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Educating Pediatric Emergency Department Nurses on Autism Spectrum Disorder

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This is to certify that the doctoral study by

Melanie Lynn Cardona

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Abstract

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MS, Ramapo College of New Jersey, 2017

BS, University of Scranton, 2008

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Caring for patients with autism spectrum disorder (ASD) that present to a pediatric emergency department (ED) poses many challenges for nurses. The multifaceted characteristics and needs exhibited by a child with ASD presenting to an ED has the potential to lead to poor patient outcomes. The purpose of this doctoral project was to increase registered nurses' knowledge and confidence level for caring for patients with ASD in a pediatric ED. The practice-focused question for this doctoral project explored whether the implementation of an ASD educational intervention increase registered nurses' knowledge and confidence level for caring for patients with ASD in a pediatric ED. Knowles' andragogy theory was utilized to help construct an educational learning that was appraised by a panel of experts for face validity and alignment with the aims of the staff education. Sources of evidence included current peer-reviewed articles, the American Psychological Association, Autism Speaks Inc., Lippincott, and an Autism Training Workshop for Educators. The staff education was delivered in an interactive, in-person learning environment to 10 pediatric ED nurses. Findings demonstrated a 10 point mean test score increase on the posttest from the pretest measuring knowledge about ASD. Additionally, more than half the participants increased their posttest confidence level score by 1 point. The findings also demonstrated clinical significance as nurses reported intent to change their clinical practice based on the educational intervention. Recommendations for a formal education on ASD for all pediatric ED nurses adds value by promoting social change to support improved knowledge and confidence, which may lead to improved patient outcomes for pediatric patients with ASD.

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Section 1: Nature of the Project

Introduction

Improving nursing knowledge and confidence in treating children with autism spectrum disorder (ASD) in a pediatric emergency department (ED) setting is essential for enhancing both the patient and caregiver's overall ED experience, and it facilitates safer patient and staff outcomes. An ED is a fast paced environment designed to offer expedited, quality services; however, it may not be conducive to the needs of a child with ASD presenting with a medical emergency. With the increasing prevalence rates of ASD diagnoses, as well as reported emergency visits, it is essential that frontline nurses feel knowledgeable and equipped to treat this unique patient population that requires specialized care (Casey et al., 2015). The multifaceted characteristics and needs exhibited by a child with ASD presenting to an ED has the potential to compound and overshadow the required treatment and care needed, which can lead to suboptimal or misguided treatment resulting in poor patient outcomes (Nicholas, 2016). The current lack of best practices and formal training for this specific patient population places ED nurses in a challenging situation (Casey et al., 2015). For registered nurses working in an ED, to be able to provide care for patients with ASD that is safe, effective, patient-centered, timely, efficient, and equitable (Agency for Healthcare Research and Quality, 2018), they first must be knowledgeable about the ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, comorbidities, and the importance of appropriate family collaboration. I intended my Doctor of Nursing Practice (DNP) project to facilitate social change by improving pediatric ED nurses' understanding and knowledge related to ASD, which can increase their confidence in their awareness and treatment management to meet the needs of children with ASD in a pediatric ED setting.

Problem Statement

ASD, as defined by the American Psychological Association (APA, 2020), is a "neurodevelopment disorder that is characterized by difficulties with social communication and social interaction and restricted and repetitive patterns in behaviors, interests, and activities" (para. 1). These symptoms generally appear early in the growth and development stages and have the capacity to affect day to day living for this population (APA, 2020; Weiss et al., 2016). The word *spectrum* is utilized in the nomenclature of the diagnosis as this refers to the variability in the disorder as it can range from mild to severe with varying levels of intellectual functioning and adaptive skills exhibited by the individual (APA, 2020; Weiss et al., 2016). However; it is important to note that while some individuals with ASD have an intellectual disability or a low level of cognitive function, more than half the population have average intellectual abilities (Weiss et al., 2016). These are important factors to take into consideration when planning education and care for ASD patients. To some degree, this disorder is highly individualized to the person (Maenner et al., 2020), and requires more than a "one size fits all" approach.

ASD does not discriminate; it affects individuals from every gender, race, and socioeconomic background (Maenner et al., 2020). The estimated prevalence across the United States of children with ASD is one out of every 54 children or 1.8% (Autism New Jersey, 2020; Maenner et al., 2020). There is variability across the states, and in the state of New Jersey where the DNP project was conducted, the reported ASD prevalence is one in every 32 children or 3.1% (Autism New Jersey, 2020; Maenner et al., 2020).

The Institute of Medicine's six aims for quality in a health care system are care that is safe, effective, patient-centered, timely, efficient, and equitable (Agency for Healthcare

Research and Quality, 2018). Children with ASD present to an ED seeking treatment at higher rates than their neurotypical counterparts (Schlenz et al., 2015; Wood et al., 2018). On average this corresponds to approximately 26% more annual ED visits (Brown et al., 2018). Several studies have documented that children with ASD also have higher rates of hospitalization for medical and psychiatric complaints (Schlenz et al., 2015; Wood et al., 2018). The rationale for this reported increase includes comorbid medical diagnoses as well as mental health diagnoses (Wood et al., 2018). It is postulated that the increase in children with ASD reporting to EDs to be correlated with ineffective access to efficient primary care resources (Wood et al., 2018).

EDs are fast paced, high stress, high tension environments that stimulate and engage an array of senses from loud noises, numerous aromas, and flashing lights. For children with ASD, this type of encounter can cause a sensory event and produce an undesirable experience that has the potential to elicit escalating behaviors and actions that place the child, caregivers, and hospital staff in an unsafe situation (Wood et al., 2018). Caregivers of children with ASD describe the experience of visiting an ED negatively as being stressful, scary, and overwhelming (Wood et al., 2018).

When responding to an unfamiliar routine and stimuli such as seeking treatment in an ED for a medical examination, children with ASD can respond impulsively and potentially aggressively (Brown et al., 2018). Children with ASD and a psychiatric disorder can become a danger to themselves or others in these circumstances resulting in these patients being placed in physical restraints or receiving sedatives, which puts this population at greater risk for adverse patient outcomes, especially due to comorbidities (Brown et al., 2018). It is reported that one in four children with ASD will receive sedation to receive a physical examination or painless, noninvasive procedure in the ED (Brown et al., 2018). Though it may be medically

necessary to sedate children with ASD, difficulties with how children with ASD respond to certain medications presents another consideration (Brown et al., 2018).

Although research has shown that health care providers feel that optimal care is best achieved when strategies such as effective communication with the parents or caregivers, parental involvement, and a teamwork approach are employed (Zwaigenbaum et al., 2016), the literature supports that parents of children with ASD often weigh the risk versus the benefits prior to disclosing the child's diagnosis of ASD with the healthcare team (Muskat et al., 2016). Concerns regarding having their child labeled or overlooked and/or misdiagnosed due to their preexisting diagnosis of ASD is present (Muskat et al., 2016). The theme of healthcare providers lacking knowledge regarding ASD is a common parental preconception, including patient escalation due to triggering events, negative interactions, and a failure to recognize the needs of the child with ASD (Zwaigenbaum et al., 2016).

Inversely, the research has shown that many health care professionals feel that they lack formal training regarding caring for patients with ASD and attempt to draw upon previous experiences, which may be limited in some instances (Zwaigenbaum et al., 2016). Despite the perceived lack of knowledge, there is no lack of desire for knowledge; research shows that health care professionals want additional information regarding ASD, which includes topics on communication, triggers and the environment, family collaboration, and a practical application of best evidence-based practices (Zwaigenbaum et al., 2016). Consistent with the literature was a desire at the project site to gain knowledge and be better equipped to appropriately handle and care for ASD patients who present to the pediatric ED, as previously expressed by staff. Feelings of ineptitude and uncertainty lingered around caring for this patient population. Prior to this staff education, there was no formal nursing education training on caring for children

with ASD presented at the organization where the DNP project occurred. In providing this staff education, the hope was to increase the knowledge and perceived confidence level of the registered nurses in the pediatric ED while bridging the gap in the six aims for quality, which is to provide care that is safe, effective, patient-centered, timely, efficient, and equitable (Agency for Healthcare Research and Quality, 2018).

Purpose Statement

The purpose of this project was to better equip registered nurses in the pediatric ED to care for patients with ASD. Registered nurses were provided with the knowledge and resources to increase their awareness and confidence with the objective of better serving patients with ASD resulting in improved patient experiences and safer patient and staff outcomes. Current research shows that there is a lack of educational resources available for frontline emergency nurses on providing quality care for ASD patients in an ED (Casey et al., 2015). Lack of understanding and/or formal training are common themes reported as the underpinnings of poor care of this patient population in the hospital setting (Richards, 2017). Consistent parental concerns and preconceptions of healthcare providers lacking knowledge regarding ASD and previous negative interactions with health care staff have been reported in the literature (Zwaigenbaum et al., 2016). Research has also echoed a current lack of and desire for formal training regarding caring for patients with ASD by health care professionals (Zwaigenbaum et al., 2016), a gap in practice that was addressed at the project site through the staff education. The hope was that increased knowledge and competence in care by providers could prevent children with ASD from being triggered and overly stimulated to the point at which additional resources and undesirable interventions are employed (Nicholas, 2016). A vital component of this

educational intervention was to provide the participants an understanding of what it like to be a patient with ASD who reports to an ED and the challenges they encounter (Richards, 2017).

Any educational intervention that increases the health care provider's knowledge and capacity to appropriately treat children with ASD is a positive advancement (Richards, 2017). The practice-focused question for the DNP project was:

PFQ: Does the implementation of an ASD educational intervention increase registered nurses' knowledge and confidence level for caring for patients with ASD in a pediatric ED?

The diversity of presentations and variables present when a child with ASD arrives to the ED for treatment will impact the care that is needed. If the need is left unmet, this has the potential to lead to poor patient outcomes due to undertreatment or misguided treatment (Nicholas, 2016). Additionally, increased confidence and ability to respond appropriately to the needs of this patient population can potentially reduce the number of incidences where a patient with ASD responds impulsively and/or aggressively, which has the potential to cause injury to themselves, their caregivers, or hospital staff.

The educational intervention was based on best practices for caring for patients with ASD in an ED. It contained information gathered and adapted from nationally recognized and credible associations and organizations such as Autism Speaks, Lippincott, and an Autism Training Workshop for Educators. The educational intervention addressed closing the gap in practice by increasing the proficiency in knowledge and overall perceived confidence of the registered nurses in the pediatric ED needed to provide evidence-based care to children with ASD. This has the potential to reduce lasting negative effects as a result of a stressful ED visit. These negative impacts include exacerbations of physical and mental health concerns (Nicholas,

2016). Improving the care rendered and over all ED experience can lead to positive patient outcomes.

Nature of the Doctoral Project

My doctoral project was conducted in the pediatric ED of a large research and teaching hospital in the Northeast region of the United States. The pediatric ED treats patients from birth to 22 years of age. The setting was appropriate for this DNP project as the pediatric ED treats over 30,000 patients annually with a diverse patient population comprising an array of medical diagnoses and comorbidities, including ASD. The pediatric ED serviced patients of various demographics including but not limited to race, ethnicity, religion, and socioeconomic status. Currently, the ASD prevalence in New Jersey is reported at 3.1% (Autism New Jersey, 2020; Maenner et al., 2020), which made this setting an appropriate location for this DNP project.

I conducted an in-depth search of the literature to find peer reviewed scholarly academic journals utilizing CINAHL Plus, Cochrane Review, Education Source, ERIC, Gale Academic, Medline, PubMed, ScienceDirect, and Social Sciences Citation Index databases to explore best practices for caring for patients with ASD in an ED as well as generalized knowledge regarding ASD to guide the staff education. Key words used in the search included a combination of *Autism* or *ASD* or *autism spectrum disorder* or *autistic*; *emergency room* or *emergency department* or *pediatric emergency room* or *pediatric emergency department*; *youth* or *adolescents*, or *young people* or *teen* or *young adults* or *children* or *kids* or *child* or *pediatric* or *pediatrics*; and *education* or *adult education* or *learning* or *adult learning*. Nationally recognized and credible associations and organizations were referenced including the APA, Autism Speaks, Centers for Disease Control and Prevention, Lippincott, and an Autism Training

Workshop for Educators. I used current evidence and best practices from the literature to develop the staff education program.

Prior to the dissemination of the educational intervention, the content of the staff education was reviewed by a panel of subject matter experts to evaluate the project's content as well as the participant test items for face validity and alignment with the aims of the staff education. The panel of experts were asked to appraise the content and educational materials and complete a provided 5- point bipolar Likert scale survey that also contained an open-ended component for the option to provide additional feedback. Once completed, the expert panel evaluation was analyzed and reviewed for feedback and themes. I made modifications as needed prior to the start of the staff education.

The staff education was delivered via a didactic lecture accompanying a PowerPoint presentation, question and answer session, and an interactive hands on opportunity for the registered nurses to become familiar with the various types of sensory objects and their purpose. Confidentiality was maintained as participants were asked to use a unique numerical four-digit code of their choosing on all testing documents. The educational intervention began with a pretest and survey question to ascertain current knowledge and confidence level of the participants (see Appendix A). Following the educational intervention that was based on best practices for caring for patients with ASD in an ED and that contained information gathered from nationally recognized and credible associations and organizations, participants were asked to complete a posttest and survey utilizing the same unique numerical four-digit code to link the pretest and posttest (see Appendix A). I analyzed data using IBM's Statistical Package for the Social Sciences (SPSS) to discern if there were any statistically significant improvements

regarding the registered nurses' knowledge and perceived confidence level to care for patients with ASD in a pediatric ED setting after receiving the educational intervention.

Significance

The implementation of this DNP project required support from stakeholders that included the registered nurses in the pediatric ED, nursing leadership, patients, and their families. Anecdotally, there were feelings of ineptitude and uncertainty surrounding caring for this patient population. Requests for formal training and education regarding caring for patients with ASD had been vocalized.

There is a potential and opportunity for a greater collaboration between the registered nurses and child life specialists in caring for patients with ASD. This staff education also has the potential to be disseminated to other pediatric EDs in the healthcare system of which the hospital is a part. In addition, the staff education might be beneficial for registered nurses working in the organization's mixed EDs who have to care for children with ASD and may have limited previous experiences working with children, especially children with ASD.

Positive social change will be achieved through the implementation of this educational intervention as the registered nurses in the pediatric ED will be better equipped to care for patients with ASD. Through the educational intervention I was able to provide registered nurses with the knowledge and resources to increase their awareness and confidence to better serve patients with ASD, which can lead to improved patient experiences and safer patient and staff outcomes. Statistics show that one in four children with ASD will receive sedation to receive a physical examination or painless, noninvasive procedure in the ED; others will be placed in physical restraints due to impulsive, aggressive behavior (Brown et al., 2018). While it may be medically necessary, these interventions have implications of their own. They place these

children at a greater risk of adverse patient outcomes including harm. By educating the nursing staff, the care that is provided to patients with ASD may be one that is holistic, highlights the multifaceted nature of ASD, and provides proactive strategic interventions to de-escalate situations. The desire to bring about positive change and support the Institute of Medicine's quality objectives to provide care that is safe, effective, patient-centered, timely, efficient, and equitable (Agency for Healthcare Research and Quality, 2018) was the motivation for this DNP project.

Summary

Nursing literature continued to call for increased frontline provider education regarding ASD as well as adaptations of the ED environment to one that is more sensory friendly to accommodate the needs of children with ASD and other sensory disorders (Wood et al., 2018). The gap in practice that was addressed through this education intervention was the lack of nursing knowledge and confidence in caring for a child with ASD in the pediatric ED setting. The goal of this project was to close this gap by enhancing the frontline nursing staff's knowledge and perceived confidence level by providing education and techniques regarding an ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, comorbidities, and the importance of appropriate family collaboration. In Section 2, I examine the guiding models and theories relevant to this staff educational intervention in greater detail. Additional themes addressed include the background and context, relevance to nursing practice, and my role as the DNP student.

Section 2: Background and Context

Introduction

As previously stated in the preceding section, ASD is prevalent in New Jersey with one in every 32 children affected by this condition (Autism New Jersey, 2020; Maenner et al., 2020). Children with ASD seek services in an ED setting 26% more than their neurotypical peers (Brown et al., 2018). However, a gap in practice remains in the lack of nursing knowledge and confidence in caring for a child with ASD in the pediatric ED setting. The practice-focused question for this doctoral project was:

PFQ: Does the implementation of an ASD educational intervention increase registered nurses' knowledge and confidence level for caring for patients with ASD in a pediatric ED?

The objective of this doctoral project was to close the gap in practice by enhancing the frontline pediatric emergency nursing staff's knowledge and confidence level to care for children with ASD in a pediatric emergency setting.

In this section, I discuss the theory used to guide the staff educational intervention, exploring the project's relevance to nursing as well as its connection to the local background. I also delineate my role as the DNP student who executed this scholarly project.

Concepts, Models, and Theories

The theory chosen to support the staff education program was Knowles' andragogy, also referred to as the adult learning theory. Andragogy is a theory that explicitly details how adults learn differently compared to how children learn (Learning Theories, 2020). Knowles' theory highlighted the distinctive learning styles and strengths of adult learners. Knowles' five basic principles and assumptions of adult learners, which is the basis of the adult learning theory, are as follows: self-concept, past learning experience, readiness to learn, practical reasons to learn,

and driven by internal motivation. Adults are in the later stages of development and have a developed self-concept and awareness that permits them to guide their own learning. Past learning experiences are valuable assets that adults can call upon to assist them in learning. Adult learners are at a pinnacle in life where they value education and have the capacity and readiness to focus on learning. Adult learners seek education to apply new knowledge to current problems. Lastly, adult learners are driven by internal motivators.

When creating this staff education program, the adult learning theory was utilized as the principles to help construct the educational learning. Knowing how adults learn can help elicit an increase in knowledge, engagement, and change in behavior that result in positive outcomes for children with ASD in a pediatric emergency setting. It is important to consider the past experiences of the learners and engage them in the learning paradigm. This helps adult learners make the connection with the content and its practical applications, which engages the learners, increases motivation, and creates a positive learning experience. Content should be focused on practical clinical application and problem solving rather than rote memorization (Learning Theories, 2020). This allows the adult learners to create a meaningful connection to their nursing practice, which promotes positive change.

Clarification of Terms

Autism spectrum disorder (ASD): Defined by the APA (2020) as a "neurodevelopment disorder that is characterized by difficulties with social communication and social interaction and restricted and repetitive patterns in behaviors, interests, and activities" (para. 1).

Learner/nurse/staff: Any registered nurse working in the pediatric ED who received and participated in the project education.

Pediatric emergency department nurse: Any registered nurse working in the pediatric emergency department that is the setting for the DNP project.

Staff education/educational intervention: "Teaching of nursing, medical, and other members of the health care team; process of assisting staff to gain knowledge, skills, values, and attitudes for maintaining and improving competencies" (*Medical Dictionary for the Health Professions and Nursing,* 2012, para. 1).

Relevance to Nursing Practice

Caring for patients with ASD who present to a pediatric ED poses many challenges for nurses. ASD has a wide range of severity as well as variability within the condition, and therefore each patient requires highly individualized care based on their various strengths and capabilities (Normandin et al., 2018; Richards, 2017). Successful interventions used for one child with ASD might not produce the same results for another. However, research does support that to achieve a successful emergency visit the care must involve the child's caregivers to identify individualized challenges as well as strategies used by the family to try to create a positive experience (Normandin et al., 2018). Preparation, communication, and accommodation can provide positive experiences not only for the patient but also for the family and staff members involved (Normandin et al., 2018). Increased ASD awareness and competency has the potential to avert sensory overload that triggers a behavioral or emotional breakdown with the need for additional resources (Nicholas, 2016).

The complexities presented by a child with ASD seeking emergency medical care has the potential to compound treatment (Nicholas, 2016). If the needs are not adequately addressed misguided treatment has the potential to yield poor patient outcomes for this patient group (Nicholas, 2016). Children with ASD also have a higher mortality rate than their neurotypical

peers (Schlenz et al., 2015). Components of the experience of an ED visit have the potential to leave lingering impacts on a child with ASD, which can also exacerbate their current physical and mental health status (Nicholas, 2016). Children with ASD often experience anxiety with routine changes, which may cause them to have unpredictable behavior or even exhibit violence or aggression towards themselves or others (Brown et al., 2018). Children with ASD in the ED may receive sedation or some form of restraint in order to complete a nonpainful procedure or exam, which, while medically necessary, is suboptimal (Brown et al., 2018). Children with ASD do not react to medication the same way their neurotypical peers do; low doses of medications such as antihistamines and benzodiazepines can cause agitation, a paradoxical effect (Normandin et al., 2018).

Current literature calls for increased ASD training for frontline ED teams to improve care and optimize not only ED experiences but also ED outcomes (Nicholas, 2016). Despite this calling, there are few educational resources available for frontline ED nurses for caring for patients with ASD that are based on best practices specific to an ED setting (Casey et al., 2015; Nicholas, 2016). The foundation for any successful ASD intervention to improve the experience of children with ASD in an ED setting involves increasing the knowledge of ED staff of the condition (Richards, 2017). Lack of training and lack of understanding is often cited as a contributor of poor care for this patient population (Richards, 2017). Understanding what it is like to be a patient with ASD is crucial in improving the service and care delivered (Richards, 2017).

Recently some organizations have initiated strategies to develop a sensory friendly pediatric ED (Wood et al., 2018). As previously stated, an ED visit can be an overwhelming experience to an individual with ASD due to sensory overload, which can create an unsafe

environment for the patient, family, and/or staff members (Wood et al., 2018). There are some modifications and interventions that can be deployed to provide sensory-informed care (Wood et al., 2018). Some environmental adaptations coupled with parental partnership, communication strategies, and increased knowledge regarding ASD have been suggested to reduce challenging behaviors (Wood et al., 2018). Providing a low-stimulating atmosphere with simple modifications such as dimmed lights, low tone of voice, and distraction with fidget and sensory toys can be beneficial for this specialized population (Wood et al., 2018).

Educational interventions need to also include distraction techniques, de-escalation techniques for procedures, and alternative communication methods such as tablet computers and storyboards that illustrate pictorially the procedures for children to be employed by the staff (Wood et al., 2018). Calm body posture, therapeutic pauses, praise and encouragement, and motivators are some examples of useful techniques for health care providers to use (Wood et al., 2018). Successful educational programs for staff about ASD and sensory-informed care involve both a lecture and a direct hands on element of learning to introduce the new concepts (Wood et al., 2018). Successful education includes the pathophysiology of ASD, communication methods and techniques, de-escalation and the management of behavior, and a pharmacological component discussing alternative therapies for children with ASD (Wood et al., 2018). Having a collaborative approach where both parents and providers create an ideal sensory-informed ED can yield positive patient outcomes and make an ED visit safer (Wood et al., 2018).

This DNP project addressed the need for formal education for frontline pediatric emergency nurses related to the care and treatment of pediatric patients with ASD in an ED setting. With the DNP project I hoped to close the gap in practice by increasing the proficiency in

knowledge and overall perceived confidence of the registered nurses in the pediatric ED to provide evidence-based care to children with ASD. Increased staff knowledge regarding an ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, sensory-informed care, comorbidities, and the importance of appropriate family collaboration can help facilitate safer, informed, quality care.

Local Background and Context

The DNP project was conducted in the pediatric ED of a large research and teaching hospital in the Northeast region of the United States. The pediatric ED treated patients from birth to 21 years of age. The setting was appropriate for this DNP project as the pediatric ED treated over 30,000 patients annually with a diverse patient population comprising an array of medical diagnoses and comorbidities, including ASD. The current data on the number of patients who reported to the pediatric ED with ASD is not available.

As previously reported, the ASD prevalence in New Jersey was reported at 3.1% (Autism New Jersey, 2020; Maenner et al., 2020). The patient population of the study site is culturally and religiously diverse as well as from a wide range of socioeconomic backgrounds, including privately insured, underinsured, uninsured, and Medicaid recipients. With the postulation that the increase in children with ASD reporting to EDs is correlated with ineffective access to efficient primary care resources (Wood et al., 2018), pediatric ED staff have raised concerns about adequately treating patients with ASD and expressed a desire for increased knowledge and intervention strategies.

Mission Statement, Nursing Values, and Strategic Vision

The DNP project was aligned with the organization's mission statement and strategic vision to achieve excellence in providing patient and family centered care. The guiding principle

was to provide life changing, innovative care to each and every patient. The pursuit of excellence in professional nursing practice and the delivery of care. The values and building blocks of the organization were ones of safety, integrity, teamwork, professionalism, and communication. The aforementioned, requires nurses to be culturally competent and adaptable.

Role of the Doctor of Nursing Practice Student

The role of the DNP student was to research and appraise the literature for evidence-based practices related to the care of patients with ASD in a pediatric ED and translate that into practice. My role included planning, designing, implementing, and evaluating the staff education program. The planning phase comprised formulating the educational curriculum including the pretest and posttest assessments. Program topics and objectives that were created included but are not limited to an ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, comorbidities, and the importance of appropriate family collaboration.

During this time, I served in a supervisory role in the pediatric ED where the project was conducted. I have seen first-hand the difficulties and stress parents endure bringing their child into an unfamiliar, crowded ED. I have witnessed and have had anecdotal conversations with staff where they have expressed their desire for increased knowledge and situational unease when handling children with ASD that have behavioral outbursts. Prior to becoming a nursing leader, I have been in their shoes caring for children with ASD wishing I knew and could do more to make the experience a more satisfying one. As a current nursing leader, who is also trained in nursing education, I am passionate about changing practices that are not founded in the evidence. I strive to promote a culture on the unit that supports patient safety and evidenced based practice.

Due to my supervisory position, to mitigate any potential biases, attention to detail was taken in communicating with staff that all participation was completely voluntary and any and all feedback would be entirely de-identified and confidential for the sole purpose of the DNP project.

Role of the Project Team

The DNP staff education was reviewed by a panel of subject matter experts who were tasked with evaluating the project's content, which included learning objectives, a PowerPoint presentation, and participant test items. Due to the lack of an acceptable validated tool, learning objectives, PowerPoint presentation, and participant test items were created and adapted from nationally recognized and credible associations and organizations such as Autism Speaks, Lippincott, and an Autism Training Workshop for Educators as well as from an extensive literature search of peer reviewed articles. Initial review of the test items and draft materials were reviewed for validity by the DNP Committee members. Thematic trends and central tendencies were reviewed and modifications were made as deemed necessary prior to the start of the educational intervention.

The panel of subject matter experts was comprised of the pediatric ED's medical director who was pediatric emergency medicine boarded, the pediatric ED's clinical level IV staff registered nurse who was certified in pediatric emergency nursing, the pediatric ED's nursing educator, who was also certified in pediatric emergency nursing, the pediatric ED's child life specialist, as well as a parent of a child with ASD. Of note, the parent of the child with ASD, was a registered nurse at another organization, and had functioned as both an ED staff nurse as well as in an ED educator role. The subject matter experts were tasked with not only appraising the content of the evidence but also validating that the staff education would be easily understood

and would provide value for the intended target audience following the principles of the adult learning theory. All information was provided to the panel of experts for review. The panel received a two week evaluation period to review and appraise the staff education. The panel of experts were asked to appraise the content and educational materials by completing a provided 5- point bipolar Likert scale survey. This survey also contained an open-ended element that allowed for the option to provide additional feedback. Once completed, I reviewed and analyzed the expert panel evaluation results for central tendencies and thematic trends. If adequate feedback and opportunities for enhancements were present, modifications were made based on the findings, if applicable.

Summary

Improving pediatric emergency nurses' knowledge and confidence for caring for children with ASD is a necessary endeavor. Understanding the adult learning theory was essential for developing a strong educational program with its intended audience being adult learners. Understanding the relevance to nursing practice as well as local background and context provided a foundation for this doctoral project. Defining my role as a DNP student from my supervisory position was essential to the success and integrity of my doctoral project. Delineating a clear role and expectations from the project team was essential to the validity of the staff education. In the following section, I discuss my practice focus question, the sources of evidence, and concluding with the analysis and synthesis of the data.

Section 3: Collection and Analysis of Evidence

Introduction

Children with ASD seek services in an ED setting 26% more than their neurotypical peers (Brown et al., 2018). As a pediatric ED in a large research and teaching hospital that treated over 30,000 pediatric patients annually with a diverse patient population comprising an array of medical diagnoses and comorbidities, including ASD, it is imperative that the specific needs of this patient population are met. The complexity of this diagnosis has the potential to compound and overshadow the required treatment and care needed, with the possible result of poor patient outcomes (Nicholas, 2016). The current lack of best practices and formal training for this specific patient population places ED nurses in a challenging situation (Casey et al., 2015). There have been requests from staff nurses for additional education regarding the care and management of patients with ASD. The purpose of the DNP project was to provide a staff education with the goal of increasing registered nurses' knowledge and confidence levels for caring for patients with ASD in a pediatric ED. In the previous section, I discussed the relevance to nursing practice, described the background and context for the project, and outlined the roles of all participants. In this section, I outline the detailed plan and methodologies that were used for the design of the program as well as the collection and appraisal of the evidence.

Practice-Focused Question

With the increasing prevalence rates of ASD, as well as increases in reported emergency visits, it is essential that frontline nurses feel knowledgeable and prepared to treat and manage this unique patient population that requires individualized, specialized care (Casey et al., 2015). A current expressed gap in practice was a knowledge deficit and lack of perceived confidence treating patients with ASD. The practice focused question for this DNP project was:

PFQ: Does the implementation of an ASD educational intervention increase registered nurses' knowledge and confidence levels for caring for patients with ASD in a pediatric ED?

The purpose of the DNP project was to increase registered nurses' knowledge and confidence level for caring for patients with ASD in a pediatric ED. I hoped that this educational intervention, which contained content related to an ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, comorbidities, and family collaboration and had been validated by a panel of subject matter experts, would enhance the pre-intervention state of the registered nurses' knowledge and confidence levels. This objective was measured and assessed statistically by evaluating de-identified, coded pretest and posttest scores. The pretest was administered in person prior to the education program to attain the nurses' knowledge and preliminary confidence score. After the staff education, the posttest scores were determined by having participants complete a replicated test to see if there was an increase in comprehension and perceived confidence. I used descriptive analysis to determine the mean and median values, as well as a paired *t* test to compare pretest and posttest results of participant's knowledge and confidence scores after completion of the staff education to determine if there was any statistically significant increase in either. Additionally, I provided a Likert scale course evaluation and open-ended question with an opportunity for feedback to all participants at the completion of the course. I reviewed and analyzed comments for potential thematic trends.

Sources of Evidence

The purpose of this project was to increase registered nurses' knowledge and confidence levels to care for patients with ASD in the pediatric ED. I presented a staff education providing educational resources and content with the intent to increase their knowledge and

confidence to better serve patients with ASD. Curriculum topics included information regarding an ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, comorbidities, and family collaboration. To obtain evidence to support these teachings, I conducted an in-depth search of the literature to find peer-reviewed scholarly academic journal articles utilizing CINAHL Plus, Cochrane Review, Education Source, ERIC, Gale Academic, Medline, PubMed, ScienceDirect, and Social Sciences Citation Index databases to explore best practices for caring for patients with ASD in an ED as well as generalized knowledge regarding ASD to guide the staff education. Key words used in the search included a combination of *autism* or *ASD* or *autism spectrum disorder* or *autistic*; *emergency room* or *emergency department* or *pediatric emergency room* or *pediatric emergency department*; *youth* or *adolescents* or *young people* or *teen* or *young adults* or *children* or *kids* or *child* or *pediatric* or *pediatrics*; and *education* or *adult education* or *learning* or *adult learning*. Professional websites from nationally recognized, credible associations, and organizations were referenced including the APA, Autism Speaks Inc., Centers for Disease Control and Prevention, Lippincott, and an Autism Training Workshop for Educators. I appraised current evidence and best practices from the literature, giving particular focus to care being delivered in an emergency setting, which was the foundation for the development of the staff education program.

The content of the staff education was reviewed by a panel of subject matter experts to evaluate the project's content as well as review the participant test items for face validity and alignment with the aims of the staff education. The panel of subject matter experts comprised the pediatric ED's medical director, clinical level IV, certified pediatric emergency nurse staff nurse, pediatric ED nursing educator, who is also a certified pediatric emergency nurse, the pediatric ED's child life specialist, and a parent of a child with ASD who had ED staff nursing and

educator experience at another organization. The panel of experts were asked to appraise the content and educational materials and complete a 5- point bipolar Likert scale survey that also contained an open-ended component for the option to provide additional feedback. The panel of experts evaluated the educational intervention for ease of understandability and transferability to a pediatric ED setting.

Evidence Generated for the Doctoral Project

Participants

All registered nurses working in the pediatric ED were eligible to participate in the educational intervention. Participation was completely voluntary. The ED nurses were notified of the staff education via email, flyers, daily huddle announcements, and word of mouth. The staff education and practice-focused question were relevant to all nurses working in the pediatric ED as they all have the possibility of caring for patients with ASD.

All participants of the expert panel were invited to participate based on their expertise in the field of pediatric ASD. Participants were apprised of the context and premise of the educational program and nature of the DNP project and asked to voluntarily contribute by providing their feedback on the presented materials. Participants of both groups were informed that they could choose to withdraw participation at any point.

Procedures

The initial action item involved creating an educational program aimed at increasing the registered nurses' knowledge and perceived confidence levels. Due to the lack of a validated tool, learning objectives, PowerPoint presentation, and participant test items were created and adapted from nationally recognized and credible associations and organizations such as Autism Speaks, Lippincott, and an Autism Training Workshop for Educators, as well as from an extensive

literature search of peer reviewed articles. I appraised current evidence and best practices from the literature, giving particular focus to care being delivered in an emergency setting. The educational materials included a pretest to attain the nurses' current knowledge and confidence score prior to the staff education. Immediately following the staff education a replicated test was given to see if there is an increase in comprehension and confidence scores. I used descriptive analysis to determine the mean and median values, as well as a paired *t* test to compare pretest and posttest results of both participant's knowledge and confidence scores after completion of the staff education to determine if there was any statistically significant increase in either category. Additionally, the nurses were provided a 5- point bipolar Likert scale standard course evaluation form that was evaluated for central tendencies. I reviewed and analyzed comments for thematic trends.

Likert scales are widely used in the field of healthcare and are used to measure the opinion, attitudes, and beliefs of the participants (Gray et al., 2017). Each response in a Likert scale is assigned a value from 1 to 5. 1 is representative of the most negative response whereas 5 is assigned the most positive response. The common types of assessment responses elicited from a Likert scale include answers to questions in terms of agreement, evaluation, (Gray et al., 2017), importance, likelihood (McLeod, 2019), and frequency (Gray et al., 2017; McLeod, 2019). In a 5-point bipolar Likert scale the middle response option is usually assigned a neutral or undecided attitude (Gray et al., 2017; McLeod, 2019). However, to measure the participant's believed confidence level, a unipolar 5-point Likert scale was used. A unipolar 5-point Likert scale allows the user to focus on the presence or absence of a single attribute or a trait. In the case of this project, the unipolar 5-point Likert scale was measuring the respondent's belief on their perceived confidence in caring for a child with ASD in one survey question. A score of a 1

would indicate no confidence at all where a 5 would illustrate extreme confidence. The responses in the Likert scale have a rank order but the intervals between the responses are not equal and therefore cannot be presumed or used for mean or standard deviation data analysis (McLeod, 2019). A unipolar scale measures ordinal data and can be analyzed for central tendencies and typically generates more accurate responses than a bipolar scale where ratings tend to be higher or favor the central middle numbers opposed to the outer numbers (Hartley & Betts, 2010). However, the data is valuable as it can be useful in ascertaining the median and mode of the data responses (McLeod, 2019).

Prior to the dissemination of the educational intervention, the content of the staff education was reviewed by a panel of subject matter experts to evaluate the project's content as well as review the participant test items for face validity and alignment with the aims of the staff education. The panel of experts were asked to appraise the content and educational materials and complete a provided 5- point bipolar Likert scale survey which also comprised an open-ended component for the option to provide additional feedback. Once completed, I analyzed and reviewed the expert panel evaluation for central tendencies and thematic trends. Modifications were made as needed prior to the start of the staff education.

The staff education was comprised of a PowerPoint presentation, question and answer session, as well as interactive hands-on opportunity for the registered nurses to become familiar with the various types of sensory objects and their purposes. Confidentiality was maintained as participants were asked to use a unique numerical four-digit code of their choosing on all testing documents. The educational intervention began with a pretest to ascertain current knowledge of the participants as well as a singular unipolar Likert scale question measuring staffs' current confidence level to care for patients with ASD. Following the educational intervention, that was

based on best practices for caring for patients with ASD in an ED which contained information gathered from nationally recognized and credible associations and organizations, participants were asked to complete a posttest utilizing the same unique numerical four-digit code to link the pretest and posttest. Participants were asked to complete a course evaluation as well as second unipolar Likert scale question aimed at measuring confidence levels post the educational intervention. Data was collected and placed in a Microsoft Excel document with the de-identified information only being linked by the unique four-digit codes. Data was then analyzed using IBM's SPSS to discern if there was any statistically significant improvements regarding the registered nurses' knowledge and perceived confidence level to care for patients with ASD in a pediatric ED setting after receiving the educational intervention.

Protections

The ASD educational intervention was conducted in alignment with the Walden University Doctor of Nursing Practice (DNP) Scholarly Project Manual for Staff Education. All necessary requirements for the Institutional Review Board at Walden University and the project site were followed and completed, as required. Administrative approvals from Walden and the project site were attained prior to implementation of the educational intervention (Walden Institutional Review Board approval number 05-17-21-0992545). In addition, requirements for obtaining continuing education units (CEUs) were completed through the project site. The ED nurses were notified of the staff education via email, flyers, daily huddle announcements, as well as by word of mouth. Participants of nurses, as well as those in the expert panel, were informed prior to participation that their involvement was completely voluntary and they could choose to withdraw participation at any point. The Consent for Anonymous Questionnaires was provided to all staff participants as well as members of the expert panel. Participants were not

paid a participation incentive, however nurse participants did have the opportunity to attain a CEU. A sign in sheet was obtained to issue CEUs for the in-service. This was not included with any project documents. All electronic data information was password protected. Confidentiality was maintained as participants were asked to use a unique numerical four-digit code of their choosing on all testing and survey documents. The institution in which the staff education was conducted will remain anonymous and not named in any of the project materials.

Analysis and Synthesis

The panel of subject matter experts completed an appraisal of the staff education program and completed a 5-point bipolar Likert scale with the option for write-in comments (see Appendix B). Modifications were made, as needed, prior to the start of the staff education based on these findings. Registered nurses working in the pediatric ED completed a pretest to determine baseline knowledge regarding ASD, as well as a singular 5-point unipolar Likert scale question measuring their perceived confidence level prior to the educational learning intervention. A didactic lecture involving a PowerPoint presentation, question and answer session, as well as interactive hands on opportunity to become familiar with the various types of sensory objects and their purpose was held. Immediately completing the program, the participants were asked to complete the identical test and 5-point unipolar Likert scale question to determine knowledge acquisition and perceived confidence levels post the education.

Data from the tests and surveys were collected and placed in a Microsoft Excel document with the de-identified information only being linked by the unique four-digit codes of their choosing that is password protected. Data then was examined applying descriptive statistical analysis utilizing IBM's SPSS to discern if there was any statistically significant improvements regarding the registered nurses' knowledge and perceived confidence level to

care for patients with ASD in a pediatric ED setting after receiving the educational intervention. A paired *t* test was performed.

Summary

The objective of this project was to create an educational intervention which contains content related to an ASD diagnosis, characteristics, communication needs, triggers and the environment, treatment modalities, comorbidities, and family collaboration, that has been validated by a panel of subject matter experts, that would enhance the current knowledge and confidence levels of the nurses working in the pediatric ED. The educational program was built upon the framework of Knowles' andragogy also referred to as the adult learning theory. All surveys were created based on the, widely utilized in healthcare, 5-point unipolar and bipolar Likert scales to measure the opinion, attitudes, and beliefs of the participants (Gray et al., 2017). Rigor and confidentiality were maintained throughout, as well as the security of all data and documents. Statistical analysis was utilized to evaluate the outcomes of the program. The findings, recommendations, strengths, as well as limitations, are presented in the forthcoming section.

Section 4: Findings and Recommendations

Introduction

Improving nursing knowledge and confidence in treating children with ASD in a pediatric ED setting is paramount for enhancing both the patient's and caregiver's overall ED experience and facilitating safer patient and staff outcomes. With the increasing prevalence rates of ASD diagnoses, it is essential that frontline nurses feel knowledgeable and equipped to treat this unique patient population that requires specialized care (Casey et al., 2015). The current lack of best practices and formal training for this specific patient population places ED nurses in a challenging situation (Casey et al., 2015). Identifying and acknowledging barriers present in delivering effective care to a child with ASD in an ED setting is imperative to mitigate some of these barriers. The practice-focused question assessed for this DNP project was:

PFQ: Does the implementation of an ASD educational intervention increase registered nurses' knowledge and confidence levels for caring for patients with ASD in a pediatric ED? The purpose of my doctoral project was to educate registered nurses working in the pediatric ED on ASD to increase their knowledge and confidence in caring for this patient population.

I conducted an in-depth search of the literature to find peer-reviewed scholarly academic journals using CINAHL Plus, Cochrane Review, Education Source, ERIC, Gale Academic, Medline, PubMed, ScienceDirect, and Social Sciences Citation Index databases to explore best practices for caring for patients with ASD in an ED as well as generalized knowledge regarding ASD to guide the staff education. Key words used in the search included a combination of *autism* or *ASD* or *autism spectrum disorder* or *autistic*; *emergency room* or *emergency department* or *pediatric emergency room* or *pediatric emergency department*; *youth* or *adolescents* or *young people* or *teen* or *young adults* or *children* or *kids* or *child* or *pediatric;* and *education* or *adult*

education or *learning* or *adult learning*. Nationally recognized and credible associations and organizations were referenced including the APA, Autism Speaks, Centers for Disease Control and Prevention, Lippincott, and an Autism Training Workshop for Educators. I used current evidence and best practices from the literature to develop the proposed staff education program.

Prior to the dissemination of the educational intervention, the content of the staff education was reviewed by a panel of subject matter experts to evaluate the project's content as well as review the participant test items for face validity and alignment with the aims of the staff education. The panel of experts completed a Likert scale survey and had the option to provide additional feedback. The evidence for this doctoral project was acquired using a pretest and posttest data comparison methodology. In addition, I evaluated the anonymous course evaluation ratings and comments prior to submission to the site facility.

Data from the tests and surveys were collected and placed in a password protected Microsoft Excel document with the de-identified information only being linked by the unique four-digit codes of the participants' choosing. I then examined data applying descriptive statistical analysis using IBM's SPSS to discern if there were any statistically significant improvements regarding the registered nurses' knowledge and perceived confidence level to care for patients with ASD in a pediatric ED setting after receiving the educational intervention.

Findings and Implications

Panel Results

The panel of subject matter experts comprised the pediatric ED's medical director, clinical level IV, certified pediatric emergency nurse staff nurse, pediatric ED nursing educator, who is also a certified pediatric emergency nurse, the pediatric ED's child life specialist, as well

as a parent of a child with ASD who had ED staff nursing and educator experience at another organization. The panel received a copy of the following: consent for anonymous questionnaire form, PowerPoint educational program, and pretest/posttest. The panel of experts were asked to review and appraise the content of the educational materials and complete a provided 9-item 5-point bipolar Likert scale survey, which also contained an open-ended component for the option to provide additional feedback. I reviewed all comments that were received for thematic trends and central tendencies. Prior to the staff presentation, minor changes were made based on feedback regarding typographical and aesthetic changes; no content trends emerged on other comments, which were predominately preferential and stylistic in nature. The comments received were mainly positive and recognized the need for this relevant and timely educational project. Of note, on analysis it was identified that there was a duplication on questions 4 and 6, which were identical in the expert panel evaluation survey; thus question 6 was omitted (see Table 1). More than half the responses from the expert panel were strongly agree. Of survey responses from the expert panel, 93.3% were either strongly agree or agree. Only three responses were marked as neutral. No responses received a strongly disagree or disagree response (see Table 1).

Table 1

Expert Panel's Survey Results

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The program objectives are clearly stated and attainable.	0	0	0	0	5
2. The PowerPoint presentation, as well as testing materials, are consistently aligned with the program objectives.	0	0	1	0	4
3. The content is proficient in the representation of autism spectrum disorder.	0	0	0	1	4
4. The content incorporates current evidence and scholarly works.	0	0	0	1	4
5. Information presented is applicable to the pediatric emergency department setting.	0	0	1	2	2
~~6. The content incorporates current evidence and scholarly works.~~	~~0~~	~~0~~	~~0~~	~~0~~	~~3~~
7. All instructional materials (i.e. PowerPoint, handouts, tests, etc.) are easy to comprehend.	0	0	0	2	3
8. The pre and posttest are clearly written and highlight key components covered in the presentation.	0	0	0	2	3
9. The presentation is professionally structured and well thought-out.	0	0	1	1	3

Participant Results

A total of 10 registered nurses working in the pediatric ED completed the ASD educational intervention. All participants received a copy of the consent for anonymous questionnaires prior to the beginning of the in-service. Each participant was asked to complete a pretest and survey question to ascertain current knowledge and confidence level of the participants (see Appendix A). Two nurses did not answer the pre- and post confidence scores, and one nurse did not answer the post confidence score. Pre- and post confidence levels were compared between the seven nurses who did complete the pre/post confidence scores (see Appendix C).

As shown in Table 2 the mean pretest score 70 was lower than the mean posttest score 80. Half of all the participants received a higher posttest score when compared to the pretest score (see Appendix C). Of the five participants who scored better on the posttest, the average increase on test scores was 22 points higher. Three participants' pretest and posttest scores remained the same; two of them receiving marks of 90 (see Appendix C). Of note, two out of the 10 participants omitted questions on the post exam, which may have resulted in a lower score (see Appendix C). Only one participant scored lower on the posttest than the pretest; this participant also failed to answer a test question (see Appendix C). As a result, the *p* value (.052) illustrated in Table 3 does not demonstrate a statistically significant improvement in posttest scores. However, Table 4 illustrates that the mean pretest confidence level was 3.4286 or moderately confident, which was shown to be lower than the posttest confidence level score of 4 or very confident. More than half the participants increased their posttest confidence level score by one point (see Appendix C). There were no reported decreases in reported confidence levels post the staff education (see Appendix C). In addition, the *p* value (.030) illustrated in

Table 5 helps support the conclusion that registered nurses working in a pediatric ED would benefit from formal ASD education, especially in terms of increasing their perceived confidence to care for children with ASD.

Table 2

Pretest and Posttest Scores Paired Samples Statistics

	Mean	*N*	Std. deviation	Std. error mean
Pretest scores	70.0000	10	14.90712	4.71405
Posttest scores	80.0000	10	12.47219	3.94405

Table 3

Pretest and Posttest Scores Paired Differences

				95% confidence interval of the difference				
	Mean	Std. deviation	Std. error mean	Lower	Upper	t	df	Sig. (2-tailed)
Pretest score – Posttest score	-10.00000	14.14214	4.47214	-20.11667	.11667	-2.236	9	.052

Table 4

Pretest and Posttest Confidence Scores Paired Samples Statistics

	Mean	N	Std. deviation	Std. error mean
Pretest confidence	3.4286	7	.97590	.36886
Posttest confidence	4.0000	7	.57735	.21822

Table 5

Pretest and Posttest Confidence Scores Paired Differences

	Mean	Std. deviation	Std. error mean	95% confidence interval of the difference Lower	Upper	t	df	Sig. (2-tailed)
Pretest confidence score – Posttest confidence score	-.57143	.53452	.20203	-1.06578	-.07708	-2.828	6	.030

The course evaluation form that was presented to all participants at the conclusion of the ASD educational in-service asked participants to evaluate and rate how the listed program learning outcomes were met as well as evaluate me as the speaker in terms of the listed objectives by a rating score of A-Excellent, B-Good, C-Fair, D-Poor, E-N/A (see Appendix D). Participants were also asked if they foresaw any future results of this program. Four nurses reported that after this educational intervention they intended to change their practice, three nurses planned to bring the information gained to my facility for policy change consideration, four nurses will use the knowledge gained to educate their patients, and no nurses reported that the knowledge gained does not to apply to their practice (see Appendix E). Of the additional responses received, the thematic trend involved the need to collaborate and partner with child life services and acquire the resources needed to assist in care. One participant reported wanting to use the picture chart to help support communication in an applicable situation with an ASD patient and family. Another requested to push for ASD education to be a mandatory requirement to increase the awareness of ASD.

A major unanticipated limitation to the study was a low enrollment rate. Staffing was challenged due to a large turnover during a short period, scheduled time off, as well as higher patient volumes than normal where staff were electing to already pick up extra shifts which made additional commitments challenging. In addition, the COVID-19 pandemic restricted the ability of groups of staff to meet at one time and restricted the number to a handful of staff in order to comply with recommendation of social distancing. Lastly, the omission to fully complete the pre/post confidence level scores by three nurses also had the potential to impact the findings. In future, potential adaptations of this course, I would recommend a formatting change where the pre/posttest and the pre/post confidence survey question being placed on a separate sheet of paper to help distinguish the confidence survey question from the header and instructions of the test, which might have played a role.

The findings aforementioned have implications not only in terms of the individual RN, but also for the community, institution, and system. For the individual RN the findings demonstrate that there is a potential for increased knowledge for caring for a child with ASD as well as increased confidence to be gained from being a participant in a formal ASD education program. Optimal care is best achieved when strategies such as effective communication with the parents or caregivers, parental involvement, and a teamwork approach is employed (Zwaigenbaum et al., 2016). At an individual and community level, gaining knowledge on topics such as communication, triggers and the environment, family collaboration, and a practical application of best evidence based practices can better equip registered nurses to appropriately handle and care for ASD patients who present to the pediatric ED; thus having the potential to improve patient experiences and lead to safer patient and staff outcomes (Zwaigenbaum et al., 2016). At the institutional level, the acquisition of increased knowledge and confidence has the

potential to lead to better patient outcomes which could include a decrease in restraint and sedation usage as well as a decline in reported injuries to both the patient, caregivers, and staff. At a system level, these findings support a formal educational program on ASD upon hire to a pediatric ED as well as refresher competencies incorporating new evidence-based practices, adding value by promoting social change to support improved knowledge and confidence, helping to achieve care that is safe, effective, patient-centered, timely, efficient, and equitable (Agency for Healthcare Research and Quality, 2018).

Recommendations

Recommendation solutions that have the potential to address the gap in practice as previously mentioned involve staff education to increase both general knowledge regarding ASD as well as confidence levels for caring for a child with ASD. Based on the findings, I recommend that all new hires to the pediatric ED receive a formal education, like this program, as well as a refresher education including new evidence-based practices on the care of patients with autism.

The current methodology of an in person interactive learning environment using the principle of Knowles' andragogy, better known as the adult learning theory, provides for the ability to hone in on those principles and also allows for an interactive hands on experience with sensory aids. However, an asynchronous learning platform should also be considered which would allow participants to view content and videos which has the potential to increase participation in the target audience. Additionally, a posttest administered immediately after the staff education demonstrates knowledge gained; it is recommended that the posttest and confidence survey question be administered at a later date to allow time to pass to truly evaluate retained knowledge. Opportunities exist to have this staff education disseminated to other pediatric EDs in the healthcare system that the hospital is a part of. In addition, the staff

education might also be beneficial for registered nurses working in the organization's mixed EDs who have to care for children with ASD and may have limited previous experiences caring for children with ASD. Additionally, a stronger partnership is needed between the child life services and the registered nurses in regards to available sensory learning aids and their functionalities. Access to these sensory aids is also sometimes challenging in the absence of a child life specialist. The recommendation is to have a dedicated space with joint access to these resources, so they can be utilized as needed by the registered nurses independent from the child life therapists, if unavailable.

Contribution of the Doctoral Project Team

I bore the sole responsibility of researching the evidence; developing, planning, and implementing the ASD staff education; as well as the data collection and analysis for this DNP project. The panel of subject matter experts, which were comprised of the pediatric ED's medical director, clinical level IV staff nurse, pediatric ED nursing educator, pediatric ED child life specialist, as well as a parent of a child with ASD who had ED staff nursing and educator experience at another organization. The panel received a copy of the following: consent for anonymous questionnaire form, PowerPoint educational program, and pretest/posttest. The panel's responsibility consisted of reviewing and appraising the content of the educational materials for face validity and alignment with the aims of the staff education and completing a provided 5- point bipolar Likert scale questionnaire. I would like to see ASD formal education be provided to all nurses working in the pediatric ED upon hire with additional supplemental evidence-based refresher courses offered. Results of this project will be disseminated to the pediatric ED nursing leadership team as well as be presented to the Nursing Research and Innovation Council Proposal Review Committee.

Strengths and Limitations of the Project

The strengths of this doctoral project is the knowledge and confidence gained in caring for children with ASD. Additionally, the overwhelmingly positive participant evaluation responses (see Appendix D), that answered, A-Excellent, in reference to the ASD staff education in meeting the learning outcomes, as well as participants who reported plans to change their practice based on knowledge learned. Limitations of this DNP project include the low sample size as well as being conducted in a single implementation site. The results obtained are not generalizable to the population and may not yield the same results in a larger sample and/or different facility. Recommendations include making this educational intervention as part of one of the required educational classes to all new hires to the pediatric ED.

Section 5: Dissemination Plan

Results of this project will be disseminated to the pediatric ED nursing leadership team as well as be presented to the Nursing Research and Innovation Council Proposal Review Committee. The results can also be disseminated with the child life leadership in an attempt to strengthen the partnership and achieve mutual gains in caring for children with ASD. These findings support a formal educational program on ASD upon hire to a pediatric ED as well as a refresher competency incorporating new evidence-based practices for staff nurses, adding value by promoting social change to support improved knowledge and confidence, helping to achieve care that is safe, effective, patient-centered, timely, efficient, and equitable (Agency for Healthcare Research and Quality, 2018). Opportunities exist to have this staff education disseminated to other pediatric EDs in the healthcare system that the hospital is a part of. In addition, the staff education might also be beneficial for registered nurses working in the organization's mixed EDs who care for children with ASD and may have limited previous experiences caring for children with ASD. Results can also be disseminated on a larger scale in the form of poster presentations, webinars, lectures, and scholarly publications to achieve maximum reach and improve the knowledge, confidence, and care that is delivered to children with ASD in an emergency setting.

Analysis of Self

My philosophy both personally and professionally is that if you can dream it you can achieve it, with a little hard work, determination, motivation, and persistence; all things are possible because in the words of Paolo Cohelo, "impossible is just an opinion." As a young child and all throughout nursing school I knew my passion and drive was to care for the pediatric patient. It was my calling. I began my career as a nurse extern in the postpartum unit taking care

of mothers and their newborn babies and then took a job in the pediatric ED after graduation. I enjoyed mentoring and precepting others to share my knowledge and passion for caring for children and their families. I always found myself engaged with and being called upon to help be a part of safety and quality initiatives. I would champion and help initiate safe practices in pediatric nursing care that fostered positive patient outcomes. I enjoyed studying a problem and looking for ways to find improved processes to optimize the care delivered. In a fast paced, technologically advanced industry such as healthcare; it is paramount that evidence-based practices and research are focused on safety in patient care. Patients must remain at the center of everything nurses do.

As a scholar, I believe advanced education is necessary to progress to the next level of professional excellence, clinical growth, and personal enrichment. I believe that a person can never stop learning and developing their education both formally and informally. My quest for knowledge and love of informing others took me on my journey to obtain my Master's in Nursing Education. During this time, I also decided to expand my responsibility and reach by becoming the administrative supervisor in the pediatric ED. I also have the opportunity and privilege to teach both didactically and clinically at two colleges. By enhancing and broadening my education and experience allows me to become a better educator. It also allows me to continue to share my experience and knowledge of pediatric nursing practices to help educate, mold, and motivate future nurses.

This DNP project has impelled me to call upon my strengths and passion for improving care of the pediatric patients and teaching and educating others; I was also called to develop additional skills. I enjoyed the process and growth in learning and advancing my research and writing style. It has helped shape and refine my critical thinking and the importance of word

choice. For a self-proclaimed lover of learning, this experience has left me grateful and enriched and looking for the next opportunity to learn and share new knowledge with others.

Summary

Pediatric EDs are fast paced environments designed to offer expedited, quality services; however, they may not be conducive to the needs of a child with ASD presenting with a medical emergency. With the increasing prevalence rates of ASD diagnoses and reported emergency visits, it is essential that frontline nurses feel knowledgeable and confident to treat this unique patient population that requires specialized care (Casey et al., 2015). A current gap in practice that was addressed by this project was a knowledge deficit and lack of perceived confidence treating patients with ASD. The implementation of an ASD staff education demonstrated an increase in registered nurses' knowledge and confidence levels for caring for patients with ASD in a pediatric ED. Based on the project's findings, a formal educational program on ASD upon hire to a pediatric ED as well as a refresher competency incorporating new evidence-based practices should be supported. In addition, mixed ED nurses who treat children with ASD on a less frequent basis might find this program beneficial. Further studies will need to be conducted to determine this program's efficacy in providing improved patient and staff outcomes and experiences.

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Appendix A: Pre-/Posttest With Answer Key

Autism Spectrum Disorder (ASD) Pre/Post Test

Please DO NOT write your name on this test. Unique four-digit code_____

Please rate the following (circle one):

My current confidence level for caring for a child with ASD is:

Not at All Confident	Slightly Confident	Moderately Confident	Very Confident	Extremely Confident
1	2	3	4	5

1. Autism Spectrum Disorder (ASD) is defined as:
    a. a mild to severe impairment in intellectual ability equivalent to an IQ of 70 to 75 or below that is accompanied by significant limitations in social, practical, and conceptual skills
    b. a congenital condition characterized by a distinctive pattern of physical characteristics including a flattened skull, pronounced folds of skin in the inner corners of the eyes, large tongue, and short stature
    c. neurodevelopment disorder characterized by difficulties with social communication and interactions and restricted and repetitive patterns in behaviors, interests, and activities
    d. repeated, sudden episodes of impulsive, aggressive, violent behavior or angry verbal outbursts in which the patient react grossly out of proportion to the situation

2. When the provider enters the room, the child with autism spectrum disorder (ASD) starts to rock back and forth and flap both arms in the air. Which action is appropriate for the nurse to take?
    a. Ask the provider to exit the room.
    b. Ask the provider for an order for a low dose antihistamine.
    c. Ask the parent(s) or caregiver(s) to provide comfort and reassurance.
    d. Ask the provider for a restraint order.

3. Which comorbidity is common in children with autism spectrum disorder (ASD)?
    a. Cardiovascular anomaly
    b. Depression
    c. Diabetes
    d. Dyslexia

4. The nurse is caring for a non-verbal 10-year-old child with autism who presented to the Pediatric E.D. for a foot injury that required an orthopedic consult and x-ray. While the child is waiting for his x-ray results, the child begins to scream and bang both hands on the wall. The nurse recognizes the most appropriate action would be to:
    a. Assess the child's pain using the numerical pain scale
    b. Place a patient in a room with a window so they can watch and hear the ambulances go by to distract them
    c. Be firm and tell the child 'No you cannot yell and bang on the wall'
    d. Provide a self-stimulating or comfort item from home

5. Which communication strategy is the most appropriate for the nurse to use when caring for a child with autism spectrum disorder (ASD)?
    a. Using abbreviated hand signals (such as thumbs-up or clapping) to praise a nonverbal child
    b. Showing pictures to a child and letting the child point to the ones that express his or her needs and feelings
    c. Offering paper and writing instruments so an older child can communicate with staff
    d. None of the above

6. Which care practice in the hospital may cause distress to a child with autism spectrum disorder (ASD)?
    a. Describing procedures in a simple and direct manner
    b. Avoiding eye contact when talking to the patient
    c. Wearing a hospital-issued gown or pajamas
    d. All of the above

7. Which of the following is a characteristic of autism spectrum disorder (ASD)?
    a. Ability to maintain conversations easily
    b. Flexibility in routines
    c. Failure to develop normal social relationships
    d. None of the above

8. Which sign or symptom is common in children with autism spectrum disorder (ASD)?
    a. Inflexibility and adherence to set routines
    b. Advanced speech and language skills
    c. Inability to hold eye contact for prolonged periods
    d. Inattention to details or decreased perception

9. The nurse is caring for a 5-year-old child with autism who presented to the Pediatric E.D. for a localized allergic reaction to an insect bite to the forearm. The patient is prescribed a low-dose antihistamine. Which of the following statements by the mother indicates the need for further teaching:
    a. "Medication can be over-stimulating or sedating which causes my child to create new behaviors to help establish a sense of stability or normalcy."
    b. "Antihistamines can sometimes cause agitation, which is a known unintended effect."
    c. "All my children have had a low-dose antihistamine before, despite the fact that he has ASD, I can anticipate him to react to the medication in the same way as my other children."
    d. "I will use the oral syringe to draw up the precise dose of the prescribed medication at home to ensure my child is getting the appropriate dose for his age and weight."

10. Which strategy is appropriate for the nurse to use when caring for a child with autism spectrum disorder (ASD) who has to have a blood draw?
    a. Use a numbing spray or cream
    b. Give the patient a very detailed explanation of what will happen, including how many tubes of blood you will fill
    c. Give the patient something that will distract their attention
    d. All of the above

Autism Spectrum Disorder Pre-/Posttest Answer Key

1. C
2. C
3. B
4. D
5. B
6. C
7. C
8. A
9. C
10. D

Appendix B: Expert Panel Evaluation Survey

Expert Panel Evaluation Survey

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. The program objectives are clearly stated and attainable.	1	2	3	4	5
2. The PowerPoint presentation, as well as testing materials, are consistently aligned with the program objectives.	1	2	3	4	5
3. The content is proficient in the representation of Autism Spectrum Disorder.	1	2	3	4	5
4. The content incorporates current evidence and scholarly works.	1	2	3	4	5
5. Information presented is applicable to the Pediatric Emergency Department setting.	1	2	3	4	5
6. The content incorporates current evidence and scholarly works.	1	2	3	4	5
7. All instructional materials (i.e. PowerPoint, handouts, tests, etc.) are easy to comprehend.	1	2	3	4	5
8. The pre and posttest are clearly written and highlight key components covered in the presentation.	1	2	3	4	5
9. The presentation is professionally structured and well thought-out.	1	2	3	4	5
Comments (Optional): Please provide any recommendations for improving the staff education content and presentation:					

Appendix C: Pre- and Posttest Raw Data

Participant ID #	Pretest Score	Posttest Score	Pretest Confidence Score	Posttest Confidence Score
#2156	90	90	5	5
#0223	70	80	2	3
#0702	60	60*	4	n/a
#0625	60	90	4	4
#2153	80	70*	n/a	n/a
#7827	70	70	n/a	n/a
#2471	50	70	3	4
#0129	80	100	3	4
#0307	90	90	3	4
#7578	50	80	4	4

* = omitted questions

Appendix D: Participant Evaluation Survey

Evaluation Form

Title: **Autism Spectrum Disorder**

CODE: **A=EXCELLENT, B= GOOD, C = FAIR, D = POOR, E = N/A**

How were the following Learning Outcome(s) met?

A B C D E	1.	Pediatric E.D. nurses will recognize challenging behaviors in a child with Autism Spectrum Disorder and apply appropriate interventions to mitigate the behaviors.
A B C D E	2.	Pediatric E.D. nurses will demonstrate enhanced communication skills, including the use of calming de-escalation strategies, to prevent self- injury.
A B C D E	3.	Relationship of learning outcome(s) to content of the activity?
A B C D E	4.	How well did this continuing nursing education program meet your learning needs?

Please evaluate each speaker: SPEAKER: ____Melanie Cardona RN MSN CPEN_____

A B C D E	5.	Knowledge of subject
A B C D E	6.	Presentation orderly and understandable
A B C D E	7.	Effective use of teaching method(s)
A B C D E	8.	Overall, I found the learning experience

PLEASE CIRCLE YOUR ANSWER: As a result of this program:

a) I plan to change my practice
b) I plan to bring the information gained to my facility for policy change consideration.
c) I will use the knowledge gained to educate my patients.
d) The knowledge gained does not to apply to my practice.
e) Other, please state:

_____
_____

Please state one change you will incorporate in your practice as a result of this presentation:

_____
_____

Additional comments:

_____
_____

Appendix E: Participant Evaluation Summation of Survey Data

Title: Autism Spectrum Disorder

EVALUATION SUMMATION

10	# of participants
10	# of RNs/APNs
10	# of evaluations

CODE: **A=EXCELLENT, B= GOOD, C = FAIR, D = POOR, E = N/A**

How were the following learning outcomes met?

A	B	C	D	E	blank	Learning Outcomes
9	**1**					1. Pediatric E.D. nurses will recognize challenging behaviors in a child with Autism Spectrum Disorder and apply appropriate interventions to mitigate the behaviors.
9	**1**					2. Pediatric E.D. nurses will demonstrate enhanced communication skills, including the use of calming de-escalation strategies, to prevent self- injury.
9	**1**					3. Relationship of learning outcomes to the content of the activity?
10						4. How well did this offering meet your learning needs?

Please evaluate each speaker: **SPEAKER:** Melanie Cardona RN MSN CPEN

A	B	C	D	E	blank		
10						5.	Knowledge of subject
10						6.	Presentation orderly and understandable
10						7.	Effective use of teaching strategies
10						8.	Overall, I found the learning experience

PLEASE **CIRCLE** YOUR ANSWER: As a result of this program:

a) I plan to change my practice -**4**
b) I plan to bring the information gained to my facility for policy change consideration. - **3**
c) I will use the knowledge gained to educate my patients. **-4**
d) The knowledge gained does not to apply to my practice. **-0**
e) Other, please state: -**3**

Please state one change you will incorporate in your practice as a result of this presentation:

1. I will utilize child life to assist with ASD patients
2. Contact child life more often for resources, use picture chart
3. I can take care of my patients with ASD in a more effective and functional manner – Utilize more resources to comfort my patients
4. Learning about autism and sensory disorders is essential in pediatric nursing. I am very thankful for this education. I learned many things that I can use in my daily practice. – Using the sensory care and Child Life.
5. Access to materials on unit

Additional comments:

1. We need to increase the awareness of ASD especially amongst healthcare workers. Please push to make this mandatory. We need to be more sensitive to people with special needs.