SCHOOL NURSING PRACTICE FOR THE 21st CENTURY:
ASSESSING SCOPE OF PRACTICE IN
THE CURRENT WORKFORCE

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SCHOOL NURSING PRACTICE FOR THE 21st CENTURY:
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ABSTRACT

School nurses play a vital role in the health and readiness to learn for the nation's 56 million

students. However, wide variation exists in school nursing practice across states and school

districts, impacting the school nurse's ability to practice. No national database exists from which

to examine school nursing practice and scant literature describes the school nursing workforce.

This study utilized a gap analysis to examine the scope of school nursing practice in the United

States. A 39-item self-assessment survey of scope of school nursing practice was developed

utilizing the one existing validated tool for general nursing scope of practice, and exemplars

linked to evidence based school nursing practice. Evidence links school nursing practices that

exemplify school nursing standards of practice and the National Association of School Nurses

(NASN)'s Framework for 21st Century School Nursing Practice with positive health and

education outcomes for students and school communities. The survey tool was organized around

the five principles of NASN's Framework: Standards of Practice, Quality Improvement, Care

Coordination, Community/Public Health and Leadership. Barriers to practicing to full scope

were identified through the school nursing literature and included in the survey. The survey was

reviewed by expert researchers and leaders in school nursing, and was then was sent to a national

convenience sample of practicing school nurses. The survey was completed by 3108 practicing

school nurses. Gaps were identified in four of five domains measured: Quality Improvement,

Care Coordination, Community/Public Health and Leadership. Self-identified barriers to full

scope of practice included inadequate resources, school/district's expectations, and state laws

and policies. Identified barriers accounted for significant variances in school nursing scope of practice. Certification status and years of experience had small but significant effects on school nursing scope of practice. Recommendations include strengthening the data infrastructure for evidence based school nursing practice, support for school nurses to implement their care coordination role for students with chronic illness, local advocacy to shape the regulations that impact school nursing practice, and mentoring school nurses in navigating the unique complexities of their role to provide population focused health care.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Chapter 1

Introduction

School nurses provide a crucial link between health and education for the nation's 56 million students attending elementary and secondary schools in the United States (National Center for Education Statistics, 2018). Keeping children healthy and ready to learn has been the goal of school nursing since 1902 (Johnson, 2017). Twenty-first century changes in healthcare include shifts away from hospital-based acute care to community-based prevention and care of chronic illness. School nurses are uniquely positioned in the community to address student health needs related to chronic illness management, mental health, wellness, and prevention, thereby promoting school attendance and academic achievement (Maughan et al., 2017).

On the front lines of community-based health care, school nurses have been called to be "catalysts for change" in addressing the declining health of our nation (Storfjell, Winslow & Saunders (2017, p.1). School nurses cost-effectively contribute to positive health and education outcomes for students and school communities (Bohnenkemp, Stephan & Bobo, 2015; Engelke, Swanson & Guttu, 2014; Lineberry & Ickes, 2015; Moricca et al., 2012; Wang et al., 2014). However, significant variances across states and school districts impact school nursing practice (Praeger & Zimmerman, 2009; Willgerodt, Brock & Maughan, 2018). These variances in school nurses' abilities to practice to full scope represent a potential practice gap that impacts the health, wellness and safety of children in the United States (American Academy of Pediatrics [AAP], 2016; Maughan et al., 2017; National Association of School Nurses [NASN], 2016). Nurses practicing to the full extent of their education play a key role in health reform, creating a safer, more patient-centered system of care (Cowell, 2012; Institute of Medicine [IOM], 2011).

There are an estimated 132,300 practicing school nurses in public and private schools in the United States but a gap in workforce data describing how school nurses practice, an understanding of which is crucial in determining needed resources to meet twenty-first century challenges (Willgerodt et al., 2018). At the present time, there is no national assessment of the school nursing workforce that addresses school nurses' perceptions of their ability to practice to full scope and school nurse's perceived barriers to full scope of school nursing practice.

Chapter 1 introduces the gap in knowledge about the current practice of school nursing in the United States. The background and significance of this problem are explicated. An organizational needs assessment is provided. The *Framework for 21st Century School Nursing Practice* is presented as an overarching model within which to understand the modern role of the school nurse. The Gap Analysis Model is introduced. The research question is articulated and key concepts defined.

Statement of the Problem

School nurses are uniquely positioned in communities to address the health needs of youth. Having a school nurse leads to positive health and education outcomes. Increases in student health needs and significant variances across states and school districts regarding the role of the school nurse impact the school nurse's ability to practice to the full depth and breadth of their scope of practice. This scope of practice gap affects the health, safety and academic achievement of youth in the United States. Currently, there is no national assessment of school nurse's perceptions of their ability to practice to full scope and what barriers exist to full scope of school nursing practice. An understanding of current school nursing practice across the United States is necessary to identify potential gaps in practice and develop strategies to address those gaps.

Background and Significance of the Problem

The first school nurse, Lina Rogers, is credited with a dramatic decrease in school absenteeism for children excluded from school due to communicable diseases (Struthers, 1917). Keeping students healthy and ready to learn has been the purpose of school nursing since 1902 (Johnson, 2017). The role of the 21st century school nurse has expanded and become increasingly complex and diverse, addressing both individual and population health needs in the school's community setting (Bergren, 2017b; NASN, 2016). In the last several decades, the health care needs of children in schools have increased due to multiple factors including legislative reforms, medical advances, population increases in chronic diseases, and social influences.

Legislative changes have supported the inclusion of all children in classrooms (United States Department of Education, 2018). Since the enactment of the Individuals with Disabilities Education Act (IDEA) in 1974, children with special health care needs who might have been cared for in therapeutic institutions or at home, are now in schools, entitled to receive a free and appropriate education in the least restrictive environment that addresses their unique needs (McClanahan & Weismuller, 2015; United States Department of Education, 2018).

Medical advances have enabled the survival and care of children with severe physical, cognitive, learning and behavioral disabilities to live outside of therapeutic settings and attend schools (McLanahan & Weismuller, 2015; Jarjour, 2012). The medical complexity of pediatric patients discharged to home and school has also increased, and medically fragile children, some requiring mechanical ventilation, tube feedings, catheterization and other specialty care needs are attending school (Hopkins & Hughes, 2015).

Chronic health conditions such as asthma, diabetes and severe health allergies as well as diagnoses of severe mental health issues are increasing (Miller, Coffield, Leroy & Wallin, 2016)

3

An estimated 14 million of the nation's children under the age of 18 years have a chronic health condition such as asthma, diabetes, epilepsy and anaphylaxis (National KIDS COUNT, 2016). Children with these conditions require complex case management including emergency plans, assessment of medical symptoms, appropriate and safe medication administration as well as other health interventions to remain in school and have the opportunity to learn (Engelke et al., 2014).

School nurses perform a central role in early intervention, referral and support for the more than 20% of students with mental health disorders and may spend 33% of their time addressing student mental health issues (Bohnenkemp et al., 2015; Perou et al., 2013). Relatively few children and adolescents (10.2%) receive mental health services (Data Resource Center for Child and Adolescent Health, 2016); those who do are likely to receive them at school (Substance Abuse and Mental Health Services Administration, 2017).

Poverty is a contributing factor to children's physical and mental health problems (Bassuk, Richard & Tsertsvadze, 2015; Jones et al., 2016) and a significant predictor of increased utilization of school nursing services in urban schools (Fleming, 2011). More than one in five children in the United States lives in poverty (National Center for Children in Poverty, 2018). Economic factors, along with other social determinants are identified to be 75% of the cause of health issues (Braveman & Gottlieb, 2014; Centers for Disease Control and Prevention, 2014). Disparities in health, healthcare and education persist; there are fewer and lower quality resources available to low income and minority children (Baisch, Lundeen & Murphy, 2011). School nurses play a key role in addressing the social determinants of health of their students as they may be the most accessible health care provider and often have a long-term relationship

with the child and family (Schroeder, Malone, McCabe & Lipman, 2018; Timmermans, Orrico & Smith, 2014).

In this context of increasingly complex healthcare needs of children in schools, there is wide variation in school nursing practice across states (Praeger & Zimmerman, 2009; Willgerodt et al., 2018), and evidence of decreasing numbers of school nurses over time (Centers for Disease Control and Prevention, 2017). The National School Nurse Workforce Study (NSNWS) found variances in numbers and licensure of school nurses, models of school nursing practice and scope of school nursing practice, providing a complex picture of school nursing across the United States (Willgerodt et al., 2018). Notably, 18.1% of public schools did not employ nurses, and 73.6% of public schools reported using non-healthcare trained personnel to support health services (Willgerodt et al., 2018). Strong regional differences were seen with northeastern states having high percentages (94.3%) of schools with paid nursing positions, southern states more frequently employing licensed practical nurses (LPNs) as school nurses, and western states (30.1%) and rural areas (30.3%) being less likely to employ nurses of any kind (Willgerodt et al., 2018). Practice models varied, with registered nurse (RN) only (69.5%), a mix of RN and LPN (13.6%), and LPN only (4.7%) reported (Willgerodt et al., 2108). Of note, RNs and LPNs provided equal amounts of direct care whether they worked in combination or worked alone, despite their differences in training and expertise (Willgerodt et al., 2018). This was thought to be related to the majority of RNs working alone in one or more buildings and attending to direct care needs at the expense of other aspects of their role (Willgerodt et al., 2018). Praeger and Zimmerman (2009) presented a state-by-state summary of rules and regulations regarding school nursing across the United States. Wide variances existed in all the criteria examined: authorization to provide school health services, criteria to become a school nurse, authority to

title school nurses, protection of title for school nurses, and continuing practice requirements for school nursing (Praeger & Zimmerman, 2009).

Framework for 21st Century School Nursing Practice

The *Framework for 21st Century School Nursing Practice* (*Framework*), depicted in Figure 1, provides an intentional description of the scope of practice that enables the school nurse to meet the healthcare needs of their student populations (NASN, 2016). This *Framework* provides a structure and focus for school nursing practice and emphasizes the multiple components that characterize modern school nursing practice. The *Framework* provides a visual representation that describes school nursing holistically and professionally, providing the school nurse with guidance in her practice to help students be healthy, safe and ready to learn (NASN, 2016). The student at the center reminds the school nurse that student outcomes are the central reason for the role (NASN, 2016). The Standards of Practice in the outer ring are described as foundational and provide a visual of all school nursing practice being within the standards of practice (NASN, 2016). The *Framework* informs this project as a means to organize school nursing practice and school nursing practice standards into concepts and language familiar to practicing school nurses. The *Framework* provides practice concepts that describe the scope of school nursing practice.

The *Framework* can be described as follows: in the center of the *Framework* is the student, depicting the concept of student-centered care. Surrounding the student are the students' family and school community, with whom the school nurse also works. Surrounding the student, family and school community are the principles of Leadership, Community/Public Health, Care Coordination and Quality Improvement. These principles overlap. Surrounding all these

elements is the fifth principle, Standards of Practice, considered the foundation for evidence-based clinically competent care (NASN, 2016).

Framework for 21st Century School Nursing Practice™
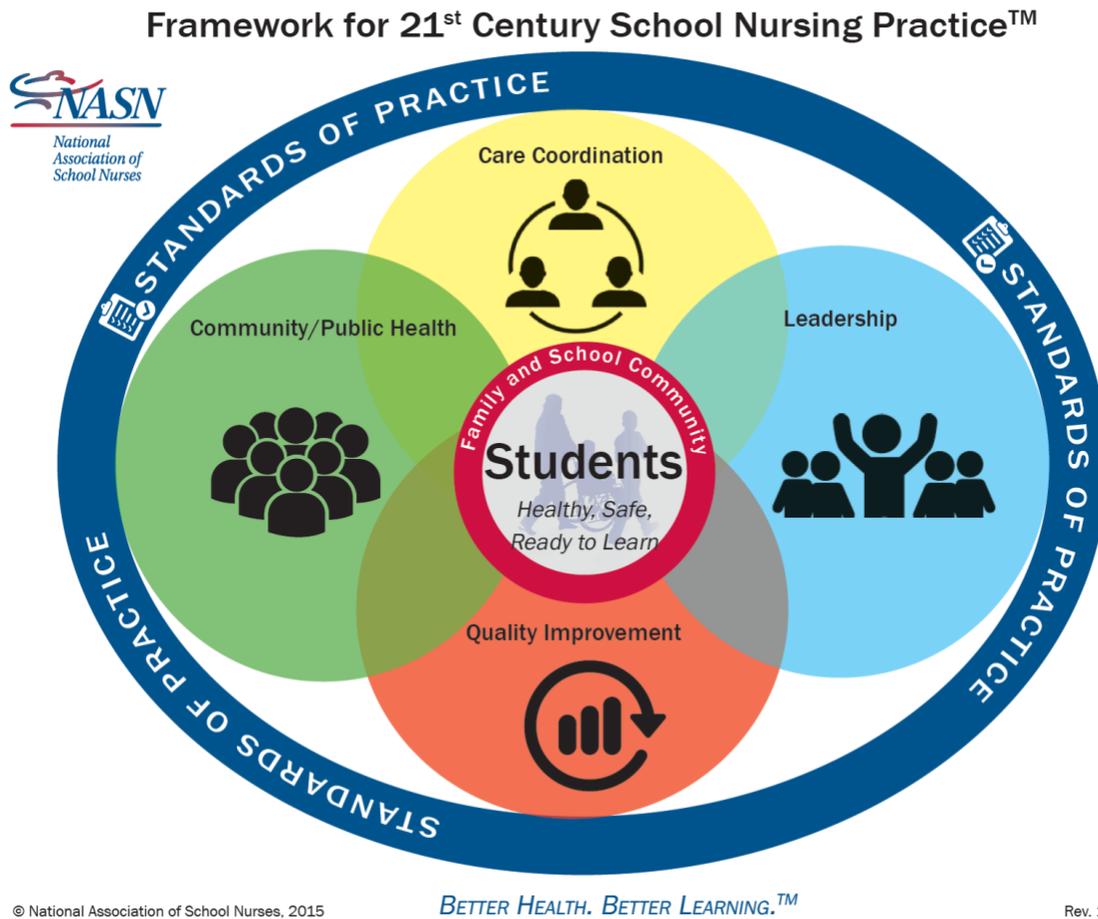
Figure 1. Framework for 21st Century School Nursing Practice. (NASN, 2016). Reprinted with permission by the National Association of School Nurses.

Leadership

The *Framework* considers leadership as a mind-set, not a formal position, which encompasses advocacy on one's own behalf or another (NASN, 2016). The school nurse

advocates for the needs of students individually and through policy development and implementation (NASN, 2016). An important aspect of leadership for the school nurse with implications for scope of practice and this study is the understanding of models of practice that consider the variance in school nurse practice across the United States. The *Framework* can provide a reference to articulate the breadth and scope of nursing practice, particularly to others without a nursing background (NASN, 2016).

Community and Public Health

The Community/Public Health principle reminds school nurses that school nursing is aligned with the core functions of public health (Bergren, 2017b; NASN, 2016). School nurses not only address health concerns of individual students but also view their school community as a population and proactively identify and outreach to students at risk (NASN, 2016). Primary prevention is exemplified in health education addressing healthy lifestyles and risk-reducing behaviors (NASN, 2016). School nurses increase immunization compliance and decrease immunization medical exemptions (Baisch et al., 2011; Lineberry & Ickes, 2015), reducing absences for communicable diseases. Secondary prevention is addressed through screenings, referrals and follow-up, detecting and treating health related issues in the early stage (NASN, 2016). Tertiary prevention is addressed with students who have diagnosed health conditions and concerns (NASN, 2016). Under this principle, the school nurse addresses the social determinants of health, striving to promote health equity by connecting students with necessary resources, including healthcare, shelter and food (NASN, 2016).

Care Coordination

Care Coordination describes the school nurse's role in case management, direct care for acute and chronic conditions, and interdisciplinary communication (NASN, 2016). The school

nurse coordinates the health care for students (McLanahan & Weismuller, 2015; NASN, 2016).

School nurses provide direct care including medication administration, implement routine

treatments, and address acute and urgent health care needs (NASN, 2016). Typically, the only

healthcare provider in the setting, the school nurse must educate others on the signs and

symptoms of an impending emergency, such as hypoglycemia in the child with diabetes or

respiratory distress in the child with asthma (NASN, 2016). The school nurse develops and

communicates a plan for how the non-healthcare provider present with the child must respond

(NASN, 2016). The school nurse communicates with parents and primary care providers to

ascertain elements of the child's health plan (NASN, 2016). Integral to care coordination are

school nurse developed student health plans, including Individualized Health Care Plans and

Emergency Care Plans (NASN, 2016). The school nurse also contributes to student education

plans such as the Individualized Education Plan (NASN, 2016).

Quality Improvement

The Quality Improvement principle focuses on the importance and power of using data

and documentation to guide practice (NASN, 2016). This principle describes the consistent and

systematic process that is integral to nursing practice and results in measurable outcomes for

students (NASN, 2016). School nurses are encouraged to use the Continuous Quality

Improvement process of *Plan, Do, Check, Act* and to contribute to the new uniform data set,

designed to collect school nursing data in a way that facilitates determination of best practices

(Maughan, Johnson, & Bergren, 2018; NASN, 2016).

Standards of Practice

The principle Standards of Practice directs and underlies every part of the *Framework*

(NASN, 2016). The standards incorporate the specialized knowledge of school nursing and

provide a means for decision making using critical thinking and evidence to enable the provision

of nursing care leading to the best possible outcomes (NASN, 2016). Within this domain, the

Standards of Practice for School Nursing and the Standards of Professional Performance for

School Nursing are described.

The Standards of Practice for School Nursing, depicted in Table 1, comprise six

statements describing competent nursing practice for the school nurse (American Nurses

Association [ANA] & NASN, 2017). The Standards of Practice for School Nursing refer to the

nursing process: Assessment, Diagnosis, Outcomes Identification, Planning, Implementation

(Coordination of Care, Health Teaching and Health Promotion) and Evaluation (ANA & NASN,

2017).

Table 1

The Standards of Practice for School Nursing

These standards describe a *competent level of school nursing practice* demonstrated by the critical thinking model known as the nursing process: its six components correspond to those standards.	
Standard	Nursing Process Component
Standard 1	**Assessment:** The school nurse collects pertinent data and information relative to the student's health or the situation.
Standard 2	**Diagnosis:** The school nurse analyzes the assessment data to determine actual or potential diagnoses, problems and issues.
Standard 3	**Outcomes Identification:** The school nurse identifies expected outcomes for a plan individualized to the student or the situation.
Standard 4	**Planning:** The school nurse develops a plan that prescribes strategies to attain expected measurable outcomes.
Standard 5	**Implementation:** The school nurse implements the identified plan.
Standard 6	**Evaluation:** The school nurse evaluates progress toward attainment of goals and outcomes.

Note: From ANA & NASN, 2017.

The Standards of Professional Performance for School Nursing, depicted in Table 2,

describe competency in the professional role of the school nurse (ANA & NASN, 2017) and are

as follows: Ethics, Culturally Congruent Practice, Communication, Collaboration, Leadership,

Education, Evidence-Based Practice and Research, Quality of Practice, Resource Utilization, Environmental Health and Program Management (ANA & NASN, 2017).

The Standards of Practice for School Nursing and the Standards of Professional Performance for School Nursing are accompanied by competency statements that are specific and measurable and serve to facilitate the practical use of the standard (ANA & NASN, 2017). In referring to Standards of Practice, the *Framework for 21st Century School Nursing Practice* (NASN, 2016) and *School Nursing: Scope and Standards of Practice* (ANA & NASN, 2017) include both the Standards of Practice for School Nursing and the Standards of Professional Performance for School Nursing.

Table 2

The Standards of Professional Performance for School Nursing

These standards describe a *competent level of behavior in the professional role* for school nurses appropriate to their education and position.

Standard 7	**Ethics:** The school nurse practices ethically.
Standard 8	**Culturally Congruent Practice:** The school nurse practices in a manner that is congruent with cultural diversity.
Standard 9	**Communication:** The school nurse communicates effectively in all areas of practice.
Standard 10	**Collaboration:** The school nurse collaborates with key stakeholders in the conduct of nursing practice.
Standard 11	**Leadership:** The school nurse leads within the professional practice setting and the profession.
Standard 12	**Education:** The school nurse seeks knowledge and competence that reflects current nursing practice and promotes futuristic thinking.
Standard 13	**Evidence-based Practice and Research:** The school nurse integrates evidence and research findings into practice.
Standard 14	**Quality of Practice:** The school nurse contributes to quality nursing practice.
Standard 15	**Professional Practice Evaluation:** The school nurse evaluates one's own and others' nursing practice.
Standard 16	**Resource Utilization:** The school nurse utilizes appropriate resources to plan, provide, and sustain evidence-based nursing services that are safe, effective, and fiscally responsible.
Standard 17	**Environmental Health:** the school nurse practices in an environmentally safe and healthy manner.
Standard 18	**Program Management:** The school nurse directs the health services program within the school and community that includes evidence-based practice and accountability measures for quality, student health and learning outcomes.

Note: From ANA & NASN, 2017.

Organizational Needs Assessment

School nurses who are members of their professional organization, NASN, were invited to participate in this assessment. Additional participation of school nurses who are not members of NASN was sought to achieve the broadest representation of school nurses in the U.S. This supplemental recruitment strategy deployed the survey to readers of the NASN weekly e-digest and through referrals from members of NASN.

NASN is a non-profit specialty nursing organization, organized in 1968 and incorporated in 1977 (NASN, 2018a). NASN represents school nurses including approximately 17,000 members and 50 affiliate school nurse organizations in all 50 states and the District of Columbia, several United States territories, overseas schools, such as Department of Defense Schools and some independent schools (Mangena & Maughan, 2015; NASN, 2018a). NASN's mission is "to optimize student health and learning by advancing the practice of school nursing" (NASN, 2018a, para. 2). School nurses work independently, often reporting to a non-nursing supervisor, and there is an absence of accreditation or recognition processes such as the Joint Commission or Magnet Recognition® that provide a means for hospital-based nurses to engage together in the application and benchmarking of professional standards. NASN serves the function of providing integration and leadership for school nurses to connect, explore, define and fully realize the scope of their profession. A recent self-audit of educational offerings on the NASN website showed many offerings in the Care Coordination principle and less in other areas, indicating a need for attention to the breadth of the *Framework* practices. In identifying school nursing's scope of practice issues and needs, this Doctor of Nursing Practice (DNP) project is congruent with the organization's purpose.

Research Questions

PICO is an acronym that describes the components of a research question and provides a means to identify key terms for the literature search. "P" addresses the population under study, "I" describes the intervention or issue of interest, "C" is the comparison group or intervention, and "O" relates to the outcome examined. (Melnyk & Fineout-Overholt, 2015). For this doctoral project, the research question in PICO format is as follows: For (P) school nurses, what is (I) current school nursing practice (C) compared to the *School Nursing Standards of Practice* as organized by the *Framework for 21st Century School Nursing* as described in the (O) analysis of the gap between current school nursing practice and the *School Nursing Standards of Practice* as organized by the *Framework for 21st Century School Nursing Practice?* The project also sought to identify barriers to full scope of school nursing practice.

Two research questions are stated:

- What is the scope of current school nursing practice compared to full scope of school nursing practice?
- What are the barriers to full scope of school nursing practice?

Model of Implementation: Gap Analysis Model

The Gap Analysis model presented by the Agency for Healthcare Research and Quality (AHRQ, 2018) is utilized to examine the current scope of school nursing practice in the United States (AHRQ, 2018; Davis-Ajami, Costa, & Kulik, 2014). A gap analysis provides a methodology for exploring gaps between current practice and a standard of practice, utilizing identified barriers to practice to elucidate the gap. The gap analysis process has five steps: 1) Identify best practice; 2) Identify best practice strategies; 3) Identify current practice and

determine the difference between best practice and current practice; 4) Determine barriers to best practice implementation; and 5) Analyze and make recommendations (AHRQ, 2018).

Definition of Terms

School Nurse

The ANA and NASN (2017) provide the following definition of the school nurse:

"Recommended to be a registered, professional nurse with at least a baccalaureate degree in nursing (bachelor of science in nursing [BSN]) from an accredited college or university, as well as state certification in those states requiring or recommending state school nurse licensure/certification. School nurses provide individual and population-based care as generalists or specialists. The role of the school nurse is unique and varied and may include clinician, advocate, counselor, educator, liaison, care coordinator, collaborator, interprofessional team member, student services case manager, researcher, administrator, leader, and others" (p.3).

School nurse for this project was operationally defined as a self-identified frontline nurse who works in a school. Nurses with all levels of education working in all kinds of school settings were included. School nurses were currently practicing in the school nurse role, and not a school nurse administrator, school nurse educator or retired school nurse. This project sought to capture the current practice of school nurses in the U.S., who may not meet the desired criteria outlined by NASN.

Scope of Practice

Scope of Practice was operationally defined through the items on the researcher-designed survey and refers to the range of activities for which nurses are educated and "the boundaries within which a fully qualified practitioner with substantial and appropriate training, knowledge, and experience may practice" (National Council of State Boards of Nursing [NCSBN], 2012, p.7).

Framework for 21st Century School Nursing Practice

The *Framework for 21st Century School Nursing Practice* was operationally defined through the items on the researcher-designed survey. The items were derived from the *Framework for 21st Century School Nursing Practice* (NASN, 2016).

School Nursing Standards of Practice

School Nursing Standards of Practice are defined for this project as the scope and standards of practice outlined in the *School Nursing: Scope and Standards of Practice, 3rd Edition* (ANA & NASN, 2017). Standards of school nursing practice are operationally defined through the items on the researcher-designed survey.

<div align="center">

Conclusion

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This chapter introduced the gap in knowledge about the current practice of school nursing in the United States. The background and significance of this problem were explicated. An organizational needs assessment for the NASN was described. *The Framework for 21st Century School Nursing Practice* was introduced as an overarching model within which to understand the phenomenon under study. The Gap Analysis Model of Implementation was described. The research questions were articulated. The key concepts of school nurse, scope of practice, *Framework for 21st Century School Nursing Practice* and *School Nursing Standards of Practice* were defined.

Chapter 2

Review of the Literature

This chapter provides an overview of the literature to answer the research questions: What is the current scope of school nursing practice in the United States? What are the barriers to full scope of school nursing practice? A review of the current literature regarding the practice of school nursing is described. The phenomenon of scope of practice is examined. The literature is explored to discover a means to measure scope of school nursing practice. Specific inquiry into the application of the *School Nursing: Scope and Standards of Practice* (ANA & NASN, 2017) and the *Framework for 21st Century School Nursing Practice* (NASN, 2016) in current school nursing practice is presented. Barriers to full scope of school nursing practice are identified. A critique and synthesis of the overall body of evidence is presented. The identified literature is critiqued. Finally, a rationale for this project is provided.

Introduction to the Search Criteria

An initial broad review of the literature was conducted to gain an overall understanding of the role of the school nurse. Three databases were utilized to search for literature that would inform this project. The Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed MEDLINE were chosen as sources for nursing and healthcare related literature. Educational Resources Information Center (ERIC) Ovid was chosen to locate literature related to the school nurses' educational practice setting. Key terms derived from the research question included *school nurse* and *scope*. *Role* was chosen to identify current practice. *Competency* was chosen to identify measurement of practice. Key terms were combined with Boolean operators: school nurse AND scope OR scope of practice OR scope and standards AND role OR competence OR competency. Inclusion criteria included school nurse practice in the U.S.,

publication dates within in the last five years (2014-2018) and publication in peer-reviewed journals. Exclusion criteria included school nurse practice outside the U.S., publication date earlier than the past five years and publication in non-peer-reviewed journal sources. The English only language filter was used in the search of all databases. Literature about school nurse practice outside of the U.S. was excluded due to differences in the educational and healthcare systems in other countries and this study's focus on the role of the school nurse in the U.S. Additional exclusions were made to literature pertaining to School Based Health Centers (SBHCs) and Advanced Practice Nurses. SBHCs are primary care health centers located in some school settings. The school nurse scope of practice of interest for this project is complementary but different than the SBHC role and the advanced practice nursing role. School nurses who work in SBHCs or who are practicing in an advanced practice role were not included in this study. Finally, bibliographies of seminal publications related to the *School Nursing: Scope and Standards of Practice* and the *Framework for 21st Century School Nursing Practice* were searched for relevant literature.

While this review of literature provided information on the current role of the school nurse and barriers to school nursing practice, the concept of scope of practice, specifically for the non-advanced practice nurse, was not well explicated. Consultation with nursing experts identified several recent publications that had not been located through the original search.

An additional search was done using the three professional databases, CINAHL, Pub Med MEDLINE and ERIC to obtain literature more widely from nursing in all areas and countries and to add the term *measurement*. Dates were extended to include the last 10 years (2008-2018) to capture related literature that might have been missed in the search with more recent dates. The search terms utilized, in combination with Boolean operators, were *nursing*

AND scope OR scope of practice AND measurement OR measurement instrument. At the completion of these methods of searching, 24 pieces of evidence were chosen for this literature review.

Critique and Synthesis of Existing Evidence

To determine the highest quality of evidence to inform this project, the Let Evidence Guide Every New Decision (LEGEND) appraisal tool was utilized (Clark, Burkett, & Stanko-Lopp, 2009). The LEGEND appraisal tool provides an algorithm to determine the type of evidence or study design and multiple tools to appraise the quality and strength of the evidence enabling a critical review of the study's quality. Categories are assigned a number one through five for 12 different study designs, and designations of *a* for a good quality study and *b* for a lesser quality study can be applied after a conducting a thoughtful review of the evidence using a series of questions specific to that study design. Quality for a single study is determined using the Agency for Healthcare Research and Quality (AHRQ) definition: "the extent to which all aspects of a study's design and conduct can be shown to protect against systematic bias, nonsystematic bias, and inferential error" (Clark et al., 2009, p. 1055). The strength of the body of evidence is determined by "three well established variables: quality, quantity, and consistency" (Clark et al., 2009, p. 1055).

The LEGEND tools focuses on evidence for patient care, not this study's focus; however, the tools provide useful guidance for determining the quality and relevance of the evidence to the study question. For a number of categories, such as systematic review, descriptive, cross sectional and longitudinal studies, and the psychometric study, the LEGEND tools could be applied with little adjustment. The adjustment considered in several of these studies is that the study is not focused on patient care, but rather, the workforce. In other instances, such as what

18

could most closely be labeled in the LEGEND algorithm as expert opinion, guidelines or case reports, elements of the LEGEND tool could not apply. For instance, the case reports provide specific and relevant evidence for this project, but measures that would be taken in a study to ensure rigor and avoidance of bias are absent, simply because these reports were not written with that purpose in mind, but as descriptions of the application of the *School Nursing: Scope and Standards of Practice* or the *Framework for 21st Century School Nursing Practice.* It is widely recognized that more rigorous methodology must be utilized in studying school nursing practice (Lineberry & Ickes, 2015).

The 24 pieces of evidence in this search were categorized using the LEGEND algorithm and each piece of evidence was individually critiqued for data relevance and methodological rigor utilizing the corresponding LEGEND Evidence Appraisal of Single Study. Only high quality and/or relevant evidence was retained for review. After all studies were categorized and critiqued, the body of evidence was assessed utilizing the LEGEND Grading the Body of Evidence tool. The body of evidence received the grade *moderate* for the presence of a single well-done study (psychometric) and multiple relevant pieces of evidence that contribute to this study's purpose.

Scope of Practice: History and Policy

The first recommendation of the Institute of Medicine Report *The Future of Nursing: Leading Change, Advancing Health* (2011) is that nurses practice to the full extent of their education and training. This call to action focused on the scope of advanced practice nursing, but had implications for all nurses, who were called to be agents of transformation despite the historical, regulatory and policy barriers that limit practice (IOM, 2011). However, the *Future of Nursing* report (IOM, 2011) ignited a focus on advancing the scope of practice for advanced

practice nurses in the policy and regulatory venues that govern practice, and comparatively little attention was paid to scope of practice for nurses in non-advanced practice roles in the years immediately following the report's release (Benton, Cusak, Jabbour & Penney, 2017; Josiah Macy Jr. Foundation, 2016; Sheetz, 2012).

More recently, with significant progress made on *The Future of Nursing* (IOM, 2011) scope of practice recommendations for advanced practice nurses, there is a heightened national discussion among healthcare experts and policy makers concerning advancing the scope of practice of nurses at all levels to address the healthcare needs of the nation, particularly as the focus of healthcare shifts to community settings that emphasize prevention and care of chronic illness (Baker & Williams, 2016; National Academies of Science, Engineering and Medicine, 2015; Josiah Macy Jr Foundation, 2016). Specific reference to school nurses in this literature considers the school nurse's unique role and position in the community in addressing the health needs of youth, as well as the need for a critical investment of health and education funding to improve the health of the nation's youth through daily full-time access to a school nurse for all students (AAP, 2016; Maughan et al., 2017; Storfjell et al., 2017).

This renewed national focus on advancing the scope of practice for all nurses, and the heightened focus on the role of the school nurse in meeting health needs of the nation's youth point to the need for enhanced role definition for school nurses and the identification of barriers to school nursing practice, the two aims of this DNP project. In subsequent sections of this chapter, the concept of scope of practice will be explored, literature regarding the measurement of scope of practice will be described, and the application of the *Standards of School Nursing Practice* and the *Framework for 21st Century School Nursing Practice* to a measurement of

scope of school nursing practice will be discussed. An exploration of barriers to full scope of school nursing practice will be explicated.

Nursing Scope of Practice: Regulation and Professional Definitions

The National Council of State Boards of Nursing (NCSBN) defines scope of practice as the "definition of the rules, the regulations and the boundaries within which a fully qualified practitioner with substantial and appropriate training, knowledge, and experience may practice" (NCSBN, 2012, p. 7). The NCSBN is concerned with the regulation of the practice of nursing and has as its charge the protection of the public through the creation and revision of laws that regulate the practice of nursing (NCSBN, 2012). Each state has its unique Nurse Practice Act that details the provision of nursing practice in that state, with recognition that nursing requires autonomous decision-making, a specialized area of knowledge and specific competencies (NCSBN, 2012). School nurses additionally work within the education system, adding a layer of complexity to the regulatory environment. States determine whether it is the state or the local school district that has the authority to title school nurses, that is, who may call themselves a school nurse, as well as determine the qualifications of school nurses, such as licensure or certification (Praeger & Zimmerman, 2009). Important to school nursing are regulations concerning delegation: whether the school nurse can delegate or not, to whom, and what duties and functions may specifically be delegated (Bobo, 2014). The state or school district may mandate school nursing, and the numbers of school nurses required (Willgerodt et al., 2018). School administrators, who often lack knowledge about healthcare service delivery, may make school nurse staffing decisions, impacting the school nurse's ability to practice to their full scope (Jameson, Keehner, Anderson, Endsley & Maughan, 2017).

NCSBN advocates that regulators keep alert to evolving needs, continually re-examining and updating regulations that enable nurses to respond effectively to changing population health care needs (Buerhaus, Skinner, Auerbach & Staiger, 2017). Nurses must be knowledgeable regarding their current state Nurse Practice Act and work within the boundaries of regulation while confronting new situations for which there may be no precedent (Ballard et al., 2016). Further, they must be aware of the process for advocating for regulatory change when necessary. In cases where school districts regulate school nursing, the school nurse must be engaged locally to participate in decisions that affect their practice (Willgerodt et al., 2018).

The ANA (2015) defines factors that impact scope of nursing practice in the model depicted in Figure 2. At the foundation of practice are the Standards of Practice, the Code of Ethics and specialty certification, providing the broadest definition of the scope of nursing practice (ANA, 2015). Narrowing practice from this foundation are the state Nurse Practice Act and the rules and regulations regarding scope enacted in the states, which may include state education regulations (ANA, 2015). Further narrowing practice are the institutional policies and procedures, which may also exhibit wide variation within a region or town (ANA, 2015). For the school nurse, this level includes school district policies as well as the policies and procedures within the school. At the peak of the model is the concept of self-determination, or self-regulation, which represents the judgment of the practicing nurse (ANA, 2015). This pinnacle also illustrates the concept of the higher level of individual professional practice regulation (ANA, 2015). This model of professional practice regulation has particular salience for the school nurse, who contends with several layers of regulation, and for whom self-determination constitutes a large part of independent practice.

Figure 2. Based on the ANA Model of Professional Nursing Practice Regulation. From Styles, Schumann, Bickford, & White, 2008, in ANA (2015).

School Nursing: Scope of Practice

The ANA and NASN (2017) outline the scope of school nursing practice through the

School Nursing: Scope and Standards of Practice. In this document, the *Framework for 21st*

Century School Nursing Practice (NASN, 2016) is described as characterizing the scope of

school nursing practice through its overlapping, synergistic principles. Further describing the

scope of school nursing practice in the *School Nursing: Scope and Standards of Practice* are the

"who, what, where, when, why and how" of the role (ANA & NASN, 2017, p. 3). The "who" is

recommended to be baccalaureate prepared, and certified, if the state of their practice requires or

recommends certification (ANA & NASN, 2017). School nursing's "what" is a designated

specialty practice that usually occurs in a school setting, but may extend beyond the physical

building into the community (ANA & NASN, 2017). The "when" of school nursing occurs

whenever there is a need to provide the specialized nursing that advances the health, academic achievement and lifelong success of the student population (ANA & NASN, 2017). The "why" or purpose of school nursing is to support the health, wellbeing and academic success of the students (ANA & NASN, 2017). Finally, the "how" of school nursing is that it is conducted with an ethical and holistic approach that integrates all core aspects of nursing practice into the comprehensive care of students (ANA & NASN, 2017). The ANA and NASN (2017) acknowledge that the full depth and breadth of school nursing practice are impacted by several factors: the school nurse's educational preparation, licensure and experience, and factors in the work environment such as role definition, workload and work environment, and the population served. This explication of professional school nursing practice provides the foundation for the scope of school nursing practice.

Actual Versus Full Scope of Practice

The extent to which regulations inhibit the practice of RNs is not well-documented (Williams et al., 2016). Organizational barriers and complexities in the work environment are thought to contribute to actual scope of practice (Ganz, Torren & Fadlon, 2016). Dery, D'Amour, Blais and Clarke (2015) explicate the concept of enacted scope of practice, reflecting the actual practices carried out by nurses and not the full range of activities for which nurses are educated, which is referred to as optimal or full scope of practice. Optimal or full scope of practice is associated with the characteristics of individual nurses such as the nurse's education level, job title and experience, and enacted scope is influenced by organizational policies and context (Dery et al., 2015). Full scope of practice is associated with greater job satisfaction through expression of autonomy and the ability to put knowledge and skills to work in the service of patient care (Dery et al, 2015). Enacted scope of practice may interfere with quality

and safety of care and contribute to negative patient outcomes as it often revolves around tasks and activities that do not improve patient care (Dery et al., 2015).

The literature outlined in this section provides a description of the phenomenon of scope of practice as it applies to generalist nursing and school nursing practice. A complex array of factors may impact the ability of the nurse to practice to full scope. The literature supports a distinction between optimal or full scope of practice and enacted or actual practice. The profession defines optimal/full scope of practice. The enacted/actual scope of practice is what occurs contingent on a complex interaction of many factors. This view of scope of practice fits with this project's aims to discover current or actual practice compared to full scope of practice for school nurses. The project sought to understand school nurse's perceptions of their scope of practice and identify factors associated with full vs. actual scope of school nursing practice.

Measuring the Scope of Nursing Practice

The search of several professional databases (PubMed, CINAHAL, and ERIC), yielded only one published tool to measure scope of nursing practice, the Actual Scope of Nursing Practice (ASCOP) Questionnaire (D'Amour et al., 2012). This measurement tool was developed in Canada to assess the scope of practice of registered nurses (D'Amour et al., 2012). The psychometric properties of the tool were analyzed utilizing a sample of nurses working in inpatient medical settings (D'Amour et al., 2012).

The ASCOP is a 26 item, six-dimension questionnaire developed through literature review, validation by experts, and analysis of a survey of nurses to ascertain validity and reliability (D'Amour et al., 2012). The instrument was developed in French, translated into English for expert review, and back-translated to French (D'Amour et al., 2012). The study received multi-institutional ethics committee approval (D'Amour et al., 2012). The ASCOP

questionnaire utilizes a 6-point Likert-type scale with 1 = *never* to 6 = *always* (D'Amour et al., 2012). The six dimensions are: assessment and care planning, teaching of patients and families, communication and care coordination, integration and supervision of staff, quality of care and patient safety, and knowledge updating and utilization (D'Amour et al., 2012). The questionnaire also considers a 3-level complexity of practice: level 1 is low complexity, level 2 is moderate complexity and level 3 is high complexity (D'Amour et al., 2012).

The ASCOP questionnaire was returned by 285 of the 509 nurses approached, a response rate of 56% (D'Amour et al., 2012). Internal consistency was determined to be acceptable with the alpha coefficient for the 26 items together at .89 and individual dimension values ranging from .61 to .70 (D'Amour et al., 2012). Overall, RN ratings of the frequency of performing the practice activities averaged 3.5 on a 6-point scale (D'Amour et al , 2012). The authors interpreted this finding as that "fewer than half of nurses believe that they are working to their full scope of practice" (D'Amour et al., 2012, p. 253). Low complexity activities were implemented more frequently than high complexity activities (D'Amour et al., 2012). Nurse clinicians demonstrated higher overall scores than staff nurses (D'Amour et al., 2012). Possible limitations of this validation study for application to this project are the medical-surgical nursing population and the implementation outside the U.S. The authors recommended further testing of the instrument in other settings with other types of nursing (D'Amour et al., 2012). The authors noted that the translation between English and French might warrant further examination of the vocabulary to determine the appropriateness of the vocabulary to the setting (D'Amour et al., 2012).

Dery, Clarke, D'Amour and Blais (2018) utilized the ASCOP Questionnaire to measure actual scope of practice in in pediatric nurses in a tertiary care academic hospital setting and

found a relatively low level of enacted scope of practice. Decision latitude and BSN preparation were associated with higher levels of enacted scope of practice; role ambiguity was associated with low levels of enacted scope of practice and contrary to expectations, a positive association with role overload and enacted scope of practice was found (Dery et al., 2018). This was thought to be due to BSN prepared nurses delegating tasks when overloaded with nursing duties (Dery et al., 2018). Dery, Clarke, D'Amour and Blais (2016) found higher levels of enacted scope of practice when BSN prepared nurses held job titles and role descriptions that reflected the higher level of nursing competencies.

The ASCOP measurement tool aligns with the purpose of this study. The domains of the ASCOP are similar to the principles of school nursing practice outlined in the *Framework*. Table 3 illustrates the commonalities of the ASCOP domains and *Framework* principles based on the specific items of the ASCOP questionnaire. While commonalities exist, there are areas that are sufficiently different, such as the Community/Public Health, and Leadership principles, to warrant an adaptation of the ASCOP to school nursing practice, rather than using the ASCOP without changes. Two studies utilizing the ASCOP to measure actual scope of practice (Dery et al., 2016; Dery et al., 2018) also measured associations with impacts on actual practice, providing evidence for the measurement of associations between barriers to school nursing practice and actual scope of practice of school nurses in this project.

Table 3

Comparison of ASCOP Domains and Framework Principles

Actual Scope of Practice Questionnaire (ASCOP)	Framework for 21st Century School Nursing Practice
Assessment and Care Planning	All Domains
Teaching of Patients and Families	Community/Public Health
Communication and Care Coordination	Care Coordination
Integration and Supervision of Staff	Leadership
Quality of Care and Patient Safety	Quality Improvement
Knowledge Updating and Utilization	Standards of Practice

Note: ASCOP domains from D'Amour et al., (2012). Framework principles from NASN, (2016)

School Nursing Practice Measures

To ascertain appropriate school nursing measures, literature was reviewed for the utilization of the *School Nursing: Scope and Standards of Practice* (ANA & NASN, 2017) and the *Framework for 21st Century School Nursing Practice* (NASN, 2016) for measurement of school nursing practice.

School Nursing: Scope and Standards of Practice. The *School Nursing: Scope and Standards of Practice* are utilized to define, guide and measure school nursing practice. School nurses were among the first nurses to establish practice standards (Finnell, Thomas, Nehring, McLoughlin & Bickford, 2015). Establishing and maintaining specialty standards involves a rigorous process of writing by recognized expert nurses in the specialty and opportunities for revision following review by the ANA Committee on Nursing Practice Standards (Finnell et al., 2015). Specialty standards build upon the foundational documents of nursing practice and

consider the evolving changes occurring in nursing practice and the healthcare environment, and the unique and diverse contributions of the specialty (Finnell et al., 2015). ANA and NASN (2017) have recently published the 3rd Edition of the *School Nursing: Scope and Standards of Practice.* School nurses have used the *School Nursing: Scope and Standards of Practice* to describe their practice, orient new school nurses to the role of school nursing, and develop self-assessment tools for performance appraisal and guide research and practice. The *School Nursing: Scope and Standards of Practice* is comprised of 20 statements that guide the practice of school nursing, and when met, "provide evidence of a standard of care" (ANA & NASN, 2017, p. xi). An exemplar of the use of the *School Nursing: Scope and Standards of Practice* is found in the Delaware School Nurse Comprehensive Induction Program (Finnell et al., 2015). In this Delaware program, each new school nurse is given a copy of the *School Nursing: Scope and Standards of Practice* to use in a self-assessment, and then to plan his/her mentoring experience (Finnell et al., 2015). The Connecticut State Department of Education (2014) has developed a comprehensive program of performance self-assessment based on the *School Nursing: Scope and Standards of Practice* (Resha, 2009).

Newell (2013) examined 111 school nurses in Washington State utilizing the *School Nursing: Scope and Standards of Practice* in a self-assessment of practice. The study's purpose was to examine school nurses' perceptions of the adequacy of their BSN preparation for school nursing practice (Newell, 2013). A researcher-designed survey utilized a 6-point Likert scale, addressed each standard from the *School Nursing: Scope and Standards of Practice* and included competency statements that allowed the respondents to self-assess their attainment of the standard (Newell, 2013). Pilot data were obtained to contribute to reliability of the study (Newell, 2013). The relatively small sample (111 of 418 surveyed) was attributed to timing of

the survey during the summer and a national meeting of NASN (Newell, 2013). The author

reported limitations of the study to include concerns of internal validity related to the researcher

constructed instrument, though content validity was sought through expert consultation (Newell,

2013). Self-reported data is at risk for generating socially acceptable responses (Polit & Beck,

2017) and was mitigated in this study by asking the respondents to reflect on their practice at an

earlier time and make a connection with their BSN preparation; two factors that allowed the

school nurses to take steps back from a current assessment of their practice and perhaps provide

a more accurate assessment of their practice. This was a useful consideration for this project,

which also used self-assessment. The author noted that although the data collection was confined

to one state, the sample represented the specialty practice of school nursing and therefore could

inform a larger, national study (Newell, 2013).

Several authors (Haffke, Damm & Cross, 2014; McDaniel, Overman, Guttu & Engelke,

2012; Southall et al., 2017) describe the development of performance appraisal tools for school

nurses utilizing the *School Nursing: Scope and Standards of Practice*. The inclusion of literature

related to appraisal tools for school nurses was important as it provided evidence of the *School

Nursing: Scope and Standards of Practice* as a foundational professional document that

describes a standard of school nurse practice and can be used in a self-assessment performance

rating tool. Southall et al., (2017) described the development of a concise school nurse

evaluation tool by adapting a teacher evaluation format, familiar to the evaluating school

administrator, using the *School Nursing: Scope and Standards of Practice*. The tool consolidates

and groups the Standards into five: assessment, diagnosis and outcomes identification, planning,

implementation, evaluation and professionalism, and utilizes a narrative component for self-

evaluation (Southall et al., 2017). There are four categories in the rating scale: exemplary,

proficient, developing and unacceptable (Southall et al., 2017). The evaluation process includes

the school nurse, a peer or supervisory school nurse and the school administrator, who is a non-

nurse (Southall et al., 2017). McDaniel et al., (2012) combined the *School Nursing: Scope and*

Standards of Practice with elements from the school district job description and the state's Nurse

Practice Act in a performance appraisal, underscoring the interplay between scope of practice

and local regulation. Each of the Standards is listed, with selected competencies, and suggested

sample evidence of work that the school nurse compiles throughout the year (McDaniel et al.,

2012). McDaniel et al., (2012) include eight pages of the evaluation tool in the publication,

providing rich exemplars of the Standards. McDaniel et al., (2012) note that the Standards

provide a firm foundation for school nursing practice and are an effective means to measure

competent practice. Haffke et al., (2014) explicate a thorough description of their process of

performance appraisal tool development, creating a performance appraisal tool that combines

elements of peer and self-assessment related to the *School Nursing: Scope and Standards of*

Practice and fits with local school district efforts to improve students' outcomes. The school

nurse self-assesses in narrative format and gives a rating on a four-point scale of accomplished,

skilled, developing or ineffective for each standard (Haffke et al., 2014). A final summative

rating is a compilation of self-assessment, peer and administrator ratings (Haffke et al., 2014).

The performance evaluation tools described are based on the *School Nursing Scope and*

Standards of Practice, utilize a four-point rating scale, provide opportunity for narrative and

incorporate school nursing self and peer evaluation along with school administrator evaluation

into a professional evaluation process. Notably, both Haffke et al., (2014) and McDaniel et al.,

(2012) are cited in the 2017 3rd Edition *School Nursing: Scope and Standards of Practice* as

providing exemplars of the application of the standards into school nursing practice in performance appraisal development.

Engelke et al., (2014) describe the use of the *School Nursing: Scope and Standards of Practice* in the development of case management protocols for children with a range of chronic illnesses. These protocols were developed to guide the nursing role in a state-wide project that examined the process and impact of school nursing case management for students with chronic illness on the health and academic success of students (Engelke et al., 2014). These authors found positive health and education outcomes related to school nurse case management of asthma (Engelke et al., 2014). For the purposes of this DNP project, this piece of evidence supports the practical application of the *School Nursing: Scope and Standards of Practice* in defining school nurse practice as well as illustrates the effects of school nursing guided by the *School Nursing: Scope and Standards of Practice* on positive health and education outcomes for students.

This review of the literature provides information about the application of the *School Nursing: Scope and Standards of Practice* in self and peer assessment. Newell's (2013) application of the *School Nursing: Scope and Standards of Practice* in the study of nurse's perceptions of their practice in Washington state is an important piece of primary literature that informs this DNP project. In this study, the construction, validity and reliability of the survey based on the *School Nursing: Scope and Standards of Practice* are thoroughly explicated, providing useful guidance in similar tool construction for a similar purpose in this DNP project. The descriptions of performance appraisal tools (Haffke et al., 2014; McDaniel et al., 2012; Southall et al., 2017) were used as models to formulate items and the scale for this DNP study's survey. Furthermore, these pieces of evidence indicate that qualitative information regarding

school nurse practice and information regarding state and local statutes would serve to enhance the data collection for this project.

   Framework for 21st Century School Nursing Practice. Changes in healthcare and in student health needs during the 21st century have impacted the role of the school nurse. These changes include the number and complexity of student healthcare needs, the impacts of health care reform, advances in technology and the increasing understanding of the role of social determinants in health. As school nursing has evolved to address these changes, the need for an updated practice model arose. The *Framework for 21st Century School Nursing Practice* (*Framework*) was developed over the course of several years involving a robust process of literature review, consultation with experts in conceptual framework development, and gathering input from school nursing experts and practicing school nurses (NASN, 2016). After all input was obtained, the NASN Board of Directors approved a final version of the *Framework* in 2015 and published it in *NASN School Nurse* in January, 2016.

   The *Framework* places the student at the center of the model, underscoring that student health and education outcomes are the goal of school nursing practice (NASN, 2016). Best, Oppewal and Travers (2017) utilized the *Framework* as a lens to conduct an integrative review of school nurse interventions and health and education outcomes. The integrative review described studies of school nurse interventions and activities, student health and education outcomes, and linkages between school nurse interventions and positive student outcomes (Best et al., 2017). Studies were classified according to *Framework* principles (Best et al., 2017). All studies included in the review exemplified the *Framework* principles, demonstrating that the *Framework* describes the current role of the school nurse (Best et al., 2017). Further, the

integrative review provides evidence that the current role of the school nurse as described by the *Framework* is associated with positive health and education outcomes for students.

Since its publication, several authors described the use of the *Framework* to guide practice development. Utilizing the *Framework* to construct a sample working template, Maughan, Duff and Wright (2016) demonstrated how the goal of consistently applying standards for evidence-based practice in the school nurse's daily work can be achieved through attention to the principles of Care Coordination, Leadership, Quality Improvement and Community/Public Health. By framing the school nurse's daily activities according to the principles, the school nurse can identify gaps in practice and ensure that activities are student centered (Maughan et al., 2016). Cogan, Conway and Atkins (2017) described a process of employment of the *Framework* to address curricular redesign in a New Jersey School Nurse Certificate Program. A gap in the preparation of nurses seeking a certificate in school nursing was identified; most school nurses had not received education in the social determinants of health to enable a population focused practice, a key principle of the *Framework* (Cogan et al., 2016). The authors utilized the *Framework* to guide the development of four courses and an academic/community partnership to address this gap (Cogan et al., 2017). Allen-Johnson (2017) described the use of the *Framework* as a roadmap for the design of a professional development program for school nurses. The author described a thorough individualized assessment of an existing professional development program and the identification of gaps that will be addressed in future professional development activities (Allen-Johnson, 2017). Gaps in the Community/Public Health and Quality Improvement principles were identified, with areas for growth in all *Framework* domains (Allen-Johnson, 2017).

This literature on the application of the *Framework* indicates that the *Framework* describes and organizes school nursing practice in a user-friendly manner for school nurses that lends itself to the identification of practice gaps and a conceptualization of how to address those gaps.

Development of a Scope of Practice Measure Specific to School Nursing Practice

This literature review of measures of scope of nursing practice and measures specific to school nursing practice supported the use of the ASCOP Questionnaire (D'Amour et al., 2012) as a guide to inform the development of a new survey regarding scope of school nursing practice. The new survey contains items that exemplify school nursing practice standards (the *School Nursing: Scope and Standards of Practice*) in the familiar language of the professional practice model (the *Framework for 21st Century School Nursing Practice*). Literature on use of the ASCOP Questionnaire (D'Amour et al., 2012) indicates that it may be used in conjunction with other measures to enable an understanding of the interaction between practice and other factors (Dery et al, 2018; Dery et al., 2016).

Barriers to Full Scope of Nursing Practice

The third step of the gap analysis implementation framework is to identify barriers to the practice standard (AHRQ, 2018). Identifying barriers to best practice leads to an understanding of the factors that contribute to the gap and provides avenues for addressing the gap (Davis-Ajami et al., 2014). Therefore, the second research question is: What are the barriers to full scope of school nursing practice? This literature review provided information about barriers to school nursing practice that fell broadly into four categories: regulations that affect school nursing practice on the state, school district, or school level; other's expectations of the school nurse's

role; the disconnect of the school nurse from the health care system; and the workload of the school nurse.

School nurses work in what has been termed a "hidden healthcare system" providing significant health care services outside the traditional healthcare system (Lear, 2007, p. 409). Wide variances in regulations and policies that govern the practice of school nursing exist across states and school districts (Praeger & Zimmerman, 2009). These regulations and policies determine the educational preparation, licensure, certification, and titling of school nurses, whether the school nurse can delegate, and to whom, how many students the school nurse oversees and within how many buildings the school nurse practices (Praeger & Zimmerman, 2009; Willgerodt et al., 2018).

Oftentimes, the school nurse works alone and reports to a school administrator who lacks a background in healthcare services. Job descriptions and performance evaluation tools may be written without an understanding of the role of the nurse causing a mismatch between the expectations of others and the judgment of the school nurse (Haffke et al., 2014; McDaniel et al., 2012; Southall et al., 2017).

Despite healthcare trends toward community-based care, and the school nurse's base in the community school, school nurses are not consistently linked with other healthcare providers, resulting in a lack of coordination of care, and subsequent gaps in the provision of quality care (Fleming & Willgerodt, 2017; Nadeau & Toronto, 2016). Privacy laws such as the Health Insurance Portability and Accountability Act (HIPAA) and the Family Educational Rights and Privacy Act (FERPA) and separate health information systems may inadvertently hinder the necessary transfer of patient/student information between hospital, home, school and primary care to establish safety and effective preventative and emergency treatment for students with

chronic health conditions such as asthma (Berwick & Gaines, 2018; Fleming & Willgerodt, 2017).

School nurse workload describes many factors that influence the ability of the school nurse to address student health, safety and readiness to learn (NASN, 2015). These include the health needs of the student population and the unique characteristics of the school and school community (Jameson et al., 2017). Current school nurse staffing formulas are not evidence based; workload measurement should be consistent with full scope of school nursing practice as described in the *Framework* (Jameson et al., 2017).

Rationale for the Project

The literature review and critical appraisal of the evidence related to school nursing practice highlights a gap in knowledge concerning current scope of school nurse practice and an approach to describe and analyze the gap. To elucidate this gap, a method of measurement of the scope of school nursing practice needed to be developed. The importance of the role of the school nurse in addressing the health needs of youth, significant variations in school nurse practice, and the gap in knowledge regarding the scope of practice of school nurses give reason for this project. A greater understanding of school nurse's perceptions of their scope of school nursing practice is imperative to inform recommendations to strengthen school nursing practice and ultimately contribute to better health for youth in schools.

Conclusion

This chapter examined the overall body of literature pertaining to the scope of school nursing practice in the U.S. The search strategy was presented. The LEGEND appraisal system was introduced. Critical appraisal of the literature was explicated. A synthesis of the literature was provided. The use of the *School Nursing: Scope and Standards of Practice* and the

Framework for 21ˢᵗ Century School Nursing Practice were validated as a means for school nurse self-assessment of their practice. The research questions: What is the current scope of school nursing practice in the U.S.? What are the barriers to full scope of school nursing practice? are currently unanswered in the literature. Based upon the synthesis and critique of this literature and the potential practice gap affecting the health and wellbeing of school children in the U.S., rationale to examine school nursing practice utilizing the *School Nursing: Scope and Standards of Practice* as organized by the *Framework for 21ˢᵗ Century School Nursing Practice* was provided.

Chapter 3

Methods

This chapter describes the implementation of the project. A quantitative instrument to measure scope of school nursing practice was developed and sent to school nurses nationwide through the school nurse's professional organization, NASN. The design of the project is described in the context of the implementation framework, a gap analysis. Project resources are presented. Considerations regarding the Human Subject Review are discussed. The population used for the project is described. The procedures and timeline are presented. A detailed description of the instrument is explicated. The data collection plan and data analysis plan are described.

Implementation Framework and Study Design

This project utilized a gap analysis framework to assess the current scope of school nursing practice in the United States and barriers to full scope of school nursing practice (AHRQ, 2018; Davis-Ajami et al., 2014). A gap analysis provides a methodology for examining gaps between current practice and a best practice and utilizes identified barriers to practice to enable an understanding of the gap. A gap analysis requires the identification of a practice standard, a study of current practice, identification of barriers to practice, an analysis of the gap between the practice standard and current practice in light of barriers, and recommendations to address identified gaps in practice (AHRQ, 2018). For this project, the practice standard utilized is the *Standards of School Nursing Practice* as organized by the *Framework for 21ˢᵗ Century Nursing*. Information regarding current school nursing practice and barriers to meeting the practice standard were obtained through a researcher-designed survey. Data gathered through the survey provided information about the gap between current practice and the standard of practice, and the

barriers to full scope of practice perceived by the school nurse respondents. By applying the gap analysis framework, thoughtful consideration of these factors informed recommendations to address gaps in the current scope of school nursing practice.

This study used a descriptive survey research design with a purposive sample. Descriptive survey research is conducted to describe, observe or document a phenomenon (Melnyk & Fineout-Overholt, 2015). In this case, it was used to describe the scope of current school nursing practice. Purposive sampling describes the choice of a sample based on the researcher's judgment that the survey respondents are knowledgeable about the phenomenon under study (Polit & Beck, 2017). In this study, school nurses were purposely chosen to provide perceptions of their own school nursing practice, integral to the second step of the gap analysis.

Project Sponsor and Resources

The National Association of School Nurses (NASN) allowed access to their e-newsletter subscription list to deploy the survey. Georgetown University provided access to a Qualtrics© account. NASN uses the Qualtrics© platform for survey deployment, and thus, it was familiar to the organization and all potential participants. The researcher had access to an expert item developer as a resource to assist with survey development and testing. A statistician was employed to assist with data analysis. The project received funding from Tau Chapter, Sigma Theta Tau International for the raffle of gift cards to encourage participation.

Human Subject Review

The study was conducted in accordance with the Georgetown University Institutional Review Board (IRB) protocol for research on human subjects. This doctoral project was determined to have exempt status due to the minimal level of risk to the research participants. The category of exempt status specifically applies to research involving adult participants and

survey procedures where the following conditions are met: information must be recorded in such

a way that participants cannot be identified, and disclosure of the participant's responses outside

the research would not reasonably be damaging to the participant's financial standing

employability or reputation, or put the participant at risk of criminal or civil liability (United

States Department of Health and Human Services, 2016).

Consent Process and Participation

All participants in the study were presented with an informed consent document. The

study received a waiver of documentation of consent, indicating that the investigator and/or

participants did not need to provide a signature or other documentation for consent. The study

participants indicated their consent to participate by beginning the survey. Participation in this

study was voluntary. If school nurses who received the survey invitation chose not to participate,

they simply did not click the web link and did not enter the electronic survey. The study design

was cross-sectional and study participants were required to answer each question before

proceeding to the next; thus, partial participation could not occur.

Electronic Survey Platform

Survey data were collected through Qualtrics[©] and were only accessible to the researcher,

project mentor and project statistician. Qualtrics[©] provides a secure server with high-end firewall

protection, redundant hardware and complete back-ups performed nightly (Qualtrics[©], 2018).

Transport Layer Security (TLS) encryption (known as https) is utilized for the transport of data

(Qualtrics[©], 2018). Survey responses were made fully anonymous using the Qualtrics[©] feature

"Anonymize Response" to disable internet provider (IP) address tracking. Therefore, no response

could be linked to any participant. Data downloaded from Qualtrics[©] are stored on a password

protected hard drive in a locked office and will be maintained for three years following the study.

Population: Sample and Setting

The population of interest for this study is all school nurses currently practicing in the United States (including the 50 states and the District of Columbia, several United States territories and overseas schools, such as Department of Defense Schools and some independent schools). The sample was drawn from school nurses who were members of NASN at the time of the survey. Additionally, the survey was also deployed to school nurses who were not members of NASN but who received the NASN weekly e-digest. This weekly e-digest is available to school nurses, school nursing leaders and others interested in school health. NASN members and state affiliate leaders were also encouraged to invite participation of school nurses who were not NASN members. Thus, the study used a convenience sample of school nurses. Convenience sampling is a form of nonprobability sampling that uses the most conveniently available participants (Polit & Beck, 2017). It is acknowledged that the use of convenience sampling may not have yielded a representative sample of the population of school nurses in the United States. However, because there is no national compilation of school nurse names or school nurse positions from which to draw a sample, convenience sampling was determined to be the most reasonable method.

Inclusion criteria for participation included self-identification as a currently practicing frontline school nurse. Participants needed to be able to read and speak English and have access to a computer or mobile device with stable internet connectivity. Exclusion criteria for participation included nurses who were not currently practicing frontline school nurses, such as those who work in school-based health centers or are school nurse administrators, researchers or educators, currently retired, or those whose practice was outside the United States. Advanced

practice nurses working in advanced practice nursing roles (such as Nurse Practitioners) were not included, as their scope of practice is different from the frontline school nurse.

The membership of NASN was over 17,000 at the time of the survey and the number of practicing frontline school nurses in the membership was unknown. Based on prior surveys deployed by NASN, the anticipated response was 5000. The setting for the project was online. The survey was sent electronically and could therefore be completed in any venue and at the participant's convenience. To facilitate completion of the survey, a hard copy was provided in the email invitations. School nurses could access the entire survey in hard copy and prepare their responses in that format before entering responses directly into the electronic survey if that was an easier or more convenient process for them.

<div align="center">

Phase I: Survey Development

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Background for Survey Creation

A researcher designed survey instrument entitled *Scope of School Nursing Practice Survey*[TM] (SSNP) was developed to ascertain school nurse perceptions of their current practice. The survey was informed, and used with permission, by the *Actual Scope of Practice Questionnaire* (D'Amour et al., 2012). The survey utilized the *School Nursing Standards of Practice* as organized by the *Framework* to provide content and context for the study of school nursing practice. This survey was designed because no instrument currently exists that captures school nurse's perceptions regarding their scope of practice utilizing the *Framework*. The items on the instrument reflect competencies for school nursing practice that have been developed by the ANA and NASN and published in the 3rd Edition of the *School Nursing: Scope and Standards for Practice* (ANA & NASN, 2017). The *Framework* was used as a means to organize the School Nursing Standards of Practice into the familiar language and principles of school

nursing practice that it exemplifies. The six *Standards of Practice for School Nursing* and the 12 *Standards of Professional Performance* that comprise the *School Nursing Standards for Practice* were cross referenced with the five Principles of the *Framework* to ensure that the *Framework* items exemplified the Standards.

Item Generation and Survey Format

DeVellis (2017) advises the generation of a large pool of items from which to choose for eventual inclusion in the survey. Item creation occurred as a four-step process.

First, to generate items for this survey, the researcher utilized a competency document created to guide education about the *Framework* for NASN members. The competency document was developed by the NASN *Framework* designers and reviewed by the NASN staff and school nurse experts. The competency document contains exemplar statements, organized according to the principles of the *Framework*: Care Coordination, Community/Public Health, Quality Improvement, Standards of Practice and Leadership, and details the knowledge, skills and attitudes school nurses should have to implement the *Framework*. School nurse competencies are described in terms of function: what the school nurse should *know* and what the school nurse needs to *do*. The items describing what the school nurse needs to *do* provided specific descriptors of practice, worded similarly to the items on the ASCOP (D'Amour et al., 2012). These *do* descriptors were chosen as a guide to draft the initial versions of the survey items. The *do* descriptors were written in declarative statement format. For example, "The school nurse documents all care provided" (NASN competency document) was revised to "I document all care provided" (SSNP survey item). This phrasing aligned items with the ASCOP (D'Amour et al., 2012) format and created them in appropriate fashion for self-report. Once this step was complete, each item was reviewed to determine what *Standard of School Nursing Practice* it

exemplified. There is not a one-to-one correspondence of standard statement to *Framework* statement, but rather each *Framework* statement may exemplify several Standards. Additionally, the *Framework* provided a means to describe school nursing practice in a reasonable number of survey items.

The statement "I document all care provided" was determined to be a practical exemplar of several Standard competencies, depicted in Table 4.

Table 4

Standards and Competency Statements Related to Survey Item: "I document all care provided"

	Standard	Competency
1.	Assessment	"Documents relevant data accurately and, in accordance with privacy regulations, in a manner accessible to the interprofessional team." (p. 44)
2.	Diagnosis	"Documents diagnoses, problems, and issues in a manner that facilitates the determination of the expected outcomes and plan." (p. 46)
3.	Outcomes Identification	"Documents expected outcomes as measurable goals." (p. 48)
4.	Planning	"Documents the plan using standardized language or recognized terminology." (p. 51)
5.	Implementation	"Documents implementation and any modifications, including changes or omissions, of the identified plan in the appropriate health and education records." (p. 52)
5a.	Coordination of Care	"Documents the coordination of care." (p. 55)
6.	Evaluation	"Documents the results of the evaluation." (p. 59)
	Quality of Practice	"Documents school nursing practice in a manner that supports quality and performance improvement initiatives." (p. 76)
16.	Resource Utilization	"Documents all aspects of resource utilization, including delegation and staff training." (p. 80)

Note: ANA & NASN, 2017.

The second step of item creation involved placing the NASN *Framework* "do" descriptors alongside the ASCOP (D'Amour et al., 2012) items to ascertain similarities and

differences. Twelve ASCOP (D'Amour et al., 2012) items could be utilized with only minor modifications, such as changing the word *patient* to *student* and *nursing team* to *school-based team*. Such modifications more accurately reflect language used by school nurses to describe their work. Nine ASCOP (D'Amour et al., 2012) items were similar but required more than simple wording changes to integrate the NASN exemplars in language and intent. For example, the ASCOP (D'Amour et al., 2012) item "When I have identified deficiencies, I *suggest* approaches or strategies to improve the quality and safety of care" was modified to "When I have identified deficiencies, I *develop* approaches or strategies to improve the quality and safety of care". This describes a different level of expected practice, owing to the more independent role of the school nurse. Another modification from the ASCOP (D'Amour et al., 2012) item "To plan my interventions, I use *healthcare problem assessment tools (pain scale, wound assessment tool)*" to "To plan my interventions, I use *clinical guidelines and the strongest evidence possible"* aligns the item with the broader focus of the school nurse. However, the change is more than semantic so could not be considered a simple wording change. Finally, 19 items from the NASN exemplars were so dissimilar to the ASCOP (D'Amour et al., 2012) items, they could not be straightforwardly adapted. These included items related to school nursing practice such as "I identify environmental factors that influence student health (such as excessive heat/cold, fumes, cleaning products, playground)" and "I work with community providers to help students gain access to care". When a *Framework* item matched to an ASCOP (D'Amour et al., 2012) item, but wording was different, both items were retained in the initial item pool. For example, the *Framework* item "I document all care provided" matched to the ASCOP (D'Amour et al., 2012) item "I regularly update, in writing, information about the patient's condition and the care

provided (therapeutic nursing plan, nurse's notes, etc.)" so both items were retained. At the conclusion of this matching exercise, there were 40 items on the newly created SSNP survey.

During the third step, an expert item developer reviewed the work of matching the *Framework* with the ASCOP (D'Amour et al., 2012) items, and the resultant 40 proposed SSNP survey items. The expert item developer provided feedback on each proposed item, addressing content, semantics, breadth, clarity and redundancy. Work with the expert item developer was interactive and iterative involving the researcher and the project mentor (a school nurse expert). The items were reworked, discussed and again examined, iteratively, until they appeared to clearly represent an element of school nursing practice described by the *Framework*.

Item development was done in the context of the response format. In choosing items, the response format should be considered simultaneously (DeVellis, 2017). The response format utilized by the ASCOP (D'Amour et al., 2012), a six-point Likert scale, was chosen for the SSNP survey after consultation with the project statistician. The ASCOP (D'Amour et al., 2012) Likert scale contains six response options (anchor points) to the question "After each statement, choose the answer that corresponds to your current school nursing practice", 1 = *never*; 2 = *rarely*; 3 = *sometimes*; 4 = *frequently*; 5 = *almost always*; 6 = *always*. DeVellis (2017) advises that the either odd or even response numbers may be used depending on the phenomenon being investigated and the goals of the investigator. The six-point response format was retained as the responses were not anticipated to be bipolar and there was no need to force a dichotomous choice (DeVellis, 2017). In addition, the ASCOP successfully used the six-point response format to measure their variable of interest, actual scope of nursing practice (D'Amour et al., 2012).

During this step of item development, it was decided that to most fully explore scope, items should be asked twice. The first time related to actual and current practice and the second

time related to perceived importance to practice. Decisions about the order of the two sets of items (frequency in practice and importance to practice) were made intentionally by the project team. The ANA model of scope of practice (ANA, 2015) includes self-determination at the pinnacle of the scope of practice. An item's perceived importance to practice may give indications as to why or why not an element of practice was enacted. For example, if a school nurse did not find the practice item important, she may be less inclined to perform it. The perceived importance of the practice item was asked as "Please indicate how important you feel the following statement is to your school nursing practice". A six-point Likert response accompanied the importance question with 1 = *not at all important*, 2 = *only slightly important*, 3 = *somewhat important*, 4 = *moderately important*, 5 = *very important* and 6 = *absolutely imperative*. The six-point Likert response format for the importance questions was chosen for consistency and to minimize confusion for the participants.

At the end of the item development phase of the study, there were 54 items on the SSNP survey. Each item was intentionally asked twice on the survey. The items were again reviewed to ensure that the re-worked items continued to encompass all of the *Standards for School Nursing Practice.* An open-ended question was added after the importance questions, "If you would like to add comments related to the scope of your school nursing practice (i.e. was anything missing, what surprised you that was included, barriers/facilitators), please do so here".

Barriers and Demographics

The literature review provided information regarding perceived barriers to full scope of school nursing practice. Previously delivered NASN surveys were reviewed for survey questions that would be relevant. Utilizing information from the literature and previous surveys, a survey item was formulated listing ten potential barriers to full scope of school nursing practice

following the question "Overall, which of the following impact your ability to practice school nursing as you would like?". Following this question were listed ten potential barriers to full scope of school nursing practice. Potential barriers included workload, laws and policies, other's expectations of the school nurse's role, and inadequate resources.

Sixteen demographic questions were developed to provide information regarding respondent's individual characteristics (e.g., years of school nursing practice, highest degree earned, type of certification) as well as information about the environment in which the school nurse practiced (e.g., number of students responsible for, number of buildings overseen, supervisor who completes their performance evaluation). Based on the literature review, these demographics were conceptualized as potential facilitators or barriers to full scope of school nursing practice. Demographic questions used by NASN for other studies were consulted for wording and content.

Content and Face Validity

The next step in the survey design was to gain content expert review of the survey items and response format. Experts are necessary to evaluate the content validity of an instrument (Polit & Beck, 2017). Content validity refers to how adequately an instrument measures the construct it is trying to measure (Polit & Beck, 2017). A content validity index (CVI) was developed (Polit & Beck, 2017) and sent to eight school nurse expert reviewers along with the complete SSNP survey. School nurse expert reviewers were located through the project mentor. The content validity index was divided into two parts; relevancy via content validity and clarity/comprehensiveness (Polit & Beck, 2017). First, item content validity (I-CVI) was assessed. Experts were asked to rate each item on a four-point scale from 1 = *not at all relevant*, 2 = *slightly relevant*, 3 = *moderately relevant* and 4 = *highly relevant*. I-CVI is computed by the

percentage of expert ratings in agreement about the relevance of the item (Polit & Beck, 2017). Four of five experts giving ratings of 3 = *moderately relevant* or 4 = *highly relevant* would indicate an acceptable level (.80) of agreement (Polit & Beck, 2017). Second, school nurse experts were asked to rate overall clarity and comprehensiveness of the instrument and indicate where they noted duplication of items. Further, experts were asked to provide their thoughts about the order or grouping of items. Additional comments were solicited.

Of the eight expert reviewers, three completed the CVI. The remaining five reviewers made thorough notations directly on the survey, oftentimes using the term "relevant" and providing many suggestions for change. These comments and the CVI ratings were entered onto a spreadsheet by item number and thoughtfully reviewed and discussed by the investigator, mentor and expert item developer. As a result of this analysis, survey items were removed, re-ordered, revised or maintained. Items maintained received ratings of *highly relevant* and/or strong positive responses from the experts. Items were removed if they addressed a specific practice or theory that might not be universally employed by school nurses, or if they were redundant of a superior-worded item. Other modifications included item phrasing and item ordering. While some expert feedback was contradictory, the majority of feedback was surprisingly similar, and modifications were easily made. After the analysis of the expert review, 39 items remained. The items were again reviewed for clarity and completeness in representing the *Standards of School Nursing Practice* and the *Framework*.

The survey was then entered into Qualtrics©. The order of the item groups was considered. The first section contained the consent, which the participants needed to read first to determine whether they would like to complete the survey. After agreeing to participate in the survey, the survey was presented. The survey began with a question about potential barriers to

practice in order to frame the practice questions to incur a more accurate response. Self-reported responses can be a threat to an instrument's internal validity as the respondent may be inclined to present themselves positively and not accurately (Polit & Beck, 2017). Acknowledging barriers to practice at the outset sets the expectation that practice may realistically be hindered by barriers. The items were asked as a group of practice questions first, then as a group of importance questions. This was done to focus the survey respondents on one area at a time and avoid any confusion or fatigue that might arise by asking the same question two ways (practice and importance) at the same time. The survey concluded with demographic questions that were factual and presumably easy to complete. Survey features such as having to answer each question before moving on to the next and the Qualtrics[©] feature "Anonymize Responses" were enabled. The survey was viewed as it would appear on various devices.

A final step in survey creation was taken to establish face validity. While not considered strong evidence of validity, face validity can decrease resistance to survey completion by contributing to the respondent's perception of survey relevance (Polit & Beck, 2017). The Qualtrics[©] survey was given to eight practicing school nurses from different regions of the country who practiced in different models of school nursing, to ascertain ease of use, readability and clarity of directions. Feedback from the practicing school nurses was entirely positive. No modifications made to the SSNP survey instrument based on the practicing school nurses' review.

Phase II: Survey Deployment and Data Collection Procedures

Recruitment was conducted through two personalized anticipatory emails sent at two weeks and one week prior to deployment of the survey. At week three, an electronic invitation with an embedded survey link was sent to the NASN weekly e-digest subscribers. Two reminder

emails were sent while the survey was open for participation. McPeake, Bateson and O'Neill (2014) found that personalized invitations, at least two reminders and embedded links increased participant response rates to electronic surveys. The data collection period continued for four weeks. The survey was then closed.

Phase I
Survey development
Item creation
Establish content validity
Establish face validity
IRB approval

Phase II
Survey deployment
Anticipatory email 1, 2
Deploy e-survey via email & e-digest
Reminder 1, Reminder 2
Close Survey
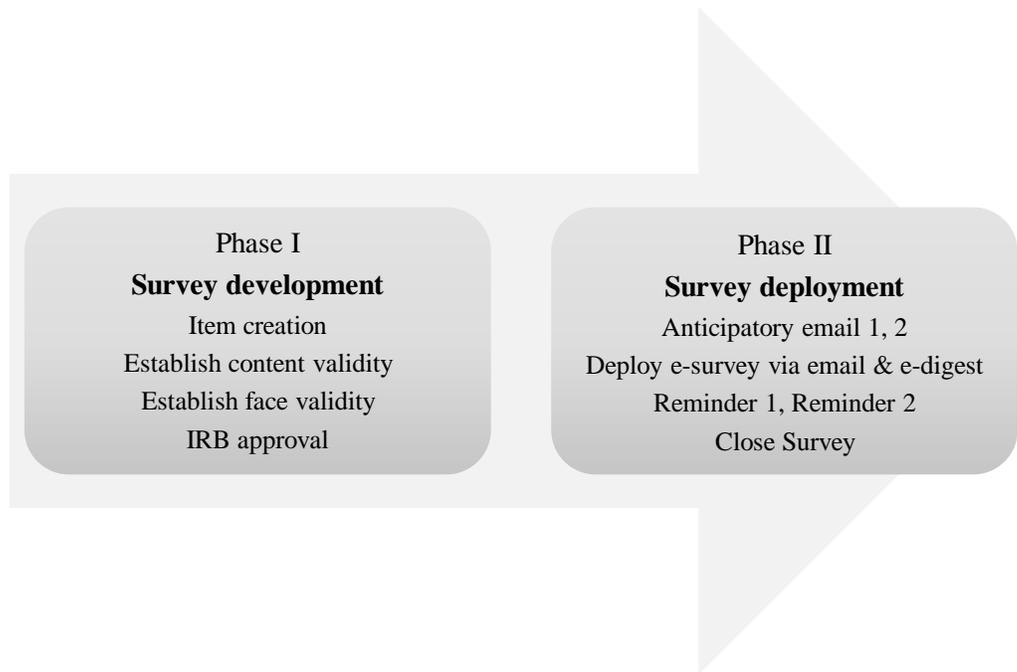
Figure 3. Phase I and Phase II

Data Analysis Procedures

Survey data were collected in the Qualtrics© survey platform. Data from the Qualtrics© survey were downloaded into Statistical Package for the Social Sciences (SPSS) software (IBM Corp, Armonk, NY) for analysis. Demographic characteristics of the sample were analyzed using descriptive statistics and reported in frequency, means, standard deviations and percentages. School nurses' perceptions of practice and importance were analyzed using descriptive statistics and reported in means and standard deviations. Practice was compared to importance using a

paired samples *t*-test that analyzed the mean difference between each *Framework* principle's practice and importance items. Statistical significance was set at $p < .05$. Effect sizes were analyzed using Cohen's *d* (0.2 = small; 0.5 = moderate; 0.8 = large). Self-identified barriers to practice were analyzed using descriptive statistics and reported in frequency and percentages. Effects of self-identified barriers on practice were analyzed by *Framework* principle using independent samples *t*-tests, with statistical significance set at $p < .05$, to compare the mean frequency ratings of the *Framework* principle with the top three chosen barriers and the mean frequency ratings of the *Framework* principle with the barriers not chosen. Effect sizes were analyzed using Cohen's *d*. Open-ended responses were analyzed by first grouping responses by theme, then categorizing the themes, and finally, counting items in each category. Open-ended responses were reported in overall frequency and frequency per category. Exemplars were reported for each category.

To determine the effects of demographic characteristics on practice, several statistical tests were used. Linear regression was used to determine if demographic characteristics could predict *Framework* practice frequencies. Demographic characteristics such as years of experience, number of buildings worked in, number of students served, model of practice and certification status were designated independent variables to predict *Framework* principle practice frequencies as the dependent variables. Results were reported in β values, R^2 (a measure of fit of the model being tested, with 0 = poor fit and 1 = perfect fit), *F* (overall significance), and *p* value (statistical significance) set at $p < .05$.

For demographic characteristics that were measured as categorical data, and having three or more groups, such as education level, location of school, employer type, and supervisor type, analysis of variance (ANOVA) was used to determine if differences in practice were due to the

demographic characteristic. ANOVA contrasts variation between groups to variation within groups; if variation between groups is higher, then the probability is high that the independent variable, the demographic characteristic, is related to or caused the difference in practice frequency (Polit & Beck, 2017). Results were reported in means, standard deviations, the *F* statistic (overall significance), *p* values with statistical significance set at $p < .05$, and eta squared to determine effect size (.01 = small, .06 = moderate; .14 = large).

An additional statistical test was computed to determine the correlation between the interval variables of age, years of experience as a nurse and years of experience as a school nurse with the *Framework* principle practice means. The results were reported in the correlation coefficient, Pearson's *r* (0 = no correlation; -1 = perfect negative correlation and +1 = perfect positive correlation) and *p* values with 2-tailed statistical significance set at $p < .05$.

Conclusion

In this chapter, the design of the project was described in the context of the gap analysis framework. Project resources were delineated. Considerations regarding the Human Subject Review were discussed. The sample population was described. A detailed description of the instrumentation, validity and reliability was explicated. The procedures and timeline of the project were presented. Data collection procedures and the data analysis plan were described.

Chapter 4

Results

Analysis of Data

This chapter presents the results of the study, obtained through the SSNP survey. Data are reported with statistical analyses to describe school nursing practice and explore relationships between and among the variables presented in the SSNP survey. Broad analyses were undertaken to explore the data and discover information to guide recommendations for school nursing practice and further study.

Demographics

At the time of the survey, there were over 17,000 members of NASN and an unknown number of potential respondents who received the NASN e-digest containing the invitation and link to the survey. The participants sought for this study were practicing school nurses, a subset of the larger group who received the invitation and survey link. The survey was opened by 5214 people. The first question asked if the respondent was a frontline school nurse; 495 respondents were not and exited the survey, leaving 4719 potential participants. Of these, 1611 did not complete the entire survey. The sample size of completed surveys was 3108. A response rate cannot be calculated because there is an unknown number of frontline practicing school nurses who received the survey link. However, of those who opened the survey and were eligible, 65.9% completed the survey.

Tables 5 and 6 contain the sample demographic characteristics. The average age of respondents was 51.9 years. Nearly half of respondents (48.6%) identified their highest education level as a BSN. Either national or state school nurse certification was reported by almost half (49.7%) of the practicing school nurses. The Public School District was the largest

employer (85.6%). Most reported to a non-nursing supervisor (65.8%) rather than a registered

nurse supervisor.

Table 5

Age and Experience

	M	SD
Years as a School Nurse	11.8	8.2
Years Practiced Nursing	25.3	11.6
Age in Years	51.9	10.0

Table 6

Demographics of the Sample, N=3108

	n	%
Highest Education Level		
BS Nursing	1510	48.6
Masters or Doctorate	813	26.3
BS/BA in other field &/or	785	25.4
Less than BS Nursing		
Certification[a]		
National Certification as a School Nurse (NCSN)	495	15.9
State Certified/Credentialed as a School Nurse	1050	33.8
Other Certification	994	32.0
No Certification	1315	42.3
Current Employer		
Public School District	2662	85.6
Private/Parochial/Boarding School	168	5.4
Public Health Department	101	3.2
Other	177	5.6
Supervisor Type		
Registered Nurse	1063	34.2
Non-Nurse	2045	65.8

[a] May add to more than 100% because respondents may have more than one type of certification

School Characteristics

  Almost half of all school nurses worked in one school building (49.7%) though some worked in as many as 10 buildings (3.5%). There was a wide range of students served, from 125 or fewer (2.9%) to more than 5000 (2.6%). Most identified their school location as suburban (54.5%). The student populations of the schools in which the school nurses worked were equitable based upon percent of children eligible for free and reduced-price lunch (Table 7).

Table 7

School Characteristics, N = 3108

	n	*%*
Location of Schools[a]		
Urban	705	22.7
Suburban	1693	54.5
Rural	1027	33.0
Other	70	0.9
Student Socioeconomic Mix (Percent Eligible for Free and Reduced-Price Lunch)		
>75%	852	27.4
50-75%	777	25.0
25-49%	852	27.4
<25%	627	20.2
Number of Buildings Served		
1	1544	49.7
2	557	17.9
3	325	10.5
4	238	7.7
5	134	4.3
6	85	2.7
7	48	1.5
8	28	0.9
9	21	0.7
10	18	0.6
>10	110	3.5
Number of Students Served		
125 or fewer	89	2.9
126-250	174	5.6
251-500	624	20.1
500-750	614	19.8
751-1000	502	16.2
1001-1500	399	12.8
1501-2000	261	8.4
2001-2500	149	4.8
2501-3000	90	2.9
3001-3500	52	1.7
3501-4000	28	0.9
4001-4500	22	0.7
4501-5000	23	0.7
More than 5000	81	2.6

[a] Percentages add to more than 100% as respondents could select more than one category.

Model of Practice

The most frequent model of practice was one nurse providing direct care in one building without assistance (43.6%). More than one third of the school nurses (37.5%) reported some form of delegation related to their practice. (Table 8).

Table 8

Model of Practice, N = 3108

	n	%
RN provides direct care to students on a daily basis (one nurse in one building)	1354	43.6
RN provides direct care to students on a daily basis (one nurse covering more than one building with no health clerk, aide, secretary, or UAP covering when RN is not present)	276	8.9
RN who oversees one or more LPNs as a team to provide care (in one building)	73	2.3
RN who oversees one or more LPNs as a team to provide care (more than one building)	116	3.7
RN who oversees health clerks or aides who work in health office(s) (one nurse covering more than one building)	305	9.8
RN who oversees health clerks or aides who work in health offices (one building)	113	3.6
RN who trains unlicensed personnel to perform routine procedures needed in the schools (one nurse covering more than one building)	561	18.1
Advanced Practice/Nurse Practitioner working in a school nurse role	40	1.3
Other	270	8.7

Scope of School Nursing Practice

To answer the first research question, participants were asked to indicate the frequency of performing each practice item in their current practice on a scale from 1 = *never* to 6 = *always*. Then, participants were asked to indicate the importance of each item to their current practice on a scale from 1 = *not at all important* to 6 = *absolutely imperative*. (Table 9).

Table 9

Practice and Importance Items

Item	Practice M (SD)	Importance M (SD)
Care Coordination		
I communicate information that could affect the management of health care for students with chronic health conditions.	5.31 (.922)	5.66 (.542)
I work with others (i.e. teachers, psychologist, nutritionist, bus drivers) to address the health needs of students.	5.35 (.890)	5.57 (.580)
I coordinate the work of others (i.e. teachers, psychologist, nutritionist, bus drivers) to meet the health needs of students/families.	4.57 (1.316)	5.13 (.941)
I develop health care plans for students with chronic health conditions (including those needing accommodations under 504).	5.09 (1.197)	5.34 (.867)
I involve the student/family in the planning for the health needs of students.	5.30 (.882)	5.44 (.683)
I include yearly goals identified by students/family in their health care plan.	3.70* (1.557)	4.49* (1.124)
I monitor student health plans to determine progress and identify interventions that may need to be changed.	4.37 (1.307)	4.91 (.923)
For each student who visits me, I assess the student's overall health condition, including the student's developmental level.	4.46 (1.348)	4.93 (1.009)
I develop health care plans to assist students with chronic health needs who will be transitioning to the next school (or graduation).	4.35 (1.581)	4.82 (1.104)
I train school staff on emergency health care for students with health care needs.	5.46 (.956)	5.74+ (.529)
I follow all of the rules (including HIPAA and FERPA) related to confidentiality of student health and education.	5.76+ (.515)	5.73 (.510)
I allow others to assist with non-nursing functions (as allowed by state laws).	4.43 (1.394)	4.56 (1.213)
Community/Public Health		

I use the nursing process (assess, diagnose, outcomes identification, plan, implement and evaluate) to address the health needs of my entire school community.	4.76 (1.269)	5.02 (.944)
I proactively identify and monitor students at risk.	4.74 (1.114)	5.21+ (.746)
I follow up on referrals sent home from screenings conducted at school.	4.68 (1.239)	4.82 (.930)
I use evidence based educational strategies that consider the needs of the student and school population.	4.58 (1.164)	4.89 (.903)
I participate on community coalitions or committees to address the needs of my school community.	3.37* (1.432)	4.18* (1.146)
I work with community partners to help students gain needed access to health care.	3.94 (1.289)	4.72 (1.011)
I actively intervene to modify environmental factors that influence student health (such as excessive heat/cold, fumes, cleaning products, playground).	3.96 (1.299)	4.83 (.953)
I incorporate the values/beliefs of my student population in my interventions.	4.77+ (1.080)	5.05 (.831)
Quality Improvement		
I document all care I provide in a timely manner.	5.30+ (.854)	5.48+ (.680)
I apply all of the steps of Quality Improvement (Plan, Do, Study, Act) to improve the quality and safety of student health care.	4.10 (1.399)	4.63 (1.084)
I identify measurable outcomes for my school population.	3.70 (1.371)	4.31 (1.105)
I plan for evaluation of progress toward goals and outcomes.	3.78 (1.353)	4.37 (1.075)
I regularly review my student data to identify trends.	3.80 (1.308)	4.44 (1.078)
I collect and share accurate (not estimated) aggregated data about my school population with stakeholders.	3.42 (1.597)	4.34 (1.268)
I use local, state, and/or national data sets to benchmark and interpret my school data.	2.92* (1.467)	4.10* (1.238)
I provide an end of the year report to educational leaders.	3.92 (2.031)	4.44 (1.339)
Leadership		
I actively participate in interprofessional committee meetings (such as wellness council).	3.92 (1.614)	4.39 (1.158)
I consider my school nurse role to include more than just addressing urgent health situations/crises.	5.51 (.858)	5.47 (.702)
I proactively update health care policies to align with current evidence and to improve the quality and safety of care.	4.11 (1.453)	5.00 (.897)
I share knowledge emerging from research about school nursing or health with others.	4.39 (1.220)	4.88 (.883)

I seek out new funding sources or models that will financially support my school nursing practice.	2.72* (1.438)	3.84* (1.316)
I make yearly professional goals for myself.	4.73 (1.396)	4.60 (1.138)
I hold myself accountable for my school nursing practice.	5.87+ (.430)	5.74+ (.534)
I stay current on legislation (or rule changes) related to school nursing in my state.	5.08 (1.042)	5.21 (.823)
Standards of Practice		
I use clinical guidelines and the strongest available evidence to plan my nursing interventions.	5.17 (.934)	5.26* (.736)
I advocate for my students/school community even when others disagree.	5.26+ (.955)	5.38+ (.694)
I improve my school nursing practice based on new knowledge derived from best practices and research in school nursing or in health.	5.06* (.958)	5.29 (.713)

Note: + = highest in principle; * = lowest in principle.

Practice frequencies averaged 4.55 out of a possible 6.0 points. The most frequently carried out activities were in the Standards of Practice principle ($M = 5.16$, $SD = 0.80$). Least frequently carried out activities were in the Quality Improvement principle ($M = 3.87$, $SD = 1.01$). (Table 10).

Table 10

Mean Ratings of Current Practice, N = 3108

	M	*SD*
Standards of Practice	5.16	0.80
Care Coordination	4.85	0.69
Leadership	4.54	0.52
Community/Public Health	4.35	0.83
Quality Improvement	3.87	1.01
Overall	4.55	0.68

Note: Items rating on a 6-point scale from 1 = *never* to 6 = *always*.

Importance of the items to practice was rated on average 4.95 out of a possible 6.0 points (Table 11). The activities in the Standards of Practice principle were considered most important ($M = 5.31$, $SD = 0.61$). Least important activities were in the Quality Improvement principle ($M = 4.51$, $SD = 0.85$).

Table 11

Mean Ratings of Importance, N = 3108

	M	SD
Standards	5.31	0.61
Care Coordination	5.19	0.49
Leadership	4.89	0.64
Community/Public Health	4.84	0.65
Quality Improvement	4.51	0.85
Overall	4.95	0.56

Note: Items rated on a 6-point scale from 1 = *not at all important* to 6 = *absolutely imperative.*

Importance and practice items were compared by *Framework* principle (Table 12). Overwhelmingly, across all five principles (Care Coordination, Community/Public Health, Quality Improvement, Leadership and Standards of Practice) the respondents rated the importance of the item higher than the frequency with which they practiced it. All pairs were significantly different ($p = < .001$) with importance rated higher than practice for each construct. Effect sizes, measured by Cohen's *d*, ranged from small (Standards of Practice, $d = 0.23$) to large (Quality Improvement, $d = 0.80$). The largest gap between practice and importance was in the Quality Improvement principle, while the smallest gap between practice and importance was in the Standards of Practice principle.

Table 12

Comparing Ratings on Practice to Ratings on Importance

	Practice		Importance				Cohen's
	M	*SD*	*M*	*SD*	*t*(3107)	*p*	*d*
Care Coordination	4.85	0.69	5.19	0.49	35.78	<.001	0.64
C/Public Health	4.35	0.83	4.84	0.65	41.78	<.001	0.75
Quality Improvement	3.87	1.01	4.51	0.85	44.81	<.001	0.80
Leadership	4.54	0.75	4.89	0.64	32.39	<.001	0.58
Standards of Practice	5.16	0.80	5.31	0.61	12.65	<.001	0.23

Barriers to Full Scope of School Nursing Practice

To answer the second research question, school nurses were asked to identify the top three factors that impact their ability to practice school nursing as they would like (Table 13). The top three impacts identified were: time-workload-caseload (62.7%), school/school district's expectations of their role (43.8%) and state laws and policies (37.6%).

Table 13

Impacts Ability to Practice School Nursing As You Would Like, N=3108

Impact	*n*	*%*
Time-workload-caseload	1949	62.7
School's/District's expectation of your role	1362	43.8
State laws and policies	1169	37.6
District laws and policies	1072	34.5
Parent's/Caregiver demands	833	26.8
State Nurse Practice Act	624	20.1
Supervisor's expectation of your role	505	16.2
Inadequate resources	441	14.2
Job Description	284	9.1
Other	283	9.1
Lack of electronic health records	238	7.7

Note: Percentage may add to more than 100 because multiple responses were allowed.

To determine the effects of these identified barriers on practice, mean ratings for current practice in all five of the *Framework* components (Care Coordination, Community/Public Health, Quality Improvement, Leadership and Standards of Practice) were compared between those who selected a specific barrier and those who did not, using independent samples *t*-tests. A number of barriers were found to be statistically significantly related to practice, although all had small effect sizes.

For the Care Coordination principle, Table 14 displays the results of the independent *t*-tests for the top barriers. Inadequate resources ($d = .06$, $p < .001$) and lack of an electronic health record ($d = .05$, $p < .01$) were statistically significantly related to Care Coordination practice and had the highest effect sizes, albeit still quite small. For Community/Public Health (Table 15), time-workload-caseload ($d = .07$, $p < .001$) and inadequate resources ($d = .07$, $p < .001$) had the highest effect sizes. For Quality Improvement (Table 16), time-workload-caseload ($d = .09$, $p < .001$) and inadequate resources ($d = .08$, $p < .001$) had the highest effect sizes. For the Leadership principle (Table 17), the school/district's expectations of your role ($d = .06$, $p < .001$) and the state Nurse Practice Act ($d = .06$, $p < .001$) had the highest effect sizes. For the Standards of Practice principle (Table 18), the school/district's expectations of your role ($d = .04$, $p < .05$) and time-workload-caseload ($d = .03$, $p < .05$) had the highest effects. (Table 18).

Table 14

Mean Ratings of Care Coordination Current Practice by Top Three Barriers, N = 3108

	Selected as Barrier M (SD)	Not Selected as Barrier M (SD)	t(3106)	95% CI for difference	Cohen's d
State laws, policies	4.88 (0.68)	4.83 (0.70)	2.22*	[.007, .107]	.04
District laws, policies	4.89 (0.67)	4.83 (0.70)	2.33*	[.010, .112]	.04
School's/District's expectation of your role	4.81 (0.71)	4.86 (0.69)	1.92	[-.088, .001]	.03
Job description	4.87 (0.73)	4.84 (0.69)	0.90	[-.040, .109]	.01
Supervisor's expectation of your role	4.84 (0.73)	4.84 (0.69)	-0.02	[-.060, .059]	.00
State Nurse Practice Act	4.88 (0.67)	4.83 (0.70)	1.97*	[.000, .112]	.03
Time, workload, caseload	4.83 (0.69)	4.86 (0.71)	-1.05	[-.080, .011]	.02
Lack of electronic health records	4.72 (0.72)	4.85 (0.69)	-3.13**	[-.217, -.050]	.05
Inadequate resources	4.74 (0.71)	4.86 (0.69)	-3.76***	[-.183, -.058]	.06
Parent's/Caregiver demands	4.85 (0.70)	4.83 (0.69)	0.59	[-.035, .065]	.01

*p < .05. **p < .01. ***p < .001

Table 15

Mean Ratings of Community/Public Health Current Practice by Top Three Barriers, N = 3108

	Selected as Barrier M (SD)	Not Selected as Barrier M (SD)	t(3106)	95% CI for difference	Cohen's d
State laws, policies	4.40 (0.83)	4.32 (0.83)	2.48*	[.016, .137]	.04
District laws, policies	4.39 (0.83)	4.33 (0.83)	1.82	[-.004, .119]	.03
School's/District's expectation of your role	4.30 (0.84)	4.38 (0.83)	2.80**	[-.129, -.023]	.05
Job description	4.43 (0.83)	4.34 (0.83)	2.07*	[.005, .183]	.03
Supervisor's expectation of your role	4.33 (0.82)	4.35 (0.69)	-0.43	[-.087, .056]	.01
State Nurse Practice Act	4.43 (0.83)	4.33 (0.83)	3.17**	[.041, .174]	.05
Time, workload, caseload	4.30 (0.82)	4.42 (0.85)	-4.40***	[-.176, -.068]	.07
Lack of electronic health records	4.30 (0.91)	4.35 (0.83)	-0.95	[-.149, .052]	.02
Inadequate resources	4.21 (0.85)	4.37 (0.83)	-4.14***	[-2.34, -.084]	.07
Parent's/Caregiver demands	4.34 (0.84)	4.35 (0.83)	-0.47	[-.074, .045]	.01

*p < .05. **p < .01. ***p < .001

Table 16

Mean Ratings of Quality Improvement Current Practice by Top Three Barriers, N = 3108

	Selected as Barrier *M (SD)*	Not Selected as Barrier *M (SD)*	*t*(3106)	95% CI for difference	Cohen's *d*
State laws, policies	3.91 (1.00)	3.84 (1.01)	2.01*	[.002, .148]	.04
District laws, policies	3.95 (1.00)	3.82 (1.01)	3.28**	[.050, .199]	.06
School's District's expectation of your role	3.82 (0.97)	3.88 (1.01)	-2.01*	[-.127, -.001]	.03
Job description	3.97 (1.02)	3.84 (0.99)	2.41*	[.024, .236]	.04
Supervisor's expectation of your role	3.86 (0.99)	3.85 (0.99)	0.16	[-.078, .092]	.00
State Nurse Practice Act	3.95 (0.97)	3.83 (1.00)	3.04**	[.044, .202]	.05
Time, workload, caseload	3.79 (0.99)	3.96 (0.74)	-5.35***	[-.241, -.112]	.09
Lack of electronic health records	3.73 (1.01)	3.87 (0.99)	-2.29*	[-.259, -.020]	.04
Inadequate resources	3.66 (0.99)	3.89 (0.99)	-5.09***	[-.321, -.143]	.08
Parent's/Caregiver demands	3.87 (1.00)	3.85 (0.99)	0.66	[-.047, .095]	.01

*p < .05. **p < .01. ***p < .001

Table 17

Mean Ratings of Leadership Current Practice by Top Three Barriers, N = 3108

	Selected as Barrier M (SD)	Not Selected as Barrier M (SD)	t(3106)	95% CI for difference	Cohen's d
State laws, policies	4.59 (0.76)	4.51 (0.75)	2.94**	[.027, .136]	.05
District laws, policies	4.56 (0.76)	4.53 (0.75)	1.13	[-.023, .088]	.02
School's/District's expectation of your role	4.46 (0.76)	4.55 (0.75)	-3.57***	[-.136, -.040]	.06
Job description	4.48 (0.81)	4.52 (0.75)	-0.81	[-.122, .051]	.04
Supervisor's expectation of your role	4.44 (0.78)	4.53 (0.78)	-2.43*	[-.145, -0.16]	.04
State Nurse Practice Act	4.61 (0.75)	4.49 (0.76)	3.88***	[.059, .180]	.06
Time, workload, caseload	4.50 (0.74)	4.52 (0.79)	-0.75	[-.069, .031]	.01
Lack of electronic health records	4.46 (0.80)	4.52 (0.75)	-1.30	[-.151, .031]	.02
Inadequate resources	4.43 (0.74)	4.53 (0.76)	-2.68**	[-.162, -.025]	.04
Parent's/Caregiver demands	4.46 (0.75)	4.53 (0.76)	-2.49*	[-.123, -.015]	.04

*p < .05. **p < .01. ***p < .001

Table 18

Mean Ratings of Standards of Practice Current Practice by Top Three Barriers, N = 3108

	Selected as Barrier M (SD)	Not Selected as Barrier M (SD)	t(3106)	95% CI for difference	Cohen's d
State laws, policies	5.19 (0.76)	5.14 (0.82)	1.71	[-.007, .107]	.03
District laws, policies	5.18 (0.78)	5.15 (0.81)	1.11	[-.026, .093]	.02
School's/District's expectation of your role	5.11 (0.82)	5.17 (0.80)	-2.29*	[-.112, -.009]	.04
Job description	5.13 (0.84)	5.15 (0.81)	-0.50	[-.111, .064]	.01
Supervisor's expectation of your role	5.12 (0.87)	5.15 (0.80)	-0.80	[-.103, .043]	.03
State Nurse Practice Act	5.20 (0.80)	5.14 (0.80)	1.97*	[.000, .130]	.03
Time, workload, caseload	5.13 (0.81)	5.18 (0.81)	-2.10*	[-.109, -.004]	.03
Lack of electronic health records	5.13 (0.83)	5.15 (0.81)	-0.42	[-.118, .077]	.01
Inadequate resources	5.12 (0.80)	5.15 (0.81)	-0.77	[-.102, .044]	.01
Parent's/Caregiver demands	5.12 (0.83)	5.16 (0.80)	-1.19	[-093, .023]	.02

*p < .05. **p < .01. ***p < .001

Open-Ended Responses

An open-ended response format was provided for respondents to add comments related to their scope of school nursing practice and 141 responses were obtained (Table 19). The responses were compiled into common themes, categorized by topic, and counted. Four categories captured the themes of the participant responses: Time-workload-caseload (*n* = 55); resources (*n* = 9); other's expectations of the school nurse role (*n* = 55), clarifications of survey responses (*n* = 32), and other (*n* = 4).

Table 19

Open-Ended Responses, N = 141

Category	Response Example
Time-workload -caseload *n* = 55	"My biggest barrier to achieving everything I deem imperative is simply a lack of time. I am fortunate to be located in one building but have over 1,000 students and a long list of additional responsibilities in addition to seeing (on average) 40 students/day."
	"Because of the huge caseload I am depending on my district's Health Programs to be doing the trending, working with where we are going and being able to share information and provide input during our staff meetings"
Resources *n* = 9	"We have a limited budget for our department and I always feel like we are missing medical equipment (i.e. blood pressure cuffs), and often have less than desirable spaces in schools to perform our tasks."
	"Staffing has not changed in years, despite a huge surge in acuity of students over the years."
Other's expectations *n* = 55	"I have excellent control over what happens in my nursing office, that is, how I care for my students, contact parents, teachers, set up medications, treatments and actually feel respected in that. My scope breaks down beyond my office."
	"I have always felt that school nurses do not work to full scope of our practice due to constraints of school policy and supervisor lack of knowledge."
	"Our scope of practice is dumbed down for district protocols meant for non-licensed staff."
	"This study has confirmed for me that so many aspects I thought were important for my job truly are, however, the support needed to do my job to my best ability is not there. This, along with my pay scale which is equivalent to a bus driver in my county, makes my job feel unimportant despite the education level and knowledge required."
	"I can only do this if the superintendent, principal and parents agrees to this. I am limited by what the superintendent and principal think are most important.
	"The district, administration and teachers still do not understand the scope of our practice and see us as "nonprofessional" by paying us and treating us like we are only here to apply bandaids and put loose teeth in envelopes. It's a struggle to be listened to and authenticated as a professional."

Clarifications	"Many of these statements, although directly related to my practice are
$n = 32$	completed by my Supervisor so they are not things I do but information I
	receive by her advocacy for school health."
	"I do not work with the entire student population, but with the medically
	fragile in my school."
	"I work in a private, independent school. We do not accept funding from any
	organization but our own for projects. All families have health insurance."
Other	"Lack of local, state and national data/benchmark to compare student
$n = 4$	outcomes. Lack of quality improvement indicators in school nursing
	practice."
	"There is a huge dissonance between what I prioritize and what actually gets
	done. This dissonance is significant and it helps me to understand why I am
	not completely satisfied with my current role."

Note: Individual responses may represent more than one category.

Demographics: Barriers and Facilitators

In addition to the respondent's self-identified barriers, responses to the demographic

questions were analyzed to determine if the demographic was a barrier or facilitator to practice.

Variances in practice across states are often seen as barriers to full scope of practice. Regional

differences were examined to determine their effects on practice. Federal regions, depicted in

Table 20, were utilized for the comparisons.

Table 20

Regional Groups

Region	States in Region
1	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
2	New Jersey, New York, Puerto Rico, and the Virgin Islands
3	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia
4	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee
5	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
6	Arkansas, Louisiana, New Mexico, Oklahoma, and Texas
7	Iowa, Kansas, Missouri, and Nebraska
8	Colorado, Montana, North Dakota, Utah, and Wyoming
9	Arizona, California, Hawaii, Nevada, American Samoa, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Guam, Marshall Islands, and Republic of Palau
10	Alaska, Idaho, Oregon, and Washington

Note: United States Department of Health and Human Services Federal Regions

There were significant differences in practice frequency by region for all *Framework* principles (Table 21). The greatest differences were seen in Community/Public Health and Quality Improvement principles (eta squared (η^2) = .04, indicating that the region accounts for 4% of the variance in those ratings). An eta squared of .06 is considered a medium effect size, so the effect of region was small for all principles.

Table 21

Practice by Region

Framework Principle		df	F	p	Eta Squared
Care Coordination	Between Groups	9	3.941	<.001	.01
	Within Groups	3082			
	Total	3091			
C/Public Health	Between Groups	9	14.478	<.001	.04
	Within Groups	3082			
	Total	3091			
Quality Improvement	Between Groups	9	14.803	<.001	.04
	Within Groups	3082			
	Total	3091			
Leadership	Between Groups	9	7.790	<.001	.02
	Within Groups	3082			
	Total	3091			
Standards of Practice	Between Groups	9	4.806	<.001	.01
	Within Groups	3082			
	Total	3091			

Significant regional differences were also found in importance ratings for all *Framework* principles but only Community/Public Health was significant at the $p < .001$ level. Region 4 (the South), rated Community/Public Health importance significantly higher ($M = 4.95$, $SD = .693$), than regions 5 (Midwest), 8 (Mountain states), and 10 (Northwest).

Demographics: Impact on practice. Simultaneous linear regression analyses were used to predict practice frequencies for each of the five *Framework* principle domains (Care Coordination, Community/Public Health, Quality Improvement, Leadership and Standards of Practice) from the following six independent variables: years as a nurse, number of students served, number of buildings served, model of practice, certification, and free and reduced-price lunch (Table 22). The predictor variables were selected because they are often seen within the literature as having an impact on school nursing practice.

Results indicated that years as a nurse increased the frequency of practice for Care Coordination ($\beta = 0.003$, $p < .001$), Community/Public Health ($\beta = 0.005$, $p < .001$), Quality Improvement ($\beta = 0.006$, $p < .001$) and Leadership ($\beta = 0.005$, $p < .001$). For example, for each additional year as a nurse, frequency of Care Coordination practice increased by 0.003 points, or 0.3%.

Holding national school nurse certification or multiple other certifications increased the frequency of practice on all five *Framework* principle domains compared to having no certification. Holding State certification as a school nurse conveyed significance only in the Leadership domain.

The number of buildings covered by a school nurse also impacted scope of practice, but only for the principle of Leadership ($\beta = 0.02$, $p < .05$). For each additional building (up to 10), there was an increase in the frequency of Leadership practice of .02 points, or 2%.

Although there were no clear trends in number of students served, there was significantly lower frequency of practice for those who serve 4001- 4500 students compared to those who serve fewer than 500 students for all domains except Care Coordination. These differences range from 1/3 of a point to ¾ of a point. Leadership practices were significantly lower if there were more than 75% of students receiving free and reduced-price lunch ($\beta = - 0.15$, $p < .001$) but there was no other relationship for that construct. Model of Practice (number and type of ancillary supports and number of buildings a school nurse covers) had the most significant effects in the Quality Improvement and Public Health principles but there was no clear trend for all *Framework* principles.

Effect sizes on most demographic measures were small ($R^2 = 0.019$ to 0.063), indicating that only small percentages of the variances in practice are explained by the independent

variable. As an example, for Leadership, 6.3% of the variation in leadership practice frequency is explained by years as a nurse, number of students, number of buildings, model of care, certification type and percentage of students eligible for free or reduced-price lunch. For Care Coordination and Standards of Practice, only 1.9% of the variance is explained.

Table 22

Predicting Domain Ratings of School Nursing Practice, N = 3108

Variable	Care Coordination B	C/Public Health B	Quality Improvement B	Leadership B	Standards of Practice B
Constant	4.84	4.12	3.50	4.27	5.11
Years as Nurse	0.003***	0.005***	0.006***	0.005***	0.002
Number of students					
501-1000	0.03	-0.07	0.05	-0.01	-0.02
1001-1500	-0.04	-0.17**	-0.10	-0.08	-0.06
1501-2000	-0.11*	-0.21**	-0.17*	-0.19**	-0.14*
2001-2500	-0.02	-0.22**	-0.19*	-0.13	-0.09
2501-3000	0.17*	-0.13	0.02	-0.09	-0.08
3001-3500	-0.07	-0.27*	-0.20	-0.16	-0.15
3501-4000	0.03	-0.37*	-0.15	-0.15	-0.03
4001-4500	-0.14	-0.61**	-0.76**	-0.46**	-0.38*
4501-5000	-0.04	-0.05	0.05	-0.07	0.05
5001 or more	0.20*	0.00	0.25	-0.08	0.09
Number of buildings	-0.01	0.01	-0.00	0.02*	0.01
Certification					
NCSN only	0.15**	0.17**	0.25***	0.26***	0.11*
SCSN only	0.04	0.02	0.02	0.15***	0.04
Other only	0.04	0.08	0.13*	0.14**	0.08
More than 1	0.10**	0.23***	0.29***	0.37***	0.19***
Model of Practice					
Direct Care	-0.08*	0.15**	0.22***	0.09*	0.03
Oversee LPNs	-0.03	0.22**	0.21*	0.13*	0.05
Oversee clerks & aides	-0.03	0.07	0.23***	0.08	-0.01
APN	0.09	0.11	0.27	0.29*	0.10
Other	-0.10	0.10	0.25**	0.11*	0.05
Free or reduced lunch eligible					
>75%	-0.06	0.03	-0.06	-0.15***	-0.10*
50-75%	-0.05	0.01	-0.03	-0.03	-0.05
25-49%	-0.07	-0.07	-0.07	-0.05	-0.12**
R^2	.019	.043	.045	.063	0.019
F	2.45***	5.79***	6.05***	8.57***	2.53***

Note: *$p < .05$. **$p < .01$. ***$p < .001$.

Analysis of Variance (ANOVA) was computed to compare the frequency of practice for the five *Framework* principles and the following demographics: education level, employer type, supervisor type and location of the school. These demographic characteristics were selected as they are often seen as barriers or facilitators to practice. There were significant mean differences between education level, employer type and supervisor type and the frequency of practice across all five principles, but effect sizes were so small that no practical differences can be inferred. There were no differences between the frequency of practice across all five principles and the location of the school.

ANOVA was computed to compare the frequency of practice for all five *Framework* principles and the school nurses' Model of Practice. (Table 23). Model of Practice refers to the number and type of ancillary supports and number of buildings a school nurse covers. Model of Practice had small but significant effects for the Community/Public Health ($p < .001$, $\eta^2 = 0.013$), Quality Improvement ($p < .001$, $\eta^2 = 0.013$) and Leadership ($p < .001$, $\eta^2 = 0.008$) practice frequencies. For all *Framework* principles, there was a trend for those who train unlicensed personnel to engage in less frequent practice across all principles. However, those who provide direct care alone had the lowest frequencies of Care Coordination practices.

Table 23

Mean Ratings by Model of Practice

Model of Practice	Care Coordination	Community/ Public Health	Quality Improvement	Leadership	Standards of Practice
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Provides Direct Care	4.83 (0.72)	4.42 (0.82)	3.93 (1.01)	4.57 (0.76)	5.18 (0.79)
Oversees 1 or more LPNs	4.85 (0.67)	4.42 (0.83)	3.85 (1.04)	4.57 (0.71)	5.17 (0.80)
Oversees health clerks or aides	4.86 (0.67)	4.25 (0.83)	3.86 (0.95)	4.50 (0.73)	5.09 (0.84)
Trains unlicensed personnel	4.88 (0.62)	4.19 (0.84)	3.63 (1.02)	4.43 (0.75)	5.11 (0.82)
Advanced Practice Nurse	5.03 (0.60)	4.46 (0.81)	4.09 (1.04)	4.87 (0.75)	5.31 (0.73)
Other	4.81 (0.74)	4.35 (0.82)	3.95 (0.99)	4.58 (0.75)	5.20 (0.79)
$F_{(5, 3102)}$	1.06	8.03	8.32	4.93	1.71
p	.380	<.001	<.001	<.001	.129
Eta squared	.002	.013	.013	.008	.003

Age and experience. Pearson's correlation coefficient was utilized to further describe the relationship between age or experience and practice frequency (Table 24). Years as a school nurse and years practicing nursing were significantly positively correlated with Care Coordination, Community/Public Health, Quality Improvement and Leadership practice, but all correlations are small. Age was significantly positively correlated with the Community/Public Health, Quality Improvement and Leadership principles but correlations are small.

Table 24

Years in School Nursing, Years in Nursing and Age

Framework Principle	Years School Nursing	Years Nursing	Age
Care Coordination	.119***	.063***	.013
Community/Public Health	.128***	.093***	.054**
Quality Improvement	.107***	.098***	.055**
Leadership	.161***	.123***	.056**
Standards of Practice	.033	.052**	.009

Note: *p* < .05. **p* < .01. ***p* < .001.

Internal Consistency

Although the purpose of this study was to examine gaps in practice, the 39-item tool was analyzed for internal consistency. As presented in Table 25, the α coefficient for the 39 items together is .936. Values for the individual *Framework* principles ranged from .796 to .845, demonstrating acceptable to good internal consistency.

Table 25

Internal Reliability for Practice Items

Framework Principle	Number of Items	Cronbach α
Total for 5 Principles	39	.936
Care Coordination	12	.820
Community/Public Health	8	.826
Quality Improvement	8	.845
Leadership	8	.819
Standards of Practice	3	.796

Summary of Findings

The quantity and depth of the data necessitated a table to provide clarity and to synthesize common themes. Table 26 provides a summary of findings by *Framework* principle.

Table 26

Summary of Relevant Findings by Framework Principle

Principle	Self-identified Barriers	Demographic Factors
Quality Improvement Practice: ($M = 3.87$, $SD = 1.01$) Practice Range: ($M = 2.92 - 5.30$) Importance: ($M = 4.51$, $SD = 0.85$)	Time-workload-caseload ($d = .09$, $p < .001$) Inadequate resources ($d = .08$, $p < .001$) "Because of the huge caseload I am depending on my district's Health Programs to be doing the trending, working with where we are going and being able to share information and provide input during our staff meetings." "Lack of local, state and national data/benchmark to compare student outcomes. Lack of quality improvement indicators in school nursing practice."	Model of practice: sole provider of health care in one building (43.6%); 2+ buildings (56.4%) Supervisor: report to non-nursing supervisor (65.8%) Certification: National Certification only ($\beta = 0.25$, $p < .001$) More than 1 certification ($\beta = 0.29$, $p < .001$) Regional differences: 2 regions ($\eta^2 = 0.4$, $p < .001$)
Community/Public Health Practice: ($M = 4.35$, $SD = 0.83$) Practice Range: ($M = 3.37 - 4.77$) Importance: ($M = 4.84$, $SD = 0.65$)	Time-workload-caseload ($d = .07$, $p < .001$) Inadequate resources ($d = .07$, $p < .001$) "My biggest barrier to achieving everything I deem imperative is simply a lack of time. I am fortunate to be located in one building, but have over 1,000 students and a long list of additional responsibilities in addition to seeing (on average) 40 students/day." "I do not work with the entire student population, but with the medically fragile in my school."	Model of practice: sole provider of health care in one building (43.6%); 2+ buildings (56.4%) Model of practice: ($\eta^2 = 0.13$, $p < .001$) Supervisor: Report to non-nursing supervisor (65.8%) Certification: More than 1 Certification ($\beta = 0.23$, $p < .001$) Regional differences: 2 regions ($\eta^2 = .04$, $p < .001$) South = higher importance ($p < .001$)
Leadership Practice: ($M = 4.54$, $SD = 0.52$) Practice Range: ($M = 2.72 – 5.87$) Importance: ($M = 4.89$, $SD = 0.64$)	School/district's expectations of your role ($d = .06$, $p < .001$) State Nurse Practice Act ($d = .06$, $p < .001$) "This study has confirmed that so many aspects I thought were important for my job truly are however, the support needed to do my job to my best ability is not there. This along with my pay scale which is equivalent to a bus driver in my county, makes my job feel unimportant despite the education level & knowledge required." "I can only do this if the superintendent, principal and parent agrees to this. I am limited by what the	Supervisor: report to non-nursing supervisor (65.8%) >75% free & reduced price lunch = less practice ($\beta = -0.15$, $p < .001$) Number of buildings = increase in Leadership practice ($\beta = 0.02$, $p < .05$) Least Leadership with model of practice = trains unlicensed personnel ($\eta^2 = .008$, $p < .001$) Certification: National ($\beta = 0.26$, $p < .001$)

	superintendent and principal think are most important."	More than 1 (β = 0.37, $p < .001$) State only (β = 0.15, $p < .001$) Model of practice: Most frequent: sole provider of health care in one building (43.6%) Most 2+ buildings (56.4%)
Care Coordination Practice: ($M = 4.85, SD = 0.69$) Practice Range: ($M = 3.70 - 5.76$) Importance: ($M = 5.19, SD = 0.49$) Gap within standard: Care Coordination	Inadequate resources ($d = .06, p < .001$) EHR ($d = .05, p < .01$) "To elaborate on my answer of limited resources: we have a limited budget for our department and I always feel like we are missing medical equipment (i.e. blood pressure cuffs), and often have less than desirable spaces in schools to perform our tasks." "Staffing has not changed in years, despite huge surge in acuity of students over the years including diabetes, food allergies, mental health issues, etc."	Model of practice: sole provider of health care in one building (43.6%); 2+ buildings (56.4%) Direct care = less frequent care coordination practice (ANOVA) Supervisor: Report to non-nursing supervisor (65.8%) Certification: National Certification (β = 0.15, $p < .01$)
Standards of Practice Practice: ($M = 5.16, SD = 0.80$) Practice Range: ($M = 5.06 - 5.26$) Importance: ($M = 5.31, SD = 0.61$) Practice/Importance gap	School/district's expectation of your role ($d = .04, p < .05$) Time-workload-caseload ($d = .03, p < .05$) "There is a huge dissonance between what I prioritize and what actually gets done. This dissonance is significant as it helps me to understand why I am not completely satisfied with my current role."	

Conclusion

This chapter presented the results of the study. Demographic characteristics of the sample were analyzed with descriptive statistics and reported in frequency, means, standard deviations, and percentages. Responses to the survey practice and importance items were analyzed with descriptive statistics and reported in means and standard deviations by *Framework* principle and overall, as the combination of all *Framework* practice and importance items. Practice and importance were compared by *Framework* principle using a paired samples *t*-test. Self-identified

barriers to practice were analyzed with descriptive statistics and reported in frequencies and

percentages. The impact of self-identified barriers on *Framework* practice principles was

analyzed with independent samples *t*-tests for each *Framework* principle. Open-ended responses

were counted, organized by theme, categorized and reported in frequency by barrier category.

Exemplars of open-ended responses were reported. Demographic variables were further analyzed

with linear regression, ANOVA and Pearson correlation to determine relationships with practice

frequencies. A summary of findings by *Framework* principle was presented. Finally, a report of

internal consistency of the 39-item practice scale was presented.

Chapter 5

Discussion

This chapter presents a discussion of the DNP project findings. Demographics of the sample will be compared to two known school nursing workforce samples. Each *Framework* principle is examined as a gap analysis, providing answers to the two research questions: What is the scope of school nursing practice, and what are the barriers to full scope of practice? Other impacts on school nursing scope of practice are examined and an analysis provided. Limitations of the study are discussed. Implications for practice, education, research and policy are explicated. Recommendations for nursing practice and further study are presented.

Demographics

This study's sample was examined in relation to two other samples of school nurses to determine how closely this study's sample represented the school nursing population. The 2015 NASN School Nurse Survey (Mangena & Maughan, 2015) utilized similar recruitment of a convenience sample (*N* = 8006 school nurses) and provided a comparator for this survey's (SSNP) sample. The National School Nurse Workforce Study (NSNWS, Willgerodt et al., 2018) also provided some comparison data. The NSNWS utilized systematic survey methodology to produce a stratified random sample (*N* = 1062 public schools) for an in-depth study of school nursing practice in the United States. Because the NSNWS survey was sent to schools, not all respondents were school nurses.

The average age of respondents in this study (51.9 years) is similar to the NASN 2015 survey (41-55 years). About half of the respondents in all three samples had a BSN degree (SSNP = 48.6%; NASN 2015 = 45.3%; NSNWS = 53%). Schools and practice models had similar characteristics in all three samples. The majority of respondents in all three samples

worked in public schools (SSNP = 85.6%; 2015 NASN = 83%; NSNWS = 82.8%). The predominant model of practice across all three samples is one RN providing direct care in one building (SSNP = 43.6%; 2015 NASN = 50.7%; NSNWS = 43.7%), though most school nurses worked in two or more buildings in the SSNP and NSNWS samples. The location of practice (suburban, rural, urban) was similarly spread across the SSNP and 2015 NASN samples. Thus, although the sample for this study was a convenience sample, participants seem to represent those of the school nursing population.

School Nursing Scope of Practice

The purpose of this study was to conduct a gap analysis between the standard of school nursing practice, operationally defined by the items on the investigator-designed survey, and actual practice, described by the survey responses (research question 1). For the gap analysis, barriers to attaining the standard, full scope of school nursing practice, were examined along with actual practice to understand the phenomenon (research question 2). For the most comprehensive discussion and to most fully understand these phenomena, both research questions are answered in combination in this section.

Overall, school nurses reported that they *frequently* to *almost always* engaged in full scope of practice as measured by the SSNP instrument (Table 10). However, within each *Framework* principle, mean frequencies of practice ranged from *rarely* to *almost always* (Table 9). Gaps between full scope of practice and current practice were identified for four of the five *Framework* principles: Quality Improvement, Community/Public Health, Leadership and Care Coordination. In this section, the gaps are discussed in order of largest gap to smallest gap.

Quality Improvement

The largest gap between actual school nursing practice and full scope of school nursing practice identified in this study was in the Quality Improvement principle (Table 10). School nurses in this study only *sometimes* to *frequently* engaged in Quality Improvement activities. The less frequent engagement in Quality Improvement practice found in this study describes a known gap in school nursing practice (Bergren et al., 2017; Maughan et al., 2014). Current initiatives to address this gap are aimed at culture change, education, and practical data collection processes (Bergren et al., 2017; Maughan, Johnson, & Bergren, 2018; Maughan & Yonkaitis, 2017).

There was a range of practice frequencies within the Quality Improvement principle (Table 9). The highest frequency Quality Improvement practice was documenting all care provided. This is a foundational nursing responsibility, and the first step in data collection for Quality Improvement. However, school nursing documentation is often non-standardized and does not allow for comparisons across time and across the practices of other school nurses at the local, state and national levels (Bergren et al, 2017; Maughan et al., 2014). It is not surprising, then, that the lowest frequency Quality Improvement practices were related to aggregating and benchmarking data. Several participants acknowledged, in the open-ended responses (Table 19), the lack of external data for benchmarking on the local, state or national level. These findings are consistent with reports in the literature (Bergren et al., 2017; Maughan et al., 2014) and lend support for the NASN data initiative, *National School Health Data Set: Every Student Counts!* (Maughan et al., 2018).

The importance of Quality Improvement was rated higher than its actual frequency of practice (Table 12). However, Quality Improvement was rated the least important *Framework* principal (Table 11). This lower practice and valuation of Quality Improvement activities may be explained by one representative respondent who stated:

> "I had to balance my answers to what I believe to be important versus the realities of being a school nurse and covering 10 schools in 4 different communities. I think that if I had more time, more assistance, or less students to manage, most or all of these statements would rank very important to absolutely imperative."

This school nurse describes the interplay between the self-identified barriers to performance of Quality Improvement practices, time-workload-caseload and inadequate resources (Table 16), and the valuing of the practices. In many open-ended responses school nurses described providing episodic and direct care for many children each day and responding to a variety of demands. This multifactorial determination of workload is consistent with the NASN position statement on workload (2015), confirmed by Jameson et al., (2018), and describes a situation in which the school nurse must prioritize competing demands.

Other survey findings point to factors that may explain the gap between full scope of school nursing practice and actual practice as it relates to Quality Improvement. Nearly half of the participants in this study noted their model of practice is a nurse working in one school building as the sole provider of health care in their setting (Table 8). Nearly two-thirds of participants noted they report to a non-nurse supervisor (Table 6). This independent practice has been described in other NASN surveys (Mangena & Maughan, 2015), and has been implicated in the lack of resources and support required to implement a system of data management that would promote evidence-based nursing practice (Johnson, 2017).

Community and Public Health

After Quality Improvement, the least frequent practices were in the Community/Public Health principle (Table 10). This practice gap is concerning in light of the national shift to community-based care and the school nurse's foundational role in public health (Bergren, 2017b; IOM, 2011; Storfjell et al., 2017).

No item was practiced *almost always* or *always* within this principle (Table 9). There was

a range of frequencies reported for Community/Public Health activities. Activities practiced

frequently to *almost always* within the Community/Public Health principle related to working

with students within the school such as proactively identifying and monitoring students at risk,

following up on screenings and using evidence based educational strategies. Activities practiced

only *sometimes* to *frequently* within the Community/Public Health principle were related to

school and community outreach and included working with community partners to help students

gain needed access to health care, participating on community coalitions to address the needs of

the school community, and actively addressing environmental health concerns. This pattern of

more frequent practice with individual or groups of students and less frequent practice with the

school or community is consistent across four of the five *Framework* principles, and points to a

gap related to a population focused practice within principles.

Self-identified barriers to Community/Public Health practice were time-workload-

caseload, and inadequate resources (Table 15). Higher frequency practice within the Care

Coordination principle (Table 10) may indicate that school nurses with limited resources attend

to Care Coordination practice before engaging in Community/Public Health practice. Although

school nursing has its roots in public health, school nurses today are more likely to view Care

Coordination activities as the traditional school nursing role (Bergren, 2017b). In this study,

school nurses not only indicated that they more frequently engaged in Care Coordination

practices, but also noted they valued those practices more so than Community/Public Health

activities (Table 11). Additionally, open-ended responses (Table 19) indicated that school

nurse's roles were often determined by others, such as the school principal, or that their role was

limited to direct care.

Respondents rated the importance of Community/Public Health higher than the frequency of their practice of Community/Public Health (Table 12). However, respondents rated the importance of Community/Public Health practice lower than all of the *Framework* principles, except for the Quality Improvement principle (Table 11). Lower frequency practice and importance ratings for practice items within the Community/Public Health principle are consistent with reports in the literature of inadequate preparation in public health concepts for currently practicing school nurses (Allen-Johnson, 2017; Cogan et al., 2017) and the precedence of the Care Coordination role (Bergren, 2017b).

Regional differences were found in the practice of Community/Public Health (Table 21). The South (region 4) placed significantly higher importance ($p < .001$) on the Community/Public Health principle items than other regions. Interestingly, the south is an area of the country with more LPNs practicing in the school nurse role, and Community/Public Health is not usually part of the LPN curriculum (Willgerodt et al., 2018). An examination of population factors, including the culture of the community may lend an understanding to this pattern.

Leadership

On average, school nurses indicated they *frequently* to *almost always* engaged in Leadership practice items (Table10). However, both the highest overall frequency item, "I hold myself accountable for my school nursing practice" and the lowest overall frequency item, "I seek out new funding or models that will financially support my school nursing practice" are within the Leadership principle (Table 9). The highest frequency item is related to standards of practice and the lowest frequency item is related to system level work involving community outreach, which is consistent with trends across four of the five principles. Activities performed more frequently within the Leadership principle revolved around personal practices such as

staying current and setting yearly professional goals. Activities performed less frequently related to working with others, such as sharing school nursing and health knowledge from research, updating health policies, and actively participating on interprofessional committee meetings.

Barriers that significantly impacted school nurses' abilities to engage in Leadership practice items were the school/district's expectations of the role and the state Nurse Practice Act (Table 17). The impact of the interplay between the education system (school/district, and state) and the health system (Nurse Practice Act) has been implicated in lack of BSN readiness for school nursing practice (Newell, 2013), moral distress in school nurses (Savage, 2017) and variances in school nursing practice across states (Praeger & Zimmerman, 2009; Willgerodt et al, 2018). Many open-ended responses (Table 19) confirmed this issue, identifying education system practices, policies and interprofessional interactions at the root of school nursing practice determinations.

School nurses who served greater than 75% of students receiving free and reduced-price lunch were less engaged in Leadership practices (Table 22). It was expected that serving students receiving free and reduced-price lunch would have impacts across *Framework* practices, so this finding unique to Leadership practices is interesting. Free and reduced-price lunch is an economic measure; greater than 75% of students receiving this service would indicate a population with the majority of students living in poverty. Poverty is related to an increased use of nursing services (Fleming, 2011) and less access to health care. It is possible that engagement in greater amounts of episodic direct care for these students minimizes the time and energy for school nurses to engage in Leadership practices. However, within the Leadership principle, the school nurse can provide crucial advocacy and voice to the most vulnerable students. This finding, therefore, is a major concern. No other *Framework* principles were associated with the

90

free and reduced-price lunch measure, however, and episodic care is not measured directly within the SSNP survey.

The number of buildings the school nurse covered predicted an increase in frequency of Leadership practices (Table 22). There were no related findings in number of students served or model of practice (such as overseeing LPNs) to elucidate this finding. It is possible that school nurses who cover more buildings do not spend as much of their time providing direct care and can, therefore attend to Leadership practices, which require time away from direct care.

Care Coordination

The majority of activities practiced most often were in the Care Coordination principle (Table 10) which is not surprising, as these activities are considered traditional school nursing responsibilities (Bergren, 2017b). However, within the Care Coordination principle, working with others to address the health needs of students, communicating information that could affect the health care for children with chronic conditions, and training others on emergency health care occurred more frequently than coordinating the work of others to meet the health needs of students and families (Table 9). This finding may describe an important gap in one of the Care Coordination practices, described by McLanahan and Weismuller (2015), that reduce fragmentation and create efficiencies in health care. Coordination of care is an important role that the school nurse is uniquely qualified to fill. It is not surprising that inadequate resources were the most significant self-identified barrier to engaging in Care Coordination practices. McLanahan and Weismuller (2015) linked effective case management with having adequate time and fiscal resources, noting in their integrative review, that many authors concluded that effective case management could not be done as a regular part of school nursing duties, but instead required dedicated time and personnel.

School nurses' model of practice may give additional insight to how inadequate human resources significantly impact the practice frequency of Care Coordination activities such as coordinating the work of others. Providing direct care alone (one nurse, one building without assistance) is the most frequent model of practice for school nurses in this study (Table 8) and was also associated with the lowest frequencies of Care Coordination practice of all of the practice models (Table 23). School nurses indicated in their open-ended responses that direct care practices, such as seeing multiple students each day, preceded and precluded other nursing practices.

Interestingly, less than 8% of school nurses indicated the lack of an electronic health record (EHR) in their top three barriers to practice (Table 13). However, the lack of an EHR had the second largest effect size on Care Coordination practices, after inadequate resources (Table 14). This underscores the importance of the EHR in the communication and coordination practices within the Care Coordination principle. Lack of access to an EHR in the school health clinic inhibits essential documentation for the coordination of patient care, and the ability to standardize and aggregate health data to improve care (Maughan et al., 2014). Lack of access to an EHR that interfaces with other health professionals is a barrier that inhibits essential communication between the school, the medical home and the hospital (AAP, 2017; Fleming & Willgerodt, 2017; Nadeau & Toronto, 2016). Promoting the use of an EHR may enhance capabilities for all *Framework* practices.

Two important components of the nursing process contained within the Care Coordination principle are less frequently practiced, representing a gap between full scope of practice and actual practice within this principle. The first relates to including yearly goals identified by the student and family in their health care plan (Table 9). Goal-setting is important

to student centered health care, yet is practiced much less frequently than involving the student/family in planning for the health needs of students. Several open-ended responses substantiated reasons why yearly goal-setting was not implemented (Table 19). These reasons included school district process issues and two respondents indicated that the cognitive level of their student population precluded student goal setting.

Second, monitoring student health plans to determine progress and identify interventions that need to be changed was also a lower frequency practice item (Table 9), indicating that evaluation of the efficacy of health plans is practiced less frequently. This gap in practice may have causes similar to those identified in the Quality Improvement principle analysis; the school nurse documents all care provided and creates health care plans, but a gap exists in taking that to the next step and looking for outcomes of that care, and opportunities for improvement based on that analysis.

Standards of Practice

School nurses in this study rated their frequency of practice the highest on items related to Standards of Practice (Table 9) and reflective of ethical principles, such as "I advocate for my students/school community even when others disagree", "I hold myself accountable for my school nursing practice", and "I follow all the rules (including HIPAA and FERPA) related to confidentiality of student health and education". This finding supports the conceptualization of Standards of Practice encircling the other principles in the *Framework* (NASN, 2016) and provides evidence that school nurses perceive their practice to be in accordance with *The Code of Ethics for Nurses*, a foundational document for the *School Nursing: Scope and Standards for Practice.* Barriers, including time-workload-caseload and inadequate resources, had smaller

effects on the Standards of Practice principle. Standards of Practice can be seen as a workforce strength.

Barriers and Impacts on Full Scope of Practice

To understand gaps between full scope of practice and actual practice, self-identified barriers to practice were examined related to overall practice (Table 13). Nearly two thirds of the respondents identified time-workload-caseload in their top three impacts on their ability to practice as they would like, and many of the open-ended responses discussed time and workload issues (Table 19). School/districts' expectations of your role and state laws and policies together account for more than 80% of the responses. Many open-ended responses identified education system practices, policies and interprofessional interactions at the root of nursing practice determinations (Table 19). Findings from this study strongly indicate a need to strengthen school nursing practice in the context of school nurse's employment within the educational system. Navigating the complexities of the school nurse role requires education and mentoring that inconsistently occurs across states and school districts (Davis, 2018; Newell, 2013; Yonkaitis, 2018).

Several demographic impacts on practice occurred across *Framework* principles. Both experience as a nurse or school nurse and national school nurse certification mitigated these barriers to school nursing practice (Table 22). Nursing experience was positively correlated with practice in four of the *Framework* principles; educational preparation was not. This is an interesting finding, as, at an average age of 51.9 years, most school nurses completed their nursing education prior to the time when evidence-based practice was part of the nursing school curriculum (Maughan & Yonkaitis, 2017). However, Newell (2013) found gaps in BSN graduate preparedness for work within the educational system. Years of experience may provide on-the-

job training in navigating educational system policies and expectations, thereby enabling the school nurse to more frequently engage in *Framework* practices. This underscores the need for specialized training, education and mentoring for the complex role of the school nurse.

Similarly, national school nurse certification, or having multiple certifications, increased the frequency of practice in all five *Framework* principles compared to having no certification (Table 22). State certification as a school nurse conveyed significance only in the Leadership principle (Table 22). This finding points to the importance of national practice standards that are evidence based, and not state determined, and the potential for national certification to reduce variances in practice across states and school districts. There is a need for local advocacy for evidence-based policies and practices that determine the school nurse role (Willgerodt et al., 2018).

Gaps Between Practice and Importance

School nurses rated the importance of each *Framework* practice higher than their frequency of performing of that activity (Table 12). Believing that an activity is important may provide incentive to engage in that activity, as described in the self-determination aspect of nursing practice regulation model (ANA, 2015). However, as further described in the ANA (2015) model, this aspect of self-determination of practice occurs within the confines of the rules and regulations that govern practice. The gap between what the school nurse believes is important to do, and what the school nurse can realistically accomplish, can lead to significant moral distress (Savage, 2017). School nurses can experience significant moral distress in relation to not having enough time and resources to deliver care, especially to children with chronic illnesses (Powell, Engelke & Swanson, 2017). Savage (2017) also found moral distress in school nurses in response to the competing demands of healthcare and educational policies.

Interestingly, these three impacts on moral distress were the top three barriers to practice identified in this study. Addressing the root causes of moral distress, including the self-identified barriers to practice, as well as educating school nurses on ways to alleviate moral distress (Savage, 2017) may contribute to increases in scope of practice in other areas of the *Framework*.

Gaps Within Framework Principles

An unexpected finding of this study was related to the patterns discovered in the more and less frequently practiced items within each *Framework* principle (Table 9). For four of five *Framework* principles, there were commonalities in the differences between those items practiced frequently and those practiced infrequently. There was more frequent practice in areas that related to care of individual or groups of students and less frequent practice in areas that involved the school or larger community. These gaps within the *Framework* principles mirror the gaps in *Framework* principles overall; Quality Improvement and Community/Public Health require the community focus more so than Care Coordination and Standards of Practice, and are less practiced and valued. These findings further support the need for population focused care (Bergren, 2017b; NASN, 2016),

Lower Frequency Practices That May Not Indicate a Gap

Several of the Care Coordination practices may occur less frequently because of opportunity; the practices may be needed less frequently (Table 9). For example, assisting with transition plans occurs at times of transition and developing care plans for students with chronic health conditions occurs when there are students with chronic conditions. These two examples are subsets of student populations, and therefore the opportunity to engage in these practices may occur with less frequency. However, if the school nurse works with a population of students with

chronic diseases, or those students transitioning, the low frequency of these practice items would represent an important gap in practice.

The Community/Public Health practice of working with community partners to help students gain needed access to health care may, similarly, not be applicable to the needs of all students. Open-ended responses clarified that respondents who did not engage in this practice simply did not need to do so (Table 19). The lower frequency of this practice may be due to the fact that the school nurse participants in this study most often work with populations who have access to health care and, thus, do not require the school nurse's assistance. However, interestingly, half of school nurses indicated that they served a culturally diverse/minority population, a grouping in which families with lack of access to health care are overrepresented (National Center for Educational Statistics, 2018). Exploration into factors that contributed to this less frequently practiced activity is warranted.

Within the Quality Improvement principle, several respondents indicated that Quality Improvement activities were not a part of their role responsibilities and/or that these responsibilities were carried out by a nursing (or other) supervisor or group (Table 19). While it is important for all school nurses to engage in some aspects of Quality Improvement, it may not represent as large a practice gap if the function is performed by a supervisor or other member of the team, such as might occur in a particularly well-staffed school district.

Limitations

A limitation of this study is the fact that this investigator-developed survey was used for the first time. Efforts to mitigate this limitation included design of the survey in conjunction with an instrument development expert and school nurse research expert. Further, review by a panel of school nursing research experts helped to establish content validity of the SSNP survey.

Internal reliability was examined through statistical analysis and found to have acceptable to good internal consistency at > 0.7 (Polit & Beck, 2017). The length of the survey may have deterred completion, though the survey's comprehensiveness provided a detailed understanding of school nursing practice. Despite careful phrasing and intentional selection of the items and anchor points, wording of items or the anchor points may have been unclear and skewed the responses. The use of a convenience sample may not be reflective of the population of practicing school nurses in the U.S., though demographic data obtained in the survey was consistent with other U.S. school nursing workforce studies, and was the most reasonable method for obtaining a sample of practicing school nurses.

Implications for Practice, Education, Research and Policy

Findings from this study highlight areas of focus for school nursing practice with implications for practice, education, research and advocacy. Numerous implications for practice are identified. First, the study found the largest gap in Quality Improvement practice and a relatively low valuation of its importance to school nurses. The self-identified barriers of insufficient time and resources within this *Framework* principle point to a need to provide a user-friendly and time-efficient method for school nurses to engage in Quality Improvement activities. School nurses should advocate for the electronic health record as a means to increase the quality, efficiency and standardization of their reports (Bergren et al., 2017). Data school nurses gather must have salience for both improving the practice of school nursing and demonstrating school nurse practice outcomes on measures that are linked to students' health and academic performance, such as attendance (Bergren et al., 2017). Linking school nurse efforts to academic goals is crucial in advocating for the role of the school nurse within educational settings. The *NASN National School Health Data Set: Every Student Counts!* provides a structure

for the school nurse to begin the standardized documentation that will facilitate the school

nurses' more frequent engagement in Quality Improvement practices (Maughan et al, 2018).

Second, the low valuation and engagement in Community/Public Health activities points

to a great need to increase the population health focus of current school nursing practice. A

population health focus is congruent with health care shifts from hospital to community-based

health care and from volume to value (Bergren, 2017b; IOM, 2011; Porter & Kaplan, 2016). The

school nurse is uniquely positioned in the community to improve health care outcomes for youth

and reduce health care disparities (Schroeder et al., 2018; Storfjell et al., 2017). This shift in

focus will require a national campaign for school nurses to make a change from episodic and

individually focused care to care focused on population health needs (Bergren, 2017b; NASN,

2016; Storfjell et al., 2017). The shift will require education, research, policy development,

advocacy and mentoring of school nurses to implement Community/Public Health nursing

practice. Education and mentoring of school nurses should address navigation of the

complexities of organizations, interprofessional relationships and state/school district

regulations.

Third, the gap within the Care Coordination principle regarding the practice of

coordination is concerning and must be examined further. It is vitally important that the school

nurse provide coordination for the care of youth with chronic health care needs attending school.

The coordinating role must be widely understood and valued by practicing school nurses.

Elements of the school nurse's role in Care Coordination have been described (McClanahan &

Weismuller, 2015) and the process for effective coordination of care utilizing school nurse case

management has been explicated (Engelke et al., 2014). NASN has published a position

statement regarding the role of the school nurse in working with students with chronic health

conditions (2017). However, there is no national guideline for the school nurse's role in Care Coordination. Such a guideline would be useful in ensuring that all school nurses are fully educated about the role. However, to fully implement this role, school nurses need to reach out beyond the areas under their direct control, and influence and coordinate the work of others. Barriers such as the school/district's expectations of the school nurse role must be addressed through policy development and advocacy both on the national and local level. At the national level, standards of Care Coordination for school nursing practice should be developed, and these standards can be utilized in local advocacy efforts to develop policy and job expectations regarding the role of Care Coordination for the practicing school nurse. Consideration must be given to resource issues. The school nurse may not be able to provide effective coordination of care for children with chronic illnesses if there is not dedicated time to do so.

Fourth, school nurses must address the barriers to full scope of practice at the national and local level. This will require clear articulation of their full scope of practice tied to the positive health and education outcomes related to full scope of practice and the necessary resources to achieve full scope of practice. National standards and evidence-based practice guidelines are needed for school nurses to utilize in local advocacy regarding the school nurse role. School nurses in this study indicated that they recognized the constraint placed on their practices from state and school district policies and their state Nurse Practice Act. School nurses must take the lead and see these constraining policies as something they can influence and change (Bergren, 2017a). This influence can occur in many places within the community. On the national level, outreach to organizations such as the Association of School Superintendents, the National Association of Local School-Boards and School Principal organizations can provide education system leadership with an understanding of the role of the school nurse and the

connection between school nursing and positive health and education outcomes for students and school communities. Within the school district, school nurses can advocate for job descriptions and a performance evaluation process that utilizes the *Framework* and includes a school nurse supervisor or peer in the process. Performance appraisals that consider school nursing practice standards and school district policies, and include both nursing and school administrator review help to educate the non-nursing supervisor on the role of the school nurse (Haffke et al., 2014; Southall et al, 2017). Other local advocacy efforts can take place at the school board or state legislative level (Bergren, 2017a).

Fifth, this study supports the use of the *Framework* to define and organize school nursing scope of practice. School nurses can be encouraged to use the *Framework* as a blueprint to discover full scope of practice (Allen-Johnson, 2017; Cogan et al., 2017; Maughan et al., 2016; NASN, 2016; NASN, 2018b). Studies that link student health and education outcomes for school nursing practice based on the *Framework,* can be utilized to educate school nurses and others on the scope of school nursing practice (Allen-Johnson, 2017; Best et al., 2017; Cogan et al., 2017). The 39-item tool developed for this study can be utilized by school nurses individually or in groups to identify gaps in their practice and discover avenues for expanding their scope of practice. Further research to develop this study's tool could provide school nurses with a validated instrument with which to assess their practice and provide a blueprint for expanding their scope of practice.

Sixth, school nurse's moral distress must be explored and addressed. Gaps between practice and importance found in this study, and the school nurse's open-ended responses indicate a vulnerability to moral distress. Decision-making models may be a useful tool for the school nurse confronting conflicts in practice (Savage, 2017). Advocacy at the national and local

level to remove barriers and attain resources and policies that support full scope of practice are needed.

There are four implications for further research. First, results from this study demonstrate that there is no particular practice model (i.e. number and type of ancillary supports and number of buildings a school nurse covers) with clear advantages to increase the scope of school nursing practice. Research that provides evidence linking effective staffing and resources to student health and education outcomes is needed.

Second, this study has identified regional differences accounting for practice variance across all principles, with the greatest differences in two of the least practiced principles, Quality Improvement and Community/Public Health. Further exploration of these practice differences, and associated barriers to practice may elucidate avenues for regionally targeted intervention.

Third, in this study, demographic characteristics and self-identified barriers to full scope of practice did not fully explain practice differences. Specifically, statistical analysis often indicated relationships with statistical significance, often at the $p < .001$ level, but often with very small effect sizes. Open-ended responses explained practice differences more robustly in their content, but these items constituted a small percentage of the study responses and could only be analyzed with descriptive statistics. This points to the need to develop research and practical definitions for the variables measured in the self-identified barriers, demographic and open-ended responses in this study. For instance, the self-identified category time-workload-caseload was identified as a top three impact to practice as you would like by 62.7% of this study's respondents. Time-workload-caseload was associated, through independent samples t-tests, with practice frequencies in the Community/Public Health and Quality Improvement principles, the two principles with the lowest overall practice frequencies and importance ratings.

However, demographic characteristics (such as number of buildings the school nurse oversees, number of students served) that would seem to comprise the time-workload-caseload category were not. Open-ended responses indicated that "seeing up to 70 students per day" or "working with [a new population of] refugees" impacted the ability to engage in some *Framework* practices. It is clear that the variable time-workload-caseload impacts practice but the measures used in this study do not fully capture the construct time-workload-caseload.

A fourth area for research is the refinement and validation of the SSNP instrument. The finding that differences existed within *Framework* principle could be addressed with an additional measure within the SSNP instrument. The ASCOP questionnaire (D'Amour et al., 2012) accounted for different levels of practice complexity within its domains. For instance, within the Care Coordination domain of the ASCOP, one of three levels of complexity (low, moderate, high) was applied to each statement. Revision of the SSNP to include the variance within principle, a similar concept, would enhance the tool's ability to describe school nursing practice.

Recommendations for Nursing Practice and for Further Study

There are four important recommendations for practice that result from this project. First is the full implementation of the *NASN National School Health Data Set: Every Student Counts!* data initiative to provide school nurses with an infrastructure for Quality Improvement practice. This is a three-pronged approach involving increasing the school nurse's ability to collect, aggregate and report on data, continued development of the school nursing uniform data set, and strengthening school nurses' abilities to benchmark at the state and national level (Maughan et al., 2018). Second, school nursing leaders should engage in a national campaign that targets national, state and local school education stakeholders and school nurses to promote a population

health focus for school nursing practice that will expand Community/Public Health practice and address gaps within all *Framework* principles. Third, it is vital that a national practice standard for school nurse coordination of care for students with chronic illness be developed and implemented throughout school nursing. The implementation of this practice standard will require attention to the work environment of school nurses. Fourth, as school nurses face tremendous challenges to self-determination of their scope of practice, efforts to address the environment of practice must be undertaken. These include addressing resource issues, and variances in practice across states and school districts, through research, policy development and advocacy. Throughout all initiatives, attention should be paid to supporting school nurses in navigating the complexities of their role within the educational system.

Recommendations for further study include refinement and validation of the SSNP instrument to provide school nurses with a validated tool with which to measure school nursing practice. Research to clarify barriers to school nursing practice, elucidate practice models that support full scope of school nursing practice and further explore regional differences in school nursing practice is recommended to inform policy and advocacy on the national, state and local levels.

Conclusion

The Scope of School Nursing Practice survey provided a self-assessment tool for school nurses to view their scope of practice and barriers to full scope of practice through the lens of the *Framework for 21st Century School Nursing Practice*. School nurses identified gaps in practice and barriers to practice that have been examined and lead to recommendations for practice and further study. To address the 21st century needs of students and school communities, school nurses and school communities will need to fully embrace a population focused, evidence-based

practice with the school nurse as a central figure in coordinating care for children with chronic illness. To attain this full scope of practice, school nurses should lead and shape school nursing practice through national and local advocacy to address the state and school district regulations, policies and organizational practices that constrain their practice. Reducing variances across states with evidence-based practices will support school nurses in realizing full scope of practice. Research into practice models that enhance the professional and population focused role of the school nurse will be necessary to address the workload and resource issues that are barriers to full scope of practice. Addressing the moral distress that may accompany school nurses holding themselves to high standards in the face of the many challenges to practice as they would like must underpin scope of practice initiatives. The *Framework for 21st Century School Nursing Practice* provides a blueprint for both a national agenda and local assessment focused on the vital role of the school nurse in the health and academic outcomes of students and school communities.

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