and all except the surgeon identified patient satisfaction outcomes as a means to measure NP outcomes. Assessing NP critical thinking skills, as evidenced in documentation of care in the medical record and direct observations of skills, was identified by KT as a means of evaluation NPs. However, assessment of specific critical thinking and physical skills was not identified and the majority of interviewees identified lack of standards in assessing NP practice and confusion over the type of standards, nursing or medicine, were most appropriate in evaluating NPs. A shortfall in collecting and monitoring patient outcome scores, such as pain or function measures resulting from patient care, was reported by SL. The administrator and manager at the VA and HMO indicated their organizations conducted voluntary patient satisfaction surveys as a means for patients to assess the organization, department, and health care providers. However, only the HMO described patient assessments of individual NP performance in surveys. The VA collected only aggregate data for the hospital or clinic and physician-specific outcomes.

Application of the PEPPA model to the ONP role required the identification of both role outcomes and methods for evaluating both role development and outcomes. An underlying assumption of the PEPPA-Plus model was all roles evolved over time reflecting a range of role maturity; evaluation methods should reflect the maturity level of the role. Establishment of a role evaluation plan was based on the previously-determined priority of role goals and outcomes. The identification of role goals and outcomes was foundational to defining the role and establishing a role implementation and evaluation

plan. Of the five participants, only CC described evaluation criteria for NPs in her department; however, she reported mixed feelings as to the appropriateness of using the RN evaluation standards for the NPs. The two NP participants described their organizational methods for evaluating the ONP role as subjective. The absence of established ONP implementation and evaluation standards suggest either the PEPPA-Plus model was not applicable to the subspecialty ONP role or the ONP role was not sufficiently developed. Therefore, the evaluation of NP long-term sustainability, the third stage in the PEPPA-Plus model, was not applicable to the ONP role. Within the third stage, the NP role was evaluated for its long-term benefits and impact of the role on health care consumers, providers, organizations, and health care systems. Identification of the impact of the NP role on predetermined needs for each of these segments of health care was necessary if meaningful NP role evaluations and revisions were to occur.

Several barriers to effective NP role planning and integration into health care systems have been identified by the authors of the PEPPA-Plus model. The barriers included a" lack of policy relevant evaluation data to make decisions about optimal designs, implementation and use of APRN roles" (Byrant-Lulosius et al., 2016 p. 204).

Balancing the medical and nursing model. As a surgical subspecialty, ONP roles incorporated elements from both the nursing model and the combined medical and surgical models of treating disease and restoring MSK health through the process of surgery. As with nonsurgical NP subspecialties, much of the general medical model was learned during generic NP role preparation and was augmented during the mentoring relationship between the NP and physician specialist. The ONP role was uniquely complex as it balanced nursing, medicine, and surgical knowledge and skills while

developing a collaborative relationship with the complex and highly specialized orthopedic surgeon role. Perhaps the view of the case is best explored from the perspectives of this unique social relationship and its setting as compared to other non-surgeon physician relationships with NP.

The nursing model focuses on the following concepts: patient, environment, nurse, and promotion of health and wellness (Fawcett, 1995). Within the advanced practice level of the NP role, the nursing model has been enhanced through the inclusion of seven APRN competencies (Hamric et al., 2014). These competencies were identified as concepts in the PEPPA-Plus model incorporated into the evaluation of NP role utilization. The first was direct expert clinical patient care using a holistic approach and the building of therapeutic partnerships with patients. This was described by KT and SL as elements of the ONP role. The second competency was guidance and coaching, including patient education, self- reflection, assisting patients in transitions, and the practice of conflict negotiation and resolution. Several studies identified this competency as a valued component of the subspecialty NP role as reviewed in Chapter 2 as well as MAC's response in the fifth interview. The fourth competency was consultation and collaboration with the physician and patient care team, including the consultee and consultor role. Consultation was described by all interviewees as a major element of the ONP role. KT and MAC described the ONP role as a consultant to other physicians in primary care. TJ and CC described the consultation component of the ONP role in outpatient, ED, and hospital settings seeing new orthopedic patients. Of particular note were two comments made by KT and TJ regarding the importance of prescreening consultation referrals to ensure the appropriate matching of NP expertise to the

complexity of the patient's chief orthopedic complaint. The same matching of provider expertise to patient complexity of care was described in a study about obstetrics and gynecology patients and the use of Women's' Health NPs (Pinto et al., 2016). Competency Number 5 was the provision of evidence-based practice (EBP) and included participation in the collection of evidence and/or the EBP process to inform patient care and policy decisions. The two NPs from the AMC mentioned ONPs being involved in research at their facility, as did CC at the VA. Leadership, the sixth competency, included clinical, professional, system wide, and health policy leadership. The only participant to broach the concept of leadership was CC at the VA who indicated NP roles were evaluated at three levels with the highest level demonstrating an aspect of leadership in the community outside of the orthopedic department.

Analytic category Number 3. The third analytic category, "leveraging support for and increasing supply of ONPs to meet demand for ONP" was the final category developed for interpreting and synthesizing the results of the study. In using the Analytic Category Development Tool (Bloomberg, 2010), I recognized connections between this category and all five finding statements. Leveraging support for an increased supply of ONPs included everything external to the ONP role or case. The PEPPA-Plus model identified elements for leveraging NP role support as policy decisions that influenced the allocation of funds and resources supportive of integrating NP roles into health care and the perceptions of policy makers in key stakeholder positions. Examples of policy decisions that influenced the allocation of funds in this study included the business manager to whom KT and LS reported for their annual reviews. Additional policy makers, in their organization, include the chief of orthopedics, chancellor of the

university, and director of all universities within the state. Of note was the need for the NPs to generate revenue sufficient to support their positions within the state-run university medical center. CC at the VA indicated her organizational leaders, including the chief of orthopedics, required justification for NP positions based on anticipated workload, an indirect indication of increased patient demand for services in this federally-run organization. Support for increasing the supply of ONPs at the HMO, a private physician-owned partnership, was influenced by the revenue generated from patient memberships as well all the experience level of the NP; the more members in the HMO, the more demand for and funding of orthopedic services provided by NPs or PAs. These connections supplied answers to the question, *What context is the ONP role situated?* All of these contextual factors, referred to as conditions and influences on the care (Styles et al., 2008), had connections with this analytic category (Appendix H).

Within the PEPPA-Plus model, organizational policy decisions that allocated funds and resources supportive of NP roles in health care included those from educational, professional, and health care systems. The decision of organizations and individual surgeons to cover the cost of NPs' continuing education was given as one such example by SL. The decision by the ONCB to invest resources into the development of a role delineation study and subsequent ONP certification examination was another example of allocating resources supportive of the NP role integration into orthopedic settings. Policy decisions by leadership from multiple APRN professional organizations led to the allocation of their resources to develop the APRN consensus model (APRN Consensus Work Group & the National Council of State Boards of Nursing APRN Advisory Committee, 2008). This was a historic move toward recognition of the

subspecialty ONP role and recommendation for NAON to further develop the subspecialty ONP role.

The recent decision by NAON to include the development of APRN orthopedic competencies in their current strategic plan was an example of a professional organization's decision to allocate resources that have the potential to influence further development of the ONP role by clarifying descriptions, an essential element in developing a case. NAON's allocation of funds in the form of a grant for future orthopedic research is another example of decisions with potential to support future ONP role integration.

The ANCC's policy decision to develop and offer a postgraduate training accreditation program to NP residency and fellowship program leaders was a recent example of a nursing organization's allocation of resources to support NP role integration into specialty practices. The National Nurse Practitioner Residency and Fellowship Training Consortium (NNPRFTC) was also recently established to provide accreditation to postgraduate NP residency and fellowship programs and offers training to program leaders on how to apply for and successfully become an accredited program. (NPPostgradtrining, 2017).

Another example of organizational policy decisions influencing NP specialty role development is the Veterans Administration's decision to establish NP residencies in Psychiatric Mental Health and Geriatric specialties (C. Hair, personal communication, August 8, 2017). This may lay a foundation for future sub specialty NP fellowship training programs. Numerous other health care systems have recently developed NP residencies and fellowships designed to integrate NPs into health care (Martsolf et al.,

2017). At a national level, policy makers have eliminated NP scope of practice barriers in the Veterans Administrations (U.S. Department of Veteran's Affairs, 2016)

Conclusions

Analytic Category 1: The need for ONP positions in the orthopedic workforce and actual placement of ONP in the workforce is dependent on many factors. Supportive environments for preparing NPs to practice in subspecialties roles need to connect NPs to environments conducive to subspecialty education and training, such as postgraduate NP residency and fellowship programs. Most employers are unfamiliar with the qualifications of a certified ONP and the means to identify recently certified ONPs through the ONCB. Matching orthopedic surgeon needs to an NP's available to participate in orthopedic on-the-job training or an apprenticeship program is not currently occurring on the AANP job board, NAON job board, or ONCB website. Matching orthopedic patient-specific needs for care within organizations that choose to precept and mentors NPs in orthopedics could increase the supply of qualified ONPs available for employment.

Networking activities and opportunities between highly motivated NPs desirous of an ONP position and individual surgeons or orthopedic practices may enhance placement of NPs within the orthopedic workforce. The use of professional orthopedic and NP websites may serve as an appropriate site for this type of networking. Inclusion of orthopedic surgeons in the development of orthopedic-specific education and training programs for NPs may also increase the supply and utilization of ONPs. Orthopedic education and training programs with measurable outcomes are dependent upon building

an evidence-based consensus of all stakeholders in developing ONP standards and competencies.

The healthcare market is a determining factor for ONP placement as evidenced by the theory of disruptive innovation. Personal factors contribute toward individual NP placement in orthopedics and include forming alliances and bonds with orthopedic surgeons while in the RN role or as NPs in orthopedic settings. Successful ONP placements may be a reflection of where NPs are seeking employment and the type of organization they are place in.

Analytic Category 2: Closing the gap between the need for ONP positions and placements of NPs in the orthopedic workforce

Actual placements or hiring of NPs in orthopedics is a reflection of a successful match between the surgeon's need, willingness to precept or mentor, and the availability of a motivated individual NP. NPs must acquire knowledge informally to sufficiently meet the requirements of an ONP position as few formal opportunities exist. Organizational support from healthcare organizations, academic institutions, and credentialing organizations for implementing NP roles into orthopedic settings is necessary. Additional organizational support from third party payer systems, insurance carriers for orthopedic patients, and state and federal agencies is also necessary for ONP role implementation.

Increasing the number of orthopedic education and training programs for NPs across geographic areas was needed for orthopedic services in order to close the gap; however, it is still dependent on an available source of surgeon mentors, preceptors, and motivated NP's.

Analytic Category 3: Leveraging support for and supply of ONPs to meet demand for ONP

There is plenty of support for the experienced ONP role, but less support for increasing the supply of experienced ONPs. Demand for orthopedic care is greatest in the underinsured and uninsured orthopedic patient populations. Demand for services is related to the supply of and access to orthopedic providers. Access to providers is influenced by geographic locations, availability of orthopedic providers, and insurance or other funding mechanism to pay for care. The ONP role serves as a means to improve patient access to orthopedic services in a cost-effective manner. The greatest barrier to utilizing NPs in orthopedics appears to be the lack of orthopedic-specific education, training, and mentoring by orthopedic trained physicians.

Limitations of the Study

Before concluding, limitations associated with this study will be identified. The primary limitations are related to the method and potential bias from the researcher and participants. The most obvious limitation is the fact that this study relied on self-reported data. Self-perceptions of the participants may be limited and/or biased. Additionally, my ability to understand, interpret, and explain the study participants' words may also be limited or biased by personal attitude, knowledge, and beliefs associated with my experiences as a ONP and NP educator. Lastly, with only five interviews, this study is not generalizable as traditionally envisioned in the social sciences. In other words, I may not have uncovered the full range of potential responses concerning participants' knowledge, attitudes, and beliefs about the ONP role. The inclusion of additional surgeon and NP participants from other settings and geographic areas of the county may have revealed

additional perspectives from those obtained. As suggested in the PEPPA-Plus model, all stakeholder perceptions of the role should be assessed, including a few which were not included in this study: patients, third party payers, insurance representatives, and/or individuals from within academia involved in ONP education. The analysis of findings and generalizations are limited to this study and enhance understanding of the complexities within the boundaries of this case. Generalizability is not the goal of case study research. Instead, it is the transferability of the findings to enhance understandings of the complexities of the case and how and in what ways the new knowledge can be applied to similar contexts and settings (Patton, 1990). Another limitation is the use of a single case study rather than multiple case studies with crossover analysis between different orthopedic workplace settings.

Application of Findings to Practice, Education, and Policy Development

Findings from this study may influence and inform policy makers within the AANPs, NAON, ONCB and the orthopedic surgeon professional associations to allocate funding and resources for developing standards for ONP competencies and the identification of role goals or expectations of NPs to meet the needs of the orthopedic patients. Additionally, the study may also influence and inform policy makers in academia to set aside resources for developing standards for educating and training ONP preceptors and faculty and the establishment of academic practice partnerships with the orthopedic service industry. From a national perspective, the study serves to inform policy makers of the need for postgraduate ONP fellowship accreditation standards and a mechanism for matching ONP training programs to orthopedic organizations with underserved patient populations that are able to provide training to NPs.

Implications for Future Research

Further research about subspecialty NP roles, the ONP role, and models for evaluating subspecialty NP roles are necessary. The application of Style's model in developing new and emerging subspecialty roles may prove useful in identifying the strengths and weakness of new subspecialty roles as it did in analyzing the ONP role (Styles et al., 2008). Future research about ONPs might expand the knowledge base by selecting additional participants to interview in future case studies such as; patients and personnel from human resources, credentialing, insurance departments, and financial officers familiar with the role of NP in orthopedics settings.

To better understand the nature of surgical subspecialty NP practice, a research study about other NP surgical subspecialties might also be undertaken (e.g., neurosurgery, cardiovascular surgical). Data generated in such studies could be compared to perceptions of the ONP role uncovered in this study. Finally, a study identifying the consensus of experts including orthopedic surgeons, NPs, and educators that investigate required knowledge and skills or specific ONP competencies required in the ONP role. The study could choose from the same orthopedic workplace settings that were employed in this study: the VA, HMOs, AMCs, and private practice orthopedic clinics affiliated with community hospitals.

Summary

This final chapter served as a summation of the research. Outcomes to the research questions were answered in Chapter 4: Results. Information in this chapter went beyond the research questions and provided additional insight and interpretation of the data gathered. This chapter also offered a discussion of how the research was executed

and interpreted. Adjustments were made for unforeseen aspects of the sampling, such the decision to include a second NP from within an AMC. The differing results between the two NPs may possibly be related to their personal demographics: age, years of nursing experience, academic degree, or length of time since receiving education as a NP. A final note was added regarding the comparison between a mature subspecialty role, as described in Style (1989) and the case study findings. The discussion suggested that the ONP role was influenced by constructs identified within the Style's (Styles et al., 2008) and PEPPA-Plus (Bryant-Lukosius et al., 2004) models used in designing the research protocol and interview guide.

The chapter continued with a debate on the overall value of the PEPPA-Plus model (Bryant-Lukosius et al., 2016) in evaluating subspecialty NP roles, identifying a potential limitation in the model. The use of this model may constrain the understanding of surgical subspecialty NP roles. Using the current model may provide less clarity and understanding of the ONP role unless it is further developed to include subspecialty NP competencies.

Some of the additional thoughts on the research data included a new understanding of the uniqueness of the ONP role, bridging both the nursing and medical specialty in ways different from general NP specialties and influencing inter-professional relationships between ONPs and surgeons.

The chapter continued study limitations and a short section on implications for NP practice, education and policy decisions and future research.

In summary, this case study described the contemporary phenomenon of the ONP. Results were condensed into three analytic categories and viewed through the lens of two

conceptual frameworks for analyzing APN roles. Analysis and interpretation of the results according to the PEPPA-Plus model suggested that the ONP role has not yet reached maturity, a requirement for long-term sustainability as a subspecialty NP role. Two conditions will need to be met for the ONP role to remain viable and viewed as a case with boundaries. The first condition is a clear, consensus-based role definition with standards for ONP competency. The second condition is representation from an organized body dedicated to the professionalism of ONP and connected to the nursing profession. When these conditions are met, the requirements for defining the ONP as a case will be in place.

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Appendix A: IRB Approval

Jul 17, 2017 9:10 AM PDT

Debra Palmer
Hahn School of Nursing & Health Science

Re: Expedited - Initial - IRB-2017-224, Orthopedic Nurse Practitioner Sub-specialty: a Case Study

Dear Debra Palmer:

The Institutional Review Board has rendered the decision below for IRB-2017-224, Orthopedic Nurse Practitioner Sub-specialty: a Case Study.

Decision: Approved

Selected Category: 7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Findings: None

Research Notes:

Internal Notes:

Note: We send IRB correspondence regarding student research to the faculty advisor, who bears the ultimate responsibility for the conduct of the research. We request that the faculty advisor share this correspondence with the student researcher.

The next deadline for submitting project proposals to the Provost's Office for full review is N/A. You may submit a project proposal for expedited or exempt review at any time.

Sincerely,

Dr. Thomas R. Herrinton
Administrator, Institutional Review Board

Office of the Vice President and Provost
Hughes Administration Center, Room 214
5998 Alcalá Park, San Diego, CA 92110-2492
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Appendix B: Consent to Participate

University of San Diego

Institutional Review Board

Research Participant Consent Form

For the research study entitled:

Orthopedic Nurse Practitioners as a Subspecialty: A Case Presentation

I. Purpose of the Research Study

Debra Palmer is a student in the Hahn School of Nursing and Health Science at the University of San Diego. You are invited to participate in a research study she is conducting. The purpose of this research study is to explore the development of the nurse practitioner role in orthopedics, how orthopedic nurse practitioners are used and why nurse practitioners are utilized in orthopedic healthcare settings.

II. What You Will be Asked to do

If you decide to be in this study, you will be asked to participate in a private audiotaped and digitally recorded interview, sharing your experiences with and perceptions of the Orthopedic Nurse Practitioner. If it's OK with you, Debra may also contact you once by telephone in a few weeks after the interview for about 10 minutes to clarify what you told her. The interview will be at a time and place convenient for you. Participation is entirely voluntary and you can refuse to answer any question and/or quit at any time. Your participation in this study will take a approximately 60 minutes.

III. Foreseeable Risks or Discomforts

This study involves no more risk than the risks you encounter in daily life. The results of the research project may be made public and information quoted in professional journals or meetings, but your real name will never be used. However, due to the small number of participants and the unique nature of their experiences, **a risk exists that you may be personally identifiable in publications/professional presentations, and you need to know this.**

IV. Benefits

While there may be no direct benefit to you from participating in this study, the indirect benefit of participating will be knowing that you helped researchers better understand the nurse practitioner role in orthopedic settings.

V. Confidentiality

Any information provided and/or identifying records will remain confidential and kept in a locked file and/or password-protected computer file in the researcher's office for a minimum of five years. All data collected from you will be coded with a number or pseudonym (fake name). Your real name will not be used. The results of this research project may be made public and information quoted in professional journals and meetings, but information from this study will only be reported as a group, and not individually.

VI. Compensation

You will receive no compensation for your participation in the study.

VII. Voluntary Nature of this Research

Participation in this study is entirely voluntary. You do not have to do this, and you can refuse to answer any question or quit at any time. ***You can withdraw from this study at any time without penalty.***

VIII. Contact Information

1) Debra M Palmer

Email: Debrap-10@sandiego.edu

OR debramariepalmer@gmail.com

Phone: 619-920-9174

2) Dr. Jane Georges

Email: Jgeorges@sandiego.edu

Phone: 619-260-4559

I have read and understand this form, and consent to the research it describes to me. I have received a copy of this consent form for my records.

Signature of Participant Date

Name of Participant (**Printed**)

Signature of Investigator Date

Appendix C: Definitions

Advanced Practice Registered Nurse. Registered nurses who have acquired advanced specialized clinical knowledge and skills to provide health care who hold a master's or doctoral degree. They build on the NP practice by demonstrating greater depth and breadth of knowledge, greater synthesis of data, increased complexity of skills, and interventions, and significant role autonomy (American Nurses Association, 2015).

Advanced Practice Registered Nurse defined by the APRN Consensus Model. A registered Nurse (a) who has completed an accredited graduate-level education program preparing him/her for one of the four recognized APRN roles; (b) who has passed a national certification examination that measures APRN, role and population-focused competencies, and who maintains continued competence as evidenced by recertification in the role and population through the national certification program; (c) who has acquired advanced clinical knowledge and skills preparing him/her to provide direct care to patients, as well as a component of indirect care; however, the defining factor for all APRNs is that a significant component of the education and practice focuses on direct care of individuals; (d) whose practice builds on the competencies of registered nurses (RNs) by demonstrating a greater depth and breadth of knowledge, a greater synthesis of data, increased complexity of skills and interventions, and greater role autonomy; (e) who is educationally prepared to assume responsibility and accountability for health promotion and/or maintenance as well as the assessment, diagnosis, and management of patient problems including the use and prescription of pharmacologic and non-pharmacologic interventions; (f) who has clinical experience of sufficient depth and breadth to reflect the intended license; and (g) who has obtained a

license to practice as an APRN in one of the four APRN roles: certified registered nurse anesthetist (CRNA), certified nurse-midwife (CNM), clinical nurse specialist (CNS), or certified NP (CNP; APRN Joint Dialogue Group Report, 2008).

Nurse Practitioner (NP). An NP/APN is a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level. In the United States, the NP is certified in one of seven specialty roles (APRN Consensus Document, 2008)

Orthopedic nurse/Orthopaedic nurse. A registered nurse who facilitates the promotion of wellness and self-care, the maintenance of health, and the prevention of injury and illness in the care of individuals with disorders of the musculoskeletal system (NAON, Scope and Standards, 2013b. Based on competency and specialty training, the professional orthopedic nurse:

- may work independently or collaboratively with a multidisciplinary healthcare team (including patients and families) providing appropriate, effective, and efficient care and education
- is able to assess, identify nursing diagnoses and treat patient conditions for which orthopedic patients are at risk, including, but not limited to, pain, impaired physical mobility, self-care deficits, impaired skin integrity, body image disturbance, and post-trauma response
- bases clinical judgment and decision making on the nursing process, nursing theory, and research, as well as specific orthopedic knowledge

- performs holistic assessments of individuals and/or families, with special focus on impact of musculoskeletal conditions on self-care needs, environmental management, resources, and support systems
- develops, implements and continuously evaluates a plan of care, encouraging a multidisciplinary team approach to making patient care decisions
- maintains current orthopedic knowledge and shares that knowledge with other health professionals
- participates in peer review to assure competent practice
- serves as educator, mentor, and role model for nursing colleagues, students, and others
- participates in professional nursing associations that promote educational and professional activities
- applies research and EBP in the various clinical practice settings
- participates in/conducts clinical research and shares findings through presentation and/or publication
- maintains and promotes political awareness and is proactive concerning health care issues

Orthopedic NP/Advanced orthopedic nurse: A NP with substantial knowledge of muscle skeletal anatomy, physiology, pathophysiology, and clinical expertise in nursing and medical/ surgical orthopedics and holds at least a master's degree preparation. The ONP/ advanced orthopedic nurse:

- incorporates all the above aspects of the one orthopedic nursing role
- provides expert care to individuals diagnosed with musculoskeletal conditions

- educates and supports community groups interested in health promotion and illness/injury prevention
- may fulfill various roles including direct caregiver, consultant, educator, researcher, administrator, and/or primary health care provider (NAON, 2013a).

Specialty. A broad, population- based focus of study by NP's encompassing common problems of that group of patients and likely comorbidities, interventions and responses to those problems; e.g. neonatal, child, women, adult, family, mental health, anesthesia and midwifery (Styles et al. 2008)

Subspecialty. A focus of practice within a specialty assuring expert knowledge of a particular area of patient problem such as cardiovascular disease or orthopedics (Styles et al. 2008)

Orthopedic Nursing: A nursing practice which facilitates the promotion of wellness and self-care, the maintenance of health, and the prevention of injury and illness in the care of individuals with disorders of the musculoskeletal system (NAON, Scope and Standards, 2013b). Based on competency and specialty training, the professional orthopedic nurse:

- may work independently or collaboratively with a multidisciplinary healthcare team (including patients and families) providing appropriate, effective, and efficient care and education

is able to assess, identify nursing diagnoses and treat patient conditions for which orthopedic patients are at risk, including, but not limited to, pain, impaired physical mobility, self-care deficits, impaired skin integrity, body image disturbance, and post-trauma response

- bases clinical judgment and decision making on the nursing process, nursing theory, and research, as well as specific orthopedic knowledge
- performs holistic assessments of individuals and/or families, with special focus on impact of musculoskeletal conditions on self-care needs, environmental management, resources, and support systems
- develops, implements and continuously evaluates a plan of care, encouraging a multidisciplinary team approach to making patient care decisions
- maintains current orthopedic knowledge and shares that knowledge with other health professionals
- participates in peer review to assure competent practice
- serves as educator, mentor, and role model for nursing colleagues, students, and others
- participates in professional nursing associations that promote educational and professional activities
- applies research and EBP in the various clinical practice settings
- participates in/conducts clinical research and shares findings through presentation and/or publication
- maintains and promotes political awareness and is proactive concerning health care issues.

Orthopedic NP. An NP who provides advanced orthopedic nursing practice requiring substantial knowledge of musculoskeletal anatomy and pathophysiology affecting the musculoskeletal system, and clinical expertise in orthopedic nursing, and at least a master's degree preparation. The ONP:

- incorporates all the above aspects of the professional orthopedic nursing role
- provides expert care to individuals diagnosed with musculoskeletal conditions
- educates and supports community groups interested in health promotion and illness/injury prevention
- may fulfill various roles including direct caregiver, consultant, educator, researcher, administrator, and/or primary health care provider

Appendix D: Propositions for PEPPA- Plus Framework

PEPPA-Plus Framework for Evaluating the Impact of APN

According to the PEPPA-Plus Model, APRN roles evolve over time and go through three stages, role introduction, implementation and sustainability. Each stage has unique separate objective evaluation criteria. The following propositions were abstracted form the model. Propositions are relationships between concepts or constructs.

Role Introduction and Implementation

1. There is a relationship between the NP role introduction and implementation and **the needs and settings of patients and health care provider teams.**
2. There is a relationship between APRN role implementation and the **appropriate matching of APRN role competencies** with the **needs of organizations, providers and patients.**
3. There is a relationship between APRN role implementation and professional, educational and health care system and professional organizational **policies concerning funding and resources Proposition**
4. There is a relationship between APRN role implementation and APRN role clarity; the understanding of APRN impact or effect on health care providers, patients and health care systems. (Style's prop. #1 research evidence)

Role sustainability

5. Implementation and utilization of APRN role related to **ongoing monitoring of trends in APN practice patterns and patient outcomes** such as deployment, retention, role activities, barriers and facilitators of role implementation.

Role Sustainability

6. APN role sustainability related to **stakeholder perceptions** of APRN role meeting needs of patients, providers, and organizations.

Source: "Framework for evaluating the impact of advanced practice nursing roles" by Bryant-Lukosius et al, 2016, *Journal of Nursing Scholarship, 48*, 201-209. Copyright 2016 by the Journal of Nursing Scholarship

Appendix E: Prepositions for Nursing

Nursing as a Social System and Connections to PEPPA-Plus Model

Relationships between structural Elements and Functional processes of Nursing Systems:

1. Education and credentialing structure related to processes of specialization Research/development AND specialized clinical practice- (PEPPA pro. #1)

2. Professional organization values are related to boundaries AND establishing roles functions and standards, generating and testing knowledge (PEPPA pro. #3)

3. Education of specialty (knowledge, skill, values and behavior norms) related to establishment of role function and standards. (PEPPA #2 & #3)

4. Relationships between structures and processes within the Nursing Subspecialty Environment and the following external influences: Economics, Socio-cultural conditions, Education, Science and technology, Political-legal processes (PEPPA #3)

5. Relationships between conditions external to Nursing: resources and funds to maintain system and or health care market for subspecialty nursing services. (PEPPA #1-#6)

6. Relationships between conditions influencing the market/ **resources** and the creation of **needs, opportunities** or **obstructions** to subspecialty nursing goals or goal achievement of the nursing role. (PEPPA #1-#6)

Source

Styles, M. M., Schumann, M. J., Bickford, C., & White, K. M. (2008). *Specialization and credentialing in nursing revisited: Understanding the issues, advancing the profession.* Silversprings, MD: American Nurses Association.

Appendix F: Semi-Structured Interview Guide/Study Protocol

Interview Protocol

The interview will include the following interview questions:

1.) Tell me what the orthopedic nurse practitioner role means to you, be as broad as you like thinking about contemporary orthopedic health care.

2.) How are Nurse Practitioners utilized in orthopedics settings?

3.) Why are nurse practitioners used in orthopedic settings?

4.) Tell me about the context of the Orthopedic Nurse practitioner role, including how orthopedic nurse practitioners are best

   a. prepared role,

   b. education and professional affiliations and

   c. how the role is evaluated.

   d. Describe your association and interaction with nurse practitioners in orthopedic settings.

Appendix G: Participant Recruitment Flyer

Participants are needed in a Research Study:

Knowledgeable Orthopedic Managers, Administrators and Chiefs Needed for Orthopedic Nurse Practitioner Work Force Study

I am seeking persons who have three or more years of experience in an orthopedic practice setting as a manager, administrator or chief with experience recruiting, hiring, supervising and or evaluating Nurse Practitioners in orthopedic practice settings. I am a Doctoral nursing student at the University of San Diego conducting a study to look at how leaders in the orthopedic work force view the role of nurse practitioners in meeting the needs of health care organizations and patients, to enhance the understanding of the nurse practitioner role in orthopedics.

Participation involves an in person or teleconference interview which takes about an hour. Participants will receive a $50 Visa card. Please contact Debra Palmer at 619-920-9174 for more information or email Debramariepalmer@gmail.com to schedule interview if interested.

Thank You,

Debra M Palmer, PhDc, DNP, ONP-BC

Appendix H: Analytic Category Development Tool & Summary of Interpretive Findings

Table 1

Analytic Category Development Tool as used in this Study

Research Question	Finding Statement(s) 1-5	Analytic Category(s) 1-3
What is your perception of ONP?	1. Highly Valued team member	1. Recognize gap between the ONP value to Orthopedics creating positions and placement of ONP in workforce
How are ONP used?	2. As ortho subspecialty practitioners 3. As team member or partner with orthopedic surgeons	3. Leveraging support for and supply of ONP
Why/why not are ONPs used?	2. To provided highly specialized ortho care and 3. Collaborator/ team member 4. Combined nursing/ medical care	2. Closing the gap between need for ONP positions and ONP placements in ortho workforce
What preparation is necessary for ONP role?	2. Advanced ortho subspecialty knowledge/skill 4. APRN education and certifications and medical/orthopedic	2. Closing the gap between need for ONP positions and ONP placements
How are ONP evaluated?	2-5 Multiple influences: ONP-C, productivity, revenue generating, patient outcomes, access metrics, subjective physician/business manager and nursing evaluations & assessment	3. Leveraging the support for and supply of ONP in workforce
Professional organizations/ influence on ONP role?	1-5 Hospital governance, CMS, NAON, ONCB, ABSNC, AANP, AANPCB, PTAP, VA	3. Leveraging support for and supply of ONP workforce