

EMERGENCY CARE SKILLS PREPAREDNESS OF RURAL MINNESOTA NURSE
PRACTITIONERS

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ABSTRACT

Many rural hospitals rely on family nurse practitioners (FNPs) to provide care in rural health care facilities. With a shortage of medical doctors, FNPs are frequently working independently to fill the need often covering the clinic, hospital, and emergency department. FNPs who work in rural settings need to have comprehensive emergency care education as they are often the only provider available when acute or critically ill patients present to the emergency department. Often, many FNPs working for rural hospitals are required to provide emergency care with little to no emergency care specific education in their curriculum. Providing FNPs with increased emergency preparedness is essential to improve patient safety when critical patients present to rural health care facilities. A lack of preparedness in emergency skills and procedures, due to the infrequency of use and lack of formal education, may affect the provision of high-quality patient care. The purpose of this practice improvement project was to evaluate the educational needs of rural Midwest FNPs covering emergency departments and to develop an educational seminar to increase perceived emergency care skills preparedness. A secondary analysis of a pre-existing 2020 needs assessment survey was conducted to review the prior perceived level of emergency care skills preparedness among rural novice FNPs in the Midwest region which directed the project's emergency care seminar topic selection. The topics presented during a one-day educational seminar included acute neurological disability, cervical spine management, and emergency airway management. All nine participants attending the educational seminar demonstrated increased levels of perceived preparedness from the pre-and post-survey regarding the three skills.

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TABLE OF CONTENTS

ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	iv
LIST OF TABLES.....	viii
LIST OF FIGURES.....	ix
CHAPTER ONE. INTRODUCTION.....	1
Background and Significance.....	1
Problem Statement.....	3
Purpose.....	4
Project Objectives.....	5
Objective One.....	5
Objective Two.....	6
Objective Three.....	6
CHAPTER TWO. LITERATURE REVIEW.....	7
Introduction.....	7
Workforce Shortages.....	9
Rural Minnesota.....	12
Critical Access Hospitals.....	14
CAH Training for Emergency Department Care.....	17
Dissatisfaction Among Rural Providers.....	19
Family Nurse Practitioner Education.....	20
Family Nurse Practitioner Students.....	21
High Acuity Low Occurrence.....	23

Previous Related Initiatives.....	24
Conclusion.....	26
Theoretical Framework	27
Iowa Model of Evidence-Based Practice	32
Step 1: Topic Selection.....	32
Step 2: Forming a Team	33
Step 3 and 4: Retrieval and Grading the Evidence	33
Step 5 and 6: Developing and Implementing Evidence-Based Practice Standard	33
Step 7: Evaluation.....	34
CHAPTER THREE. METHODS	35
Project Design and Implementation Plan	35
Step 1: Selection of a Topic.....	35
Step 2: Forming a Team	36
Step 3 and 4: Retrieval and Grading the Evidence	37
Stage 5 and 6: Developing and Implementing	38
Step 7: Evaluation/Data Analysis	42
CHAPTER FOUR. RESULTS	44
Demographic and Practice Characteristics of Respondents	44
Objective One.....	45
Objective Two	49
Objective Three	50
CHAPTER FIVE. DISCUSSION AND RECOMMENDATIONS.....	55
Summary and Synthesis	55

FNP Students	56
Limitations and Strengths.....	59
Recommendations	61
Implications for Practice & Future Research	63
Dissemination	65
Application to Nurse Practitioner Role	65
Conclusion.....	65
REFERENCES	67
APPENDIX A. COMPETENCIES FOR NPS IN EMERGENCY CARE.....	76
APPENDIX B. THE IOWA MODEL REVISED: EVIDENCE-BASED PRACTICE TO PROMOTE EXCELLENCE IN HEALTH CARE.....	79
APPENDIX C. UNIVERSITY OF IOWA HOSPITALS AND CLINICS PERMISSION LETTER.....	80
APPENDIX D. INVITATION TO PARTICIPATE.....	81
APPENDIX E. PRESEMINAR SURVEY EVALUATION	83
APPENDIX F. POST SEMINAR SURVEY EVALUATION.....	84
APPENDIX G. IRB APPROVAL	89
APPENDIX H. PERCEIVED LEVEL OF PREPAREDNESS IN CLINICAL AREAS	90
APPENDIX I. EXECUTIVE SUMMARY	93

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Perceived Level of Preparedness in Clinical Areas Among Participants of the Rural Nurse Practitioner Skill Needs Assessment	46
2. Perceived Effectiveness of Teaching Methods	49

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1. County Categorizations Based on Rural-Urban Commuting Areas	9
2. HPSAs within the State of MN.....	11
3. Selected Rural Healthcare Facilities in MN.....	13
4. Agenda for the Rural Emergency Skills Seminar	39
5. Acute Neurological Disability Preparedness	52
6. Cervical Spine Management Preparedness	53
7. Emergency Airway Management Preparedness	54

CHAPTER ONE. INTRODUCTION

Background and Significance

Access to adequate health care in the United States can be of great concern to individuals who reside in rural communities. In the United States, almost 60 million people make their home in a rural community, accounting for 19.3% of the total population (United States Census Bureau, 2016). Rural areas make up 97% of the actual land mass in the United States. In a rural setting, there are 13.1 physicians per 10,000 people compared to 31.2 physicians per 10,000 people in an urban setting (National Rural Health Association [NRHA], 2021). Thus, there is a disproportionate number of healthcare workers resulting in healthcare provider shortages in rural areas. Rural communities rely on the availability of critical access hospitals (CAH) for medical care. CAHs provide emergency care to over a quarter of the United States population (Barnason & Morris, 2011; Ross & Bell, 2009). Family nurse practitioners (FNPs) fill health care provider shortages and provide care in many different roles, often expanding their knowledge and practice to provide care in many different fields of medicine (Nelson & Hooker, 2016; Stock, 2015).

CAHs face many challenges when trying to provide health care to community residents. CAHs need to be able to provide comparable care to what patients would receive in an urban facility (Barnason & Morris, 2011; Office of Rural Health & Care, 2017a). Unfortunately, there is a nationwide shortage of medical providers and bringing providers to rural facilities is difficult. According to the Association of American Medical Colleges (AAMC) (2019), by the year 2032, the overall number of providers is projected to fall short by 122,000 nationwide. The projected shortage of providers is expected to rise as the nationwide average age of individuals is increasing and people are living longer. Rural and underserved areas are expected to experience the brunt of upcoming provider shortages.

Many providers practice in specialty areas (Hooker, et al., 2008; Stock, 2015). A decrease in primary care providers is occurring due to a decrease in salary paired with increased student debt, a high burnout rate, decreased reimbursement rate, and increased administrative and computer time (Zabar et al., 2019). Emergency care is also experiencing a workforce shortage. Emergency care is a service that is essential to a community and needs to be readily available when an emergency arises (Schneider et al., 2010). FNPs working in rural areas cover more specialty care, as access is limited especially in mental health, OB, and pediatrics (Minnesota Department of Health Division of Health Policy, 2019). CAHs in rural communities are found to provide care to patients who live in an area with an aging population, more comorbidities, and higher mortality rates (Baernholdt et al., 2014; Center for Disease Control and Prevention [CDC], 2017; Minnesota Department of Health Division of Health Policy, 2019).

One strategy that has been utilized to alleviate the physician shortage is by hiring FNPs to help cover the decline in physicians, especially in a rural setting. The FNP role is unique as many NPs can practice independently depending on the state's nurse practice act and regulations. In a rural CAH, having an FNP provide safe and effective care is vital, as many of these facilities are only staffed by one provider at a time. FNPs are useful as they are cost effective, have a large scope of practice, and are able to provide all-inclusive care which includes prescribing (Hooker et al., 2008). FNPs are commonly covering primary care, the emergency department, and sometimes the hospital when they provide care at a CAH (Stock, 2015). FNPs are fundamental in rural settings as they help to fill the provider gap and provide care to the rural communities who face increased healthcare disparities and decreased health outcomes compared to the urban health setting (Nelson & Hooker, 2016).

The Institute of Medicine responded to the shortage of providers through the report, “The Future of Nursing” (2011), which recommended the elimination of barriers to FNP practice to answer the demands of the aging population while having FNPs practice to their full scope and allowing them to use their comprehensive education (IOM, 2011). Eliminating the limitations for FNPs on the scope of practice decreases the challenges that NPs face while helping to fill provider gaps in the healthcare system. As of 2015, MN has allowed FNPs to practice to the full scope of their degree, but some states still have practice restrictions in place (Rural Health Advisory Committee, 2015).

Problem Statement

Many FNPs are practicing in rural America where resources and nearby healthcare facilities are limited (Office of Rural Health and Primary Care, 2017). The MN Department of Health Division of Health Policy (2019), confirms that health disparities are more common among the individuals who reside in these rural communities and where access to specialty care is non-existent. As a result, FNP responsibilities go beyond primary care as many are the sole providers covering emergency departments at CAHs. In the rural setting, emergencies can create high stress situations and can have significant consequences for the patient, family, provider, and hospital staff involved. This project sought to evaluate whether comprehensive emergency preparedness education for NPs practicing in a rural setting increased an FNP’s perceived preparedness levels when providing emergency care.

Healthcare facilities find FNPs to be a valuable resource when faced with the rural healthcare shortage. In CAHs, FNPs are commonly the only provider at the facility and must be educated and skilled in numerous areas (Rural Health Advisory Committee, 2015). Many FNPs feel unprepared to provide care in emergency department settings due to the infrequency of skills

completion and lack of structured education (Hart & Bowen, 2016). According to the Rural Health Advisory Committee (2015), in MN, rural health care facilities are required to employ at least one NP or PA who must be available to see patients at a minimum of 50% of the time the facility is open. A study by Hart & Bowen (2016), showed that FNPs lacked preparedness in skills needed to care for acutely ill patients in an emergency department, which can be very overwhelming and frustrating for FNPs. Wolf et al. (2017) described that there is no set verification regarding FNP emergency care competencies and NPs may lack confidence and emergency education during the transition into the provider role.

Purpose

Providing care in a rural community can bring many challenges to FNPs who are working in a CAH. FNPs are shown to provide high quality and cost-effective care while maintaining excellent patient satisfaction scores (Marsh et al., 2012). Rural healthcare can be challenging for FNPs, as the patient demographic they are working with have increased comorbidities and chronic disease in comparison to those who live in an urban setting (Baernholdt et al., 2014; CDC, 2017; Minnesota Department of Health Division of Health Policy, 2019). Rural patients have a higher prevalence of being uninsured, not having a primary care provider, experiencing worse socioeconomic factors, having higher rates of mental distress and suicide, and heavy reliance on emergency services for treatment (Barnason & Morris, 2011; Minnesota Department of Health Division of Health Policy, 2019). FNPs who work in rural CAHs need to have comprehensive emergency care education as they are often the only provider available when acutely or critically ill patients present to the emergency department.

FNPs are often providing care to vulnerable patients in the emergency department within a CAH. Emergency care education is not standardized in many FNP curriculums and many of the

NPs in critical access hospitals have not received specific emergency care education that is needed to care for acutely ill patients (Wolf et al., 2017). FNPs are expected to make complicated decisions and have increased autonomy within the emergency department setting. FNP emergency skills education varies by FNP program, and if present is often fragmented throughout an FNP curriculum with variable validation of skills. Many FNPs feel they are not prepared for the acute level of practice and are concerned about the lack of emergency care education as a practicing provider in these situations.

Most FNPs receive education in primary care with little to no emergency department education as education focuses on family level FNP program requirements (Rural Health Advisory Committee, 2015). The path from a novice to competent FNP is demanding, difficult, and necessitates learning many complex skills (Hart & Bowen, 2016). The Journal of the American Association of Nurse Practitioners (AANP)(2019), shares that FNP competencies upon graduation from their graduate program of study is based on competencies for entry-level practice and are not focused in specialized areas of care or skills. FNP students need to be educated in a wide array of competencies, skills, and knowledge to be prepared to practice in many different settings after graduation, including rural emergency care (Chan & Garbez, 2006; Owens, 2018). As stated by the Rural Health Advisory Committee (2015), the ability to work independently indicates the need for rural FNPs to have the education to obtain proficiency in an emergency department at a CAH.

Project Objectives

Objective One

Evaluate the perceived level of preparedness among rural MN FNPs in performing emergency skills within a rural health care facility.

Objective Two

Develop and implement an emergency skills seminar using evidence-based practice and proficiencies needed by the rural FNP.

Objective Three

The rural FNP's perceived level of preparedness will increase after attending the evidence-based emergency skills seminar.

CHAPTER TWO. LITERATURE REVIEW

Introduction

A review of literature was completed which revealed a lack of current literature covering the subjects of rural healthcare providers and their emergency skill competency and preparedness. Keywords applied in the search included: critical access hospitals, Midwest, MN, rural, competencies, emergency care, and nurse practitioner. Multiple databases were searched, and data was included from PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), EBSCO, Cochrane Library, and Science Direct. Over 60 articles were reviewed with no articles specifically addressing rural MN or Midwest NP emergency care competencies. For the purposes of the review of literature, rural physicians, physician assistants (PA), and NPs will be referred to as a “provider”. The professions will be discussed together as there is a lack of specific rural FNP emergency care competency literature.

According to the 2010 United States Census Bureau (2017), rural is defined as “any population, housing, or territory, not in an urban area”. Areas that have more than 50,000 people are considered urban. Places that have less than 2,500 people are considered rural, with one in five Americans making their home in a rural community (United States Census Bureau, 2017). In 2000, the United States Census Bureau broke down urban areas into two categories, separating urban clusters and urbanized areas. Urbanized clusters are defined as areas that have more than 2,500 people and less than 50,000 people. Urban areas have greater than 50,000 people. The classification of each category helps to compare communities and look at the needs of social, economic, and housing data (Ratcliffe et al., 2016).

In 2015, MN FNPs were employed at a wide range of both urban and rural clinics. In the rural healthcare system FNPs make up at least one third of primary care providers on staff which

often means covering the clinic, hospital, and emergency department (Office of Rural Health and Primary Care, 2019). According to Asche (2019) (Figure 1), MN has 87 counties which are divided into the following four categories, along with the most recent census data:

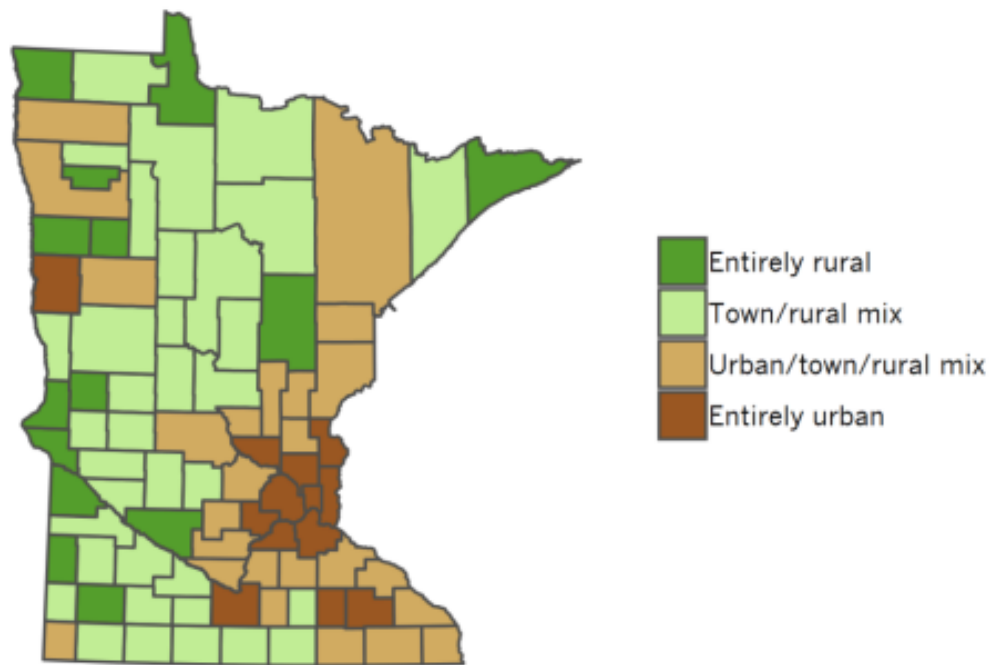
1. 14 counties entirely rural
 - All residents rural
2. 35 counties town/rural mix
 - Some rural residents
 - Some towns between 10,000 to 49,999 residents
 - Some towns between 2,500 to 9,999 residents
3. 25 counties urban/town/rural mix
 - Some rural residents
 - Some towns between 2,500 to 9,999 residents
 - Some towns between 10,000 and 49,999 residents
 - Some towns with over 50,000 residing residents
4. 13 counties entirely urban
 - Population of over 50,000 residents in every county.

Figure 1

County Categorizations Based on Rural-Urban Commuting Areas

(Asche, 2019)

County categorizations based on rural-urban commuting areas



Rural communities are found to face health inequities that leave residents with inferior healthcare opportunities compared to residents in urban communities. “Rural health disparities are deeply rooted in economic, social, racial, ethnic, geographic, and health workforce factors. The complex mix of rural inequities limits access to care, makes finding solutions more difficult, and intensifies problems for rural communities” (Warshaw, 2017). A substantial concern in rural communities is the lack of local providers and access to CAH and quality healthcare.

Workforce Shortages

In an aging population, adequate medical providers are required to fulfill the increased healthcare need. According to the Association of American Medical Colleges (2019), by 2032 the demand for physicians will be between 46,900 and 121,900. Due to national physician

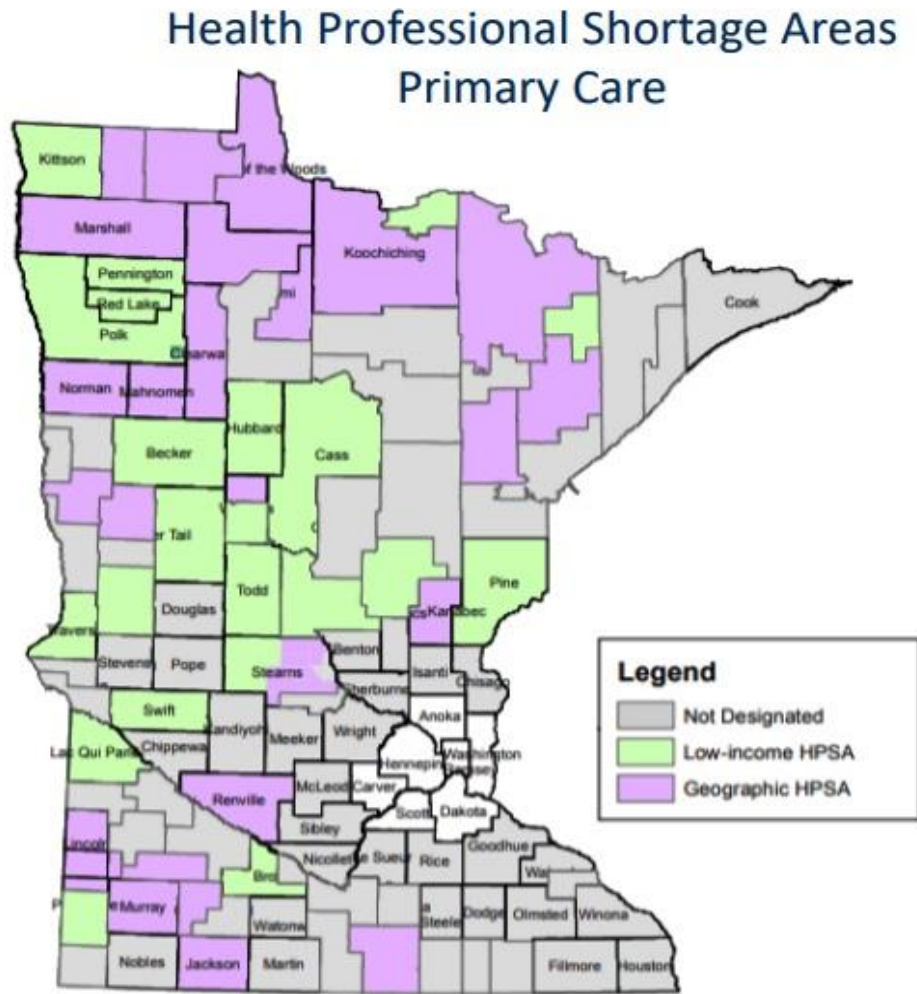
shortages, the United States Health Resources and Services Administration (2019), implemented a designation known as the Health Professional Shortage Areas (HPSAs) to help determine the areas in need. HPSAs are identified as geographic or population groups that have a shortage of healthcare professionals. A HPSA designation helps to focus resources where the need is the highest. Certain criteria must be met for a HPSA designation to be applied. The HPSA criteria includes the population to provider ratio, the percentage of the population that is below 100% of the federal poverty, and the time that it takes to travel to the nearest source of healthcare outside of a rural setting.

As of September 2020, there is currently a shortage of 14,945 primary healthcare providers in a HPSA area, meeting only 44.52% of the nation's current provider needs (U.S. Department of Health and Human Services, 2020). In 2020, the number of providers needed in the HPSAs increased by 858 compared to the year prior (U.S. Department of Health and Human Services, 2020). These numbers represent the critical nature of the provider shortage, especially in the rural areas of our nation. In MN, HPSA facilities have reached only 50.67% of the current need for providers in these rural areas (Figure 2)(U.S. Department of Health and Human Services, 2020).

Figure 2

HPSAs within the State of MN

(Minnesota Department of Health Division of Health Policy, 2019)



As our nation’s average age increases due to the baby boomer population, many challenges will be faced in the United States. By 2030, 1 in 5 Americans will be retirement age, including many of our nation’s current practicing providers. By 2032, there will be more older Americans than children in the nation (Hughes, 2019). As a result of the increased aging population, there is an anticipated strain on the United States healthcare system. Specifically, there will be a shortage of primary care physicians as many of the incoming providers are

fulfilling specialty roles. Many of the current younger providers are not working full time due to the increased risk of burnout and pressure which also is a factor contributing to the shortage (Hughes, 2019). FNP's will be crucial to help fill the role as a primary care provider to help improve access to individuals for preventative health care and to manage chronic medical conditions.

Rural Minnesota

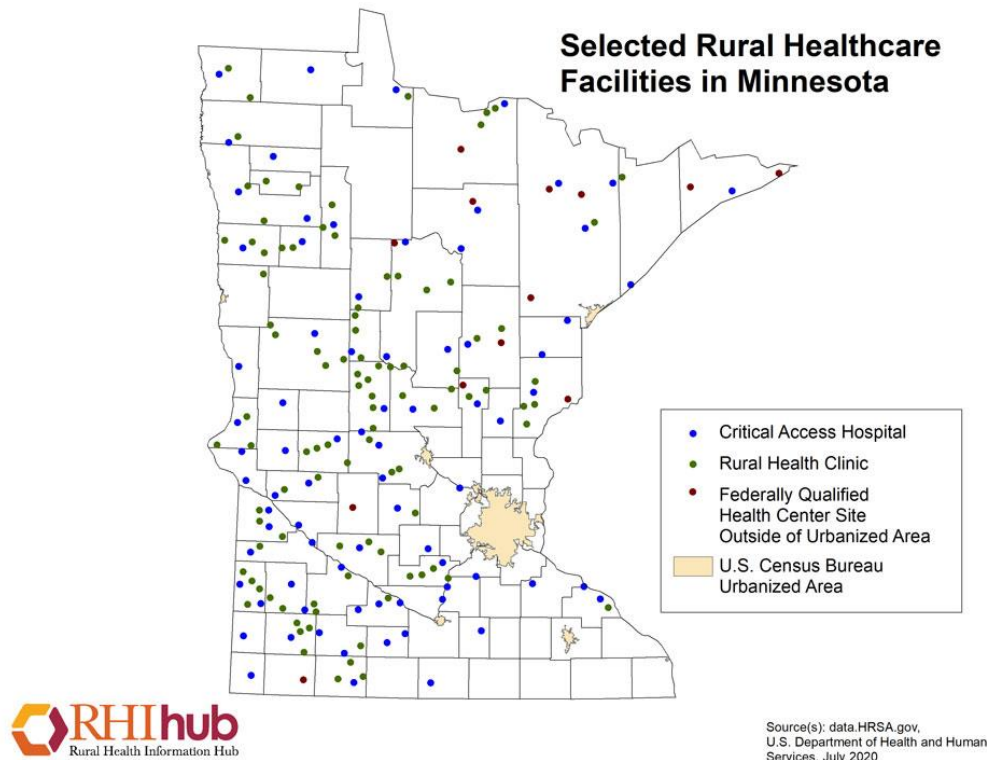
Minnesota (MN) is faced with the same concerns of healthcare provider shortages like what the rest of the nation is facing. MN mainly consists of rural areas with most of the counties being defined as HPSAs (MNDOH, 2019). As of December 2019, there were 8,849 Advanced Practice Registered Nurses (APRN) in MN with 66% being NPs (MNDOH, 2019). In 2015, MN granted authority for NPs to practice independently. The number of NPs rapidly increased by 31% after the implementation of a full scope of practice. (Office of Rural Health and Primary Care, 2019).

As of July 2020, HRSA reports that MN currently has 78 CAHs, 99 rural health clinics, 25 short term rural hospitals, and 13 health centers that are federally qualified. Approximately, one third of all hospital outpatient clinics in the state are in rural areas. In comparison to other states in the United States, MN has the third highest number of CAHs (Figure 3)(MNDOH, 2019).

Figure 3

Selected Rural Healthcare Facilities in MN

(U.S. Department of Health and Human Services, 2020)



Consequently, because of the high number of CAHs in rural settings, access to providers is limited in comparison to the urban areas. In the rural or isolated areas of MN, there is one FNP for every 1,987 people compared to the metropolitan ratio of 1 to 277 people. These numbers accurately depict how FNPs are significantly needed to help fill the care gap in these rural MN communities.

Approximately 39% of the state’s population currently lives in a rural area with many of the residents being older, uninsured, lower levels of education, and higher poverty rates. Rural residents are older when compared to those who live in an urban setting. Within rural communities, the five leading causes of death reported by the Center for Disease Control (CDC) includes heart disease, cancer, unintentional injury, chronic lower respiratory disease, and stroke

(Office of Rural Health and Primary Care, 2017; Warshaw, 2017). Rural population causes of death are at an increased level as compared to the urban population. Individuals residing in rural MN also have higher obesity rates and increased comorbidities, ultimately leading to higher death rates from chronic disease than their urban counterparts.

Rural areas have increased health disparities so CAHs often deal with urgent health concerns in resource constrained environments compared to urban hospitals. Since CAHs are often in smaller communities, skills that are performed in an emergency care setting are often low frequency. The literature has shown that patient outcomes in rural areas are worse than those in urban areas, partially due to the distance and delays in treatment (Barnason & Morris, 2011). Within rural hospitals, it is critical for providers to deliver comparable care similar to what patients are receiving in an urban area presenting to the emergency department (Barnason & Morris, 2011). The provision of advanced emergency care education to rural providers, along with appropriate and timely care, contributes to desirable health outcomes for rural patients. Residents in rural MN have increased healthcare disparities leaving a large care gap to adequately deliver healthcare, results in decreased access, and has fewer primary care providers per population compared to those who reside in urban MN (Office of Rural Health & Care, 2017). In MN, most providers practice in urban communities leaving a great need of healthcare providers in the rural communities (Minnesota Department of Health Division of Health Policy, 2019).

Critical Access Hospitals

A CAH is a “hub of health services that goes well beyond acute care by offering primary care, long-term care, basic care, assisted living, health promotion and disease prevention services, and other services that are important to the community (UND School of Medicine and

Health Sciences Advisory Council, 2019)”. For qualification as a CAH, a healthcare facility must be a nonprofit or a public hospital, provide 24-hour emergency department services, have no more than 25 inpatient beds, deliver care for no more than 96 hours, and be 35 miles from the nearest hospital or 15 miles with mountainous terrain and/or areas with only secondary roads from another hospital (Balanced Budget Act, 1997; Marsh et al., 2012; Nelson & Hooker, 2016). From a historical perspective, the rural hospital system was established after World War II, which laid the foundation for the CAH system today.

After World War II, a political response was developed due to a shortage of acute hospital beds. The Hospital Survey and Construction Act of 1946 provided \$75 million annually to hospitals that were newly built or replaced in rural areas. However, over time, the charity care provided by these rural hospitals eventually took a financial toll. Funding for these hospitals was offered until the 1970’s (Kulbok, et al., 2017; Marsh, et al., 2012). As an attempt to help cover these financial strains, Medicare and Medicaid were developed in 1965 and followed by the Social Security amendments of 1983. After implementation of these programs, funding increased for hospitals as the government paid for the enrolled patients in these programs helping to fund hospitals. Eventually, the cost of these programs increased significantly, changing the way hospitals were reimbursed. Rural hospitals moved from a cost-based reimbursement to a prospective payment system which increased financial stress due to decreased funding. Due to the financial stress, many hospitals closed in both urban and rural areas. As a result of rural hospital financial constraint, the Balanced Budget Act was created in 1997 which helped CAHs receive reimbursement and funding (Marsh et al., 2012; Nelson & Hooker, 2016).

The implementation of the Balanced Budget Act in 1997 allowed the ability to designate a facility as a CAH. The Act’s classification guidelines allowed each state to designate rural

CAHs while helping to contain cost due to the reimbursement from Medicare (Marsh et al., 2012; Nelson & Hooker, 2016; Rural Health Information Hub, 2019). The CAH designation helps to reduce financial vulnerability while improving access to healthcare in rural communities by having a favorable reimbursement method which also includes access to educational resources and grants. CAH reimbursement opportunities include receiving 101% of funding from Medicare for the facility's costs including outpatient, inpatient, lab work, and therapy (Rural Health Information Hub, 2019).

In MN, there are currently 142 hospitals, with 77 (54.2%) of those having the designation of a CAH (Minnesota Hospital Association, 2020). In the nation, an estimated 74% of the rural hospitals have changed to a CAH distinction due to the reimbursement model along with the support of the tertiary hospitals (UND School of Medicine and Health Sciences Advisory Council, 2019). CAHs are vital to rural communities, providing many healthcare services that are needed in these communities. To maintain CAH access and availability to communities, the workforce shortage of providers needs to be addressed. In addition to provider shortages, finances remain a large concern for CAHs.

Due to the changes in insurance policies and government regulation, the cost of healthcare is a major concern for a CAH's ability to remain open and financially functional. MN CAHs are financially vulnerable and have 19 rural hospitals that are at risk for a potential closure, with 32 rural MN hospitals being financially distressed. The number of MN CAHs with financial concerns is the fifth highest in the nation (Olson, 2019). MN CAHs remain essential for the state as the CAH provides increased jobs and income for rural communities. Without CAHs, many small rural towns would suffer. Many CAHs have been able to remain open by merging with a larger healthcare system (Olson, 2019). In MN CAHs, over half of the patients that

receive care are on state healthcare aid. The CAH hospital's aging patient population relies upon the use of Medicare more than those in an urban setting. The average per person healthcare spending is higher in rural areas compared to those in urban areas for all age groups in MN. Keeping the doors open to the CAHs is critical for access to healthcare (Minnesota Department of Health Division of Health Policy, 2019).

CAH Training for Emergency Department Care

In a CAH, providers need to be equipped for any situation that presents through the emergency department. Depending on their location and population served, CAHs can have relatively low patient volumes in the emergency department. However, when patients present, providers care for both urgent and emergent cases (Barnason & Morris, 2011). To provide competent care, continued education is imperative for providers to remain confident and knowledgeable about emergency medical practices and skills.

There is a limited amount of published literature regarding FNP's emergency care education and skills validation in the emergency department setting (Wolf et al., 2017). FNP's are a crucial member of the healthcare team and help to fill the shortage of providers in a CAH. As FNP's are often the most trained individual at a given time providing care in a CAH, they need to be an expert, an educator, and a resource for hospital staff. The Emergency Nurses Association (ENA) completed a study which evaluated emergency skills and emergency department competencies that an FNP needs for patient care (Hoyt et al., 2010). As a result of the ENA's Delphi study, a list of entry level competencies to practice in the emergency department were determined and endorsed (Appendix A) (ENA, 2008). The list of competencies was developed to be a guide for emergency nurse practitioner curriculum. Currently, the list of 51 skills competencies is not routinely incorporated into FNP programs, as acute care setting didactic

content and clinical rotations are not required. Despite the ENA study, there is still a lack of evidence so more research is needed to determine the current practices, emergency education, and practice settings of emergency NPs (Hoyt et al., 2010).

As the FNP role expands and more accountability is placed on these providers, especially in rural settings, certain emergency department skills and the confidence to perform these skills are imperative (Hoyt et al., 2010). Wolf et al. (2017) found that there was no standardized emergency care competency validation for FNPs. Due to the lack of standardization, there are some concerns about the actual emergency skills that FNPs are performing, how they were trained, who was validating these skills, and how often. Wolf et al. (2017), found that FNPs felt the education they received regarding emergency care during school lacked from what they needed to transition into emergency care practice. Emergency care education for FNPs can be difficult to provide when there are limited resources available. Due to a full curriculum focused on primary care, most FNP program curriculums do not cover emergency care skills and education (Hoyt & Proehl, 2015). Further research needs to be completed to determine the education and competency for NPs in the emergency department, especially in rural areas.

Providers in rural settings are expected to have multiple certifications before practicing in CAHs. The certifications include basic life support (BLS), advanced life support (ACLS), pediatric life support (PALS), advanced trauma life support (ATLS) or comprehensive advanced life support (CALS). These required classes are designed to prepare providers for delivering lifesaving skills to patients and are completed every 2-4 years. BLS is a course that provides instruction on the importance of recognizing emergencies, learning how to provide basic care for an individual in cardiac arrest, administering proper chest compressions and ventilation, and using an AED (American Heart Association [AHA], 2019a). ACLS builds on the fundamentals

of the BLS course with the addition of emergency medications, managing stroke and acute coronary syndromes, recognition of different cardiac arrhythmias and their management and treatment (AHA, 2019b). PALS focuses on how to provide care for infants and children during a cardiac arrest and how to manage arrhythmias and respiratory complications (AHA, 2019c). ATLS concentrates on providing immediate stabilization, assessment, and care of a trauma patient. ATLS also provides instruction on how to determine if the patient should be transferred to a higher level of care (American College of Surgeons [ACS], 2019). CALS education for rural healthcare providers emphasizes all ages and conditions seen in rural settings, and the management of those conditions in rural hospitals (Comprehensive Advanced Life Support, 2019).

All these courses and certifications help prepare a provider to practice in an emergency department setting with patients across the lifespan. According to Stock (2015), upon completing the graduation requirements, FNP's are ready to pass a national examination and transition from pre-novice to novice FNP's in practice. If FNP's did not receive emergency care education during their FNP program and is an expected part of their advanced practice role, providing emergency care education is necessary to allow their progression in advanced practice roles and to provide safe patient care (Hart & Bowen, 2016).

Dissatisfaction Among Rural Providers

Practicing in a rural area brings about different challenges and circumstances that are not as common in an urban facility. Some of these challenges include isolation, both geographically and culturally, increased distance to tertiary facilities, decreased socioeconomic stability in the population, non-insured patients, decreased reimbursements, and potentially difficult boundaries between personal and professional relationships (Waddimba, Scribani, Krupa, May, & Jenkins,

2016). The Practitioner Resilience, Adaptability and Well-Being Study which was completed among providers working in a rural facility found there were factors that contributed to dissatisfaction in their job. The top-rated dissatisfaction was the increased workload in these rural areas (Waddimba et al., 2016). The study also showed that practitioners with increased workloads, and or uncertainty in practice had higher rates of job dissatisfaction. Increased preparedness and education would help to increase job satisfaction in rural providers. The shortage of providers creates a unique challenge because they are often the only provider in the facility. The providers take an increased amount of call time and are frequently the provider on call when patients present to the emergency department.

Providing emergency department care in a CAH presents an additional challenge because of the need to handle complex patient conditions with fewer specialists available (Schneider et al., 2010). While covering rural emergency departments and only having one provider in the CAH, providers shared they did not always feel prepared for what was going to present to the emergency department. A study published in the *Advanced Emergency Nursing Journal* by Barnason & Morris (2011), reported that 57% of CAH FNPs did not feel adequately prepared to manage patients in an inpatient or emergency department setting. CAH FNPs felt they needed more emergency education as they use some of their required emergency skills so infrequently, with no routine validation or adequately prepared hospital staff. Nurses working in rural emergency departments also lack experience and skills when needing to assist providers in an emergency (Barnason & Morris, 2011).

Family Nurse Practitioner Education

Additional emergency care education is recommended to meet the needs of rural patients served. Many different types of care are needed in the emergency department, including critical

care, primary care, behavioral health, and public health (Hoyt & Proehl, 2015). The additional knowledge and skills that are needed to provide care in emergency settings is different than the competencies necessary for primary care (Hoyt & Proehl, 2015). Using formal on the job education, continuing education, and mentoring will help maintain patient safety and assist NPs to grow in their fields of practice while expanding the care they provide to patients (Hoyt & Proehl, 2015).

FNPs can obtain emergency care proficiency and competency by “completing an ENP graduate program, attending a structured emergency fellowship program, or by obtaining continuing education in critical care while working within the emergency departments” (Evans et al., 2015; Sand, 2019). The AANP National Certification Board implemented guidelines that need to be met to qualify for the ENP certification by completing one of the three following options (American Academy of Nurse Practitioners, 2020):

- 1) Minimum of 2,000 direct emergency care clinical practice hours as a FNP in the past five years. Evidence of 100 hours of emergency education, and a minimum of 30 education hours in emergency care procedural skills within those 5 years.
- 2) Completion of an academic emergency care accredited graduate or post graduate ENP or dual FNP/ENP program.
- 3) Completion of an approved emergency fellowship program. In addition to the increased need for providers in rural areas and FNPs filling these roles, an increase in emergency care education for FNPs who are working in the emergency department are important.

Family Nurse Practitioner Students

As rural healthcare facilities are relying on FNPs to fill the growing workforce challenge, FNPs are being recruited and incentivized to work in rural settings. One challenge that rural

facilities are facing with recruitment of FNPs, is the requirement to cover the emergency department. Recruitment into these roles is difficult as many NPs do not feel comfortable covering the emergency department especially if they lack experience in a rural setting. The Rural Health Advisory Committee (2015) of MN suggests some potential changes to FNP education in order to help increase preparedness in emergency department skills and procedures. Suggested changes have included developing FNP programs with an educational track focusing on rural health, requiring clinical rotations to be completed at a CAH, requiring a residency for FNPs, and increasing the number of sites available for emergency department clinical rotations.

Administrators in rural MN CAHs were asked if the facility would have interest in collaborating with an FNP residency program. Over half of the CAHs showed interest in a residency program with the other facilities requesting more information prior to answering (Rural Health Advisory Committee, 2015). The CAHs administrators were invited to share ideas that would encompass a residency program with suggestions including trauma and acute-care education. Feedback on supporting an FNP in an emergency department residency in exchange for service at the completion of the residency program was discussed.

FNP emergency skills education varies by FNP programs, and if present is often fragmented throughout an FNP curriculum with variable validation of skills (Wolf et al., 2017). Currently, FNP programs do not have a specific emergency course to prepare for emergency department practice. Of the skills identified by ENA's Delphi study, the ability to teach all 51 clinical skills and procedures during an FNP curriculum is not standardized. Depending upon the FNP program select skills may be taught depending upon the curriculum and their faculty's expertise.

High Acuity Low Occurrence

High acuity low occurrence often known as HALO, are skills and procedures that are infrequently used in emergency department practice but are crucial to be prepared for when needed. Bierer et al. (2021) states that these specific HALO scenarios are often complex clinical situations that occur infrequently but require expert cognitive and technical competency. To prepare for these situations, trainings are often developed for these occurrences and are frequently taught in a hands-on or simulation format. HALO education can be completed by implementing individual skills or accomplished as a team to prepare for the critical circumstances. Education focused on these specific situations have been shown to help relieve concerns among interprofessional teams and improve continued education and exposure to maintain proficiency (Bierer et al., 2021). HALO training has been shown to be valuable to establish technical skill proficiency, non-technical skill refinement, teamwork, health care delivery, and ultimately improving clinical outcomes HALO training helps improve resilience, limit planning failures, and increase treatment strategies successfully. Many of the procedures and skills needed in a rural emergency department are infrequently used but having the education and preparedness for these scenarios is crucial. A few examples of some HALO skills include imminent childbirth, procedural sedation, cervical spine management, emergency airway management, acute neurological disability, and endotracheal intubation. When HALO skills are utilized, the patient is often critical and needs to be treated without a delay in care. Continued education is important in an emergency department, therefore finding ways to continue education which may include self-directed modules, hands-on skills practice, or a team simulation all are important aspects to maintain proficiencies.

Previous Related Initiatives

A limited amount of research and literature is available regarding the emergency skills and competencies of FNPs who work in the emergency care setting. As the healthcare field expands, the emergency department is anticipated to have one of the most significant growths in workforce needs (Ramirez et al., 2018). Emergency care providers need to be able to provide a wide range of skills and knowledge including evaluating, managing, and treating patients of all ages. They also need to be able to care for critically injured or unstable patients (Ramirez et al., 2018). Over 14,000 FNPs work in emergency care settings in both rural and urban areas of the nation. As the number of FNPs continues to grow, providing the ability for education and continued advancements in emergency care will help to provide safe and effective care (Follin et al., 2018). There are three previous educational initiatives which illustrate the need and value of FNP emergency care education.

First, Olson (2015) created and implemented a self-directed learning module to provide education to advanced practice providers. The module was based on the Emergency Care Education for Advanced Practice Providers in Rural Critical Access Hospitals survey. The survey focused on advanced practice providers who were new to rural emergency care to determine what the educational needs were in these CAH facilities among the providers. The main emergency care needs that were identified included trauma, cardiopulmonary disorders, fracture management, sepsis, and neurological disorders. From the identified needs, a self-guided module was created focusing on adult and pediatric trauma including education on CT scan interpretation, needle thoracostomy, thoracentesis, shock, and emergency ultrasound. After the modules were completed, there was unanimous positive feedback indicating that the education was beneficial while working in a rural CAH (Olson, 2015). Limitations of this study included

the need to have ATLS and CALS completed prior to the modules. The modules were self-directed with a focus on trauma requiring the use of a textbook. In addition, technology barriers and the time required for completion of each module added additional challenges. No hands-on experience was available due to the virtual learning format. Self-directed modules were not used during the implementation of this PIP as a hands-on seminar was desired.

A second self-directed learning module was developed that focused on care in an emergency department setting (Ro et al., 2018). Ro et al. (2018) focused on creating a web-based self-guided curriculum to help enhance the FNPs' education in emergency department care. The online content was focused on self-directed modules and skills curriculum. After FNPs finished the modules, evaluations were completed pertaining to the effectiveness of the online course. The evaluation showed an increase in emergency department skills and knowledge by comparing pre-and post-test data. The FNPs felt the learning module was a positive addition to their education and would help bridge the gap in information not covered in an FNP curriculum. Additionally, this knowledge will help prepare students to take a more active role during clinical rotations to identify learning gaps by completing these modules prior to an emergency rotation (Ro et al., 2018).

Limitations noted in the Ro et al. (2018) study included the combined use of an online self-directed learning module along with concurrent emergency department clinical rotations, potentially adding an additional variable influencing the learner's outcomes. A nine-week preceptorship was used in addition to reinforce the curriculum that was taught online. Topics covered included, abdominal pain, altered mental status, chest pain, OB/GYN concerns, pharmacology, shock, trauma, ultrasound, and toxicology. Skills were also supplemented with additional teaching from radiologists which included interpreting plain radiographs of the

chest, musculoskeletal system, and abdomen. The certified registered nurse anesthetists provided hands-on experience to the students in the operating room focusing on airway management.

A third initiative was a one-day educational seminar that was provided to North Dakota (ND) preceptors and North Dakota State University Doctor of Nursing Practice (NDSU DNP) students. The educational seminar was implemented on North Dakota State University's (NDSU) campus with emergency department DNP/FNPs providing education to the participants. The seminar included both didactic and hands-on learning, focusing on three skills that emergency department FNPs felt the need for increased education which included imminent childbirth/post-delivery care, procedural sedation/airway management, and cervical spine management. A pre- and post-test were completed with the post-test indicating the seminar had improved the participants' perceived competency and comfort level in those three skills (Sand, 2019).

Emergency department residencies are another way to increase clinical experiences and to fill the knowledge gap while having a preceptor available to provide feedback and guidance, with a normal residency period lasting between 12 to 18 months (Olson, 2015). Providing continued education helps to maintain knowledge and skills and encourages providers to stay proficient in practice. With limited data available, there was no literature that assessed the long-term statistics evaluating the results of emergency department education, and the retention of knowledge.

Conclusion

The review of literature revealed there is undoubtedly a large need for the increased use of FNPs in emergency departments, especially in rural CAHs. FNPs can help fill the shortage in providing patient care, but the need for increased education in preparation for emergency skills used in practice is imperative. There is limited data available about emergency care education for

emergency department FNPs. Further education and data are needed to help prepare FNPs to work in a rural emergency care practice setting.

Theoretical Framework

The nursing theory from novice to expert by Patricia Benner is fundamentally relevant to this dissertation project (Benner, 1984). As rural emergency department FNPs grow and advance in their practice, they will work through the five levels of proficiency that compose the midrange theory; the novice to expert theory. In addition to improving the rural FNPs proficiency, improved perceived provider preparedness will take place for an emergency department setting.

The theory of novice to expert uses a model developed by Dreyfus which represents an acquisition of skills. The Dreyfus model focuses on the advances made in skilled performance based upon experiences in the profession, as well as knowledge and education using five sequential stages of proficiency. Benner separated her theory into five categories and acknowledged that as individuals gained experience, their knowledge base increased and improved their proficiency in care. Focusing on both Benner's theory (1984), and Dreyfus's model, individuals advance through levels of proficiency as they develop which include novice, advanced beginner, competent, proficient, and expert. The five levels of proficiency from Benner's theory include:

Stage One Novice: Davis and Maisano (2016) acknowledge that novice learners are inexperienced or are new to the skill or situation. The novice is just beginning and has little to no familiarity in which they are required to practice. In this stage, using simple and objective teaching methods are important as these individuals are sometimes inflexible and require growth and exposure to situations. Novice learners occasionally have the inability to use discretionary judgment and may struggle with learning relevant tasks. There may be difficulty differentiating

between relevant and irrelevant aspects in a situation. Fraley (2016) shares that novice NPs have little to no experience and less than two years of clinical practice. Newly hired FNP graduates working in rural areas would be defined by this level.

Stage Two Advanced Beginners: According to Davis and Maisano (2016), advanced beginners demonstrate a slight increase in skills and performance in certain situations. In this stage the novice individual has gained some further knowledge and has been exposed to more experiences and can understand the components of a situation. The advanced beginner relies on the guidelines that are taught in the novice stage and still needs assistance and guidance in a clinical scenario, as well as instruction on setting priorities. FNPs would progress into advanced beginners around one to two years of practice (Fraley, 2016).

Stage Three Competent: As stated by Davis and Maisano (2016), the competent learner prioritizes tasks by utilizing past experiences. These individuals have been working in a similar situation for two or three years and are capable of setting goals and plans and following through with them. Competent performers are often systematic and work in an organized manner being deliberate in their organization and plan. Multi-tasking and flexibility are still lacking in the competent stage, but they have developed analytical as well as abstract thinking to work towards obtaining long term goals. In this stage, new rules and reasoning for a plan are used while applying what they have learned previously to form an action based on facts and previous scenarios. Competent FNPs have been in the same job or situation for two to four years (Fraley, 2016).

Stage Four Proficient: Davis and Maisano (2016), state that after the competence stage an individual becomes proficient. This stage often occurs around three to five years of working in a similar environment. Proficient individuals possess a deep understanding of situations, have less

conscious planning, and critical thinking and decision-making skills are more developed. They are able to observe relevant situations as they appear and react accordingly. Individuals use past experiences that can help provide direction and prioritization in certain circumstances. Proficient individuals have a holistic understanding and increased decision-making abilities. According to Fraley (2016), proficiency is obtained around three to five years of working in the same area as an FNP.

Stage Five Expert: According to Davis and Maisano (2016), the final stage is those who are considered experts in certain situations. These individuals have extensive knowledge and are confident in their ability to work in complex settings. To reach expert stage it often takes five years or greater in the same area, but some individuals advance faster than others. The experts do not rely on analytical principles but connect previous understandings of situations to make appropriate decisions. They have a strong intuitive grasp and are able to get things accomplished without relying upon others. Experts understand how to accomplish tasks and have a deep understanding of the entire situation in a flexible and proficient manner. FNPs progress to the expert level often after working in the same clinical area for greater than five years. In a rural CAH where patient volume is minimal having frequent education and skills validation is imperative in order to remain proficient and to advance to the expert level (Fraley, 2016).

Benner's theory is relatively new and was developed in the 1980s. This theory closely relates to the practice improvement project when focusing on providing education to further increase preparedness with providers emergency skills. Benner uses seven domains of the nursing practice. These domains include a) the helping role, b) the teaching-coaching function, c) diagnostic and patient monitoring function, d) effective management of rapidly changing situations, e) administering and monitoring therapeutic interventions and regimens, f) monitoring

and ensuring the quality of healthcare practices, and g) organizational and work-role and competencies (Benner, 1984). These seven domains focused on the knowledge and understanding needed in nursing practice. The domains should be used when situations arise and applied with each situation with application of clinical judgment, skills, expertise, and advanced practical knowledge.

In relation to Benner's Theory, a secondary analysis of the 2020 Educational Needs for Novice Nurse Practitioners Survey, assessed the nurse practitioner's knowledge level of comprehension which could be correlated to an FNPs perceived preparedness when providing emergency skills. The survey had been designed to assess the participants perceived preparedness in the 51 emergency skills needed in an emergency department setting. The 2020 Educational Needs for Novice Nurse Practitioners Survey was established with four levels of preparedness of which there is no clear criteria to assimilate a succinct correlation with Benner's theory. However, for the purposes of this practice improvement project (PIP) the categories of "unprepared" were correlated to Benner's novice stage, "somewhat prepared" correlated to advanced beginner stage, "generally prepared" correlated to Benner's competence, and "very well prepared" correlated to proficiency. The fifth stage of Benner's theory was not correlated which is the expert level as the participants are entry level providers.

Novice learners learn best by using simple and objective teaching methods which include clear step by step instructions in a direct learning format. They also learn when provided with feedback and helping to place information in proper context as well as developing the prioritization of information. Novice learners have limited discretionary judgment and learning is based on facts.

Advanced beginners learn by beginning to look at the larger context of data. These individuals do not always see the overall context but are better able to recall information and have an increased comfort level. Advanced beginners learn best through experience while receiving guidance with critical thinking and clinical decision making in situations that they are not familiar with.

Choosing skills in the novice and advanced beginner level, will assist in preparing these providers to proficiently use these skills in practice. When focusing on the education of providers in the novice stage, understanding comes from strict guidelines, rules, and protocols as the providers in this category have no experience or exposure to the specific emergency skill. Information should be very objective and follow the textbook procedures and terms (Benner, 1984).

In the advanced beginner stage, following the guidelines and policies are still helpful, but individuals have some experience beyond the novice level. Advanced beginners are working towards a more complex level such as applying the information learned both with knowledge and hands-on practice. The participants in the advanced beginner stage may have marginally acceptable emergency skill knowledge but do not have the experience. Those that are competent in the advanced beginner stage are able to look at the whole situation. These providers are able to identify a problem and how to rectify the problem. They have more clinical and hands-on experience (Benner, 1984). A provider grows with experience and knowledge. It is imperative to help guide the providers by increasing their skills and ability to work in a rural emergency department setting. This practice improvement project is focused on emergency care skills in which participants identified as an “unprepared” or “somewhat prepared” level of preparedness.

Iowa Model of Evidence-Based Practice

The Iowa Model of Research-Based Practice to Promote Quality Care (Iowa model) is used to evaluate and apply evidence-based practice into patient care (Cullen & Adams, 2012). This closely correlates the implementation strategy and effective ways to incorporate evidence-based healthcare into a practice improvement project. The Iowa Model was used to guide the development of the practice improvement project which was an educational seminar to improve rural emergency department provider's perception of emergency care preparedness. Cullen & Adams (2012) states the Iowa model is a systematic process which involves phases including a seven-step process and three decision-making points (Appendix B). These decision-making points are incorporated to advise the developer to stop and reassess to determine if the project should continue to progress or revise what is currently in place. Permission to relate the Iowa Model to this project was requested and obtained from the University of Iowa Hospitals and Clinics (Appendix C).

Step 1: Topic Selection

According to Zhao et al. (2016), identifying a key issue is the start to any project that is being initiated. For this PIP, the triggering issue is the pre-existing low level of perceived preparedness and emergency care skills among FNPs. When triggering issues are identified, opportunities for practice improvement are provided which initiates the Iowa model and evidence-based process. Updates in practice or new regulations can be helpful topics to develop a PIP. Issues can sometimes be from ideas that patients identify or clinical change in practice, as well as changes in an organization, state, or a national initiative. As more providers are working in a rural emergency department setting, preparedness in the skills needed are important. The lack of emergency department education specifically for rural providers adds complexity to this

concern (Stock, 2015). A review of literature revealed there was a lack of data regarding rural health care FNPs and their preparedness in emergency care skills.

Step 2: Forming a Team

The second step in the Iowa model is developing a team. According to Zhao et al. (2016), “The team is responsible for development, implementation, and evaluation”. The composition of the team should be directed by the chosen topic and include all interested stakeholders. The team for this practice improvement project consisted of the committee chair, two additional committee members, and a graduate appointee. SIM-ND, seminar instructors, and participants were also members of the team during the educational seminar.

Step 3 and 4: Retrieval and Grading the Evidence

Zhao et al. (2016), encourages reviewing literature to look for consistent findings among studies, the quality and number of studies available, relevance of the findings, similar sample characteristics, and the risk- benefit ratio. If enough literature is present, then a practice change can be completed. An extensive review of literature was completed using online electronic databases with the assistance of an NDSU librarian. All resources were scholarly articles that were obtained from the NDSU’s library database system. The articles were reviewed for relevance and reliability and validity. Journal articles within the last five years were analyzed to identify consistent findings among studies and publications regarding emergency care.

Step 5 and 6: Developing and Implementing Evidence-Based Practice Standard

The goal of this practice improvement project was to increase the perceived level of emergency skills preparedness of rural MN FNPs by implementing an emergency skills educational seminar. After a secondary analysis of a pre-existing needs assessment survey which was completed by novice FNPs regarding the completion of the 51 clinical procedures and

emergency skills, a one-day emergency skills seminar was developed. According to Zhao et al. (2016) implementation of practice change looks at the outcome to be achieved, collecting data, developing a written evidence-based practice guideline, implementing the change, and evaluating the process are the large components of these two steps in the Iowa Model.

Step 7: Evaluation

Cullen & Adams (2012) shared that the evaluation step maximizes the benefit of the process change. During the evaluation step, comparing pre-and post-information is useful as it helps to evaluate how well the process change worked. As part of this PIP, a pre-survey was administered electronically to the participants prior to the educational seminar. The pre-survey questions had the participants rate their perceived level of preparedness in the identified skills and topics that were taught during the seminar. The questions were administered with a Likert rating scale to determine exactly where the participants perceived level of preparedness was prior to the implementation of the seminar. Evaluation of the educational seminar was accomplished by completing a post-survey evaluation of the participants' perceived level of preparedness after the emergency skills seminar. The questions that were asked on the post-survey used a Likert rating scale. The post-survey evaluated the participant's education and certification, work history, rating of the perceived level of preparedness in the skills that were taught during the educational seminar, evaluation of the seminar, and feedback and recommendations for the investigator. The data collected in the pre-survey was compared to the post-survey results to accurately compare how the participants rated their perceived level of emergency care skills preparedness after the seminar. The data collected was closely analyzed and results of the project were disseminated in a written format and shared on ProQuest.

CHAPTER THREE. METHODS

Project Design and Implementation Plan

Step 1: Selection of a Topic

The practice improvement project was developed from the knowledge gap identified through a secondary analysis of pre-existing data from the 2020 Educational Needs for Novice Nurse Practitioners survey. Based on the knowledge gaps identified during the secondary analysis, an evidence-based skills seminar was developed and implemented.

The 2020 Educational Needs for Novice Nurse Practitioners conducted by Barnacle & Gross (2020) was a needs assessment survey that was distributed to novice FNPs within a local hospital organization which helped to determine the perceived level of preparedness of novice FNPs in 51 procedures and skills. The survey was conducted using a Likert rating scale where the participants rated their perceived level of preparedness as “unprepared”, “somewhat prepared”, “generally well prepared”, or “very well prepared”. The PIP secondary analysis of the survey primarily focused on the perceived level of preparedness in the 51 rural clinical/emergency care skills identified by a rating of either “unprepared” or “somewhat prepared”. Skills that were selected as “unprepared” or “somewhat prepared” were considered for additional education. Second, the determination of whether the skills were feasible to provide education in a didactic setting, along with a hands-on component was made. Third, the skills list was refined further by whether equipment would be needed for education and if the supplies were feasibly available. Finally, trained instructors for the skills selected were an additional criterion that was considered to provide comprehensive education. Based on the above criteria, the list of 51 skills was narrowed down to three skills.

Step 2: Forming a Team

The team for this practice improvement project was composed of four members including the committee chair, two additional committee members, and a graduate appointee. The committee chair was a family nurse practitioner who practices in an emergency care setting in a rural facility, had extensive knowledge of the outlined topic, and was part of the DNP faculty at NDSU. Two committee members were also current DNP faculty at NDSU and practicing FNPs at local health care facilities. All three DNP faculty had extensive knowledge regarding the family nurse practitioner curriculum at NDSU. The graduate appointee had a vast amount of experience in many different fields and is currently a senior associate at NDSU. In collaboration with the NDSU School of Nursing, the educational seminar was conducted by experienced DNP/FNP providers who delivered the education. The educational seminar instructors were providers who volunteered their time and had extensive knowledge and experience with emergency care skills. Instructors were on-site to provide immediate skills feedback and validation at the time of the education.

SIM-ND was also utilized for the skills and resources they offer which aided in the participants' learning and hands-on application. SIM-ND is a grant-based ND resource composed of nurses and paramedics, who are highly trained in emergency care, that provide education within the state of ND. SIM-ND is connected with large health care organizations and are able to provide educational services to CAHs by using state of the art simulation equipment and high-fidelity mannequins. The practice improvement project was implemented at NDSU so the resources that SIM-ND were able to provide could be utilized. Based on their grant funded mission, SIM-ND provides educational resources at no cost, which helps provide further educational opportunities and the ability to practice skills in a low stress environment (University

of North Dakota, 2020). Even though SIM-ND is a ND resource, it was utilized during the PIP as it provided increased education which otherwise would not have been able to be taught. SIM-ND has been utilized in the past for other PIPs and the collaboration with NDSU is a relationship that has been developed. The large healthcare organizations SIM-ND is partnered with have a large regional presence where many of the student participants will begin to practice as an FNP.

Step 3 and 4: Retrieval and Grading the Evidence

After completing an extensive review of literature, the information found emphasized the need for the practice improvement project. Rural facilities that have practicing FNPs in their emergency departments often have decreased preparedness in emergency care procedures and skills. Implementation of the Rural Educational Skills Seminar was provided to MN preceptors of NDSU DNP/FNP to further the education of providers who are providing care in a rural emergency department setting. The Rural Educational Skills Seminar utilized Benner's theory, and the educational seminar content was designed to work towards achieving an increased self-perception of emergency care preparedness for the providers in attendance. The Rural Educational Skills Seminar aligned closely with previous practice improvement initiatives that focused on emergency preparedness. Sand (2019) successfully implemented a previous PIP project for ND preceptors that showed an increase in preparedness and competency in the emergency skills taught during the educational seminar; therefore, providing a similar approach was modeled for MN rural preceptors.

Benner's theory was helpful in determining what skills should be taught by assessing the FNPs perception of preparedness in correlation to the novice and the beginner stages. Accurately assessing a learner's level of skill and providing a consistent level of stage appropriate education,

will help advance the providers to a higher level of perceived preparedness with the intent to enhance patient care in the clinical setting.

Stage 5 and 6: Developing and Implementing

The target population for the PIP were MN preceptors and DNP/FNP students who may practice in an emergency department setting upon graduation. A sampling frame of MN based NDSU preceptor names and emails were obtained from NDSUs School of Nursing. The email was sent to all preceptors and NDSU DNP/FNP students within the sampling frame and the first 10 respondents were selected for participation in the Rural Emergency Skills Seminar. The invitation to participate was sent electronically to the provider and students emails five weeks prior to the event with one reminder email. The email consisted of information pertaining to the educational seminar including an invitation to participate and consent with risks and benefits, a description of the seminar, and the COVID precautions undertaken. (Appendix D).

The eight-hour didactic and hands-on educational seminar instructional content was created by the co-investigator in collaboration with the committee chair. Topic selection was based on a secondary analysis of the 2020 Educational Needs of Novice Nurse Practitioners Survey as the individuals who took the survey were all novice FNPs within the same hospital organization. Skills for the practice improvement project were selected through several different criteria. First, the skills were evaluated by how the participants perceived their level of preparedness in each emergency skill. Skills that were selected as “unprepared” or “somewhat prepared” were considered for additional education. Second, the determination of whether the skills were feasible to provide education in a didactic setting, along with a hands-on component was made. Third, the skills list was refined further by whether equipment would be needed for the education and if the supplies were feasibly available. Finally, qualified instructors for the

skills selected were an additional criterion that was considered to provide comprehensive education. Based on the above criteria, the list of 51 skills was narrowed down to three skills. The rural emergency skills seminar topics were instructed by DNP/FNPs who currently work in emergency department settings (Figure 4).

Figure 4

Agenda for the Rural Emergency Skills Seminar

<u>Rural Emergency Skills Seminar Agenda</u>
0800-0930- Acute neurological disability
0930-1100- Cervical spine management
1100-1230- Emergency airway management
1230-1300: Lunch (Provided for participants)
1300-1600- Further practice and education, hands on

A maximum capacity of 10 participants was implemented to allow adherence with COVID precautions and maintain 6-foot social distancing requirements. SIM-ND also had capacity requirements of less than 10 participants for ease of instruction and use of equipment.

Resources

The educational seminar was hosted on the campus of NDSU. The resources necessary for the practice improvement projects included personnel, technology, and budget. The personnel involved in the practice improvement projects were the two instructors who volunteered to teach didactic content for the seminar. Both instructors are current practicing DNP/FNPs in rural emergency departments with multiple years of experience. The instructors had previously taught didactic and hands-on skills and were experts in the content that was delivered to the participants. Collaborating with NDSU’s School of Nursing provided the setting for the project and access to technology that allowed the delivery of the PowerPoint presentations during the

didactic portions of the seminar. Adequate room size and space during the seminar were taken into consideration to accommodate precautions for COVID-19 and to abide by the CDC social distancing regulations to ensure safety for participants. Content was delivered in person, as the hands-on skills would be unable to be duplicated in a hybrid format such as Zoom.

Participant time commitment was an eight-hour educational day which included time away from patient care along with travel time and expense. Collaborating with SIM-ND provided equipment for the hands-on skill portions of the seminar free of charge. Funds to provide lunch for the individuals in attendance were covered by the co-investigator. A minimal cost was factored in for printing the participants handouts.

Congruence of the Project to the Organization's Strategic Plan

The PIP reflected the NDSU School of Nursing mission statement to “advance nursing knowledge and develop dynamic nurse leaders who improve the health of all people, including underserved, rural, and diverse populations” (NDSU School of Nursing, 2020). The purpose of the project was to increase rural MN FNP preceptors perceived knowledge and confidence in three emergency care skills. Many NDSU DNP/FNP students complete clinical rotations within the state of MN and NDSU relies heavily on the continued use of preceptors and actively works to find ways to incorporate continued benefits of precepting into the preceptors' practice. The education offered through the educational seminar was a beneficial way to help strengthen continued partnership between NDSU students and MN preceptors and increase the skills, knowledge, and education NDSU DNP/FNP students receive from preceptors.

Protection of Human Subjects

This project was conducted in accordance with the institutional review board policies of NDSU. The proposed participants were rural MN FNP preceptors who precept NDSU DNP/FNP

students. All eligible participants were over the age of 18 and no children were in attendance. No specific gender was targeted for the purpose of this practice improvement project. The participation of the FNPs was completely voluntary, and participants were able to withdraw at any time, posing minimal risk to the subjects.

The importance of this project, along with the risks associated, were provided in writing, and included in the invitation which was emailed to the participants of the seminar (Appendix D). Implied consent was assumed by the participants by voluntarily accepting the invitation to attend and participate in the education seminar. The in-person education seminar was held during the COVID-19 pandemic, so risk of COVID-19 exposure was possible. However, precautions were taken to abide by the CDC and NDSU campus guidelines to help ensure safety. By voluntarily accepting the invitation to attend, the risk of COVID-19 exposure was assumed by the participants. Face masks were required during the entirety of the seminar and when possible maintaining a six-foot physical distance between attendees. The benefits for participating included the ability to expand their current emergency care education, increase their perceived preparedness in emergency care skills, and practice skills in a controlled learning environment.

Institutional Review Board Approval

The NDSU IRB approval process was completed after the co-investigator's dissertation proposal meeting and approval from the project committee. The IRB titled Determination of Exempt Human Subjects Research, protocol #PH21070 allowed for human participants during the Rural Emergency Care Skills Seminar. IRB stated the human subjects research project was exempt in accordance with federal regulations (Appendix G). All data for the project was stored on a password protected computer. Pre-and post-survey data was obtained and stored using Qualtrics, a password protected survey collection software.

Step 7: Evaluation/Data Analysis

The three objectives for the practice improvement project were evaluated as part of the project.

Objective One Evaluation

Objective one was to evaluate the perceived level of preparedness of rural MN FNP preceptors in performing emergency skills at a rural health care facility. The objective was evaluated by completing a secondary analysis of data collected from a pre-existing 2020 Educational Needs for Novice Nurse Practitioners survey (Appendix A) to obtain baseline data for the educational seminar and the development of the pre-survey. The PIP's pre-survey evaluated the participants' perceived preparedness regarding the three skills taught during the educational seminar (Appendix E). Prior to the educational skills seminar, the pre-survey data was collected using Qualtrics via email upon RSVP of participation.

Objective Two Evaluation

Objective two was the development and implementation of an emergency skill seminar guided by evidence-based practice and the perceived emergency skill needs of rural MN FNPs. In conjunction with the PIP committee, the development of the seminar was driven by the NP emergency care competencies literature review. The didactic instructors were DNP/FNP emergency department providers who currently practice in a rural setting and have taught similar courses in the past. SIM-ND was used to help implement the education by providing resources and additional learning opportunities during the hands-on portion of the seminar. The content was delivered using a didactic, tabletop discussion, and hands-on skills application.

To evaluate the educational seminar aspect of objective two, a post-survey was administered to the participants. The post-survey questions that evaluated objective two were

questions 12 through 16 (Appendix F). These questions assessed the effectiveness of the seminar educational content, delivery methods used when implementing the seminar, and included recommendations for future educational topics and improvement.

Objective Three Evaluation

Objective three was after attending the evidence-based emergency skills seminar, the rural MN FNP preceptors' perceived level of emergency care skill preparedness would increase. To evaluate objective three, the responses from the post-survey were analyzed and compared to the pre-survey data (Appendix E & F). The question in the post-survey that evaluates objective three was question eight. Question eight assessed the participants perceived level of preparedness in implementing the three emergency care skills taught during the education seminar by using a Likert scale which was also used in the pre-survey. From this evaluation, the investigator was able to determine if the participant's level of preparedness increased after attending the Emergency Care Skills Seminar.

CHAPTER FOUR. RESULTS

Demographic and Practice Characteristics of Respondents

A total of nine participants, eight females and one male, attended the Rural Emergency Care Seminar held on January 29, 2021. No MN FNP preceptors were able to participate in the Rural Emergency Care Skills Seminar, therefore NDSU DNP/FNP students from the first, second, and third-year cohorts were all invited to attend. With no preceptors being able to attend within one week of the seminar, DNP students were utilized since there was not enough time to redo the pre-and post-survey or IRB for the project. The invitation to participate was opened to all cohorts of DNP/FNP students to obtain adequate participants for the SIM-ND members, as a minimum of 8 participants were required.

The pre-and post-survey was sent to student emails utilizing a Qualtrics link. All the participants ($N=9$) completed the pre-survey, and all completed the post-survey. All survey answers remained confidential treated anonymously. Demographic information collected included the type of NP degree obtained and board certification. Since all the participants were DNP/FNP students and not current practicing FNPs, the demographic data was irrelevant and, therefore, not reported.

The participants were all NDSU DNP/FNP students working towards a family nurse practitioner board certification, and currently employed as registered nurses. On the post-survey, question nine assessed how frequently each emergency skill that was taught during the skills seminar was utilized in practice in the emergency department. However, since none of the participants were practicing FNPs, it was impossible to ask this question as the skills may have been implemented while working as a registered nurse or during clinical rotations. Findings were not relevant as all of the participants were students and not currently practicing as FNPs.

Objective One

Objective one was to evaluate the perceived level of preparedness among rural Minnesota FNPs, in performing emergency skills within a rural health care facility. However, no MN FNP preceptors were able to participate in the Rural Emergency Care Skills Seminar, therefore NDSU DNP/FNP students were utilized as the final participants. Evaluation of the first objective was completed by a secondary analysis of a pre-existing 2020 Educational Needs of Novice Nurse Practitioners survey that was completed by novice nurse practitioners regarding the completion of 51 clinical procedures and emergency skills. The secondary analysis evaluated the perceived level of preparedness among rural FNPs in performing the emergency skills (Appendix A). A total of 11 FNPs had responded to the survey; nine participants completed question eleven which assessed their perceived level of preparedness in performing emergency care skills in the 51 clinical areas. An additional question asked about emergency care specific education that was included in their orientation, training, or self-initiated preparation, however none of the respondents answered the question due to lack of applicability. FNPs who participated in the needs assessment survey used a self-rating scale, “unprepared”, “somewhat prepared”, “generally well prepared”, or “very well prepared” to identify how prepared they felt in performing emergency care skills in each of the clinical areas. The results showed that overall, the participants generally rated their preparedness level in the “unprepared”, “somewhat prepared”, and “generally well prepared” categories. Of the 51 clinical skills, there were no skills that 100% of the participants felt “very well prepared” for question eleven asked, “Considering your experiences from your educational program, previous work experiences, and your orientation or training in your current position, how prepared were you for actual practice in the

following clinical areas? The participants perceived level of preparedness in the 51 clinical skills are displayed in Table 1.

Table 1
Perceived Level of Preparedness in Clinical Areas Among Participants of the Rural Nurse Practitioner Skill Needs Assessment

Clinical area	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	Total
EMTALA –specified medical screening exam	44.44%	22.22%	22.22%	11.11%	9
Rapidly changing the physiologic status of a patient	11.11%	0.00%	77.78%	11.11%	9
Sexual assault exam and evidence preservation	66.67%	33.33%	0.00%	0.00%	9
Laboratory diagnostics— ordering and interpreting	0.00%	11.11%	33.33%	55.56%	9
Pharmacologic and non-pharmacologic therapies	0.00%	0.00%	44.44%	55.56%	9
Electrocardiograms interpretation	0.00%	44.44%	44.44%	11.11%	9
Radiograph interpretation	11.11%	33.33%	55.56%	0.00%	9
CT scans and MRI interpretation	33.33%	44.44%	22.22%	0.00%	9
Manages <i>adult</i> patient in cardiopulmonary arrest	22.22%	22.22%	44.44%	11.11%	9
Manages <i>pediatric</i> patient in cardiopulmonary arrest	44.44%	33.33%	22.22%	0.00%	9
Emergency airways (e.g. King, Combitube, LMA)	55.56%	22.22%	22.22%	0.00%	9
Endotracheal intubation	88.89%	11.11%	0.00%	0.00%	9
CPAP/BIPAP	33.33%	22.22%	22.22%	22.22%	9
Intraosseous access	33.33%	44.44%	22.22%	0.00%	9
Central venous access	77.78%	11.11%	11.11%	0.00%	9
Procedural sedation	77.78%	11.11%	0.00%	11.11%	9
Ultraviolet examination of skin and secretions	55.56%	22.22%	22.22%	0.00%	9
Skin lesions treatment (e.g. ulcers, foot callus, skin tag)	11.11%	0.00%	66.67%	22.22%	9
Lesion excision: Punch biopsy	0.00%	22.22%	55.56%	22.22%	9
Injects local anesthetics	11.11%	22.22%	33.33%	33.33%	9

Table 1. *Perceived Level of Preparedness in Clinical Areas Among Participants of the Rural Nurse Practitioner Skill Needs Assessment (continued)*

Clinical area	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	Total
Nail trephination/removal	33.33%	55.56%	11.11%	0.00%	9
Nail bed closure	55.56%	44.44%	0.00%	0.00%	9
Single layer laceration repair	0.00%	11.11%	77.78%	11.11%	9
Complex or deep wound closure	22.22%	44.44%	22.22%	11.11%	9
Minor burn debridement	33.33%	22.22%	33.33%	11.11%	9
Abscess incision, drainage, and wound packing	11.11%	0.00%	77.78%	11.11%	9
Pupil dilation	55.56%	11.11%	33.33%	0.00%	9
Fluorescein staining	22.22%	22.22%	33.33%	22.22%	9
Slit lamp examination	33.33%	44.44%	22.22%	0.00%	9
Cerumen impaction curettage	0.00%	0.00%	77.78%	22.22%	9
Epistaxis control	22.22%	33.33%	44.44%	0.00%	9
Nasogastric or orogastric tube placement	22.22%	11.11%	66.67%	0.00%	9
Cervical spine management	22.22%	33.33%	44.44%	0.00%	9
Bartholin's cyst incision and drainage	44.44%	44.44%	11.11%	0.00%	9
Lumbar puncture	100.00%	0.00%	0.00%	0.00%	9
Imminent childbirth and post-delivery maternal care	66.67%	11.11%	0.00%	22.22%	9
Fecal impaction removal	33.33%	33.33%	33.33%	0.00%	9
Incise thrombosed hemorrhoids	66.67%	11.11%	22.22%	0.00%	9
Digital nerve block	55.56%	11.11%	22.22%	11.11%	9
Fracture reduction	55.56%	44.44%	0.00%	0.00%	9
Dislocation reduction	55.56%	44.44%	0.00%	0.00%	9
Immobilization devices—splints or casts	22.22%	44.44%	22.22%	11.11%	9
Bivalves/removes casts	66.67%	22.22%	0.00%	11.11%	9
Arthrocentesis (knee or elbow)	77.78%	22.22%	0.00%	0.00%	9
Compartment pressure measurement	88.89%	0.00%	11.11%	0.00%	9

Table 1. *Perceived Level of Preparedness in Clinical Areas Among Participants of the Rural Nurse Practitioner Skill Needs Assessment (continued)*

Clinical area	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	Total
Foreign body removal (e.g. eyes, ears, nose, rectum, vaginal)	22.22%	33.33%	22.22%	22.22%	9
Disaster and mass casualty incidents	44.44%	33.33%	11.11%	11.11%	9
Palliative care and end-of-life care	0.00%	55.56%	33.33%	11.11%	9
Acute neurologic disability	22.22%	55.56%	11.11%	11.11%	9
Mental health emergency	22.22%	55.56%	11.11%	11.11%	9
Long-acting reversible contraceptive (LARC) placement (eg. IUD, Nexplanon)	11.11%	44.44%	22.22%	22.22%	9

To determine the clinical skills and procedures to be taught during the Rural Emergency Care Seminar, each skill was evaluated. All 51 skills were reviewed, and the list of skills were narrowed to achieve the top three skills that could be implemented. Skills were initially eliminated if the majority of the survey respondents selected “very well prepared” or “generally well prepared”. The skills were to be taught by trained instructors, have a didactic component, and potentially have the capability of a hands-on simulation aspect. The top potential skills were further assessed to determine if the skills were able to be completed in a classroom environment. If not, they were eliminated for logistical reasons. Some of the skills needed to be eliminated due to the lack of resources available such as MRI interpretation and lumbar puncture. A similar PIP project was completed just prior to this PIP and part of the elimination process included excluding skills that had recently been taught to increase participation by providing education in new clinical areas. SIM-ND also had a list of scenarios available for instruction which included

correlated skills that could be used. The three skills that were ultimately chosen that fit the above criteria are listed below:

- Acute neurological disability- 55.56% of the participants felt they were “somewhat prepared”
- Emergency airway management- 55.56% of the participants felt they were “unprepared”
- Cervical spine management- 44.44% of the participants felt they were “generally well prepared” but were divided, with no participants rating “very well prepared”

Prior to the implementation of the PIP, the pre-survey was emailed to participants to determine their perceived preparedness in the three skills that were planning to be taught.

Objective Two

The second objective was to develop and implement a rural emergency skills seminar guided using evidence-based practice and the FNP proficiencies needed to practice in a rural emergency setting. The seminar was assessed using a post-survey that was emailed to the participants. Question 12 on the post-survey was “were the following teaching methods utilized in the educational seminar conducive to my learning?” All nine ($N=9$) of the participants strongly agreed that the teaching methods used during the seminar were conducive for learning (Table 2).

Table 2

Perceived Effectiveness of Teaching Methods

Teaching Methods	Strongly agree	Somewh at agree	Neutral	Somewhat disagree	Strongly disagree
PowerPoint lecture	100.00%	0.00%	0.00%	0.00%	0.00%
Tabletop discussion	100.00%	0.00%	0.00%	0.00%	0.00%
Hands-on skills application	100.00%	0.00%	0.00%	0.00%	0.00%

When the participants were asked if they would recommend the emergency skills seminar to their colleagues, all nine (100%) participants reported they would recommend the educational seminar to their colleagues, but the data was invalid as the participants were students and not current practicing FNPs with colleagues. All nine of the participants (100%) felt the seminar content was at an appropriate level for the participants learning needs and felt the seminar would be beneficial as a FNP student. Eight (88.89%) of the participants answered “no” to question 15 asking if there were other emergency care competencies that the participants would have rather been educated on. One (11.11%) participant stated “yes” to wanting to have other skills presented but had left the write in portion blank when asked which skills. Question 17 on the Post-Survey asked for any suggestions or comments about the educational seminar. Three participants responded with “The seminar was very helpful! I appreciated everything that we learned”. A second participant stated “Very well done! I learned a lot and feel much more competent”. The final participant who wrote in a response said, “Excellent day and learning experience”.

Objective Three

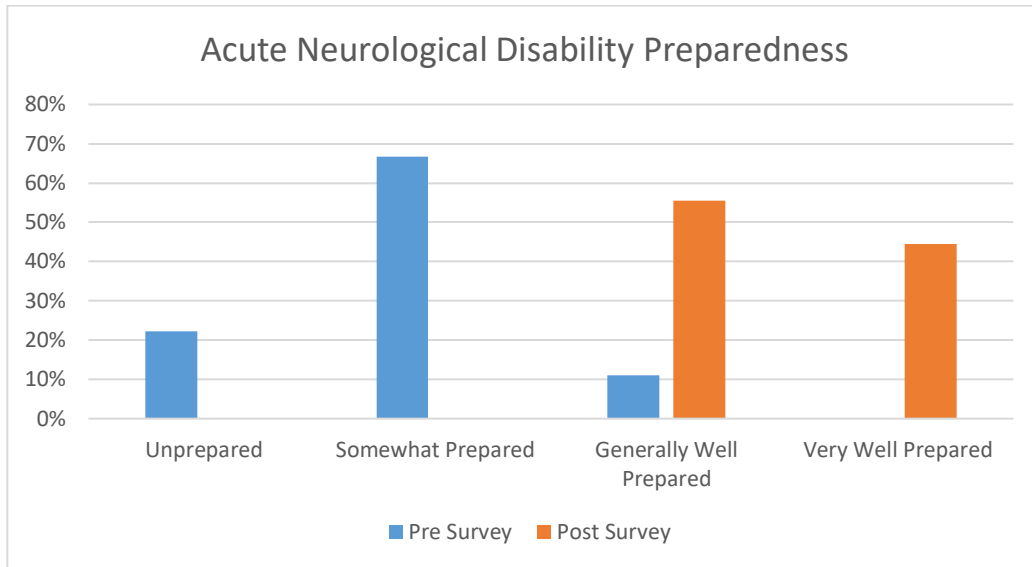
Objective three was after attending the evidence-based rural emergency skills seminar, the rural FNPs’ perceived level of preparedness will increase. The three skills that were taught during the educational seminar included acute neurological disability, cervical spine management, and emergency airway management. The participants’ perceived level of preparedness was assessed prior and after the seminar by administering a pre-and post-survey (Appendix E & F). The data was compared between the pre-and post-survey to determine if the participants’ perceived level of preparedness increased after the seminar. In the post-survey, Question 8 asked if “After completing the educational seminar, how prepared do you feel in

implementing the following skills?” The question specifically assessed the participants’ perceived preparedness level of each skill by rating the skill as “unprepared”, “somewhat prepared”, “generally well prepared”, or “very well prepared”. The co-investigator could conclude if preparedness increased by comparing the results with question one in the pre-survey which was prior to completing the educational seminar, how prepared do you feel in implementing the following skills.

The overall perceived level of preparedness among participants in implementing acute neurological disability increased after completing the educational seminar. On the pre-survey, 22.22% ($n=2$, $N=9$) of respondents reported feeling unprepared, 66.67% ($n=6$) reported feeling somewhat prepared, and 11.11% ($n=1$) reported feeling generally well prepared for implementing acute neurological disability into practice. An acute neurological disability is a condition that affects the brain or spinal cord such as a stroke, brain hemorrhage, or a traumatic injury. After completion of the Rural Emergency Care Skills Seminar, on the post-survey, 55.56% ($n=5$, $N=9$) of participants reported feeling generally well prepared and 44.44% ($n=4$) reported feeling very well prepared for implementing acute neurological disability in actual practice. Figure 5 depicts the findings from the pre-and post-survey of the participants perceived level of preparedness for an acute neurological disability.

Figure 5

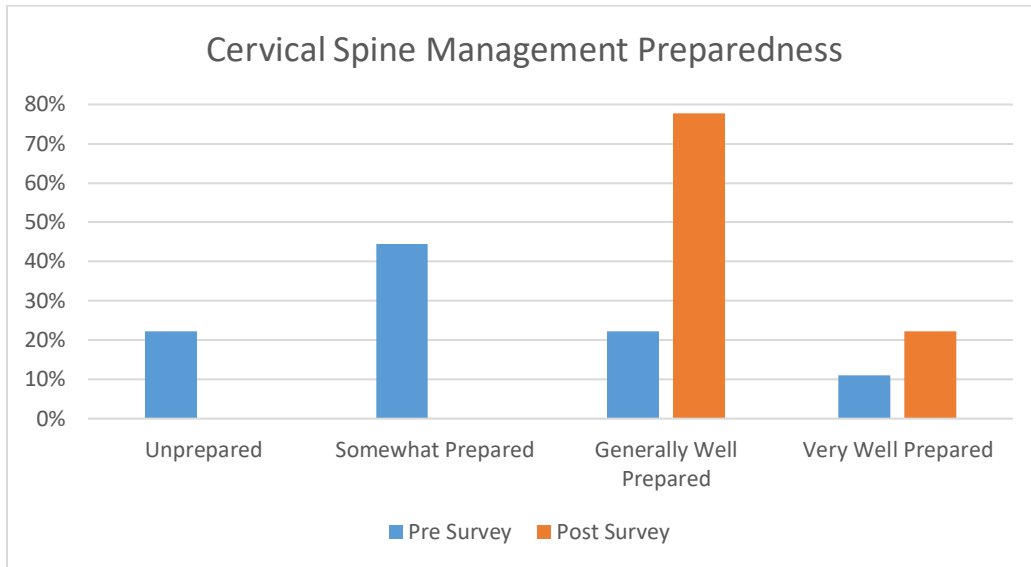
Acute Neurological Disability Preparedness



After completion of the education seminar, the overall perceived level of preparedness among participants in implementing cervical spine management increased. On the pre-survey, 22.22% ($n=2$, $N=9$) of respondents reported feeling unprepared, 44.44% ($n=4$) reported feeling somewhat prepared, 22.22% ($n=2$) reported feeling generally well prepared, and 11.11% ($n=1$) reported feeling very well prepared for implementing cervical spine management in actual practice. After completion of the Rural Emergency Care Skills Seminar, on the post-survey, 77.78% ($n=7$, $N=9$) of respondents reported feeling generally well prepared and 22.22% ($n=2$) reported feeling very well prepared for implementing cervical spine management in actual practice. Figure 6 presents the findings from the pre-and post-survey of participants' perceived level of preparedness for cervical spine management.

Figure 6

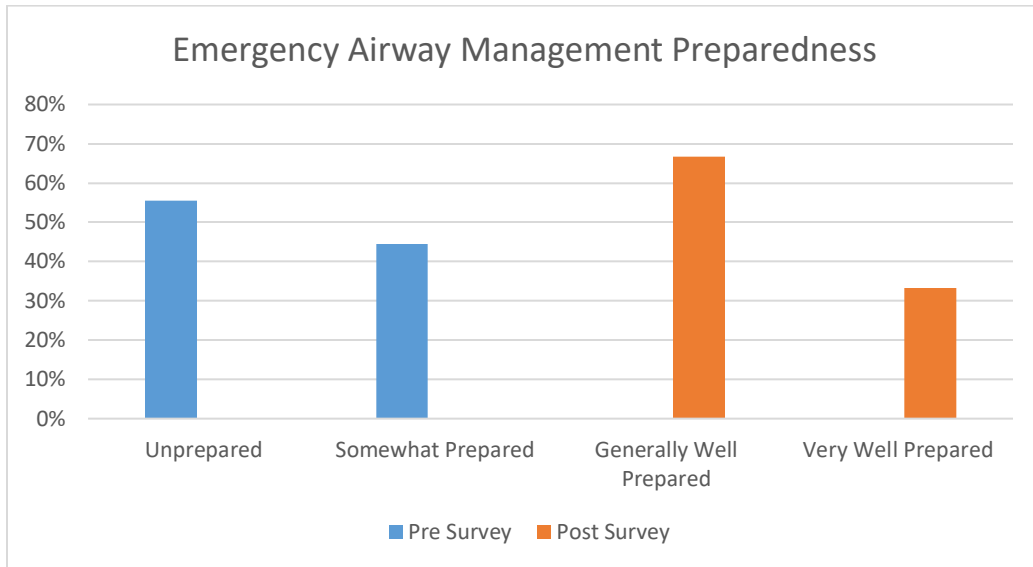
Cervical Spine Management Preparedness



The overall perceived level of preparedness among participants in implementing emergency airway management increased after completing the education seminar. On the pre-survey, 55.56% ($n=5$, $N=9$) of respondents reported feeling unprepared and 44.44% ($n=4$) reported feeling somewhat prepared for implementing emergency airway management into practice. After completion of the Rural Emergency Care Skills Seminar, on the seminar post-survey, 66.67% ($n=6$, $N=9$) of respondents reported feeling generally well prepared and 33.33% ($n=3$) reported feeling very well prepared for implementing emergency airway management in actual practice. Figure 7 represents the findings from the pre-and post-survey of participants' perceived level of preparedness for emergency airway management.

Figure 7

Emergency Airway Management Preparedness



CHAPTER FIVE. DISCUSSION AND RECOMMENDATIONS

Summary and Synthesis

Findings during the PIP were identified from both the secondary analysis of the 2020 Educational Needs of Novice Nurse Practitioners along with the pre-and post-survey data collected. The data collected reinforced that pre-novice FNPs do not feel fully prepared in emergency care skills when entering practice. All participants were DNP/FNP students with limited experience in the implementation of the emergency skills provided during the Rural Educational Skills Seminar. Wolf et al. (2017) shares that there is no standardized way that emergency care competencies are validated for FNPs and that FNPs felt the education they received in emergency care during school lacked from what they needed to transition into practice. Education in an FNP program is limited in emergency care preparation and the data collected during the PIP demonstrates that increased education should be provided during an FNP program to increase the perceived level of preparedness in implementing emergency care skills.

Based on the literature review and the secondary analysis of the Educational Needs of Novice Nurse Practitioners, there are many clinical skills that novice FNPs do not feel prepared to implement into practice. In relation to question 8, at the end of the educational seminar, all participants reported feeling more prepared to implement the emergency skills in practice. After the educational seminar, all nine of the participants also felt either “generally well prepared” or “very well prepared” in their perceived preparedness level when implementing acute neurological disability, cervical spine management, and emergency airway management. Including skill evaluations at intervals of 6 and 12 months would be an additional way to determine how effective the educational seminar was for the participants’ perceived

preparedness levels. Following up with the participants at 6- and 12-months post seminar would provide the opportunity to determine how the emergency skills knowledge was retained. Due to time constraints of the PIP, 6 or 12 months follow up was not part of the implementation plan. Routine evaluations and checkoffs would encourage continued use of emergency skills in practice and help to maintain preparedness.

FNP Students

As the participants were all FNP/DNP students who may potentially practice in rural MN, the Rural Emergency Care Skills Seminar was beneficial to help prepare these students upon graduation to become novice FNPs. Novice FNPs have reported the lack of skills for emergency skill preparedness. An educational platform like the Rural Emergency Care Skills Seminar can help increase the preparedness levels of participants in attendance. While in school, students are pre-novice learners, therefore educating and preparing the FNP students to become novice FNPs upon entry into practice is imperative. New graduates will feel more prepared to practice in rural emergency department settings when the skills needed have been taught and practiced as a pre-novice learner. Incorporating both didactic and hands-on education improves skill preparedness in clinical skills for rural practice (ENA, 2008; Hoyt et al., 2010; Olsen, 2015; Ro et al., 2018; Wolf et al., 2017).

Upon completion of the Rural Emergency Care Seminar, all of the participants reported an increase in preparedness regarding the three skills taught. The post-survey also showed that all participants' preparedness increased suggesting that students in the pre-novice level benefit from increased emergency care skills preparedness education. Participants will enter practice as a novice FNP which reinforces the need to prepare FNP students in the 51 clinical procedures and skills to provide comprehensive care to patients in a rural setting.

In a previous study completed by Olson (2015), participants shared unanimous positive feedback that completing self-directed learning modules was beneficial to their education. A second study by Ro et al. (2018) also used self-directed learning modules with an additional hands-on component from specialists for radiology interpretation and airway management. Both studies showed a significant increase in preparedness and competency with the participants feeling that the modules were a positive addition to their education. While these two studies may not serve as a substitute for in person emergency education, they do reinforce the importance of providing education to FNP students to increase preparedness when planning to work in an emergency department setting.

All participants also strongly agreed that the teaching methods utilized which included PowerPoint lecture, tabletop discussion, and hands-on skills application were conducive to learning. All the participants (100%) would recommend the educational seminar and felt the skills education was beneficial as an FNP student with the content level being appropriate. Benner's theory was utilized in the development of the educational content. The educational content was developed for participants who were within Benner's novice to advanced beginner stage with a focus on providing step by step instructions in a direct learning format which is best utilized for novice learners (Benner, 1984).

The Iowa Model of Evidence Based Practice and the novice to expert theory by Patricia Benner, were utilized during the practice improvement project. The Iowa model was beneficial in this project and guided the design, implementation, and evaluation. The model used a stepwise approach to guide and assist throughout the practice improvement project. Benner's theory was utilized based on advancements needed to achieve each stage of proficiency using a stepwise

approach. Education and instruction were developed based on how participants in each stage would learn best.

Although Benner's theory was utilized throughout this PIP, it may not have been the most suitable nursing theory. When working primarily in a rural emergency department setting, obtaining expert or even proficient ratings in certain rural emergency skills may be difficult. The frequency that certain emergency skills are completed may be limited depending on the frequency of shifts the participants work, and the number of patients seen during those shifts. Therefore, HALO training can play such an important aspect in patient care by increasing preparedness and training for NPs in situations that occur infrequently. With these complex situations and difficulty achieving the expert level in the Benner's theory, increasing skills education and technical competence are critical (Bierer et al., 2020). Another limitation of the Benner's theory is that the participants were all DNP/FNP students. This meant that all the participants were in the pre-novice phase and had not accomplished the first stage in the Benner's theory. Other theoretical models, such as the Diffusion of Innovation, may have provided a better comparison. The Diffusion of Innovation model would be more representative for this PIP, as it follows an advancing approach that works well when adopting a new idea or implementing projects. There are five categories of adopters and the model closely relates as it is focused on meeting the needs of all five categories of individuals.

After implementation of the practice improvement project, a repeat review of literature was performed to identify any new emergency care competencies literature since the initiation of the PIP. Unfortunately, only limited new data was found of which most was related to the care of COVID-19 patients and did not directly address preparedness in the emergency department. The National APRN Practice and Pandemic Survey that was collected from NPs during the COVID-

19 pandemic showed that allowing FNP's to practice independently made providing care less burdensome, allowed more time with patients, and increased ease in providing comprehensive patient care (Kleinpell et al., 2020). As part of the many changes to the healthcare system brought about by the COVID-19 pandemic, many FNPs were relocated to different departments often in areas in which they do not typically work. Due to this change, having all FNPs trained in emergency care skills could have increased the preparedness level when needing to respond to crisis. The literature reinforces the continued need of emergency preparedness education for FNPs in practice (Hoyt et al., 2010; LeBoeuf & Pritchett, 2020; Olson, 2015; Ro et al., 2018; Wolf et al., 2017). As all nine participants were DNP/FNP students, increasing emergency care skills preparedness while in school received positive feedback on the post-survey with all participants stating the education would be beneficial as an FNP student.

Limitations and Strengths

Several limitations were identified during the practice improvement project. A significant limitation was that no Minnesota FNP preceptors responded to the invitation to participate. Given that DNP/FNP students were the only participants, the responses to surveys were skewed. The pre- and post-survey were designed for practicing FNP preceptors and not all the questions pertained to the DNP/FNP students which affected the data results providing invalid responses. The post-survey responses, especially question 9 looking at the skill frequency, created difficulty in discerning whether the skills were implemented while working as a registered nurse or during clinical rotations as none of the participants were practicing FNPs. With the pre-and post-survey questions directed towards practicing FNPs, the data collected for many of the questions were obsolete and did not pertain the FNP student participants. The main time limiting factor was the Rural Emergency Care Seminar date had been set and confirmed. The seminar date could not be

rescheduled as the instructors were practicing health care workers and the mandatory timeline for completion of the PIP would have been missed. As a result, the pre-and post-survey could not be reconfigured to focus specifically on FNP students in the time available prior to the seminar implementation. If a new survey had been created that was designed for students, the accepted IRB approval would have needed amendments which was not possible on the short one-week time frame following the notification of lack of preceptor participation.

Another limitation for the PIP was that the educational seminar was on the same day as a local hospital continuing education conference. This may have reduced some of the potential participants as continuing education credits were not offered for this PIP. The cost to obtain these credits was not in the investigator's project budget. In addition, there was a short recruitment time of only one month for participation from MN preceptors which may have limited the number of participants.

The COVID-19 pandemic also provided some limitations for the seminar. Participants needed to be seated six feet apart from each other, masks were to be worn, and participation capacity was limited to allow participants the ability to maintain the CDC and NDSU COVID-19 guidelines. With local hospital institutions limiting in-person education, the campus of NDSU was utilized to allow for these changes. The limitation may have contributed to discouraging FNP participation by requiring the participants to travel.

The limited number of participants is a challenge for data collection and the strength of that data. However, the small participant number was actually a strength of the project, allowing individualized learning and increased hands-on skills practice. A smaller group size enabled discussion development and the ability to answer individualized questions. Subject matter experts were available for questions and were knowledgeable in the information they provided.

Participants stated that the teaching methods used during the Rural Emergency Care Skills Seminar was conducive to learning and found the seminar beneficial as an FNP student. Having FNP students participate helped to increase emergency care skills preparedness prior to graduation. Working together in groups provided strong collaboration and the benefit of learning from one another. Working with SIM-ND during the PIP helped develop a collaboration with the NDSU SON and educated the participants on the availability and the assets SIM-ND provides throughout the state.

Recommendations

After the completion of the Rural Emergency Skills Seminar, the post-survey showed an increase in the level of preparedness among the participants. The post-survey results help reinforce that emergency care education should be offered in FNP programs, especially those that have a focus on rural health. The feedback from the Rural Emergency Care Skills Seminar was positive with all the participants recommending the education. Further recommendations for increasing FNP emergency care skills preparedness include:

1. Providing the Rural Emergency Care Skills Seminar on an annual basis to reach individuals who are planning to practice in rural settings and to help maintain preparedness in emergency care skills. Additionally, expanding the seminar to include additional skills may be beneficial and would hopefully attract more participants in the future.
2. Offering the seminar after the COVID-19 pandemic and lengthening the recruitment period may also encourage more preceptor participants.

3. Encouraging rural hospitals to apply for grant funding to provide equipment and adequate resources to maintain preparedness in clinical skills and allow practicing FNPs and FNP students to practice skills during clinical rotations.
4. Establishing a SIM-MN program and finding sustained grant funding which would have the capability to travel to Minnesota rural facilities and MN based FNP schools which would be beneficial for the practicing FNPs and students completing clinical rotations in these communities. Currently, SIM-ND is not able to provide services in Minnesota as it is currently funded through a ND state grant with the inability to cross over state lines.
5. Providing an in person post-graduate course with different educational formats including PowerPoint, didactic, and hands-on application that would help to enhance FNPs preparedness and knowledge in emergency skills.
6. Offering an emergency care skills elective course for FNP students or integrating the information throughout multiple courses. If an FNP is planning to work in a rural setting which includes ER coverage, these providers must seek out learning opportunities and education to remain prepared in emergency care skills.
7. Encouraging FNP schools that have a focus on rural health to incorporate emergency care education along with providing an emergency department clinical rotation would be helpful in preparing entry level NPs for the workforce needs in rural settings.
8. Advising CAHs to collaborate with high volume emergency departments to establish residencies for new hires who will be covering the emergency department setting.

9. Suggesting rural hospitals and FNP programs have routine emergency skills evaluations and skill re-validation to encourage maintained preparedness when providing emergency care.
10. Increase FNPs preparedness levels in emergency care skills to care for higher acuity ambulatory care patients. Routine skills evaluation may be beneficial as many skills are not used daily. Some skills could also be provided in just in time training such as splinting, nasogastric or orogastric tube placement, or laceration repair (LeBoeuf and Pritchett, 2020).
11. Develop a classroom course that focuses on emergency skills implementation that would be taught in an FNP curriculum that emphasizes rural health.
12. Require clinical rotations in a CAH or provider shortage area in FNP programs that have a focus on rural health.
13. Develop a transition into practice program for FNPs after graduation who plan to practice in a rural emergency department setting.

Implications for Practice & Future Research

Due to the lack of MN FNP preceptors who were able to participate in the Rural Emergency Care Skills Seminar, the PIP increased emergency care education and perceived preparedness of FNP students, many of whom may practice in a rural emergency care setting in MN upon graduation. In a CAH, there is often a sole provider model of care which often is a primary care provider covering both hospital, clinic, and the emergency department. In a sole provider model when a critical patient presents to the emergency department that provider needs to be prepared for what may arrive. Having comprehensive and continuing education in emergency skills would be beneficial to providers in all practice models. The PIP evaluated gaps

in emergency care and knowledge among FNP students. Students are focused on learning new skills and information and providing the opportunity while they are connected within a college would most likely prove to be beneficial.

The seminar provided further emergency skills education while also utilizing teaching methods that could be beneficial in a future emergency care course. Surveying the participants to determine if there would be an interest in a course specifically for emergency care as part of an FNP program provided encouraging results. The results should be evaluated and provided to the directors of FNP programs for consideration of a future emergency-based course. Educating current FNP students rather than providing a post graduate option may be beneficial for novice FNPs starting in emergency department practice. Once in practice, FNPs may have a busy schedule, may live in a rural community away from an FNP program, and have many other commitments which may be barrier to post graduate training options.

Post graduate options could also be feasible and include transition into practice initiatives by health care institutions or residency programs. Future research is recommended regarding specific education which could be implemented to help FNPs transition into practice. Transition into practice programs are another option that can be utilized to help ease into the new role as an FNP provider. The programs help to alleviate stress, increase FNP retention in the rural facility, and make the transition into practice more successful (Olson, 2015; Stock, 2015). Developing educational material for novice FNPs working in a rural emergency department could increase their preparedness level as well by providing a 12–18-month residency program for practice. Residency programs may be difficult though depending on the number of skilled providers available with an FNP working in a rural setting.

Dissemination

The project was disseminated in multiple different formats. In the initial stages of the project, a poster presentation was completed. The poster presentation was coordinated as part of the North Dakota Nurse Practitioner Association's virtual pharmacology conference in September 2020. The project will also be disseminated during a poster presentation in May 2021 at NDSU's School of Nursing. The final dissertation paper will also be disseminated on NDSU's ProQuest database.

Application to Nurse Practitioner Role

FNPs play a vital role in providing healthcare in rural communities. FNPs are often providing medical care to patients in the emergency department while at a CAH so FNPs should have the education and expertise to feel prepared while providing emergency care to patients. As emergency care content is not standardized in most FNP programs, many FNPs working in a critical access hospital may have not received sufficient emergency care education to successfully take care of an acute patient. Considering the continued shortage of medical providers in CAHs, increasing the level of emergency care preparedness of FNPs is important.

Conclusion

The purpose of the PIP was to identify rural FNPs perceived level of preparedness in performing emergency skills and to develop and implement an emergency skills seminar. This project also sought to evaluate whether comprehensive emergency preparedness education for NPs practicing in a rural setting increased an FNP's perceived preparedness levels when providing emergency care.

The project involved the development and implementation of a Rural Emergency Care Skills Seminar that focused on education for three specific emergency care skills that were

chosen after completing a secondary analysis of a previous need's assessment survey. Pre-and post-surveys were completed which demonstrated an increase in perceived preparedness levels within the three emergency skills that were taught. The overall PIP helps to increase the knowledge regarding FNPs regarding the perceived preparedness levels in emergency skills.

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[7562/100011](https://doi.org/10.24966/ACIM-7562/100011)

APPENDIX A. COMPETENCIES FOR NPS IN EMERGENCY CARE

Competencies

The following competencies include knowledge, behaviors, and skills an entry-level nurse practitioner should have in order to practice in emergency care. These competencies are intended to supplement the core competencies for all nurse practitioners as well as population-focused nurse practitioner competencies while providing a model for entry-level practice in emergency care. Nurse practitioner practice may differ from that described in these entry-level competencies due to variations in state regulation, practice setting, employment arrangement, and as a result of increasing knowledge and experience.

I. Management of Patient Health/Illness Status

1. Triage patients' health needs/problems.
2. Completes EMTALA-specified medical screening examination.
3. Responds to the rapidly changing physiological status of emergency care patients.
4. Uses current evidence-based knowledge and skills in emergency care for the assessment, treatment, and disposition of acute and chronically ill and injured (e.g., physiologic, psychological, socio-economic, cultural) emergency patients.
5. Specifically assesses and initiates appropriate interventions for violence, neglect, and abuse (e.g., physical, psychological, sexual, substance).
6. Specifically assesses and initiates appropriate interventions and disposition for suicide risk.
7. Assesses patient and family for levels of comfort (e.g., pain, palliative care, end of life, bad news) and initiates appropriate interventions.
8. Recognizes, collects, and preserves evidence as indicated (e.g., forensic evidence).
9. Orders and interprets diagnostic tests.
10. Orders pharmacologic and non-pharmacologic therapies.
11. Orders and interprets electrocardiograms.
12. Orders and interprets radiographs.
13. Assesses response to therapeutic interventions.
14. Documents assessment, treatment, and disposition.

II. Professional Role

15. Functions as a direct provider of emergency care services.
16. Directs and clinically supervises the work of nurses and other healthcare providers.
17. Participates in internal and external emergencies, disasters, and pandemics.
18. Maintains awareness of known causes of mass casualty incidents and the treatment modalities required for emergency care.
19. Acts in accordance with legal and ethical professional responsibilities (e.g., patient management, documentation, advance directives).

III. Airway, Breathing, Circulation, and Disability Procedures

20. Assesses and manages a patient in cardiopulmonary arrest (e.g., neonatal resuscitation, leads code team, rapid response team).
21. Assesses and manages airway (e.g., endotracheal intubation, ventilated patients).
22. Assesses and obtains advanced circulatory access (e.g., intraosseous).

23. Assesses and manages patients with disability (e.g., neurologic).
24. Assesses and manages procedural sedation patients.

IV. Skin and Wound Care Procedures

25. Performs ultraviolet examination of skin and secretions (e.g., Woods Lamp).
26. Treats skin lesions (e.g., foot callus, skin tag, plantar lesion, decubitus care).
27. Injects local anesthetics.
28. Performs nail trephination.
29. Removes toenail(s) (e.g., partial or complete removal of an ingrown toenail).
30. Performs a nail bed closure.
31. Performs closures (such as a single layer, multiple, staple, adhesive).
32. Revises a wound for closure.
33. Debrides minor burns (e.g., nonadhering blister).
34. Incises, drains, irrigates, and packs wounds.

V. Head, Eye, Ear, Nose, and Throat Procedures

35. Dilates eye(s).
36. Performs fluorescein staining.
37. Performs tonometry to assess intraocular pressure.
38. Performs Slit lamp examination.
39. Performs cerumen impaction curettage.
40. Controls epistaxis.

VI. Chest and Abdomen

41. Performs a needle thoracostomy for life-threatening conditions in emergency situations (e.g., tension pneumothorax).
42. Replaces a gastrostomy tube.

VII. Neck, Back, and Spine Procedures

43. Clinically assesses and manages cervical spine.
44. Performs lumbar puncture.

VIII. Gynecologic, Genitourinary, and Rectal Procedures

45. Incises and drains a Bartholin's cyst.
46. Assists with imminent childbirth and post-delivery maternal care.
47. Removes fecal impactions.
48. Incises thrombosed hemorrhoids.
49. Performs sexual assault examination.

IX. Extremity Procedures

50. Performs digital nerve block.
51. Reduces fractures of small bones (e.g., fingers, toes).
52. Reduces fractures of large bones with vascular compromise (e.g., traction splint).
53. Reduces dislocations of large and small bones.
54. Applies immobilization devices (e.g., splint, traction).
55. Bivalves/ remove casts.

56. Performs arthrocentesis (e.g., knee, elbow).

57. Measures compartment pressure.

X. Other

58. Performs radio communication with prehospital units.

59. Interprets patient diagnostics (e.g., vital signs, 12-lead ECGs) as communicated by prehospital personnel.


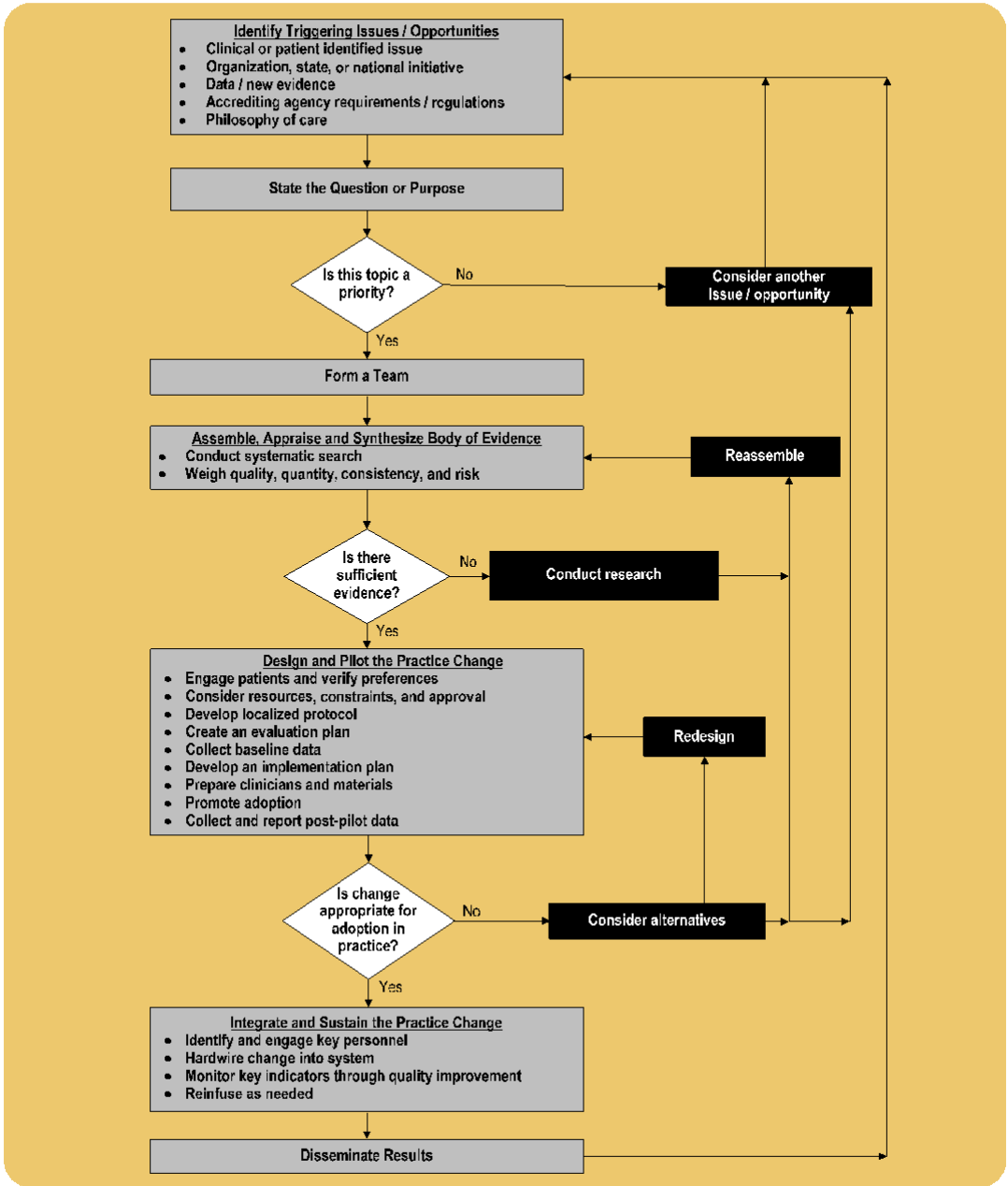
60. Removes foreign bodies (e.g., from orifices and soft tissue).

Competencies for Nurse Practitioners in Emergency Care

©Emergency Nurses Association, 2008

APPENDIX B. THE IOWA MODEL REVISED: EVIDENCE-BASED PRACTICE TO PROMOTE EXCELLENCE IN HEALTH CARE

The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

◆ = a decision point
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**APPENDIX C. UNIVERSITY OF IOWA HOSPITALS AND CLINICS PERMISSION
LETTER**

You have permission, as requested today, to review and/or reproduce *The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care*. Click the link below to open.

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APPENDIX D. INVITATION TO PARTICIPATE



NDSU Dept. 2670
Fargo, ND 58108-6050
701-231-7395

Emergency Care Skills Preparedness of Rural Nurse Practitioners

My name is Rachel DeHoogh, and I am a DNP student at North Dakota State University. I am conducting a practice improvement project to improve emergency skills preparedness among rural nurse practitioners by developing an Emergency Care Skills Seminar. By participating in my project, it is my hope that rural nurse practitioners will have educational/training resources, knowledge, and enhanced preparedness to provide evidence-based emergency skills when caring for a patient in emergent situations.

As a rural nurse practitioner, you are invited to participate in my practice improvement project and attend the Emergency Care Skills Seminar. Your participation is completely voluntary, and you may withdraw from the seminar at any time with no penalty to you.

There are some risks to participants. These known risks may include: loss of confidentiality due to face-to-face participation and the expectation to follow CDC guidelines and take additional precautions due to the COVID-19 pandemic. By participating in the project, you may benefit by receiving education related to emergency care skills. The seminar will be submitted for approval of up to 7 contact hours of accredited education. Use the attachment to this email to collect more information on the Emergency Care Skills Seminar and RSVP to attend.

Prior to attending the Emergency Care Skills Seminar, I will request you take a pre-seminar survey. It should take less than 5 minutes to complete. After completion of the Emergency Care Skills Seminar, I will request your feedback on the seminar as well as obtain demographic information. It should take about 5-10 minutes to complete the post-seminar survey. These surveys are voluntary and seminar data is anonymous. That means that no one, not even members of the practice improvement project team, will know that the information you give comes from you.

If you have any questions or concerns about this project, please contact me at rachel.dehoogh@ndus.edu, or contact my chair Adam Hohman at adam.hohman@ndus.edu

You have rights as a research participant. If you have questions about your rights or complaints about this research, you may talk to the research or contact the NDSU Human Research Protection Program at 701.231.8995, toll-free at 1-855-800-6717, or by email at ndsu.irb@ndsu.edu.

Thank you for your time and taking part in this practice improvement project,
Rachel DeHoogh, DNP-student
Email: rachel.dehoogh@ndus.edu

North Dakota State University School of Nursing DNP Program

Invites you to attend: **Emergency Care Skills Seminar**

Speakers: Dr. Adam Hohman DNP, APRN, FNP-BC

Dr. Nathan Tiedeman, DNP, FNP-C

Topics: **Acute Neurological Disability, Cervical Spine Management, & Emergency Airway Management**

Education will be completed through lecture, table-top discussion, and hands-on simulation scenarios

Learning Objectives: At the end of the presentation, participants will be able to:

Friday January 29th, 2021 from 8:00am to 4:00pm

NDSU Aldevron Tower

1455 14th Ave North

Fargo, ND 58102

RSVP to: Rachel DeHoogh at rachel.dehoogh@ndus.edu by Tuesday January 19th, 2021

Participation is completely free. Lunch will be provided.

If a participant has any dietary considerations, please include these in the RSVP as well.

This education activity will be submitted to the American Association of Nurse Practitioners for approval of up to 7 contact hours of accredited education.

Due to limited space, time, and social distancing as a result of COVID-19, the first 10 RSVP's will be accepted. Any RSVP's after this will be placed onto a waiting list. If you are no longer able to attend, please reach out to me via email at least one week prior to the scheduled seminar date to allow for ample time to contact someone on the waiting list.

COVID-19 precautions: To maintain the safety of participants CDC guidelines and NDSU policies will be followed. Participants will be screened prior to the education seminar.

Participants will have access to disinfectant throughout the seminar and adequate room size is available to ensure there is at least 6 feet between participants. Per NDSU policy participants will be required to wear masks during the seminar, maintain social distancing, and wear gloves during the hands-on skill stations. SIM-ND also has guidelines in place for hands-on skills; they take temperatures and screen participants prior to simulations, require masks and gloves during the hands-on skills, limit the number of participants to maintain social distancing, and clean training supplies between each group.

APPENDIX E. PRESEMINAR SURVEY EVALUATION

1. Prior to completing the educational seminar, how prepared do you feel in implementing the following skills?

Clinical Skills	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	Skill within your scope of practice? Y/N/Unsure
Acute Neurological Disability					
Cervical Spine Management					
Emergency Airway Management					

APPENDIX F. POST SEMINAR SURVEY EVALUATION

1. What type of post-graduate nurse practitioner program did you attend?
 - a. Masters of Science in Nursing (MSN)
 - b. Doctor of Nursing Practice (DNP)

2. What accredited certification program did you complete?
 - a. Family Nurse Practitioner
 - b. Emergency Nurse Practitioner
 - c. Acute Care Nurse Practitioner
 - d. Adult-Gerontology Nurse Practitioner
 - e. Other (please specify)

3. How long have you been employed in your current rural position?
 - Less than a year
 - 1-2 years
 - 3-5 years
 - 6-9 years
 - Over 9 years

4. Did you have previous experience as an advanced practice provider in a rural setting?
 - Yes
 - No

5. If you answered yes to the previous question, how many years of experience in rural care did you have prior to your current position?
 - Less than a year
 - 1-2 years
 - 3-5 years
 - 6-9 years
 - Over 9 years

6. On average, how frequently do you work in a rural emergency department setting?
 - Weekly
 - Monthly
 - Every 2-3 months
 - Every 4-6 months
 - Every 6-8 months
 - Annually

- Less than annually

7. On average, what is your patient volume per 8-hour shift in the rural emergency department?

- 0-2 patients
- 3-5 patients
- 6-8 patients
- 9 or greater patients

8. After completing the educational seminar, how prepared do you feel in implementing the following skills?

Clinical Skills	Unprepared	Somewhat prepared	Generally, well prepared	Very well prepared	Skill within your scope of practice? Y/N/Unsure
Acute Neurological Disability					
Cervical Spine Management					
Emergency Airway Management					

9. On average, how often do you complete the following skills in the emergency department?

- Acute Neurological Disability
 - More than once a month
 - If selected, how many times a month? _____
 - Once a month
 - Once every 2-3 months
 - Once every 4-6 months
 - Once every 7-12 months
 - Less than once a year
 - I have never performed this skill before in my practice
 - If selected, have you performed this skill during any form of training?
 - If yes, what type of training? _____
- Cervical Spine Management
 - More than once a month
 - If selected, how many times a month? _____
 - Once a month

- Once every 2-3 months
 - Once every 4-6 months
 - Once every 7-12 months
 - Less than once a year
 - I have never performed this skill before in my practice
 - If selected, have you performed this skill during any form of training?
 - If yes, what type of training? _____
- Emergency Airway Management
- More than once a month
 - If selected, how many times a month? _____
 - Once a month
 - Once every 2-3 months
 - Once every 4-6 months
 - Once every 7-12 months
 - Less than once a year
 - I have never performed this skill before in my practice
 - If selected, have you performed this skill during any form of training
 - If yes, what type of training? _____

10. Based on the skills you learned today, do you have the resources or supplies at your facility to sustain your skill preparedness long term?

- Yes
- No

If No, what resources or supplies would be needed to help support the sustainment of the skills you learned today?

11. What barriers in your practice setting do you anticipate, if any, when implementing the skills learned today? _____

Additional Comments:

12. The following teaching methods utilized in the educational seminar were conducive to my learning.

Teaching Method	Strongly agree	Somewhat agree	Neutral	Somewhat Disagree	Strongly Disagree
PowerPoint lecture					
Tabletop discussion					
Hands-on skills application					

13. I would recommend this seminar to my colleagues.

- Strongly agree
- Somewhat agree
- Neutral
- Somewhat disagree
- Strongly disagree

Additional Comments:

14. The level of content in the educational seminar for nurse practitioners was:

- Too advanced
 - a. If selected, please comment _____
- Appropriate
- Too simple
 - a. If selected, please comment _____

15. Are there other emergency care competencies for future seminars you would like to see presented?

- Yes
- No

16. If you answered yes to question 15, list the top 3 skills/topics you would like to see presented?

- a.
- b.
- c.

17. Do you feel this educational seminar would have been beneficial as a nurse practitioner student?

- Yes
- No

18. If a post graduate emergency care skills elective was offered at a university as an in-person course would you have interest in completing such a course?

- Yes
- No

19. Do you have any further suggestions or comments about this educational seminar?

APPENDIX G. IRB APPROVAL



December 18, 2020

Dr. Adam Hohman
School of Education

Re: IRB Determination of Exempt Human Subjects Research:
Protocol #PH21070, "EMERGENCY CARE SKILLS PREPAREDNESS OF RURAL MINNESOTA NURSE PRACTITIONERS"

NDSU Co-investigator(s) and research team: Rachel DeHoogh
Date of Exempt Determination: 12/18/2020 Expiration Date: 12/18/2023
Study site(s): NDSU Funding Agency: n/a

The above referenced human subjects research project has been determined exempt (category 1, 2(i)) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, Protection of Human Subjects). This determination is based on the revised protocol materials received 12/18/2020.

Please also note the following:

- If you wish to continue the research after the expiration, submit a request for recertification several weeks prior to the expiration.
- The study must be conducted as described in the approved protocol. Changes to this protocol must be approved prior to initiating, unless the changes are necessary to eliminate an immediate hazard to subjects.
- Notify the IRB promptly of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Report any significant new findings that may affect the risks and benefits to the participants and the IRB.

Research records may be subject to a random or directed audit at any time to verify compliance with IRB standard operating procedures.

Thank you for your cooperation with NDSU IRB procedures. Best wishes for a successful study.
Sincerely,

A handwritten signature in purple ink that reads "Kristy Shirley".

Kristy Shirley, CIP, Research Compliance Administrator

For more information regarding IRB Office submissions and guidelines, please consult https://www.ndsu.edu/research/for_researchers/research_integrity_and_compliance/institutional_review_board_irb/. This Institution has an approved FederalWide Assurance with the Department of Health and Human Services: FWA00002439.

INSTITUTIONAL REVIEW BOARD

NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 70.1231.8995 | Fax 70.1231.8098 | [ndsu.edu/irb](https://www.ndsu.edu/irb)

Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo ND 58102

NDSU is an EO/AA university.

APPENDIX H. PERCEIVED LEVEL OF PREPAREDNESS IN CLINICAL AREAS

Clinical Area	Preparedness				Total (Frequency)
	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	
EMTALA –specified medical screening exam	44.44%	22.22%	22.22%	11.11%	9
Rapidly changing physiologic status of patient	11.11%	0.00%	77.78%	11.11%	9
Sexual assault exam and preserves evidence	66.67%	33.33%	0.00%	0.00%	9
Laboratory diagnostics—ordering and interpreting	0.00%	11.11%	33.33%	55.56%	9
Pharmacologic and non-pharmacologic therapies	0.00%	0.00%	44.44%	55.56%	9
Electrocardiograms interpretation	0.00%	44.44%	44.44%	11.11%	9
Radiograph interpretation CT scans and MRI	11.11%	33.33%	55.56%	0.00%	9
interpretation	33.33%	44.44%	22.22%	0.00%	9
Manages adult patient in cardiopulmonary arrest	22.22%	22.22%	44.44%	11.11%	9
Manages pediatric patient in cardiopulmonary arrest	44.44%	33.33%	22.22%	0.00%	9
Emergency airways (e.g. King, Combitube, LMA)	55.56%	22.22%	22.22%	0.00%	9
Endotracheal intubation	88.89%	11.11%	0.00%	0.00%	9
CPAP/BIPAP	33.33%	22.22%	22.22%	22.22%	9
Intraosseous access	33.33%	44.44%	22.22%	0.00%	9
Central venous access	77.78%	11.11%	11.11%	0.00%	9
Procedural sedation	77.78%	11.11%	0.00%	11.11%	9
Ultraviolet examination of skin and secretions	55.56%	22.22%	22.22%	0.00%	9
Skin lesions treatment (e.g. ulcers, foot callus, skin tag)	11.11%	0.00%	66.67%	22.22%	9
Lesion excision: Punch biopsy	0.00%	22.22%	55.56%	22.22%	9
Injects local anesthetics	11.11%	22.22%	33.33%	33.33%	9

Clinical Area	Preparedness				Total (Frequency)
	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	
Nail trephination/removal	33.33%	55.56%	11.11%	0.00%	9
Nail bed closure	55.56%	44.44%	0.00%	0.00%	9
Single layer laceration repair	0.00%	11.11%	77.78%	11.11%	9
Complex or deep wound closure	22.22%	44.44%	22.22%	11.11%	9
Minor burn debridement	33.33%	22.22%	33.33%	11.11%	9
Abscess incision, drainage, and wound packing	11.11%	0.00%	77.78%	11.11%	9
Pupil dilation	55.56%	11.11%	33.33%	0.00%	9
Fluorescein staining	22.22%	22.22%	33.33%	22.22%	9
Slit lamp examination	33.33%	44.44%	22.22%	0.00%	9
Cerumen impaction curettage	0.00%	0.00%	77.78%	22.22%	9
Epistaxis control	22.22%	33.33%	44.44%	0.00%	9
Nasogastric or orogastric tube placement	22.22%	11.11%	66.67%	0.00%	9
Cervical spine management	22.22%	33.33%	44.44%	0.00%	9
Bartholin's cyst incision and drainage	44.44%	44.44%	11.11%	0.00%	9
Lumbar puncture	100.00%	0.00%	0.00%	0.00%	9
Imminent childbirth and post-delivery maternal care	66.67%	11.11%	0.00%	22.22%	9
Fecal impaction removal	33.33%	33.33%	33.33%	0.00%	9
Incise thrombosed hemorrhoids	66.67%	11.11%	22.22%	0.00%	9
Digital nerve block	55.56%	11.11%	22.22%	11.11%	9
Fracture reduction	55.56%	44.44%	0.00%	0.00%	9
Dislocation reduction	55.56%	44.44%	0.00%	0.00%	9
Immobilization devices—splints or casts	22.22%	44.44%	22.22%	11.11%	9
Bivalves/removes casts	66.67%	22.22%	0.00%	11.11%	9
Arthrocentesis (knee or elbow)	77.78%	22.22%	0.00%	0.00%	9

Clinical Area	Preparedness				Total (Frequency)
	Unprepared	Somewhat prepared	Generally well prepared	Very well prepared	
Compartment pressure measurement	88.89%	0.00%	11.11%	0.00%	9
Foreign body removal (e.g. eyes, ears, nose, rectum, vaginal)	22.22%	33.33%	22.22%	22.22%	9
Disaster and mass casualty incidents	44.44%	33.33%	11.11%	11.11%	9
Palliative care and end-of-life care	0.00%	55.56%	33.33%	11.11%	9
Acute neurologic disability	22.22%	55.56%	11.11%	11.11%	9
Mental health emergency	22.22%	55.56%	11.11%	11.11%	9
Long-acting reversible contraceptive (LARC) placement (e.g. IUD, Nexplanon)	11.11%	44.44%	22.22%	22.22%	9

APPENDIX I. EXECUTIVE SUMMARY

Executive Summary

Emergency Care Skills Preparedness of Rural Minnesota Nurse Practitioners

Introduction

Many NPs are practicing in rural America where resources and nearby healthcare facilities are limited. Health disparities are more common among the individuals who reside in these rural communities and where access to specialty care is nonexistent. As a result, NPs responsibilities go beyond primary care as many are the sole providers covering emergency department at critical access hospitals. In the rural setting, emergencies present as high stress situations and can have significant consequences for the patient, family, provider, and hospital staff involved. As the NPs' role continues to expand, health care facilities are finding NPs to be a valuable resource in the rural health care shortage. In critical access hospitals, NPs are commonly the only provider at the facility and must be skilled and trained in numerous areas. NPs should have increased emergency care education and continued sustainment of emergency skills to provide care in the emergency setting.

Purpose

The purpose of this practice improvement project was to identify rural NPs perceived level of preparedness in performing emergency skills and to develop an emergency skills seminar to increase rural NPs perceived level of preparedness when providing emergency care in a rural health care facility.

Project Design

A secondary analysis of the Educational Needs of Novice Nurse Practitioners needs assessment survey was completed and from the knowledge gaps identified an educational seminar was developed. The seminar provided education on three emergency skills: acute neurological disability, cervical spine management, and emergency airway management. A pre- and post-seminar survey were distributed to the participants to evaluate their perceived level of preparedness in the three skills that were covered during the seminar.

Results

- Based on the results from the Educational Needs of Novice Nurse Practitioners Needs Assessment novice nurse practitioners do not feel fully prepared to implement emergency care skills as they transition into practice.
- Teaching methods utilized during the Emergency Care Skills Seminar: PowerPoint lecture, tabletop discussion, and hands-on skills application, were conducive to learning among participating DNP students.
- After completion of the seminar the participants perceived level of preparedness in acute neurological disability, cervical spine management, and emergency airway management improved.

Recommendations

Further recommendations for increasing FNP emergency care skills preparedness include:

1. Providing the Rural Emergency Care Skills Seminar on an annual basis to reach individuals who are planning to practice in rural settings and to help maintain

preparedness in emergency care skills. Additionally, expanding the seminar to include additional skills may be beneficial and would hopefully attract more participants in the future.

2. Offering the seminar after the COVID-19 pandemic and lengthening the recruitment period may also encourage more preceptor participants.
3. Encouraging rural hospitals to apply for grant funding to provide equipment and adequate resources to maintain preparedness in clinical skills and allow practicing FNPs and FNP students to practice skills during clinical rotations.
4. Establishing a SIM-MN program and finding sustained grant funding which would have the capability to travel to Minnesota rural facilities and MN based FNP schools which would be beneficial for the practicing FNPs and students completing clinical rotations in these communities. Currently, SIM-ND is not able to provide services in Minnesota as it is currently funded through a ND state grant with the inability to cross over state lines.
5. Providing a in person post-graduate course with different educational formats including PowerPoint, didactic, and hands-on application that would help to enhance FNPs preparedness and knowledge in emergency skills.
6. Offering an emergency care skills elective course for FNP students or integrating the information throughout multiple courses. If an FNP is planning to work in a rural setting which includes ER coverage, these providers must seek out learning opportunities and education to remain prepared in emergency care skills.
7. Encouraging FNP schools that have a focus on rural health to incorporate emergency care training and education along with providing an emergency department clinical rotation would be helpful in preparing entry level NPs for the workforce needs in rural settings.
8. Advising CAHs to collaborate with high volume emergency departments to establish residencies for new hires who will be covering the emergency department setting.
9. Suggesting rural hospitals and FNP programs have routine emergency skills evaluations and skill re-validation to encourage maintained preparedness when providing emergency care.
10. Increase FNPs preparedness levels in emergency care skills to care for higher acuity ambulatory care patients. Routine skills evaluation may be beneficial as many skills are not used daily. Some skills could also be provided in just in time training such as splinting, nasogastric or orogastric tube placement, or laceration repair (LeBoeuf and Pritchett, 2020).
11. Develop a classroom course that focuses on emergency skills implementation that would be taught in an FNP curriculum that emphasizes rural health.
12. Require clinical rotations in a CAH or provider shortage area in FNP programs that have a focus on rural health.
13. Develop a transition into practice program for FNPs after graduation who plan to practice in a rural emergency department setting.