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An Educational Program for Providers on Asthma Management for Pediatric Clients

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Abstract

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MSN, Walden University, Minneapolis, 2017

BSN, University of Texas, Arlington, 2007

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Asthma, a chronic inflammatory respiratory disease, is the third-ranking cause of hospitalization among children under the age of 15. Of the 25 million Americans living with asthma, 6.2 million are children under the age of 18. In 2018, more than 11.4 million people with asthma, including more than 3 million children reported having one or more asthma exacerbations. The burden of pediatric asthma accounts for more than 13.8 million missed school days among children ages 5 to 17 years, $3 billion in losses due to missed work, $29 billion due to asthma-related mortality and $50.3 billion in medical costs. Asthma management in children is an ongoing challenge. This staff education project was driven by the inconsistencies in the use of current guidelines for managing pediatric asthma among providers at an outpatient clinic. The project's purpose was to enhance providers' knowledge and their perceived self-efficacy about current asthma management and practice. The novice to expert model was used to inform this project. A webinar-based educational program with a pretest/posttest design was provided. A 17 - question evidence-based self-efficacy scale was used to assess provider confidence for incorporating their knowledge into practice. Ten members of the clinic staff participated in the educational program. The pretest results ranged from 40% to 90%, and the posttest results reflected an increase in scores to 100%; with a pretest mean of 66, a posttest mean of 100, and a mean gain of 34. The *P* value on the sample *t* test was 0.000, which demonstrated that the educational intervention was effective. The findings of this project are important to providers in pediatric clinics who by incorporating existing asthma guidelines can optimize client care.

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Dedication

This project is dedicated to my husband, our children, and all frontline healthcare providers who joined the profession to serve and protect the community. This project is dedicated to you.

Acknowledgments

My sincere gratitude to my husband Allwell Sr. Thank you for your unwavering support throughout this journey. You have helped even with the household chores to make it easier for me to complete the DNP program.

I thank my young sons, Alex, Allwell Jr. and Alton, for understanding what it meant to be quiet. I can tolerate your naughtiness at home when this program is over.

A special feeling of gratitude to my committee chair, Dr. Barbara Barrett, and to my committee members, Dr. Catherine Garner and Dr. Margaret Harvey, for their encouragement, constructive comments, and guidance. Thank you for the opportunities to help me grow.

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Section 1: Nature of the Project

Introduction

Asthma is a chronic inflammatory respiratory disease, causing reversible airway constriction and hyperresponsiveness of the bronchi. Asthma is the third- ranking cause of hospitalization among children younger than 15 years (Center for Disease Control and Prevention [CDC], 2018). Among an estimated 25 million Americans living with asthma, 6.2 million are children under the age of 18 years. Research shows that in 2018, more than 11.4 million people with asthma, including more than 3 million children report having one or more asthma exacerbations (Dharmage, Perret, & Custovic, 2019). The burden of pediatric asthma is enormous; accounting for more than 13.8 million missed school days among children ages 5 to 17 years, $3 billion in losses due to missed work, $29 billion due to asthma-related mortality and $50.3 billion in medical costs (CDC, 2018).

The American Academy of Allergy, Asthma, and Immunology (AAAAI, 2018) and the National Heart Lung and Blood Institute (NHLBI, 2018) have published new evidence-based guidelines on controlling pediatric asthma. According to the guidelines, the main elements that are crucial to the management of pediatric asthma include the application of objective parameters to measure lung function in order to identify the severity of asthma. Additional asthma management elements identified in the guidelines include the effects of therapy, the use of pharmacological therapy in the management of pediatric asthma exacerbations, the control of environmental triggers to minimize asthma severity, and implementation of patient/family education intervention on the management

of asthma. According to AAAAI (2018), guidelines are increasingly evidence-based, but their impact on improving outcomes has been negligible due to the lack of implementation by healthcare providers. Practice guideline-based management with accurate assessment of asthma severity and control will minimize frequent ED visits due to asthma exacerbations (AAAAI, 2018). The AAAAI suggested the development of training programs ensuring continuous education of providers. The overarching goal of pediatric asthma care is to achieve asthma control, enabling a patient to live without functional limitations, impairment in quality of life, or risk of adverse events. To achieve this goal, the NHLBI recommended the four components of care which include assessment and monitoring, education, control of environmental factors/comorbid conditions and medications (NHLBI, 2018). Additionally, the NHLBI (2018) recommended the Provider Asthma Care Program (PACE), an interactive educational program to improve provider awareness of existing asthma management guideline and the use of communication and therapeutic techniques for reducing the effects of asthma in children and their families.

Given the high prevalence of asthma in children and the associated frequency of visits to primary care clinics for asthma-related complaints, providers in primary care are positioned to serve as the asthma clients' primary source of education. Thus, it is important to be familiar with the key components of effective asthma management to assist in routinely providing thorough asthma education (Patel & Teach, 2019). As providers continue to explore the management of asthma for pediatric clients, it becomes pertinent to educate the providers about current evidence-based guidelines, which may improve client outcomes and increase parents/caregivers' awareness of childhood asthma.

Providers have the responsibility to properly educate clinic clients on self-management of asthma, ways to reduce exposures to allergens and community programs created to improve access to quality care (Guilbert, Bacharier, & Fitzpatrick, 2014). Patel and Teach (2019), supported providers' education and the importance of their ability to practice guideline-based management with accurate assessment of asthma severity and control in children.

This educational program explored whether staff education on pediatric asthma management can improve their knowledge on current asthma management guidelines and enhance their perceptions for incorporating these guidelines into the care practices in an outpatient pediatric clinic. The role of providers in the management of pediatric asthma cannot be over-emphasized, thus, the fundamental premise of this project was that the treatment modalities and management approach of the clinic providers will determine the clients' health outcomes.

Asthma is the most common chronic illness in children, therefore this project focused on providing education to providers in the pediatric clinic on up-to-date clinical guideline for pediatric asthma management. The AAAAI (2018) and NHLBI (2018) emphasized the importance of client/family education intervention in the management of asthma. The role of the provider is to establish a relationship with the child and their family in order to minimize asthma symptoms, exacerbations, and establish asthma control (Gupta, Bhat, & Pianosi, 2018).

The potential positive change implication of this project is the creation of an awareness for the providers about the most current treatment and management guidelines

for pediatric asthma, which will improve the management and care outcomes of clients' asthma. Additionally, this project can minimize asthma exacerbations, emergency room visits, clients' complications related to poor management of asthma, and optimize clients' health outcomes that can reduce financial burden on the economy, and ultimately promote social change.

Problem Statement

Local Nursing Practice Problem

Adherence to asthma treatment guidelines in children and the implementation of a client/family education intervention on the management of asthma lead to proper diagnosis, treatment, and control of exacerbations (Ballas, 2018). Asthma treatment guidelines are readily available, but evidence shows that healthcare providers do not do a good job of following them, resulting in a high prevalence of poor asthma control (AAAAI, 2018). The NHLBI (2018) also noted that despite advances in the management of pediatric asthma, significant disparities in care and outcome persist due to providers' nonadherence to asthma treatment guidelines. Therefore, to bridge these gaps, providers must be aware of asthma care guidelines and be willing to embrace asthma care by following current treatment practice guidelines.

The local nursing problem was the lack of use of current recommended clinical practice guidelines for pediatric asthma management in this clinic that is situated in a low-income urban neighborhood. Current recommended asthma practice treatment guidelines are summarized and published by the National Asthma Education and Prevention Program (National Asthma Education and Prevention Program, 2018). It is

pertinent for clinic providers (pediatrician, nurse practitioners, and the office manager/nurse) and pediatric clients to be knowledgeable about asthma risk factors, medical management, and environmental modifications because they are essential to communicating and understanding client needs and care (Vermier et al., 2015). These facets were incorporated into this educational project to increase the awareness and knowledge base of the providers at the intended outpatient pediatric clinic.

The Local Relevance of the Need to Address the Problem

The site for the implementation of this DNP project is a privately- owned pediatric clinic in Houston, Texas. The site provides pediatric medical care and services, such as sick visits, vaccinations, and sports physicals. The providers at this clinic are tasked with the responsibility of meeting the health care needs of their clients. According to Nkoy et al. (2015), several clinics across the nation and the state of Texas have incorporated asthma treatment guidelines and client education, which led to improved care and outcomes. Despite this national and statewide care and outcomes improvement approach, there is a disturbing trend of increasing prevalence of pediatric asthma among children younger than 15 years of age that are seen in this clinic (C.C. Eze, personal communication, April 29, 2019). Similarly, the incidence of asthma exacerbations and flare-ups have increased clinic visits and asthma-related complications, as reflected in the organizational data collected and reviewed on a monthly basis. This data revealed that approximately 65% of pediatric clients seen at the clinic were diagnosed with asthma. Of these clients, 60% frequent the clinic due to asthma exacerbations and flare-ups, which may be as a result of a lack of understanding of asthma management (C. C. Eze, personal

communication, April 29, 2019)**.** Al-Muhsen et al. (2017) reported that unnecessary and frequent visits to the ED and clinic for asthma care is associated with poor client education about asthma and lack of understanding about asthma management. Treatment of pediatric clients at the clinic is not consistent with currently established practice guidelines that emphasize the importance of educating clients/family about asthma and medication use; such cases justified the need to educate providers about the existing clinical guideline for pediatric asthma management at the clinic.

According to the American Academy of Pediatrics (2018), one of the most important aspects of childhood asthma management is an emphasis on educating parents/caregivers on signs and symptoms of asthma, guidance on avoiding triggers, proper medication administration, and proper utilization of asthma action plan in schools that have been shown to be effective in minimizing asthma exacerbations, flare-ups, and hospitalizations. This reflects improved patient understanding of good asthma control and early recognition of asthma symptoms. The goal of GINA and the NHLBI is to increase awareness of asthma among health professionals, and the general public, as well as improve diagnoses, management and prevention of asthma complications through education. The NHLBI Expert Panel Report represents the most comprehensive effort to define care and management protocols for pediatric asthma clients, including a heightened emphasis on client and caregiver education (NHLBI, 2018).

Significance for the Field of Nursing Practice

This doctoral project holds significance for the field of nursing practice by serving as a platform for continued lifelong learning for providers, and an opportunity for

seamless incorporation of EBP guideline on asthma management of pediatric clients. Nurses must be prepared to meet diverse clients' needs; function as leaders and advance science that benefits clients and the capacity of providers to deliver safe, quality client care (Bridges, Sherwood, & Durham, 2014). The American Nurses Association (2010) indicated that nurses are frontline caregivers positioned to impact safety and the quality of client care by acquiring knowledge and experience through education and care coordination. In 2020 the ANA continues to advocate and support this 2010 premise. Thus, the knowledge gained through my educational program sought to impact providers' awareness, knowledge, and perceptions about proper asthma management for pediatric clients. The ANA (2017) believes that providing appropriate nursing resources must account for human factors including a nurse's years of experience, knowledge, education, and skill set. The ANA (2018) recommends the conscientious and judicious use of current best evidence in conjunction with clinical expertise and patient values to guide healthcare decisions. The ANA posits that in practice settings, nurses encounter questions, problems, and client needs that require effective clinical decision- making for appropriate intervention. To address these situations nurses must apply knowledge and skills acquired from evidence-based healthcare instruction and experience.

Purpose

Gap in Practice

The organizational data collected and reviewed on a monthly basis revealed that approximately 65% of pediatric clients seen at the clinic were diagnosed with asthma. Of these clients, 60% frequent the clinic due to asthma exacerbations and flare-ups, which

may be due to various reasons that may include a lack of understanding of pediatric asthma management (C. C. Eze, personal communication, April 29, 2019), a finding which marked a gap in practice that will be addressed in this project. The AAP (2018) emphasized that the failure in pediatric asthma control is due to insufficient knowledge of providers on pediatric asthma management which results in frequent exacerbations and ED visits. According to Sears (2019), variables that may impact client asthma exacerbations include medication non-compliance, lack of access to healthcare, and inadequate knowledge of risk factors. Non-adherence to treatment guidelines was found as the strongest predictor of exacerbations in pediatric clients.

The Global Initiative for Asthma (GINA, 2019) and the NHLBI (2018) recommended educating clients and families on symptoms recognition and control to reduce the future risk of poor outcomes as top priorities for pediatric asthma management. According to Dharmage, Perret, and Custovic (2019), providers' awareness and incorporation of treatment guideline and an emphasis on asthma education for children are associated with a reduction in the number of hospitalizations, ED visits, and a decrease in the number of nonscheduled clinic visits. At the clinic, usage of current evidence-based clinical guideline by providers on asthma management for pediatric clients as recommended by current guidelines was lacking. This lack resulted in recurrent visits to the clinic and ED due to asthma exacerbations. Thus, the purpose of this DNP project was to create an educational program for providers on current asthma management guidelines for pediatric clients. This project educated providers about the pre-disposing risk factors associated with pediatric asthma, environmental triggers,

modifications and medical management utilizing current AAP and GINA guidelines. The project goal was to increase provider's awareness, knowledge and their perception about incorporating current clinical practice guidelines for asthma management in pediatric client care in an effort to reduce the practice gap.

Practice-Focused Question

The guiding practice focused question for this project was: Can educating staff in an outpatient pediatric clinic on pediatric asthma management improve their knowledge and perceived self-efficacy about current asthma management and practice?

Addressing Practice Gap

This doctoral project has potential to address the gap in practice by enhancing providers' knowledge about effectively managing pediatric clients diagnosed with asthma through client education on symptoms recognition, environmental triggers and medication management. To bridge this gap in practice, providers need to inculcate a sense of responsibility to caring for their clients by increasing their awareness of and following the national standards of care (Anise & Hasnain-Wynia, 2016).

Nature of the Doctoral Project

Sources of Evidence

This DNP project was a webinar-based practice intervention for providers based on published evidence about management of pediatric asthma. A literature search was conducted using ProQuest, CINHAL and the Walden University Library's databases. Sources of evidence for the providers' educational program content were also gathered from national organizations like AAAAI, AAP, GINA, NAEEF and the NHLBI. These

entities provided updated guidelines between 2013 and 2019 for the management of asthma in the pediatric population and they share common goals of enhancing and promoting asthma treatment and management. The evidence collected were organized and graded using the Melnyk pyramid matrix. The matrix assigned levels of evidence and strength to studies based on the methodological quality of their design, validity, and applicability to client care. The Melnyk levels of evidence is important to clinicians as the grading system can assist in determining how much emphasis to place on a study, report, practice alert or clinical practice guideline when making decisions about a client's care (Melnyk & Fineout-Overholt, 2019).

Approach

The educational program incorporated the development of a 90-minute webinar on evidence-based providers' learning activity on pediatric asthma management. The educational program included a pretest/webinar survey, webinar-based providers' education activity, a posttest/webinar survey and a summative evaluation. Participants were invited via email to complete a pretest to assess their knowledge on pediatric asthma management. Two days after the pretest closed, a second email was sent which included a webinar with instructions on how to complete the posttest to assess staff's knowledge after the learning activity. This education program aimed at evaluating whether a staff education will enhance staff knowledge on pediatric asthma management guidelines and enhance staff perception to incorporate the guidelines into client care to optimize client outcomes. The NAEEF environmental management of pediatric asthma guidelines education tool for health care providers was used to assist in developing the education

program (NAEEF, 2015). A program evaluation was also provided via email to collect participant feedback on the learning activity.

The framework that guided this project is the novice to expert model (NEM) by Dr. Patricia Benner. The NEM model emphasized the need and significance of training staff for acquisition of knowledge to enhance client care (Walker-Reed, 2016). Benner believed that the best healthcare providers develop their skills over time. Education and experience help to contribute to this development, allowing a healthcare provider to fully understand what it means to deliver high quality client care (Walker-Reed, 2016).

Statement of Purpose

The purpose of this DNP project was to develop a staff educational program for pediatric asthma management. I hope to enhance providers' awareness on management of pediatric clients with asthma, which will improve diagnoses, management and prevention of asthma complications through education (GINA, 2019). Adherence to asthma treatment guidelines in children is poor due to lack of understanding of asthma management (Yong & Shafie, 2014). Therefore, providing resources to assist clinic providers when educating clients/caregivers may prove to be beneficial for the clinic clients' asthma outcomes.

Significance

Stakeholders

The stakeholders I identified at the clinic are this DNP student, the pediatrician, 3 APNs, the office manager, pediatric clients with a diagnosis of asthma, family members of pediatric clients, and the community at large. This project focused on educating the

providers on ways to enhance their knowledge on the management of pediatric clients with asthma in the outpatient clinic setting. The project will impact stakeholders because of its relation to the acquisition of knowledge, skills, and attitudes geared towards minimizing the negative health-associated consequences of asthma and the enhancement of improved clients' outcome.

Contributions to Nursing Practice

This doctoral project will make a positive contribution to nursing practice because it will stimulate the providers at the pediatric clinic to re-evaluate and revise their current approach to the management of pediatric clients with asthma. Additionally, this project has the potential to foster client/provider relationship, minimize emergency room visits, and lower the cost of asthma care (Progracic, Krouse, & Babineax, 2016). Providers will be encouraged to perceive asthma disease process from the client and family's perspective, which will create awareness to enhance the management of pediatric asthma. Creating an awareness for the clinical staff about the most current treatment and management guidelines for pediatric asthma, will improve the management and care outcomes of clients diagnosed with asthma and optimize clients' health care outcomes that can ultimately promote social change.

Transferability of the Doctoral Project

Information gleaned from this project could influence other asthma care clinics that may also struggle with asthma care management to educate providers on asthma management for pediatric clients. Additionally, other areas of disease management in nursing practice at the project site and other community clinics may also be positively

impacted. EBP educational intervention can positively impact other areas of health, such as the management of streptococcal pharyngitis, otitis media, urinary tract infection, bronchiolitis, bronchitis, pneumonia, and type 1 diabetes in children. EBP guidelines for providers can be reproduced to develop education programs to promote the management of other diseases in children and overall disease management in adults.

Implications for Positive Social Change

Evidence-based health care practices promote optimal cost-effective care and profit maximization (Reddel et al., 2015). This educational project will create an awareness for the clinical staff about the most current treatment and management guidelines for pediatric asthma, which will improve the management and care outcomes of clients' asthma. Additionally, this project can minimize asthma exacerbations, emergency room visits, clients' complications related to poor management of asthma, and optimize clients' health care outcomes that can ultimately promote positive social change.

Summary

Asthma is the third- ranking cause of hospitalization among children younger than 15 (CDC, 2018). The burden of pediatric asthma is significant; leading to missed school days among school children, financial losses due to missed work and asthma-related mortality (Nkoy et al., 2015). In Section 1 I discussed the lack of knowledge of clinic providers on the management of asthma in pediatric clients, which became the impetus for the development of this evidence-based educational program. The practice problem that this education intervention project addressed was the lack of knowledge and awareness of guidelines for pediatric asthma management, as recommended by the

National Asthma Education and Prevention Program guideline (NAEEP, 2015). This practice problem increased the number of pediatric clients that frequent the clinic due to asthma exacerbations (C. C. Eze, personal communication, April 29, 2019). Section 1 also included the need for providers' education to enhance their knowledge and assess their perception to incorporate pediatric asthma care management guidelines into practice. In Section 2, I will present the model that was used to inform this project and a review of additional scholarly literature that are relevant to pediatric asthma management and provider education.

Section 2: Background and Context

Introduction

The practice problem that was addressed in this project was the lack of awareness and knowledge of clinic providers in a pediatric outpatient clinic on the management of asthma. The practice-focused question was**:** Will educating staff in an outpatient pediatric clinic on pediatric asthma management improve their knowledge and perceived self-efficacy about current asthma management and practice? The purpose of this project was to develop a providers' educational program for pediatric asthma management based on an existing clinical care guideline. A staff educational program will ensure that the providers at the outpatient pediatric clinic acquire the skill and knowledge necessary for the management of pediatric clients with asthma, and to educate clients and families/caregivers.

Concepts, Models, and Theories

Models

The theoretical framework that guided this clinical project is Patricia Benner's novice to expert model (NEM). The NEM model emphasized the acquisition of knowledge through formal, structured learning, and skill through opportunities gained by experience and performing on the job (Ozdemir, 2018).

The Melnyk levels of evidence model was used to determine the strength and relevance of the articles used in this project. This model assisted in evaluating the quality, validity, reliability, and applicability of a study to the clinical question (Buccheri & Sharifi, 2017) and further supported the clinical question.

Novice to Expert Model

The NEM model was chosen because it guides one through a systematic process of knowledge and skill acquisition and provides a foundation for continuing education that fosters the development of intuitive decision-making by providers and nurses. The model holds that skills are acquired through formal education and practicing; and that the promotion of EBP requires healthcare infrastructure committed to supporting organizations to deliver EBP care through a system that supports providers in acquiring EBP competence through education (Thomas & Kellgren, 2017).

The NEM provided a basis for clinical knowledge development and career progression in clinical settings. The model also reflected on incremental skilled performance based upon education as well as experience. To address the provider issues of knowledge deficit and to enhance their perception about improving pediatric asthma care and management, this project focused on educating providers about current and established treatment guidelines that can ultimately improve client outcomes and minimize asthma-related complications.

The NEM includes five levels of skill acquisition with distinguishing behaviors and traits: novice, advanced beginner, competent, proficient, and expert. These traits can account for the extent and nature of healthcare delivery to clients (Thomas & Kellgren, 2017).

The concept of *novice* involves a provider that does not know anything of the subject he/she is approaching and must memorize its context-free features. The novice is then given rules for determining an action based on these features. To improve, the

novice needs monitoring, either by self-observation or instructional feedback. For example, a nurse learning to use a new hospital information system needs explicit instruction and 'rules' to learn to use the computer interface and manipulate the software (Thomas & Kellgren, 2017).

An *advanced beginner* is still dependent on rules, but as the provider gains more experience through experience and education, he/she notices additional aspects that can be applied to related conditions. (Thomas & Kellgren, 2017).

A *competent l*evel provider would be able to use a clinic information system with ease and knows how to problem solve technical difficulties or interpret conflicting data. The competent provider grasps all the relevant rules and facts of the field and is, for the first time, able to bring his/her own judgment to each case. This is the stage of learning that is often characterized by the term "problem solving." (Thomas & Kellgren, 2017).

The *proficient* stage is characterized by the progress of the learner from the step-by-step analysis and solving of the situation to the holistic perception of the entirety of the situation (Thomas & Kellgren, 2017). The *proficient* clinic information system learner would know how to interpret data from all sources and provide guidance to other disciplinary members as needed. Becoming a member of a healthcare profession demands the acquisition of knowledge and skills, and growing into the professional community through education, instruction and experience. Benner's model presented a scheme that proposes that experts develop skills and understanding of patient care over time through a proper educational background (Lyon, 2015)

An *expert* in his/her field has a repertoire of experienced situations that is so vast that normally each specific situation immediately dictates an intuitively appropriate action. After a great deal of skill and knowledge acquisition through education and experience, the *expert* can consistently apply skill and knowledge to real life situations (Thomas & Kellgren, 2017). The NEM is an open access model that does not require permission for use. The NEM is reflected in table 1.

Table 1

Novice to Expert Model Applied to Pediatric Asthma Management

Clinical Competence	Definition	Application
Novice	The novice lacks practice experience and confidence to demonstrate safe practice	Discuss safe practice Cue provider
Advanced beginner	Demonstrates marginally acceptable performance due to prior experience	Review EBP Occasionally provide cue
Competent	Able to safe practice, is coordinated, and has confidence in his/her actions	Discuss asthma guideline and emphasize consistent use
Proficient	Perceives situation as whole rather than parts.	Emphasize use of EBP Share EBP that minimized asthma exacerbations. Support client/family education
Expert	Very intuitive and zeros in on the accurate problem	Show use of EBP and support client and family education

Benner's model was used to illuminate the need for providers' educational intervention to improve their knowledge on the proper management of asthma in pediatric clients. The educational program provided staff with current and existing guidelines on pediatric asthma management. The NEM is relevant to nursing because it advances nursing practice and fills the gap-in-practice that was identified at the pediatric clinic. The educational intervention for providers on managing asthma in pediatric clients encouraged the incorporation of EBP guidelines into client care. The theory promoted ways to address the issue of providers' knowledge deficit regarding pediatric asthma management. Providers at this clinic can use the knowledge about current management from this education program to better improve asthma care which may prove to be beneficial for clients' asthma outcomes**.**

Melnyk Levels of Evidence Model

The Melnyk levels of evidence represents the hierarchy of evidence and illustrates the strength of study types. The strength of the levels of evidence range from Level 1 to 6. Level 1 is the highest Level of evidence (Melnyk & Fineout-Overholt, 2019). The Melnyk & Fineout pyramid is meant to assist researchers in appraising the evidence that will be used to answer the clinical or practice question (Melnyk & Fineout-Overholt, 2019). The Melnyk Evidence Appraisal Model is an open access model that does not require permission for use.

Based on the Melnyk model, articles portraying systematic reviews and meta-analysis of randomized clinical trials was graded as Level 1 evidence. Articles with randomization and cause-effect relationships was graded as Level 2 evidence, whereas

those evidence that were controlled and devoid of randomization were graded as Level 3 evidence. Level 4 evidence was assigned as correlational and case-controlled studies; Level 5 and Level 6 were graded as cohort studies and descriptive studies respectively. After categorizing the strength of evidence of the articles, I selected the articles with the strongest evidence to support this project and to assist in developing the educational program.

Relevance to Nursing Practice

History of the Problem

The management of a chronic condition like asthma remained a challenge as a result, it was important to reflect on the historical timeline of pediatric asthma management and the improvement in care that occurred over the years, in spite of the current challenges.

Provider education is ingrained in the broad discipline of health promotion and illness prevention across the lifespan (Nash, Fabius, Skoufalos, Clarke, & Horowitz, 2016). Providers are empowered to integrate the best current practice to provide exceptional care to clients by participating in education programs that address specific knowledge gaps and barriers (McEwen & Wills, 2019).

A call to action in provider education has evolved over time. In December 1995, the Pew Health Professions Commission Report pointed out that the health professions in general need to reevaluate and revisit their education and training programs to prepare professional practitioners for the new roles and health care service systems that are evolving as we enter the next century. In response to this need, the American Nurses

Association (ANA) developed in-service interprofessional training guidelines for nurses to provide primary healthcare services (Belar, 1995). The ANA (2018) reemphasized that, an organized planned program, under the direction of the staff development educator, in which learning experiences are designed to build upon the previously acquired knowledge and skills of the learner will increase competence in a specific area of practice. Currently, the ANA recommends a nursing professional development program with emphasis on educational processes that contribute to the professional growth of nurses and other learners. Professional growth and the acquisition of knowledge and skill can be facilitated by providing in-service and professional continuing education (Clark, 2018).

In the United States, the need to revolutionize client care triggered the promotion of provider and client education in clinical settings and research to evaluate the effectiveness in healthcare delivery. As the recipients of care, the public trusts health professionals to provide care that is safe, efficient, effective, timely, client-centered, and equitable. Education of healthcare providers is a key medium for shaping healthcare professional knowledge, skills and attitudes, and therefore play an essential role in determining the quality of care provided (Zamani-Alavijeh, Araban, Harandy, Bastami, & Almasian, 2019). The mode of delivery for provider education may be a PowerPoint presentation, in service training, poster presentation, and brochures/pamphlets (Chaghari, Saffari, Ebadi, & Ameryoun, 2017).

The literature review revealed that education is paramount to enhancing pediatric clients' asthma management. Specific asthma management highlights strict adherence to

medication, identification of symptoms, avoidance of environmental and non-environmental triggers, and proper understanding of individualized asthma action plan (AAP) (Boulet, 2015). In 2009, Boyd et al. reported that provider education of current and existing guidelines is a key factor in managing asthma in pediatric clients. Kaplan (2019), supports the Boyd et al. (2009) finding further reiterating and emphasized the need for provider awareness about asthma treatment guideline and the importance to optimizing clients' health outcomes. To buttress this point, Black, Balneaves, Garossino, Puyat, and Qian (2015) revealed that provider education and the incorporation of EBP guideline into practice will assure that clients/family are treated and educated on the current care practices, which is critical to improving the healthcare outcomes of pediatric clients with asthma. These are the same suggestions made by AAAAI (2018) and NHLBI (2018) which emphasized that using pharmacological therapy in conjunction with the implementation of client/family education intervention are key in pediatric asthma management.

Educating professionals on existing clinical guidelines is a key component in managing asthma (McCleary et al., 2016). McCleary et al. (2016) synthesized the evidence regarding the effectiveness of educational interventions for professionals supporting self- management in pediatric clients with asthma. After a systematic review of randomized control and clinical trials to determine the effectiveness of professional education on asthma management, the authors concluded that professional education is effective in enhancing the knowledge base of providers. The effectiveness of the educational intervention is evidenced in the form of process-level outcome. Process-level

outcome was reflected by professional behavior change of the providers in incorporating the knowledge gained from teaching into practice. Thus, providers are encouraged to incorporate the current existing EBP guidelines to deliver the best care possible.

To ensure that providers adopt current guideline in managing pediatric clients with asthma, educational programs should encompass proper identification of symptoms of asthma, pharmacological and non-pharmacological management, identification and avoidance of triggers, and client education (Cheng, Hsu, Yang, Yeh, & Shu, 2017). Lack (2012) offered that educational programs that incorporate computers, Power Point presentations, brochures, flyers, and handouts have been effectively used to educate providers and pediatric clients with asthma. Moran, Burson, and Conrad (2017) supported and emphasized Lacks' (2012) position and also added that poster presentation will also promote the delivery of an effective educational intervention because poster sessions are attractive and require elements such as logos, headers, and taglines that are visually attractive and stimulate learning.

Asthma is a variable condition, which unfortunately often remains uncontrolled, resulting in frequent acute healthcare use and impaired quality of life. Client involvement in the management of their condition helps improve its control. However, to be able to manage asthma adequately, those suffering from asthma should understand the nature of the disease, how to assess its control, the basic principles of treatment and the peculiarities associated with their own case, in addition to learning essential self-management skills (Cheng et al., 2017).

The current trend in the management of asthma, much like past asthma management trends emphasized the importance of controlling symptoms and preventing exacerbation of attacks. To achieve optimal asthma control, pediatric asthma clients/caregivers must be involved in treatment plan. Clients are expected to avoid triggers, monitor asthma symptoms and make necessary behavioral changes as dictated by the written action plan. Asthma education aims to help clients recognize disease symptoms, follow treatment plan, control environmental triggers and to seek medical care when symptoms get worse. It is well-documented in public health and in health promotion that structured client/caregiver health education, given to the right participants in the right settings, improve health behaviors (Castro-Rodriguez, Custovic, & Ducharme, 2016). Self-management asthma education is therefore considered by current asthma guidelines and strategies to be an essential component in the management of asthma, hence, initiatives that allow effective educational interventions to be more easily integrated into current care are important (Cheng et al., 2017). Therefore, asthma education has become an essential component of asthma management (Barsky, Giancola, Baxi, & Gaffin, 2018) and can be delivered by providers at healthcare settings.

Coffman, Cabana, Halpin, and Yelin (2008) conducted a systematic review which endorsed the need for providers to incorporate current EBP pediatric asthma clinical guideline into client care. The authors reiterate that client education should encompass the disease process and the importance of adhering to asthma plan of care. The study found that utilizing a clinical guideline improved clients' healthcare outcome as well as reduce asthma exacerbations and ED visits due to asthma related complications. Alatawi (2017) supported the Coffman et al. findings and also concluded that the effectiveness of pediatric asthma

management depends on providers' willingness to incorporate evidence-based asthma protocol into practice. The focus in all asthma treatment guidelines is to control asthma symptoms by involving clients in their treatment planning and execution. Therefore, asthma education should become the main component of the treatment plan (GINA, 2019).

Bundy and Murphy (2014) provided an explanation of the importance of provider education and the incorporation of evidence-based clinical guideline into pediatric asthma management. The authors supported the use of an asthma action plan and showed how such a plan can enhance clients' asthma outcomes. Results of their study showed that differences exist between clients in treatment group and control group in terms of number of clinic and ED visits. The treatment group showed a remarkable decrease in clinic and ED visits than the control group after the incorporation of an asthma action plan as recommended by the NHLBI guideline. Thus, the need to educate providers on proper ways to manage pediatric asthma clients to enhance their healthcare outcomes prevails (Friend & Morrison, 2015).

Kercsmar et al. (2017) also emphasized the need and importance of adopting the most current evidence in the management of pediatric clients with asthma; thus, improving the quality of life of clients and reducing frequent ED visits due to exacerbations. Olivera et al. (2016) found that client education delivered by the provider resulted in adherence to treatment, positive clinical results and improved patient quality of life. Educational intervention also resulted in the inclusion of an asthma action plan into clients' care plans, improved documentation, improved client medication adherence, and reduced clinic visits related to asthma exacerbations (Patel & Teach, 2019). This

finding further supported the need for practitioner education and resources to appraise, synthesize, and diffuse the best evidence into practice.

Research reveals evidence that rates of absenteeism are higher among students with asthma (Dinakar & Chipps, 2017). Some interventions to improve rates of absenteeism among school-aged children with asthma show promise (NHLBI, 2018). Such interventions include the incorporation of an EB clinical guideline to the care of pediatric clients with asthma, and an emphasis on clients and family education (NHLBI, 2018).

Patient outcomes must reflect discipline-specific accountabilities. While asthma management guidelines continue to evolve, some of the historical treatment recommendations have prevailed further highlighting the importance of incorporating treatment guidelines into asthma care practices.

Current State of Nursing Practice and Recommendations

To follow up on the historical reference, the current nursing practice offers asthma screening based on an order from the healthcare provider in conjunction with the client completing the screening**.** Guidelines from the NHLBI and GINA, revolve around two clinical tools: subjective measures of asthma control (detailed history taking, use of composite asthma control scores, and quality-of-life measures) and objective measures of asthma control (assessment of lung function, evaluation of airway hyperresponsiveness, and biomarkers) (Dinakar & Chipps, 2017).

Current evidence shows that the combination of these clinical tools elevates the likelihood of controlling asthma in pediatric clients and enables the provider to determine

if clients' asthma is well-controlled, not well controlled, and very poorly controlled (Dinakar & Chipps, 2017). Asthma control exhibits short- and long-term variability; health care providers need to be vigilant regarding the fluctuations in the factors that can create discordance between subjective and objective assessment of asthma control. Familiarity with the properties, application, and relative value of these measures will enable health care providers to choose the optimal set of measures that will adhere to national standards of care and ensure delivery of high-quality care customized to their clients. Since the assessment of asthma severity is used to guide initiation of therapy and monitor asthma control to determine whether therapy should be maintained or adjusted, the recommendation is that the nuances of estimation of asthma control should include understanding concepts of current impairment and future risk, and incorporating current EBP guideline and their measurement into clinical practice (Dinakar & Chipps, 2017).

The GINA (2019) has updated the current pediatric asthma screening guidelines to incorporate age-specific stepwise pharmacological treatments, according to clinical severity and the level of disease control and non-pharmacological measures that may improve quality of life and reduce symptoms. Minimizing exposure to environmental triggers, tobacco smoke, and avoidance of pollutants and irritants will reduce flare-ups and asthma- related complications (Tesse, Borrelli, Mongelli, Mastrorilli, & Cardinale, 2018). According to GINA (2019), the current state of practice must include education of client/caregiver, skills training for effective use of inhaler devices, encouragement of good adherence, monitoring of symptoms by caregiver/client, and a written asthma action plan, A written asthma action plan must include a description of how the caregiver can

recognize when symptom control is deteriorating, the medications to administer and when and how to obtain emergency medical care.

Similarly, Parikh et al. (2018) reported that using a clinical protocol with pediatric asthma client was an effective measure which reduced revisits rates at pediatric clinic and ED. These are the same suggestions outlined by the GINA (2019) guideline for pediatric asthma management and prevention.

Kercsmaer et al. (2017) emphasized that incorporating EBP asthma guideline into practice will assure that clients/family are treated and educated on the most current care practices. In addition to client/family education, providers should be knowledgeable about the classification of asthma severity in pediatric clients, prevention and pharmacologic/non-pharmacologic treatments, which will improve client health outcomes. Since provider education is a key component in managing asthma in pediatric clients, Curtis et al. (2018) emphasized the importance of knowledge acquisition and translating research evidence into practice.

Another aspect of the importance of provider education and incorporating the most current clinical evidence by providers for pediatric asthma management dealt with medication compliance and client/family education. Medication compliance and family education are important; therefore, a well-coordinated approach and good client/provider relationship is key. Failure to identify medication compliance as a pertinent factor in pediatric asthma management could yield adverse and detrimental results (Pollart, 2015).

Asthma control is defined according to the frequency and intensity of symptoms, functional limitations, and potential negative effects of treatment. Children with poorly

managed asthma are increased risk for adverse events including life-threatening exacerbations, ED visits and associated hospitalizations (Chipps et al., 2018). Current strategies for managing asthma in pediatric clients are guided by severity. Different medications are included in each step to allow for individualizing treatment, with the goal to minimize the risk of asthma exacerbations and impaired lung function. Providers should be aware and receptive of the current guideline to know when and how to implement a step-up therapy (GINA, 2019).

According to Ramratnam, Bacharier, and Gilbert (2017), one of the factors leading to poor control of asthma is providers' inability to follow the recommended clinical guideline. Thus, the evaluation of children with asthma must include a detailed diagnostic assessment and significant resources which include regular follow-up appointments with asthma education, and written asthma action plans (Pham & Jones, 2017).

Previous Strategies and Practices

The 1980 GINA asthma screening recommendations endorsed screening and treating pediatric asthma in school-aged children in the United States without a user-friendly operational document. At the time, there was nothing like a pediatric asthma yardstick in the current literature (Kemp & Kemp, 2001). Treatment guidelines have evolved over time since 1980 with the incorporation of a stepwise treatment for pediatric asthma management. The most current guideline published by GINA (2019) incorporates a pediatric asthma yardstick for screening and management of asthma. This pediatric yardstick discusses controller treatments at different severity for all ages. The pediatric

yardstick also describes choices available for parents, for children, and for providers as attempt to increase or decrease therapy. The diagnosis and management of asthma in children differs from that in adults. Differences also exist between the three age groups addressed in the yardstick- adolescents, 12-18 years old; school-aged children 6-11 years old; infants and young children, 5 years old and under (Tesse, Borrelli, Mongelli, Mastrorilli, & Cardinale, 2018). Despite the changes in guidelines and practices, asthma exacerbation continues to recur at this clinic due to providers not embracing the clinical guideline. For example, the clinic manager confirmed that a six months review of pediatric clients' charts with asthma, revealed that nearly 50% of these clients do not have an asthma action plan in place, as recommended by the GINA guideline (A. B. Mason, Personal Communication, April 1, 2019). This gap in practice could negatively impact clients' health outcomes. This educational intervention t will equip the providers at the clinic with information about the current EBP guideline that exists to manage pediatric clients with asthma.

How the Doctoral Project Advances Nursing Practice

This doctoral project will advance nursing practice by offering an education intervention that is nurse-specific to enhance pediatric asthma management in outpatient clinic settings. Nurses play a key role in chronic disease management and facilitating ongoing treatment regimens. The AAAAI (2011) and NHLBI (2013) have found that non-adherence to asthma treatment guidelines in children and the implementation of a client/family education intervention on the management of asthma lead to improper diagnosis, treatment, and control of exacerbations. An updated report by the AAAAI

(2018) and NHLBI (2018) reiterated the importance of embracing the most current guideline for pediatric asthma management which has been shown to be effective in reducing recurring asthma exacerbations. This present doctoral project filled this gap in practice by providing education to providers at an outpatient pediatric clinic.

Local Background and Context

Local Evidence

Approximately 5 million children in the U.S. in 2016 (8.4%) reported currently having asthma. During the same year, slightly more than 500,000 Texas children reported having current asthma, representing an asthma prevalence of 7.6% (Texas Health and Human Services, 2016). Research shows that in the US, Texas children suffer more asthma attacks than those in any other state and miss 500,000 days of school each year for the same reason. Half of the top 30 U.S. counties for asthma attack risks are in Texas (THHS, 2016). According to THHS (2016), the state saw 144,496 children suffer from asthma attacks, or nearly 20 percent of all oil and gas related asthma attacks in the nation. Similarly, the incidence of asthma exacerbations and flare-ups have increased clinic visits and asthma-related complications, as reflected in the organizational data collected and reviewed on a monthly basis. This data revealed that approximately 65% of pediatric clients seen at the clinic were diagnosed with asthma. Of these clients, 60% which averages five clients daily, frequent the clinic due to asthma exacerbations and flare-ups. Asthma exacerbations can increase the likelihood of severe complications in pediatric clients if not managed properly. These data about asthma management in pediatric clients

demonstrated the need to educate providers to increase awareness about pediatric asthma management.

Institutional Context

The practicum site located in the Southwest Texas provides pediatric medical care such as sick visits, vaccinations, sports physicals, and wellness examinations. The clinic is a multicultural facility that serves African Americans, Caucasians, Hispanics, and Asians. The clinic has ten staff members composed of three advance practice nurses (APNs), five medical assistants (MAs), an office manager (a nurse with an MSN degree), and a pediatrician. The educational program was given to the clinical staff (pediatrician, APNs) who provided direct health care services for up to 3,000 clients annually and to the office manager, a masters-prepared registered nurse who will assist with providing educational materials to clients and families. The mission of the facility is to provide excellent healthcare services to its clients and to attend to the needs of the children and their families. The strategic vision of the facility is to promote optimal and unparalleled healthcare experiences for the populations served. An express and written approval to implement this project at the clinic was given by the clinic administrator, who is also the owner and the pediatrician at the clinic. This agency approval was provided to the Walden IRB during the IRB process for final approval to conduct the project.

Definitions of Key Terms

Asthma: Asthma is a chronic inflammatory disease- causing reversible airway constriction of the bronchi. With inflammation there is a simultaneous narrowing of the airways and increased mucus production (Hollier, 2016)

Asthma exacerbation: An asthma exacerbation is an asthma attack, with classic symptoms such as shortness of breath, wheezing and chest tightness. The wheezing is most often when breathing out. Although these are the primary symptoms of asthma, some people present primarily with coughing and in severe cases, air motion may be significantly impaired such that no wheezing is heard (Kaplan, Hardjojo, Yu, & Price, 2019)

Evidence-Based Practice (EBP): Evidence-based practice is a method of critically appraising and applying available data and research to achieve a better understanding of clinical decision making (Terry, 2018)

Pediatrics: A specialty of medical science concerned with the physical, mental, and social health of children from 0-21 years old. Pediatric care encompasses a broad spectrum of health services ranging from preventive health care to the diagnosis and treatment of acute and chronic diseases. (Rimza et al., 2015).

Provider: A person with specialized training to take care of people that have medical problems (Peters, 2018).

State/Federal Contexts

The AAAAI and NHLBI guidelines are applicable to all states and federally approved healthcare institutions. All licensed and qualified healthcare providers are expected to follow the modalities and recommendations for pediatric asthma management which specifies that the management of pediatric asthma must include the application of objective parameters to measure lung function in order to identify the severity of asthma and the effect of therapy. It also recommends the use of pharmacological therapy in

conjunction with nonpharmacological therapy in the management of pediatric asthma exacerbations. The guideline emphasizes the implementation of client/family education intervention and the control of environmental triggers to minimize asthma severity. Currently, the AAAAI, GINA, and NHLBI still maintain their stand on client/family education and providers' incorporation of current guideline into practice to effectively manage pediatric clients with asthma.

Role of the DNP Student

Professional Context and Relationship

I work as a family nurse practitioner in an urgent care clinic, with experiences in pediatric intensive care unit, telemetry, and psychiatric nursing. My work responsibility includes the provision and management of direct care including assessments, physical examinations, evaluations, diagnosis and treatment. As an advanced practice nurse, I maintain up-to-date working knowledge of the EBP guidelines and literature relating to medical care. This DNP project was devoid of any connections or relationships to my employment responsibilities.

Role in the Doctoral Project

My role in the doctoral project, as the DNP student and project leader, was to develop a webinar-based educational program to educate providers at an outpatient pediatric clinic on asthma management. I focused on how to streamline asthma management in pediatric clients which is consistent with one of the roles of a DNP-prepared nurse, providing complex healthcare to diverse populations (Zaccagnini & White, 2017). My relationship with the institution was limited to completing my

practicum hours, implementing the project, collecting and analyzing evidence, and disseminating the findings.

Motivations

As a mother to a child with asthma, I was motivated to contribute towards improving the quality of care delivered to children with asthma. My son, who is now age nine was diagnosed with asthma at two years old. He underwent a tonsillectomy and adenoidectomy at three years old secondary to enlarged tonsils and adenoids that were obstructing his breathing, and a sleep study result that revealed partial loss of oxygen up to ten times during sleep within a 12- hour period. Although his asthma is well-controlled, he had flare-ups and asthma exacerbations that took him to the emergency department (ED). I chose to use this doctoral project and my platform as a DNP student to help other families and prevent them from suffering the same fate that befell my son, by encouraging and promoting the incorporation of current EBP guidelines by providers for pediatric asthma management.

Potential Biases

As a parent committed to creating awareness on pediatric asthma management, potential researcher bias that I am likely to possess are confirmation and question-order bias. The potential for confirmation bias exists when data is interpreted or omitted to support a personal belief (Baack, Dow, Parente, & Bacon, 2015). To overcome this bias, the support of colleagues was enlisted to review my work for possible constructive criticisms and recommendations. Also, it was important to consider all data obtained and

analyze it with a clear mind to ensure that all pre-existing assumptions are disregarded (Baack, Dow, Parente, & Bacon, 2015).

Question-order bias occurs when some questions may influence the responses to subsequent questions (Baack, Dow, Parente, & Bacon, 2015). Due to the order of arrangement of questions participants may compare and judge subsequent questions based on their responses to the first resulting in a biased and inaccurate answer. Question-order bias can be avoided by considering potential biases while constructing the pre and post test questions, and ordering the questions suitably; if possible, general questions should be asked first before moving to specific and sensitive questions (Baack, Dow, Parente, & Bacon, 2015).

Role of the Project Team

The Project Team

The educational program was developed by this DNP student with the assistance of an expert panel. The expert panel included this DNP student, the clinic administrator and owner who is a pediatrician, an APN, the clinic manager, who is a registered nurse with a Master of Science in Nursing degree, and the coding manager. Collaboration amongst panel members is paramount in developing an educational program, therefore engaging members early in the planning process will assure that all expectations, roles, and standards are clearly defined (Zaccagnini and White, 2017). Once developed, the educational program was presented to the expert panel members for review and final feedback prior to implementation.

The expert panel members for this educational program and their specific roles are as follows:

DNP Student: I developed the educational program, lead the team, facilitated the project from planning stage to completion and analyzed the outcome of the educational intervention. I also facilitated interdisciplinary collaboration amongst team members.

Pediatrician: Assisted with the review and validation of the curriculum content and alignment of relevant literature for the development of educational program prior to delivery.

Nurse practitioner: Assisted with educational content review and alignment with relevant literature.

Nurse manager: Assisted with educational content validation and assumed the role of a coordinator and facilitated team efforts throughout the project. Assisted with the analysis of the collected data.

Coding manager: Assisted with reviewing organizational data to ensure that records reflect current status and correct information. Assisted with analysis of collected data.

Background information, evidence, updates and feedback was shared with and provided to the team members via email. The expert panel emailed questions and updates that were deemed necessary. The team members agreed to participate voluntarily and were not compensated for their time. A chat forum was organized which afforded team members an opportunity to share their expertise and contextual insight relative to the doctoral project. The team members were also encouraged to utilize the chat forum and

emails to provide additional feedback and updates. Team member inputs, suggestions and recommendations were carefully reviewed by all members and the team assisted in determining content to be incorporated into the final program. Approval of the educational program by the expert panel was obtained prior to scheduling and delivering the education program.

Summary

Section 2 addressed the importance of a providers' education intervention in managing pediatric clients with asthma. Section 2 also provided additional evidence supporting the importance and management of asthma in the pediatric population. Provider and client/caregiver education play a pivotal role in improving patient healthcare outcomes. The lack of awareness and knowledge of clinic staff on the asthma care management guidelines in pediatric clients became the impetus for the development of this evidence-based educational program. The NEM model guided the development and implementation of the educational program. The Melnyk appraisal model was used to determine the strength and relevance of the articles used in this project. The educational intervention is relevant and has potential to advance nursing practice by educating providers on current EBP clinical guidelines that support the care of pediatric clients with asthma. Section three focused on the program implementation and the collection and analysis of evidence.

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this project was to educate providers on current asthma management guidelines to effectively manage pediatric clients and to educate clients/family on how to care for loved ones at home, to assist in minimizing asthma exacerbations. Recent statistics have shown that approximately 65% of pediatric clients seen at the clinic were diagnosed with asthma. Of these clients, 60% frequent the clinic due to asthma exacerbations and flare-ups. In this section, I identified the project design, approach and procedures, the program curriculum, and described the analysis and synthesis of the data.

Practice-Focused Question

The problem identified for the purpose of this project is that treatment of pediatric clients with asthma at the clinic was not consistent with established guideline. This current gap in practice justified the need to educate providers about clinical practice guidelines for pediatric asthma management. The practice-focused question was: Can educating staff in an outpatient pediatric clinic on pediatric asthma management improve their knowledge and perceived self-efficacy about current asthma management and practice?

Clarification of the Purpose

This project used evidence-based sources to develop an educational program to enhance providers' awareness and knowledge on pediatric asthma management and on the importance of incorporating current management guidelines into practice. The

program addressed the importance of applying current established pediatric asthma management guidelines that can further support practice that may result in better client outcomes. The intent of this educational program was to improve awareness This approach aligns with the purpose of the project of providing information to providers to better manage pediatric clients diagnosed with asthma.

Sources of Evidence

Evidence to address the Practice-Focused Question

Current evidence to address the practice-focused question were extracted from reviewing existing literature on best practices for managing pediatric asthma clients in an outpatient clinic. A literature search was conducted using ProQuest, Medline, CINHAL, Google Scholar and the Walden University Library's databases. Evidence was also gathered from the GINA, AAP, NHLBI, and the National Environmental Education and Training Foundation (NAEEF). These entities provide the most up to date guidelines for the management of asthma in the pediatric population and they share common goals of enhancing and promoting asthma treatment and management**.** Searching different databases enabled me to obtain evidence to appropriately answer the practice-focused question.

The key search terms included *clinical practice guideline in pediatric asthma, providers approach to asthma management, prevention of asthma in children,* and *improving asthma management in children.* I used filters to restrict the subject of the search results by study types to locate articles based on the level of evidence. In support of best practice and to ensure current information is provided, evidence were full text

peer-reviewed articles which were restricted to the last 5 years unless such evidence is providing additional contextual information.

Levels of Evidence

The project incorporated the highest levels of evidence available. The Melnyk pyramid matrix was used to grade and establish the hierarchy of the evidence collected to ensure that the highest levels of evidence are incorporated into the project and into the development of the educational intervention. This matrix enabled me to ascertain the strength of the articles, interventions and their relevance to the practice gap (Melnyk & Fineout-Overholt, 2019). The literature search resulted in 150 articles of which 20 was used in the project. Of the 20 articles for inclusion in the project there are 8 systematic reviews, 6 randomized control trials, 4 cohort studies, and 2 case studies.

Relationship of Evidence to the Purpose

The purpose of this project was to create an educational program for providers on asthma management for pediatric clients. Evidence collected assisted in supporting this project and in developing the educational program for staff that included information about the pre-disposing risk factors associated with pediatric asthma, environmental triggers, modifications and medical management utilizing current AAP and GINA guidelines. The program included the strategies that providers will use to enhance the management of asthma in pediatric clients for better healthcare outcomes (Bundy & Murphy, 2014).

Evidence Generated for the Doctoral Project

The evidence and data that was generated for the purpose of the project came from committee and participant evaluations of educational program content. Evidence also came from the pre/posttest given to assess participant knowledge before and after the educational intervention and from the educational program evaluation.

Project Design

The purpose of this DNP project was to develop a staff educational program for pediatric asthma management. The educational program incorporated the development of a 90-minute webinar-based evidence-based staff learning activity on pediatric asthma management. The educational program included a pretest, webinar presentation, a posttest and a program evaluation completed on survey monkey. A pretest was given to assess participants' knowledge on pediatric asthma management, followed by the webinar-based educational program and a posttest to assess staff knowledge after the learning activity. This education intervention aimed at evaluating whether education will enhance providers' awareness and knowledge on pediatric asthma management guidelines and enhance their perception to incorporate the guidelines into client care. I developed the educational program based on the current state of practice recommended by the GINA guideline**.** A program evaluation was also provided to assess participants' reaction to the learning activity. Future projects will measure practice change and outcomes as the organization moves forward and will also reflect the effectiveness of this program.

Participants

There are ten potential participants who work at the clinic that will benefit from this project. The potential participants include the pediatrician, three nurse practitioners, a licensed vocational nurse (LVN), four medical assistants, and the office manager. All prospective participants received an email which included a brief description of the project purpose and an invitation to participate in the project. Another email followed that included a consent and disclosure form and an outline of the anticipated time for completion of pre- and posttest and educational webinar. A unique identifier/ number was used to assist in comparing the pre and post-test scores, track surveys and program evaluation. Participants were also informed that attending the learning activity is voluntary and that they have the right to opt out or leave the activity at any point.

The disclosure and consent form were included as the first page of the pretest and participants typed their assigned unique identifiers and date of completion at the end of the page to indicate their consent to participate. Participants were unable to complete the pretest if they did not type in their unique identifiers. The pretest, posttest, and educational program evaluation were created via survey monkey, and links for each of the tests and program evaluation were emailed to participants.

Procedures

The DNP student sought approval to conduct the project from the Walden University Institution Review Board (IRB). The IRB approval number and expiration date for this project were as follows: IRB# 04-14-20-0561037 and expiration date April 13, 2021. The educational program incorporated a 90-minute webinar via PowerPoint

presentation (Appendix B), that provided current information on pediatric asthma in terms of assessment, diagnosis and monitoring, education, control of environmental triggers, and medications. The program was presented in two phases that included an introduction, objectives and goals of the activity, the pre/post-test and the program evaluation. Phase 1 included the program introduction, pretest, and the webinar presentation. Phase 2 included the posttest and the program evaluation. I developed the pretest and posttest using the GINA guidelines which emphasized on diagnosis, assessment, management, and prevention. The GINA (2019) guideline recommended a stepwise approach to pediatric asthma management, with a medication adjusted up or down to achieve good symptom control and minimize future risk of exacerbation and medication side effects. The committee reviewed the content of the educational program and the pre/post-test for final approval before it was presented. The educational program curriculum on pediatric asthma management aligned with the NEM. The program curriculum and NEM alignment is reflected in Table 2.

Table 2

Educational Program Curriculum

Objectives	Novice to Expert Model	Key Teaching Points	Goals
Determine knowledge of pediatric asthma	Novice	Prevalence in children, environmental and non-environmental triggers, signs and symptoms	Asthma prevention
Current pediatric Compliance, asthma prevalence	Novice Advanced beginner	Low income family Poor literacy, lack of knowledge, inaccessibility of healthcare	Improve safety
Risk factors for pediatric asthma	Novice Advanced beginner Competent	Family history, allergies, air intolerance, viral respiratory infections, obesity, exposure to tobacco, smoke, GERD	Safety Asthma prevention Avoidance of triggers
Symptoms of Asthma	Novice Advanced beginner Competent Proficient	Coughing spells, wheezing, SOB, exercise intolerance, chest tightness, fatigue, increased heart rate and respiratory rate, rapid breathing	Low ED visits Safety
Increased asthma management knowledge	Novice Advanced beginner Competent Proficient Expert	Classification of severity, prevention, pharmacological and non-pharmacological management	Safety Improved quality of life

The following is a detailed description of each phase of the learning program:

Phase1: Introduction to the learning program, Pretest, Webinar (75 minutes): The DNP student distributed an informational recruitment email to all participants. This email included the program introduction and an invitation to participate in the project and the pretest link. During the introduction, participants were informed that the learning activity was 75 minutes; a 10- minute introduction to the learning activity, a 15- minute pretest, and a 50 -minute webinar-based presentation via Microsoft PowerPoint (Appendix B) that showed current information on pediatric asthma management including diagnosis, life-style modifications and prevention based on GINA and NHLBI guidelines . Participants were also informed about the pre/post-test assessment of knowledge gain and the program evaluation. Providers that agreed to participate received another email that include a consent and disclosure form and an outline of the anticipated time for completion of pre- and posttest and educational webinar. A unique identifier/ number was assigned to providers that agreed to participate. The identifier was used to access, track, and compare pre and post-test scores and program evaluation. Participating providers included their unique identifiers among responses to the online pre/posttest questions. Participants were also informed that attending the learning activity is voluntary and that they have the right to opt out or leave the activity at any point. Another email included an instruction that guided participants through the steps of completing the informed consent form, pretest, review of webinar, and completion of the posttest via Survey Monkey. The purpose of the pretest was to establish the knowledge level of the participants prior to the learning activity. The

pre/post-test is reflected in Appendix A. After the pretest, the participants had the opportunity to listen to the pre-recorded webinar.

Phase 2: Posttest/Evaluation (25 minutes): After the webinar-based learning activity, participants had the opportunity to complete the posttest, education program evaluation, and self- efficacy scale via SurveyMonkey. The pretest and posttest were the same and depicted current information from the GINA clinical guideline on pediatric asthma management which participants need to know to better manage their clients. The program evaluation (Appendix C) was completed after the learning activity and posttest to gather participants' feedback on the education intervention and measure their confidence (Appendix E) in incorporating learning into practice.

The Kirkpatrick Model for evaluation of continuing education suggests that there are four levels of evaluation: reaction to the presentation and relevance of the program; assessment of knowledge gain; the degree to which learners use their education in practice; and the results of the training on clinical practice. The reaction to the program was assessed by the satisfaction instrument in Appendix C. The knowledge gain used a comparison of the pre and posttest (Appendix A) results and a paired T-test. Since the project will not be able to follow the nurses into practice, a self-efficacy survey (Appendix E) was used as a proxy for readiness and intent to change practice behavior.

The evidence-based practice self-efficacy scale was used to gauge providers' readiness and intent to change practice behavior. This self-efficacy assessment tool is a 17-item scale that rates how confident providers are that they can complete each activity

listed using a number from 0 to 100. The self-efficacy scale is reflected in Appendix E. Permission to use this scale was granted and is reflected in Appendix D.

Ethical Considerations

Written approval for this project was provided by the site's' agency administrator for implementation at the site (Appendix F). Approval for implementation of the project was received from the Walden University IRB, prior to implementing the project. All data, information, and documents were kept anonymous and confidential. Participants were informed that participation is strictly voluntary and are free to opt out of the learning activity at any time. There are no direct client interventions involved**.**

Analysis and Synthesis

The analysis of the learning activity was descriptive in nature and included a comprehensive analysis of the number of participants, percentage of the correct and incorrect scores on the pretest and posttest, and the average gain in the percentage of correct scores. Due to the small sample size, the analysis of data was computed manually and reflected on an excel spreadsheet and IBM SPSS V. 25 statistical software. The goal of evaluation and analysis of score was to ascertain whether there is a change in the percentage of correct questions after the learning activity. I analyzed the program evaluation provided at the end of the educational program. Both analyses enabled me to determine if there was an increase in participants' knowledge and perceived self-efficacy in the management of pediatric clients diagnosed with asthma.

Summary

There was a need for the development of an educational program at the clinic to enhance providers' awareness and knowledge on pediatric asthma management. This section focused on the development and implementation of the educational program project. The project development and delivery included describing the setting for the project, participants, procedures for data collection, analysis and synthesis of project data. The privacy of all participants was maintained. Project assessment and evaluation included a pretest and posttest, and a program evaluation that solicited feedback from participants related to the educational program. Participation in the learning activity was strictly confidential. A descriptive analysis of the data collected enabled the DNP student to ascertain the effectiveness of the learning activity. Section 4 will herald the findings, recommendations, and the strength and limitations of the project.

Section 4: Findings and Recommendations

Introduction

This doctoral project focused on the lack of use of current recommended clinical practice guidelines for pediatric asthma management at a pediatric outpatient clinic. The project was designed to address the current gap in practice related to providers' non-adherence to asthma treatment guidelines. Due to the providers' lack of consistent clinical practice that consistently incorporated asthma risk factors, medical management, and environmental modifications, my goal was to provide them with information on current treatment practice guidelines, which may reduce the number of hospitalizations, ED visits, and decrease the number of nonscheduled clinic visits. Embracing current recommended clinical guidelines can improve the management and care outcomes of clients diagnosed with asthma and optimize clients' health outcomes.

Gap in Practice and Purpose of Project

The purpose of this project was to develop a providers' educational program for pediatric asthma management based on an existing clinical care guideline. A staff educational program ensured that the providers at the outpatient pediatric clinic acquired the knowledge necessary for the management and education of pediatric clients with asthma as well as their families/caregivers. The practice focused question was: Can educating staff in an outpatient pediatric clinic on pediatric asthma management improve their knowledge and perceived self-efficacy about current asthma management and practice? Research shows that using an evidence-based management approach can reduce the morbidity of asthma in pediatric populations (AAP, 2018).

Sources of Evidence and Analytical Strategies

I reviewed literature from ProQuest, CINHAL and the Walden University Library's databases. Sources of evidence were also gathered from national organizations like AAAAI, AAP, GINA, NAEEF and the NHLBI. Additional sources of evidence included data analyzed from the pretest and posttest, providers' EBP self- efficacy scale, and the education program evaluation. The Kirkpatrick model of evaluation also provided insight into participants' reaction to the learning activity, degree of knowledge acquired, confidence of providers to incorporate knowledge to practice, and outcome of embracing EBP (Kennedy, 2017)

Findings and Implications

The comparison of the pretest and posttest scores revealed that the participants had increased their knowledge about pediatric asthma management following the asthma education. In fact, all 10 participants achieved perfect scores on the posttest after the educational activity. Table 3 shows the breakdown of the participants' individual pretest and posttest scores.

Table 3

Analysis of Each Participant's Test Scores

Participant Number	Pretest	Posttest
Participant 1	60%	100%
Participant 2	60%	100%
Participant 3	50%	100%
Participant 4	80%	100%
Participant 5	90%	100%
Participant 6	90%	100%
Participant 7	40%	100%
Participant 8	70%	100%
Participant 9	70%	100%
Participant 10	50%	100%

Ten out of the ten participants (100% participation) completed the pre-and posttests. The posttests were completed following the webinar presentation. There were 10 multiple choice questions evaluating providers' knowledge in pediatric asthma management. The participants' pretest results ranged between 40% as the lowest score and 90% as the highest score. There were two participants (20% of participants) that had 9 correct answers (scoring 90% on the pretest) of the total 10 questions. Another one participant (10% of participants) had 8 correct answers (scoring 80% on the pretest) and another two participants (20% of participants) had 7 correct answers (scoring 70% on the pretest). Two participants (20% of participants) had 6 correct answers (scoring 60% on the pretest), two participants (20% of participants) had 5 correct answers (scoring 50% on the pretest). One participant (10% of participants) received the lowest score with 4

correct answers (scoring 40% on the pretest). Table 4 shows a breakdown of their pretest results.

Table 4

Analysis of the Pretest Results

Overall Score	Frequency	Percent
40% (4/10).	1	10
50% (5/10)	2	20
60% (6/10)	2	20
70% (7/10)	2	20
80% (8/10)	1	10
90% (9/10)	2	20
Total	10	100

Table 5 depicts the breakdown of the posttest results. All 10 participants had a perfect score, which shows that they were able to apply the knowledge gained from the learning activity successfully. A comparison of the table 4 and table 5 test scores reflect that asthma education is an effective tool that can be used to enhance provider knowledge about pediatric asthma management.

Table 5

Analysis of the Posttest Results

Overall Score	Frequency	Percent
100% (10/10)	10	100.0
Total	10	100.0

Table 6 and 7 show paired samples statistics and paired *t*-test respectively. In Table 6, I used the IBM SPSS V. 25 software to compare results of the pretest and posttest data as completed by 10 participants. Paired-samples t-test allowed me to determine the number of observations (10), minimum (40), maximum (100), mean of 66.0000 (66%) for the pretest, and 100.0000 (100%) for the posttest, standard error of the mean (5.41603) and standard deviation (17.12698). It is obvious that the posttest is higher than the pretest; but is it statistically significant? To answer that, I ran a paired t-test. Result of the paired t-test is depicted in Table 7.

Table 6

Paired Samples Statistics

		Minimum	Maximum	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	40.00	90.00	66.0000	10	17.12698	5.41603
	Posttest	100.00	100.00	100.0000	10	.00000	.00000

Table 7

Paired Samples Test

				95% Confidence Interval					
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair	Pretest Posttest	-34.00000	17.12698	5.41603	-46.25190	-21.74810	6.278	9	.000

As you can see from the table above, the p-value (column Sig.(2-tailed)) is lower than 0.05 indicating that there is a statistically significant difference in the means of the pre and posttests at 5% significance level. These results serve as evidence about the importance of education and the benefits to these healthcare providers.

The educational program was evaluated based on content, mode of delivery, presenter's effectiveness, and instructional methods. A Likert scale was used to quantify the program evaluation with a scale of 1-2, in which 1 = *agree*, and 2= *disagree.* Each participant rated the degree to which each element enhanced their learning. My goal was for a 100% of the participants to rate the educational program as successful, which was accomplished. One hundred percent of the participants selected agree to all of the elements evaluated; therefore, the educational program was highly effective. There were no negative responses.

The four-step Kirkpatrick Model for evaluation of continuing education was adapted to evaluate the providers' educational program on pediatric asthma management and provide an overview that incorporates all of the evaluative components of the project. The reaction to the presentation and relevance of the program were assessed by the satisfaction instrument (Appendix C), which showed that all participants agreed that the presentation was engaging, relevant, and met their expectations. Assessment of participants' knowledge was determined by the pre and posttest results (Appendix A) and the paired T-test (Table 6), which showed a statistically significant improvement in knowledge after the learning activity. To measure the degree and confidence to which learners were willing to apply their knowledge to practice, the evidence-based self-efficacy survey was used, which reflected a confidence level of 100% for all participants. The high confidence level showed participant's readiness and willingness to change practice behavior, which will improve clients' health outcomes.

Unanticipated Limitations

The most significant limitation, potentially impacting this project was the unanticipated emergence of the Coronavirus disease 2019 (COVID-19) pandemic. Due to the COVID-19 pandemic readjustments were made, and participants were notified that the mode of delivery of the educational intervention would be a virtual platform (webinar) instead of the initially planned face-to-face approach, which could have accorded the participants more time to interact with the presenter, ask questions directly, and seek clarifications. The participants were provided with a phone number and encouraged to ask questions via email or text messages. Another unanticipated limitation also associated with the COVID-19 Pandemic was the short window for implementation and the participant time restraints due to changes in their schedules resulting from the pandemic. Although the content on pediatric asthma management was informative and edifying, the time for project implementation (one week) might have been too short for the participants to carve out the time to participate. Some of the participants verbalized that with a full time, five days a week work schedule and the requirement to home school their children; they had wished that more time was available to complete the learning. Also, participants' time restraints with competing priorities could have had an impact on their motivation and interest in learning.

Implications from Findings

The implications of the findings relating to individuals includes the importance of making a concerted effort in providing education to healthcare workers about incorporating the most current evidence-based practice guidelines and in this case about

managing pediatric clients diagnosed with asthma. Educating providers about the deleterious effects of poor asthma management and ways to promote clients' well-being can enhance client outcomes. Armed with the knowledge on pediatric asthma management, providers can promote an environment where clients/families can heal and optimize their well-being.

With regards to communities, creating an optimal healing environment should be paramount in the minds of providers charged with the responsibility of providing care. Education can enhance providers' ability to promote a healing environment. Medical assistants who work in primary care clinics can also be integrated into learning programs because, they are often the first contact for clients during clinic visits.

Institutions, healthcare organizations, and professional entities, like the American Association of Pediatricians, should seek ways to encourage providers to incorporate the most current EBP guidelines into care, which can address the problems of high levels of asthma exacerbations, emergency department (ED) utilization, and unscheduled clinic visits. Efforts by these entities will serve to equip providers with EBP knowledge that can improve practice and optimize client care outcomes.

Minimizing asthma exacerbations, recurrent ED visits, school absenteeism in children, and the financial burden will result in positive social change that can have lasting impacts. The data demonstrates the pressing need to educate providers regarding current asthma management practice guidelines. Increasing providers' knowledge about asthma management can create a practice culture which promotes healing and optimize clients' outcomes. Education can also refurbish client/provider relationship and

client/family experience, by encouraging participation in their health management. The resulting improvement in the quality of life of children with asthma can have lasting positive social impacts.

Recommendations

The gap in nursing practice addressed by this project is the inconsistency in the use of current EBP to manage pediatric clients with asthma. A review of the literature suggests that educating providers about current practices will optimize clients' health outcomes (Morton, 2017). Researchers found that providers who implemented education achieved success in minimizing asthma exacerbations and unscheduled clinic visits due to complications of asthma (AAP, 2018).

The first recommendation is to create more learning activities and programs geared towards professional development of clinic providers. Another recommendation is to institute a quality improvement project to assess if the knowledge gained was successfully incorporated into practice. The final recommendation would involve assessing the outcome of the practice change.

Contributions of the Doctoral Team

The expert panel included the clinic administrator and owner who is a pediatrician, an APN, the clinic manager, who is a registered nurse with a Master of Science in Nursing degree, and the coding manager. The plan to implement this staff education project was verified with organizational leadership. The expert panel members were aware of their roles and responsibilities and provided approval to proceed with

project implementation after reviewing and validating the content of the educational program.

With permission from the clinic administrator, the future plan is to extend the educational offering beyond this doctoral project. Offering periodic educational interventions at this clinic, especially to newly hired providers, will create awareness of the current pediatric asthma treatment guideline and encourage efforts to incorporate the guideline into practice.

Strengths and Limitations of the Project

Strengths

One of the strengths of the project is the sample size. The small number of participants allowed for a controlled and organized manner to promptly and quickly deliver the webinar-based educational program due to the last- minute change in the mode of delivery and other challenges that resulted from the COVID-19 pandemic. A webinar is a form of e-learning that accommodates different learning approaches and allows the learner to go back and review the material as needed (Kennedy, 2017). Additionally, webinars have the benefit of permitting flexible, self-paced participation and typically requires fewer resources than face-to-face education (Moran, 2017).

Secondly, collaboration with the expert panel was vital to the successful completion of this project. The expert panel offered crucial information relating to pediatric asthma management and the implementation of the educational program. Thirdly, I was able to find literature reviews, much evidence and EBP related to pediatric asthma management.

Another major strength is the positive outcome of the project, which resulted in the acquisition of knowledge and a perceived self-efficacy and confidence to incorporate EBP into pediatric asthma management. This outcome assists in confirming that educational intervention not only enhanced providers' knowledge of pediatric asthma management, but also supports a platform for ongoing monitoring of the resultant change in practice.

Limitations

Time was the first limitation facing this asthma education project. With the mode of delivery changed from a face to face to a virtual platform (webinar), due to schedule conflicts, it became challenging to mandate every provider to participate at the same time, which resulted in the selection of a webinar rather than a live virtual platform. Time constraints threatened the feasibility of convincing the providers to participate amidst their busy schedules. Therefore, the educational intervention webinar was pre-recorded to allow participants the flexibility to listen to the webinar on their own time.

Additionally, the results of this project were interpreted based on a narrow sample (10) and must be analyzed and interpreted with caution because the small size may lower the statistical power. These limitations can be the focus of future educational projects with special emphasis on expanding the inclusion criteria and sample size to allow for more generalization.

Recommendations

The rising prevalence of asthma and associated complications pose a significant threat to the pediatric population of this clinic therefore, provider and client/family

education is an important factor in achieving the goal of improving the quality of life of children diagnosed with asthma (AAP, 2018). Thus, the following were recommended to the facility's leadership team:

- Track and trend the number of ED visits or unscheduled clinic visits due to asthma exacerbations to ascertain the effectiveness of EBP management strategies and amend as needed.
- Offer an ongoing community class on asthma management strategies.
- With each patient visit, reassess the need for more asthma self-management education and emphasize its importance.
- Provide prompt feedback on asthma-related questions and offer positive reinforcement.
- Institute a quality improvement (QI) project to assess practice change.
- Take advantage of continuous education offerings on asthma management at least twice a year, to enhance their knowledge on current EBP guidelines.
- With each asthma patient's initial visit, staff should educate patients on self-management strategies and resources.

Chapter 5: Dissemination

The goal of any dissemination plan is to return project findings and outcomes to organizations and stakeholders (Moran, 2017). For this capstone project, results, findings, and recommendations will be communicated to organizational leadership and program stakeholders. The dissemination of capstone project results to enhance healthcare delivery aligns with DNP essentials II which emphasized the role of the DNP scholar as a leader within an organization (AACN, 2006).Thus, the project findings will be disseminated through publications in journals such as *Pediatrics, Journal of Pediatrics*, and *Journal of Adolescent Health*; which will be beneficial to providers and to the broader nursing profession hence reaching other audiences beyond the project's facility. The dissemination for this project will also include presentations at local elementary, middle, and high schools, which will allow for in-person audiences of school nurses, parents, and students.

Analysis of Self

Practitioner

Before bringing about a change to current practices, the clinician needs to reflect on what is currently being practiced, and changes that are needed. This staff education project was used to help inform and improve knowledge using current evidence-based practices. The knowledge acquired during this providers' educational program will positively impact my nursing profession, paving ways to comprehensively assess health and practice issues in a systematic and professional manner.

Scholar

Scholarship is an important facet of the profession. As a scholar, developing and implementing an educational program for providers on pediatric asthma management broadened my knowledge on asthma management and on program development and the incorporation of evidenced-based information. As Conrad and Pape (2017) noted, DNP graduates can impact patient care through knowledge and skills acquired during the DNP program. During this capstone project, I was able to apply the knowledge acquired from the DNP program at Walden University. As a scholar, I identified a practice problem and practice gap and formulated a project question that would reduce the gap in practice through developing and implementing an evidence-based asthma management educational program.

Project manager

According to Moran (2017), a doctoral program aims to nurture leaders in nursing who can develop and implement EBP and translate research into practice. As project manager, I developed and implemented the project on pediatric asthma management, while collaborating with providers to bring about positive change in the nursing profession and clients' health outcomes. The completion of this educational capstone project enabled me to demonstrate the application of the skills and knowledge I acquired, and most importantly, provided me with the ability to evaluate, translate, and use research and evidence in problem-solving, improving population health.

My long-term professional goal is to navigate the clinical ladder to achieve the designation of Chief Nursing Officer (CNO), where I can bring awareness of the positive

impact of education on disease management. This awareness may be achieved through collaboration with nursing organizations such as the Texas Nurses Association (TNA), and the American Nurses Association (ANA).

Challenges, Solutions, and Insights

The completion of this project was difficult, and I encountered several challenges that involved time management, multiple draft revisions, and changing the project implementation design. Due to the pandemic health crisis, the project implementation was changed from face-to-face to a virtual platform, which required more revisions, and eliminated the one-on-one interaction with participants. I overcame this by reassuring participants that I was available for questions by phone, email, or text. Time management was a struggle which stemmed from an underestimation of the demands and intensity of researching the literature, while balancing a full-time job and caring for a family, which proved to be time-consuming. I overcame this through organization, determination, and perseverance.

Insights gained through this scholarly journey were edifying. The expert panel and participants were supportive and dedicated and displayed an eagerness to learn. They were driven, poised, and ready for a practice change. I am confident that this pediatric asthma educational project will bring positive change at the clinic. This project enhanced my interprofessional collaboration skills within an organization, and my confidence in the nursing profession.

Summary

The goal of asthma therapy is to achieve asthma control, but only a limited number of clients are able to achieve that control. This may be due to an incorrect diagnosis, comorbidities, or lack of access to treatment. In the majority of cases, providers' non-adherence to evidence-based treatment guideline was the main reason for therapy failures; as a result, most children suffer from recurrent coughing, wheezing, and chest tightness (Ballas, 2018). The identification of these factors supported the need to create awareness of existing pediatric asthma management guidelines through educating providers at an outpatient pediatric clinic with the hope that they will incorporate existing guidelines into practice. This project has the potential to change practice behaviors and equip patients with skills to be active participants in their health and care. Dissemination of this DNP project outcome is an important component of the project as it creates an opportunity for knowledge-sharing.

References

Al-Muhsen, S., Horanieh, N., Dulgom, S., Al-Aseri, Z., Vasquez-Tello, A., Halwani, R., & A-Jahdali, H. (2017). Poor asthma education and medication compliance are associated with increase in ED visits by asthmatic children. *Annals of Thoracic Medicine*, *10*(2), 123-131.

Alatawi, A. (2017). The effectiveness of asthma education approaches for children: Group versus individual education. *Biomedical Journal of Scientific & Technical Research*, *1*(3), 794-799.

American Academy of Allergy, Asthma, and Immunology. (2011). *Many asthma attacks due to patients not using their medication.* Retrieved from https://www.aaaai.org/home.aspxglobal/latest-research-summaries/Current-JACHI-Research

American Academy of Allergy, Asthma, and Immunology. (2018). *Asthma.* Retrieved from https://www.aaaai.org//conditions-and-treatments/asthma

American Academy of Pediatrics. (2018). *Childhood asthma*. Retrieved from https://www.aap.org/childhood/asthma

American Nurses Association. (2010*). Scope and standards of practice.* Retrieved from https://www.iupuc.edu/academics/divisions-programs/nursing/course-descriptions/Website-ANA2010Nursing

American Nurses Association. (2018*). Scope and standards of practice.* Retrieved from https://www.iupuc.edu/academics/divisions-programs/nursing/course-descriptions/Website-ANA2018Nursing

Anise, A., & Hasnain-Wynia, R. (2016). Patient-centered outcomes research to improve asthma outcomes. *Journal of Allergy and Immunology*, *138*(6), 1503-1510.

Baack, D. W., Dow, D., Parente, R., & Bacon, D. R. (2015). Confirmation bias in individual-level perceptions of psychic distance: An experimental investigation. *A Journal of International Business Studies*, *46*(8), 938-959.

Ballas, Z. K. (2018). Asthma clinical practice guidelines: Time for an update. *The Journal of Allergy and Clinical Immunology*, *142*(3), 787-788.

Barsky, E. E., Giancola, L. M., Baxi, S. N., & Gaffin, J. M. (2018). A practical approach to severe asthma in children. *Annals of the American Thoracic Society*, *15*(4), 399-408.

Belar, C. D. (1995). Collaboration in capitated care: challenges for psychology. *Professional Psychology: Research and Practice*, *26*(2), 139-146.

Black, A. T., Balneaves, L. G., Garossino, C., Puyat, J. H., & Qian, H. (2015). Promoting evidence-based practice through a research training program for point-of-care clinicians. *Journal of Nursing Administration*, *45*(1), 14-20.

Boulet, L. (2015). Asthma education: An essential component in asthma management. *European Respiratory Journal*, *46*(1), 1262-1264.

Boyd, M., Lasserson, T. J., McKean, M. C., Gibson, P. G., Ducharme, F. M., & Haby, M. (2009). Interventions for educating children who are at risk for asthma-related emergency department attendance. *Cochrane Database of Systematic Reviews*, 1-120. https://doi.org/DOI.10.1002/146551858.CD001290.pub2.

Buccheri, R. K., & Sharifi, C. (2017). Critical appraisal tools and reporting guidelines for

evidence- based practice. *Worldviews Evidence-Based Nursing, 14*(6), 463-472.

Bundy, E. Y., & Murphy, L. S. (2014). Improving provider compliance in the use of an asthma action plan for patients with asthma in an outpatient setting. Clinical Scholars Review, 7(2), 128-134.

Burns, C. E., Dunn, A. M., Brady, M. A., Starr, N. B., & Blosser, C. G. (2013). *Pediatric primary care* (5th ed.). Philadelphia: PA: Elsevier Saunders.

Bridges, R., Sherwood, G., & Durham, C. (2014). Measuring the influence of a mutual support educational intervention within a nursing team. *International Journal of Nursing Sciences*, *1*(1), 15-22.

Castro-Rodriguez, J. A., Custovic, A., & Ducharme, F. M. (2016). Treatment of asthma in young children: Evidence-based recommendations. *Asthma Research and Practice*, *5*(2), 1-2.

Center for Disease Control and Prevention. (2018). *National current asthma prevalence*. Retrieved from https://www.cdc.gov/asthma/most-recent-national-asthma-data.htm

Chaghari, M., Saffari, M., Ebadi, A., & Ameryoun, A. (2017). Empowering education: A new model for in-service training for nursing staff. *Journal of Advanced Medical Education & Professionalism*, *5*(1), 26-32.

Cheng, Y. F., Hsu, L. N., Yang, K. D., Yeh, S. H., & Shu, S. S. (2017). Outcomes of continuing education in the care of children with asthma for pediatric health providers. *Journal of Continuing Education in Nursing, 38*(3), 122-131.

Chipps, B. E., Bacharier, L. B., Farrar, J. R., Jackson, D. J., Murthy, K. R., Phipatahakul,

W., ... Teague, W. G. (2018). The pediatric asthma yardstick. Annals of Allergy, Asthma & Immunology, 120(6), 559-579

Clark, K. M. (2018). Interprofessional education and collaborative practice: Are we there yet? *Journal of Lung Health and Diseases*, *2*(4), 1-5.

Coffman, J. M., Cabana, M. D., Halpin, H. A., & Yelin, E. H. (2008). Effects of asthma education on children's use of acute care service. *Pediatrics*, *121*(3).

Conrad, P. L., & Pape, T. (2017). Roles and responsibilities of the nursing scholar. *Journal of Nurse Practitioners*, *40*(2), 87-90.

Corbridge, S., & Corbridge, T. (2010). Asthma in adolescents and adults. *American Journal of Nursing*, (5), 28-40.

Curtis, K., Fry, M., Shaban, R. Z., & Considine, J. (2018). Translating research findings to clinical practice. *Journal of Clinical Nursing*, *26*(5), 862-872.

Dale, J. C., Drews, B., Dimmit, P., Hildebrandt, E., Hittle, K., & Tielsch-Goddard, A. (2013). Novice to expert: The evolution of an advanced practice evaluation tool. *Journal of Pediatric Healthcare*, *27*(3), 195-201

Davis, A. H., & Kimble, L. P. (2011). Human patient stimulation evaluation rubrics for nursing education: Measuring the essentials of baccalaureate education for professional nursing practice. *Journal of Nursing Education*, *50*(11), 605-611.

Dharmage, S. C., Perret, J. L., & Custovic, A. (2019). Epidemiology of asthma in children. *Frontier Pediatrics*, *7*(246), 1-10.

Dinakar, C., & Chipps, B. E. (2017). Clinical tools to assess asthma control in children. *Pediatrics*, *139*(1), 1-12.

Ekim, A., & Ocakci, A. F. (2013). Perceptions of parents and children regarding asthma management responsibilities. *Journal for Specialists in Pediatric Nursing: JSPN*, *18*(4), 289-296.

Friend, M., & Morrison, A. (2015). Interventions to Improve Asthma Management of the School-Age Child. *Clinical Pediatrics*, *54*(6), 534–542.

Global Initiative for Asthma. (2018). *GINA Mission statement*. Retrieved from https://www.ginasthma.org/.

Global Initiative for Asthma. (2019). *2019 GINA Report: Global strategy for asthma management and prevention.* Retrieved from https://www.ginasthma.org/gina-reports/

Guilbert, T. W., Bacharier, L. B., & Fitzpatrick, A. M. (2014). Severe asthma in children. *The Journal of Allergy and Clinical Immunology*, *2*(5), 489-500.

Gupta, A., Bhat, G., & Pianosi, P. (2018). What is new in the management of childhood asthma? *Indian Journal of Pediatrics*, *85*(9), 773-781.Hodges, B. C., & Videto, D. M. (2011). *Assessment and planning in health programs* (2nd ed.). Sudbury, MA: Jones & Bartlett Learning.

Hodges. C., Videto, D. M. (2011). Assessment and planning in health programs (2nd ed.). Sudbury, MA: Jones & Bartlett.

Hollier, A. (2016). *Clinical Guidelines in Primary Care: A Reference and Review Book* (2nd ed.). Scott, LA: Advanced Practice Education Associates, Inc.

Jones, M. A. (2008). Asthma self-management patient education. Respiratory Care, 53(6), 778-786.

Kaplan, A., Hardjojo, A., Yu, S., & Price, D. (2019). Asthma across age: Insights from primary care. *Frontiers in Pediatrics*, *7*(162), 1-12.

Kemp, J. P., & Kemp, J. A. (2001). Management of asthma in children. *American family Physician*, *63*(7), 1341-1349.

Kennedy, D. M. (2017). Creating an excellent patient experience through service education: contents and methods for engaging and motivating front-line staff. *Journal of Patient Experience*, *4*(4), 156-161.

Kercsmar, C. M., Beak, A. F., Sauers-Fora, H., Simmons, J., & Wiener, B. (2017). Associating an asthma improvement collaborative with healthcare utilization in Medicaid-insured pediatric patients in an urban community. *Journal of the American Medical Association*, *171*(11), 1072-1080.

Lack, S. (2012). Education of the pediatric patient with asthma: a literature review. *Journal of Pediatric Nursing*, *27*(1), 174-176.

Long, L., Burkett, K., & McGee, S. (2009). Promotion of safe outcomes: incorporating evidence into policies and procedures. Nursing Clinics of North America, 44(1), 57-70.

Lyon, L. J. (2015). Development of teaching expertise viewed through the Dreyfus model of skill acquisition. *Journal of Scholarship of Teaching and Learning*, *15*(1), 88-105.

McCleary, N., Andrews, A., Morrow, S., Wiener-Ogilvie, S., Fletcher, M., Steed, L., & Pinnock, H. (2016). Educating professionals to support self-management in people with asthma: protocol for a systemic review and scoping exercise. *BMJ*

Open, *6*. Retrieved from https://doi-org.ezp.waldenulibrary.org/10.1136/bmjopen-2016-011937

McEwen, M., & Wills, E. M. (2019). *Theoretical basis for nursing* (5th ed.). Philadelphia, PA: Wolters Kluwer Health.

McHugh, M. D., & Lake, E. T. (2010). Understanding clinical expertise: nurse education, experience and the hospital context. *Research in Nursing & Health*, *33*(4), 274-287.

Melnyk, B. M., & Fine out-Overholt, E. (2019). *Evidence-Based Practice in Nursing and Healthcare: A guide to Best Practice* (3rd ed.). Philadelphia, PA: Wolters Kluwer Health.

Moran, K., Burson, R., & Conrad, D. (2017). *The Doctor of Nursing Practice Scholarly Project: A framework for success* (2nd ed.). Burlington, MA: Jones & Bartlett Learning.

Morton, P. G. (2017). Nursing education research: An editor's view:. *Journal of Professional Nursing*, *33*(5), 311-312.

Nash, D. B., Fabius, R. J., Skoufalos, A., Clarke, J. L., & Horowitz, M. R. (2016). *Population health: Creating a culture of awareness* (2nd ed.). Burlington: MA: Jones & Bartlett Learning.

National Asthma Education and Prevention Program. (2015). *Guidelines for the diagnosis and management of asthma.* Retrieved from https://www.nhlbi.nih.gov/guidelines/asthma/asthsumm.pdf

National Asthma Education and Prevention Program. (2018). Diagnosing and managing

asthma. Retrieved from https://www.nhlbi.nih.gov/files/doc/guidelines/asthma-qrg.pdf

National Environmental Education and Training Foundation. (2015). Environmental management of pediatric asthma: guidelines for health care providers. Retrieved from https://www.neefusa.org/resource/environmental-management-pediatric-asthma-guidelines-health-care-provider

National Heart, Lung, and Blood Institute. (2013). *How is asthma treated and controlled?* Retrieved from https://www.nhbli.nih.gov/health/health-topics/topics/asthma/signs.html

National Heart, Lung, and Blood Institute. (2018). *Expert panel report: Guidelines for diagnosis and management of asthma.* Retrieved from https://www.nhbli.nih.gov/guidelines/asthma/asthgdln.pdf

Nkoy, F., Fassl, B., Stone, B., Uchida, D. A., Johnson, J., Reynolds, C., ... Kim, E. H. (2015). Improving pediatric asthma care and outcomes across multiple hospitals. *Pediatrics*, *136*(6), 1602-1610.

Nkoy, F., Fassl, B., Stone, B., Uchida, D. A., Johnson, J., Reynolds, C., ... Kim, E. H. (2015). Improving pediatric asthma care and outcomes across multiple hospitals. *Pediatrics*, *136*(6), 1602-1610.

Olivera, C. M. X., Vianna, E. O., Bonizio, R. C., de Menezes, M. B., Ferraz, E., Cetlin, A. A., … de Freitas, O. (2016). Asthma self-management model: randomized controlled trial. *Health Education Research*, *31*(5), 639–652.Peters,

A. L. (2018). The changing definition of a primary care provider. *Annals of Internal Medicine*, *169*(12), 875-876.

Ozdemir, N. G. (2018). The development of nurses' individualized care perceptions and practices: Banner's' Novice to Expert model perspective. *International Journal of Caring Sciences*, *12*(2), 1279-1285.

Parikh, S. M., Kenyon, C. C., & Teufel, K. J. (2018). Impact of decreased component on readmission rates for children hospitalized with asthma. *The Journal of Pediatrics*, *195*(1), 175-181.

Patel, S. J., & Teach, S. J. (2019). Asthma: Pediatrics in Review. *Journal of the American Academy of Pediatrics*, *40*(11), 549-567.

Peters, A. L. (2018). The changing definition of a primary care provider. Annals of Internal

Medicine, 169(12), 875-876.

Pham, S., & Jones, S. M. (2017). Individualized therapy for persistent asthma in young children. *Pediatrics*, *140*(3), 220-221.

Pollart, S. M., Crompton, R. M., & Edward, K. S. (2015). Management of acute asthma exacerbations. *American Family Physician*, *84*(1), 40-47.

Progracic, J. A., Krouse, R. Z., & Babineax, D. C. (2016). Distinguishing characteristics of differences to control asthma in inner city children and adolescents. *Journal of Allergy and Immunology*, *138*(1), 1030-1041.

Ragazzi, H., Keller, A., Ehrensberger, R., & Irani, A. (2010). Evaluation of a practice-based intervention to improve the management of pediatric asthma. Journal of

Urban Health: Bulletin of the New York Academy of Medicine, 88, 38-48.

Ramratnam, S. K., Bacharier, L. B., & Gilbert, T. W. (2017). Severe asthma in children. *Journal of Allergy and Immunology Practice*, *5*(4), 889-898.

Rance, K. S. (2011). Helping patients attain and maintain asthma control: Reviewing the role of the nurse practitioner. *Journal of Multidisciplinary Healthcare*, *4*(1), 299-309.

Reddel, H. K., Bateman, E. D., Becker, A., Boulet, L., Cruz, A. A., Drazen, J. M., ... FitzGerald, J. M. (2015). A summary of the new GINA strategy: a roadmap to asthma control. *European Respiratory Journal*, *46*(3), 622-639.

Rimza, M. E., Hotaling, A. J., Keown, M. E., Marcin, J. P., Moskowitz, W. B., Sigrest, T. D., & Simon, H. K. (2015). Definition of a pediatrician. *Pediatrics*, *135*(4), 780-781.

Rosswurm, M. A., & Larrabee, J. H. (1999). A model for change to evidence-based practice. Journal of Nursing Scholarship, 31(4), 317-322.

Roter, D. L., Stashefsky, R., & Rudd, R. (2001). Current perspectives on patient education in the US. *Patient Education and Counseling*, *44*(1), 79-86.

Schultz, A., & Martin, A. C. (2013). Outpatient management of asthma in children. *Clinical Medicine Insights Pediatrics*, *14*(7), 13-24.

Sears, M. R. (2019). Can we predict exacerbations of asthma? *American Journal of Respiratory and Critical Care Medicine*, *199*(4), 299-300.

Terry, A. J. (2018). *Clinical research for the Doctor of Nursing practice* (3rd ed.). Burlington, MA: Jones & Bartlett Learning

Tesse, R., Borrelli, G., Mongelli, M., Mastrorilli, V., & Cardinale, F. (2018). Treating pediatric asthma according to guidelines. *Frontiers in Pediatrics*, *6*(234).

Texas Health and Human Services. (2016). Texas childhood asthma factsheet. (2016). Retrieved from https://www.dshs.state.tx.us/asthma/data.aspx

Thomas, C. M., & Kellgren, M. (2017). Benner's novice to expert model: An application for simulation facilitators. *Nursing Science Quarterly*, *30*(3), 227-234.

Titler, M. G. (2018). Translating research in practice. *The Online Journal of Issues in Nursing*, *23*(2), 1-7.

Tucker, S. J., Olson, M. E. & Frusti, D. K. (2009). Evidence-based practice self-efficacy scale: Preliminary reliability and validity. *Clinical Nurse Specialist, 23*(4), 207-215. doi:10.1097/NUR.0b013e3181aae8c6

Vermier, P., Vandijck, D., Degroote, S., Peleman, R., Verhaeghe, R., Mortier, E., ... Vogelaers, D. (2015). Communication in healthcare: a narrative review of the literature and practical recommendations. *International Journal of Clinical Practice*, *69*(11), 1257-1267.

Walker-Reed, C. A. (2016). Clinical coaching: The means to achieving a legacy of leadership and professional development in nursing practice. *Journal of Nursing Education and Practice*, *6*(16), 41-45.

Yong, Y. V., & Shafi, A. A. (2014). Economic evaluation of enhanced asthma management: a systematic review. *Pharmacy Practice*, *12*(4), 1-13.

Zaccagnini, M. E., & White, K. W. (2017). *The Doctor of Nursing practice essentials: A new model for advanced practice nursing* (3rd ed.). Sudbury, MA: Jones &

Bartlett.

Zamani-Alavijeh, F., Araban, M., Harandy, T. F., Bastami, F., & Almasian, M. A. (2019). Sources of healthcare providers' self-efficacy to deliver health education: A qualitative Study. *BMC Medical Education, 19(16), 1-10.*

Appendix A: Pretest and Posttest

Pick one answer for each question. Thank you.

1. Asthma in children is classified as intermittent, mild persistent, moderate persistent, or severe persistent depending on symptom, recurrences and pulmonary function measurements:
   a. True
   b. False
2. Apart from frequent coughing at nights, other symptoms that may be present in children with asthma include all but one of the following:
   a. Wheezing
   b. Shortness of breath
   c. Increased respiratory rate
   d. Eye redness
3. The preferred first line treatment for children with intermittent asthma is:
   a. Short-acting beta agonist
   b. Long-acting beta agonist
   c. Inhaled corticosteroids
   d. Leukotriene receptor antagonist
4. Client and caregiver asthma education should include:
   a. Medication use
   b. Environmental control of triggers
   c. Recognition of symptoms

d. All the above

5. Which of the following is less likely to trigger asthma exacerbation in children?

a. Tobacco smoke

b. Strenuous exercise

c. A common cold

d. Eating

6. What change should clients make to their medication regimen on bad pollution days?

a. Use a rescue inhaler

b. Double-up on prescribed medication

c. Skip medications

d. Skip school

7. Symptoms indicating poor asthma control in children include:

a. Frequent nighttime awakenings due to asthma symptoms

b. Frequent use of quick-relief medications

c. Difficulty performing normal activities due to asthma symptoms

d. All the above

8. Clients with asthma and their families should be educated by providers to seek emergency care if:

a. The child has difficulty ambulating due to shortness of breath

b. The child lips and fingernails are turning blue

c. The child is struggling to breath

d. All the above

9. An important aspect of pediatric asthma management is the incorporation of an asthma action plan:

   a. True

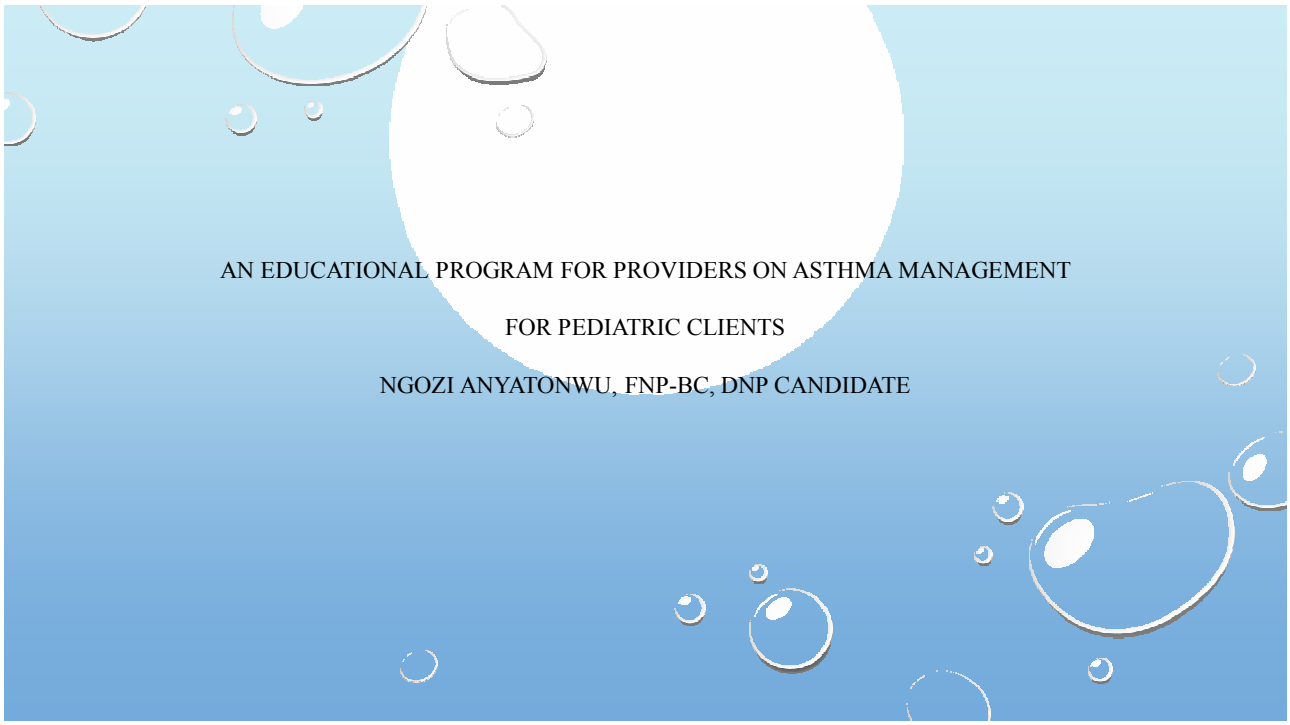
   b. False

10. Long-acting asthma medications such as inhaled corticosteroids and leukotriene modifiers prevent symptoms of asthma by reducing inflammation:

    a. True

    b. False

Appendix B*:* Power Point Presentation



Introduction

- Asthma is the most common chronic disease of childhood in the United States. Therefore, providers should ensure that they understand its management and embrace the most current and existing clinical guideline to enhance clients' healthcare outcomes (AAAA1, 2011).

Learner objectives

Upon completion of this learning activity, the learner will be able to

- Define asthma
- Recognize signs and symptoms of an acute asthma episode
- Recognize common environmental and non-environmental asthma triggers
- Develop awareness of asthma medications
- Utilize the GINA treatment guideline in managing pediatric asthma
- Recommend lifestyle modifications for clients with asthma
- Identify non-pharmaceutical strategies to avoid asthma triggers
- Know goal treatment of pediatric asthma

What is asthma?

Asthma is a chronic inflammatory lung disease that can cause repeated episodes of cough, wheezing, and breathing difficulty (GINA, 2018).

Risk factors for childhood asthma include

- Family history of asthma
- Allergies
- Cold air intolerance
- Viral respiratory infections
- Obesity
- Exposure to tobacco smoke
- Gatroesophageal reflux disease (GERD) (AAAAI, 2011).

Symptoms of asthma in children

- Coughing spells
- Wheezing
- Shortness of breath
- Decrease exercise tolerance
- Complaints of chest tightness
- Fatigue
- Increased heart rate and respiratory rate
- Rapid breathing (GINA, 2018; NHLBI, 2013).

Classification of asthma severity in children

- Mild intermittent: Symptoms ≤ 2 days per week or ≤ 2 nights per month. Exacerbations brief.
- Mild persistent: Symptoms > 2 times per week, but not daily; or 3-4 times per month at nighttime
- Moderate persistent: Daily symptoms or > 1 night per week, but not nightly
- Severe persistent: Symptoms throughout the day; often 7 nights per week (NHLBI, 2013)

Prevention

- Avoidance of allergens and irritants
- Use of asthma action plan
- Learn early signs and symptoms of asthma exacerbation
- Influenza immunization
- Monitor peak flow values
- Learn correct use of inhalers, spacers, and medications (GINA, 2018; NAEEP, 2015).

Pharmacologic management

For infants and children < 4 years of age

- Mild intermittent: Short-acting bronchodialator (Albuterol): for exacerbations
- Mild persistent: **Preferred treatment**: low dose inhaled corticosteroids; albuterol for exacerbations

  Alternative treatment: cromolyn or montelukast
- Moderate persistent: Medium-dose inhaled corticosteroids or medium dose corticosteroids plus either salmeterol or montelukast; albuterol for exacerbations
- Severe persistent: High dose inhaled corticosteroids plus either salmeterol or montelukast; or high dose inhaled corticosteroids plus either salmeterol or montelukast plus oral systemic glucocorticoids; albuterol for exacerbations (NHLBI, 2013).

Pharmacologic management

For infants and children 5-11 years of age

- Mild intermittent: Albuterol for exacerbations
- Mild persistent: **Preferred treatment**: low dose inhaled corticosteroids

  Alternative treatment: cromolyn, nedocromil or theophylline
  Short-acting bronchodilator (Albuterol): for exacerbations
- Moderate persistent: **Preferred treatment**: low dose inhaled corticosteroids plus either salmeterol, or theophylline or medium dose inhaled steroid

  Short-acting bronchodilator (Albuterol): for exacerbations
- Severe persistent: Preferred treatment: high dose inhaled corticosteroid plus salmeterol and if needed, oral corticosteroids (2mg/ kg/ day not to exceed 60mg/ day) (NHLBI, 2013).

Alternative treatment: high dose inhaled corticosteroid plus either salmeterol or theophylline or high dose inhaled steroids plus salmeterol plus oral systemic glucocorticoids

Short-acting bronchodilator (Albuterol): for exacerbations (NHLBI, 2013).

Pharmacologic management

For children 12 years or greater

- Mild intermittent: Albuterol for exacerbations
- Mild persistent: : **Preferred treatment**: low dose inhaled corticosteroids

  Alternative treatment: cromolyn, leukotriene, or sustained-release theophylline

  Short-acting bronchodilator (Albuterol): for exacerbations

  Consider leukotriene blocker such as singulair or accolate
- Moderate persistent: Preferred treatment: low to medium dose inhaled corticosteroid and long-acting inhaled bronchodilator

  Alternative treatment: low to medium dose inhaled corticosteroid and either leukotriene blocker or theophylline

  Short-acting bronchodilator (Albuterol): for exacerbations (NHLBI, 2013).

Pharmacologic treatment

- Severe persistent: **Preferred treatment**: high dose inhaled corticosteroids and long acting inhaled bronchodilators and if needed, oral corticosteroids (2mg/ kg/ day not to exceed 60mg/ day)
- Short-acting bronchodilators for exacerbations (NHLBI, 2013).

References

American Academy of Allergy, Asthma, and Immunology. (2011). *Many asthma attacks due to patients not using their medication.* Retrieved from https://www.aaaai.org/home.aspx global/latest-research-summaries/Current-JACHI-Research

Global Initiative for Asthma. (2018). *GINA Mission statement.* Retrieved from https://www.ginasthma.org/.

National Asthma Education and Prevention Program. (2015). *Guidelines for the diagnosis and management of asthma.* Retrieved from https://www.nhlbi.nih.gov/guidelines/asthma/asthsumm.pdf

National Heart, Lung, and Blood Institute. (2013). *How is asthma treated and controlled?* Retrieved from https://www.nhbli.nih.gov/health/health-topics/topics/asthma/signs.html

Appendix C: Program Evaluation

EVALUATION FORM: Pediatric Asthma Management Education

Content		Agree	Disagree
1.	The content was informative to me	1	2
2.	The content improved my knowledge on the topic	1	2
3.	Enhanced my perceived self-efficacy about practice	1	2
4.	The content aligned with the objectives	1	2
5.	The content has relevance to my job	1	2
6.	The program objectives aligned with the goals	1	2
Mode of Delivery			
1.	The webinar was appropriate for the learning activity	1	2
2.	Length of webinar was appropriate for the activity	1	2
Presenter's Effectiveness			
1.	The presentation was clear and succint	1	2
2.	The presenter demonstrated mastery of the topic.	1	2
3.	The presenter maintained a conversational tone	1	2
Instructional Methods			
1.	The instructional material was simple and organized.	1	2
2.	The instructional method was suitable for the activity.	1	2

Appendix D: Permission to Use Evidence-Based Nursing Practice Self-Efficacy Scale

Walden University

Thank you for your interest in the Evidence-Based Nursing Practice Self-Efficacy Scale developed by Sharon Tucker, PhD, RN; Marcelline Harris, PhD, RN; and Mariann E. Olson, PhD, RN. This tool may be useful for assessing nurses' confidence with EBP skills. Permission is granted as requested today, it is not granted for revising or modifying.

Following is a link to the scale and instructions for use. We ask that you share what you learned and submit your data for us to complete further psychometric evaluation. You are responsible for data management and analysis for use within your organization. Please format as an Excel file as follows with the questions across the top and the respondent number in the left column:

Respondent ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	through Q 17	Comments
1									
2									

The number of the answer circled (or the comment) goes in the appropriate cell. Please email the Excel file to laura-cullen@uiowa.edu.

Evidence-Based Nursing Practice Self Efficacy Scale

Citation:
Tucker, S. J., Olson, M. E. & Frusti, D. K. (2009). Evidence-based practice self-efficacy scale: Preliminary reliability and validity. *Clinical Nurse Specialist, 23*(4), 207-215. doi:10.1097/NUR.0b013e3181aae8c6

Thank you for your interest. We are excited for the nursing community to use this scale. If you have any questions, please contact Laura Cullen at 319-384-9144 or laura-cullen@uiowa.edu.

Appendix E: Evidence-Based Nursing Practice Self-Efficacy Scale

EVIDENCE-BASED NURSING PRACTICE SELF-EFFICACY SCALE

Developed by Sharon J.Tucker, PhD, RN; Marcelline Harris, PhD, RN; Marianne E Olson, PhD, RN
Mayo Clinic- Department of Nursing – Rochester, Minnesota

Instructions:

The following items describe activities that support and ensure evidence-based nursing practice. Using a pen or pencil, for each of the 17 items below, rate how confident you are that you can do each activity listed using a number from 0 to 100. These numbers mean that you are not at all confident or sure (0%) to completely confident or sure (100%) that you can do each of these things listed. You can use the scale directly below to gauge your confidence from 0-100% and then put percentage in the space provided after each item.

PICK ONE OF THESE NUMBERS AND WRITE ON THE LINE NEXT TO EACH ITEM BELOW.

0 10 20 30 40 50 60 70 80 90 100

Not confident Moderately confident Confident

	SELF-EFFICACY STEM	**CONFIDENCE** MARK 0-100%
I am THIS PERCENT confident I can complete the following activities that support nursing practice:		
1.	Routinely ask questions about my practice.	_____%
2.	Locate resources in my department and institution to facilitate my understanding of research literature relevant to my nursing practice.	_____%
3.	Locate resources in my department and institution necessary to institute an evidence-based practice change.	_____%
4.	Locate and review published practice guidelines that support nursing interventions important to my practice.	_____%
5.	Locate and review published research studies that have relevance to nursing interventions important to my practice.	_____%
6.	Organize the necessary support and procedures to make a nursing practice change based on evidence (research, clinical practice guidelines, clinical expertise, patient goals/preferences).	_____%
7.	Routinely identify patient outcomes to target nursing interventions.	_____%
8.	Integrate the various sources of evidence and apply to my specialty population and practice.	_____%
9.	Activate the processes to implement an evidence-based practice change.	_____%
10.	Modify nursing interventions recommended for my patient population based on characteristics of the specific unit in which I work.	_____%
11.	Routinely evaluate the research literature and other sources of evidence related to nursing interventions for my specialty population and practice.	_____%
12.	Routinely implement nursing interventions that are supported by evidence (research and other sources such as practice guidelines) for my patient population and practice.	_____%
13.	Modify nursing interventions I routinely implement based on what I learn about my patient's preferences.	_____%
14.	Routinely modify nursing interventions based on outcomes and goals.	_____%
15.	Routinely evaluate the effectiveness of nursing interventions using measurable outcomes.	_____%
16.	Obtain proper training and education to be able to effectively implement an evidence-based nursing intervention or practice.	_____%
17.	Implement an evidence-based nursing intervention individualized to my patient/family situation without losing the fidelity of the intervention (i.e., delivering as it was intended to be delivered).	_____%

Appendix F: Site Approval Documentation for Staff Education Doctoral Project

Partner Site

Contact Information

Date

The doctoral student is involved in Staff Education that will be conducted under the auspices of our organization. The student is approved to collect formative and summative evaluation data via anonymous staff questionnaires, and is also approved to analyze internal, de-identified site records that I deem appropriate to release for the student's doctoral project. This approval to use our organization's data pertains only to this doctoral project and not to the student's future scholarly projects or research (which would need a separate request for approval).

I understand that, as per DNP program requirements, the student will publish a scholarly report of this Staff Development Project in ProQuest as a doctoral capstone (with site and individual identifiers withheld), as per the following ethical standards:

a. In all reports (including drafts shared with peers and faculty members), the student is required to maintain confidentiality by removing names and key pieces of evidence/data that might disclose the organization's identity or an individual's identity or inappropriately divulge proprietary details. If the organization itself wishes to publicize the findings of this project that will be the organization's judgment call.

b. The student will be responsible for complying with our organization's policies and requirements regarding data collection (including the need for the site IRB review/approval, if applicable).

c. Via a Consent Form for Anonymous Questionnaires, the student will describe to staff members how the data will be used in the doctoral project and how the stakeholders' autonomy and privacy will be protected.

I confirm that I am authorized to approve these activities in this setting.

Signed,
Authorization Official Name Title

Appendix G: Consent Form for Anonymous Questionnaires

To be given to the staff member prior to collecting questionnaire responses—note that obtaining a "consent signature" is not appropriate for this type of questionnaire and providing respondents with anonymity is required.

You are invited to take part in an evaluation for the staff education doctoral project that I am conducting.

Questionnaire Procedures:

If you agree to take part, I will be asking you to provide your responses anonymously, to help reduce bias and any sort of pressure to respond a certain way. Staff members' questionnaire responses will be analyzed as part of my doctoral project, along with any archival data, reports, and documents that the organization's leadership deems fit to share.

Voluntary Nature of the Project:

This project is voluntary. If you decide to join the project now, you can still change your mind later.

Risks and Benefits of Being in the Project:

Being in this project would not pose any risks beyond those of typical daily professional activities. This project's aim is to provide data and insights to support the organization's success.

Privacy:

I might know that you completed a questionnaire, but I will not know who provided which responses. Any reports, presentations, or publications related to this study will share general patterns from the data, without sharing the identities of individual respondents or partner organization(s). The questionnaire data will be kept for a period of at least 5 years, as required by my university.

Contacts and Questions:

If you want to talk privately about your rights in relation to this project, you can call my university's Advocate via the phone number 612-312-1210. Walden University's ethics

approval number for this study is 04-14-20-0561037. Before you start the questionnaire, please share any questions or concerns you might have.