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## **Assessing the Knowledge of Pediatric Healthcare Providers as it Relates to PPEC Services and its Benefits; A Quality Improvement Project**

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Assessing the Knowledge of Pediatric Healthcare Providers as it Relates to PPEC Services and  
its Benefits;  
A Quality Improvement Project

A Scholarly Project Presented to the Faculty of the  
Nicole Wertheim College of Nursing and Health Sciences

Florida International University

In partial fulfillment of the requirements  
For the Degree of Doctor of Nursing Practice

By  
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Approval Acknowledged  \_\_\_\_\_, DNP Program Director

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### **Abstract**

Prescribed Pediatric Extended Care (PPEC) centers are also known as medical daycare centers. These centers provide children with special health care needs (CSHCN) nursing care and developmental therapies. PPECs are non-residential facilities that serve children from birth to 21 years of age. During the last several decades' technological advances have dramatically improved the survival rates of children with life-threatening diseases or injuries (Caicedo, 2013). Some children with special healthcare needs (CSHCN) who survive life-threatening diseases or injuries tend to need in-home nursing care. One study has shown that CSHCN in PPEC settings had the highest healthcare quality of life (HRQL) compared to CSHCN cared for at home or in long-term care facilities, including physical and psychosocial functioning (Caicedo, 2013). This quality improvement project assessed Nicklaus Children's Hospital pediatric healthcare providers' knowledge of PPEC services and the benefits associated with PPECs. Eighty-seven percent of the participants had a master's degree and an average of twenty years of pediatric experience. The providers participated in a pre-survey to assess their knowledge of the services and benefits associated with PPEC. Next they participated in an educational PowerPoint presentation about PPECs, the referral process, and patient qualifications for admission. After the educational presentation, the participants completed a post-survey to assess if there was an increase in participants' knowledge. Results showed a 37% increase in knowledge about the benefits of PPEC services. In conclusion, although there were advanced healthcare providers with an average of 20 years of experience working with children, they had little knowledge of the benefits and services provided by PPEC. Research has shown that PPECs provide children with special healthcare care needs a place that can serve their medical and psychosocial needs. PPEC providers can implement educational in-services to local pediatric healthcare providers through personal visits and

collaborate with local children's hospitals to increase participation in community outreach programs. The quality improvement project has shown that educational intervention effectively increases pediatric healthcare providers' knowledge about PPEC services and their benefits.

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## Introduction

According to the 2019-2020 National Survey of Children's Health, 18.6% of children in Florida have a special healthcare need (National Survey of Children's Health (NSCH), 2020). The American Academy of Pediatrics (AAP) stated that in the United States, about 500,000 CSHCN require a range of medical services at home (Simpser et al., 2017). There is yet to be precise data available on the exact number of children attending prescribed pediatric extended care (PPEC) centers in Miami-Dade County. The only data available is the bed capacity for each PPEC in Miami-Dade County, which amounts to less than two thousand beds. Research on the benefits of PPEC services can be dated as far as 1987. According to (Pierce et al., 1987), PPEC services benefit a CSHCN by offering a program designed to address cognitive, psychomotor, psychosocial, and medical needs. Families' and caregivers' benefits include an environment where these caregivers can receive emotional and technical support.

The cost of caring for a medically fragile child can be astronomical. The average American family spends \$284,570 on primary care for a child. Those with CSHCN can easily spend triple that when you factor in nursing and hospital care bills, special equipment such as feeding tubes or wheelchairs, and much more (U.S. Department of Agriculture, Center for Nutrition Policy and Promotion. et al., 2017). In 2016, the average hospital cost for a pediatric nonbirth stay was \$13,400 (Healthcare Cost and Utilization Project Kids' Inpatient Database Kids' Inpatient Database (KID) et al., 2019). According to current data, medically complex children account for 2 million (6% of all children) but utilize about 40% of Medicaid spending. In comparison, healthy children amount to about 31 million (94% of children) and utilize 60% of Medicaid spending (Simpser et al., 2017).

A recent study evaluated national data to determine changes in the prevalence of hospital admissions for medically complex children over fifteen years (Burns et al., 2010). The study concluded that CSHCN consistently had increased hospitalization rates (Burns et al., 2010). Proper transition to PPEC can positively benefit the child and its caregiver and also be cost-effective. Research on PPEC and its services is exceptionally scarce, and no recent research evaluates pediatric health providers and their knowledge of PPEC services. Before initiating referrals to PPEC, pediatric healthcare providers must be educated on the benefits and services provided by PPEC for the patients they are referring to the PPEC.

PPEC services can help prevent hospitalizations during an acute period of a chronic illness (Palasky,2007). PPEC nurses can handle minor illnesses that might otherwise cause a child to end up in the emergency room and cause a caregiver to miss work. Cross-sectional data on this population's demographic characteristics and needs is limited, and more research needs to focus on the services provided at PPECs. When assessing current research on the care CSHCN, most literature discusses home-bound care, long-care facilities, or home health nursing as options. Very few discuss PPEC services and their benefits. More research must be done and published; this would provide pediatric providers with evidence-based knowledge of the services available for CSHCN.

### **Significance**

According to the AAP, studies have shown that home health services seem to be infrequently and variably used in pediatrics compared with adults. Family members frequently assume significant responsibility for the care and are often the primary care providers (Simpser et al., 2017). PPEC centers are only available in certain states, and many disparities exist across the United States. In Florida, PPECs are not licensed or regulated as childcare centers but as

alternative rehabilitative sites. In other states like Delaware and Pennsylvania, PPECs are licensed as childcare centers and are regulated by the Office of Health Facility. In Maryland, there are two centers that are comparable to PPECs but do not use that terminology. PPEC services provide CSHCN with medical care without the high cost of an inpatient hospital bill. These centers provide children with socialization, which is a critical component in the child's development. PPEC services can also prevent hospitalization due to an acute period of a chronic illness (Palasky, 2007). The negative financial consequences can be seen just by assessing the cost of hospital care vs. non- hospital care. CSHCN represent less than 1% of all U.S. Children but account for more than 30% of the total pediatric healthcare cost (Murphy & Clark, 2016). These children account for about 1.6 billion dollars of all Medicaid pediatric healthcare expenditures; 47% are spent on pediatric hospital care and 71% of the 30-day unplanned hospital readmission (Murphy & Clark, 2016). Increasing the pediatric healthcare provider's knowledge of PPEC services and their benefits can increase CSHCN assess and use through the pediatric healthcare provider's referral to PPEC services.

### **Problem Statement**

PPEC may be called medical daycare. These centers allow Medicaid-eligible children from birth to twenty-one years old with special healthcare needs (CSHCN) to receive continual medical care in a non-residential setting (Agency for Health Care Administration (AHCA), 2022). There are forty-two licensed PPECs in Miami Dade County, with a total bed capacity of 1,891 (Florida Agency for Health Care Administration (FAHCA), 2022). The number of licensed beds per PPEC varies based on their licensure and state regulations. The average number of licensed beds per center in Miami-Dade County is forty-five (Facility/Provider Locator, n.d.)



Medical advances have dramatically improved survival rates for children with life-threatening conditions like premature births, congenital abnormalities, or injuries (Caicedo,2013). These events tend to result in children with special health care needs (CSHCN) requiring nursing care in the home or PPECs. The national nursing shortage has translated into a gap in-home nurse care for CSHCN (Weaver et al., 2018). Home health agencies assign one nurse to one child. PPEC has a mandated nurse-patient ratio of 1:3. AHCA regulations require the PPEC to staff with Registered Nurses, LPN, and direct staff members-(AHCA, 2021). These centers also have direct care staff composed of nursing assistants, patient care technicians, medical assistants, Emergency Medical Technicians (EMTs), or paramedics.

Identifying pediatric healthcare providers' knowledge of PPEC services and addressing the knowledge gaps can help decrease CSHCN hospital stays. Caregivers might benefit from the services and support provided at the PPECs, and the child can also benefit from having nursing and therapy services in one facility. A child with special medical needs cannot attend a "regular" daycare. Therefore, healthcare providers and parents are limited in care options. Some options are keeping a child in the hospital or keeping them at home. PPEC can offer parents and their patients a variety of benefits.

### **Literature Review**

A literature review was conducted to identify the benefits of PPEC services for special healthcare needs children and pediatric healthcare providers' knowledge of PPEC services. The review was conducted using the CINAHL database and the Florida International University online library using the following keywords: prescribed pediatric extended care, children with special health care needs (CSHCN), medical daycare, medically fragile children, and pediatric home health care, a total on fifteen articles were found and included in this literature review.

Articles (Pierce et al., 1987) and (Palsky, 2007) describe PPEC services and their benefits. The third article compared home care settings, prescribed pediatric extended care, and long-term care settings (Caicedo, 2013). Articles related specifically to PPEC services date back to 1987, but only a few provide quality research evidence. Six articles identified the lack of local, state, and national policies related to the care of children with special health care needs. One article is an AAP policy statement that helps address concerns with current pediatric home health care home (Simpser et al., 2017). The articles demonstrate the benefits of a CSHCN attending PPEC. They have also stated there is a lack of policies to increase healthcare access to CSHCN. No articles evaluated pediatric providers' knowledge about PPEC services or their benefits.

### **PPEC Services**

Pierce et al. (1987) is one of the only articles that discusses why and how PPECs were developed. These authors identified the need for a continuum of care for CSHCN. Before the development of PPECs, CSHCNs had limited access to in-home care options. Options included leaving the child in the hospital for an extended period of time, having the child home with costly private nursing services, which can isolate the child, or having one parent become the primary healthcare giver. This could place families under tremendous financial stress. The authors discussed how child health advocates recommended that programs for medically fragile children include a family center approach, an array of multidisciplinary services, and individualized goals based on the child. This article discussed the development of the PPEC's model standards of care, funding, and how specific guidelines regarding establishing an advisory board assured PPECs would conform with licensure and certification requirements.

The authors discussed the prerequisite for admission to the PPEC, who would qualify for services, identified the staff employed at the centers, and the requirements needed to maintain

admission at the PPEC. The most beneficial information this article provides is the clear benefits of PPEC services. According to Pierce et al. (1987), the family benefits included emotional and technical support. PPEC centers were noted to address these families' financial needs because parents could remain employed if necessary, and those single parents could return to work. Therefore, it helped minimize the financial stress on the family. The articles also addressed the benefits to the child. PPEC centers prevented children from being isolated in a hospital or their home. PPEC also offers a program that is designed to address the child's cognitive and psychosocial needs, as well as medical conditions. Finally, the financial benefits were also discussed. The cost differential between hospital and non-hospital care was significant. It was noted that the hospital cost for a ventilator-dependent child was about three to four times greater than home care

In 2007, Heather Palsky, RN, BSN, Director of Nursing of Frankie's World, a PPEC Center in Philadelphia, Pennsylvania, wrote the article "Prescribed Pediatric Extended Care Center." She discussed the increased need for experienced pediatric nurses, especially in-home care. In this article, she presented an overview of the PPEC services, hours of operation, and the ratio of healthcare workers to children. She also addressed how PPEC provides a beautiful complement to home care, where home care is given at night and receives the benefits of socialization, activities, and therapies during the day at the PPEC. The author summarized the medical care the registered nurse provides the children at the PPEC.

The children are provided with a developmental program tailored to their specific needs and medical care. The author stated that PPECs could help prevent hospitalization during acute periods of a chronic illness. This article did not have literature with supporting evidence to validate the author's statements.

## **Quality of Life**

Caicedo (2013) conducted a study to compare the effects of home care settings, PPEC care settings, and long-term care (LTC) settings on child and family health outcomes and health care use. The framework of this study was based on the Donabedian Structure/Process/Outcome (SPO) model. In this study, the structure was where the CSHCN receives daytime care.

Processes were care delivery and care coordination. Outcomes of care were child health and functioning outcomes per parent report, family health (physical and mental), and family cost of care burden (Caicedo, 2013).

This study is a non-experimental study that compares the effects of home settings, PPEC care settings, and long-term care settings on a child's health, family health, and functioning. The participants recruited for home care settings were from several primary care pediatric practices in North Miami and South Dade County; for PPEC care settings were from Miami Dade Jackson, Children's Rehab Network, and Patches PPEC; for LTC settings were from the Miami Cerebral Palsy Residential Services, Sabal Palms Health Care Center, and several independent congregated group homes. The sample size for this study was 84 children and 84 parents/caregivers/ nurses. Data was collected via monthly interviews, including child health and functioning data, using the Parent Report - Pediatric Quality of Life Inventory.

This study concluded that children in PPEC settings had the highest health care quality of life (HRQL) overall, including physical and psychosocial functioning. Parents/guardians in the home care setting had the poorest (HRQL), including physical and psychosocial functioning. The parents/caregivers in the LTC setting had the highest (HRQL), but the out-of-pocket expenditures were the highest (Caicedo, 2013).

Adams (2009) noted that CSHCN are a growing population of children with special healthcare needs (Adams 2009). This study described the child and parent health and parental perception of care of a CSHCN cohort and compared their finding with those of children with other chronic diseases (Adams, 2009). Referrals identified participants to complex care clinics. Parents participated in semi-structured interviews and assessed their health using the SF-36 Coping Health Inventory for Parents. The study showed that parents with CSHCN reported poorer overall general health.

In conclusion, parents of CSHCN reported poorer health-related quality of life. The researcher identified the need for more research. CSHCN needs targeted intervention to address and prevent these problems.

### **Health Care Services Use**

The article by Caicedo (2016) evaluates health, functioning, and healthcare service used by CSHCN and describes the differences by condition severity. This longitudinal descriptive study used a convenience sample of medically complex, technology-dependent (MTD) children. Data were collected from March 2012 to March 2013. Inclusion criteria were CSHCN ages 2 to 21 with a complex medical condition dependent on MTDs or procedures to maintain life. Exclusion criteria included CSHCN with only behavior or mental health disorder. Participants were recruited from local pediatric primary and specialty physicians' practices, medical daycare settings, and long-term/residential care settings. The total sample was 76 children over five months.

Most children were younger than 11 years old, male, and Hispanic. Most were severely disabled yet in good to excellent health, per their parents. Most children needed help with their ADLs due to their conditions. Ninety-two percent of the children received multiple prescribed

daily medications, and 74% used medical technology devices. Eighty-two percent visited specialty physicians, 65% received nursing health care services, and 37% of the children were seen in an emergency department (Caicedo, 2016).

Many CSHCN have higher levels of condition severity, which may include increased prescription medication and limited functional abilities with and without assistive devices. There was an elevated healthcare service use reflecting the complex medical condition. In conclusion, a care coordinator role is necessary to help improve the health and function of medically complex technology-dependent children to help improve care coordination with caregivers.

### **Cost of Care**

Boss et al. (2017) identified that the pediatric population with CSHCN has increased over the past two decades. The children have repeated prolonged hospitalizations and ongoing dependence on technologies to sustain vital functions. This study utilized semi-structured interviews with 52 stakeholders with experience with children with CSHCN. The stakeholders included physicians, nurse practitioners, social workers, and parents from five metropolitan areas. Interviews transcripts were qualitatively analyzed for themes. Research showed that all stakeholders agreed that the home environment is ideal for children with CSHCN. This environment can be a family home, foster home, or medical group home. Four themes were identified regarding reasons for excess hospitalizations in children with CSHCN: child, family, clinicians, and health care system.

The child factors identified that illness complexity and severity drove many pediatric hospitalizations. Family factors include the high home care demands. Many caregivers must navigate the system for the best care for the child, even when it is not the best for their family. The clinical factors were the lack of outpatient pediatricians with experience managing the

complex medication, care, and technologies these children might need. Insufficient time and low reimbursement also played a key role. The health care system factors identified the lack of pediatric home care and durable medical equipment services. The lack of knowledge of policies relevant to CSHCN was also a factor identified by most stakeholders (Boss et al., 2017).

The study identified the need to improve coordinated changes in the clinical setting, social services, and policy levels. CSHCN need intentional care models to help streamline care for them and ease burdens for the families, clinical, and the health care system. Targeted interventions to decrease unnecessary hospital days, facilitate the transition between inpatient and outpatient care, and build home care capacity are critical steps in this effort (Boss et al., 2017).

According to Carter et al. (2016), the number of CSHCN continues to rise, and they often have prolonged hospital stays. This qualitative interview-based study explored the work of nurses whose key role is facilitating the transition from hospital care to long-term care at home. Prolonged home discharges expose children to the psychosocial and physical harms associated with hospitalization. Data were collected via face-to-face interviews at the WellChild Children's Nurse facility. Interviews were then transcribed and subjected to thematic analysis. Limitations of this study included the fact that it focused on nurses working for a specific charity. However, these nurses reflected a wide range of geographical settings and places of care.

It was concluded that children should be able to receive care at home, even in situations where specialist transition support is not available. Nurses and other health and social care professionals can improve the discharge journey of children through dialogue with colleagues in other settings and by placing the child and family needs at the center of care.

## **Policies**

Bruder & Borman Fink (2004) collected data from 48 states and the District of Columbia regarding the policies that impacted children with special medical healthcare needs in licensed childcare centers. The study identified policies that directly affected children with special healthcare needs (CSHCN). These policies included medication administration and medical procedures like gastroenteric feedings. Participants of this study included 85 individuals from 48 states and the District of Columbia. Interviews were conducted via telephone or email. The participants were individuals who potentially influenced the services provided to children with special healthcare needs in a childcare setting. The results found that very few states have policies that intentionally focus on CSHCN. On the other hand, states like Florida, Delaware, Pennsylvania, and Maryland have policies and direct resources for children with special healthcare needs.

The study evaluated if the 48 states addressed or failed to identify six significant themes; restriction on dispensing medication, policies on medical treatment, financial support, childcare healthcare consultants, policies regarding specialized centers, and issues related to boards of nursing or Nurse Practice Acts. According to this study, current policies failed to define the term CSHCN. The study acknowledged fluidity in the definition of the phrase children with complex medical needs and states that a child can “enter” the zone of medical complexity but exiting this “zone” is possible (Bruder & Borman Fink, 2004). When childcare centers enrolls a CSHCN, states like Oklahoma, Alaska, Montana, and Arizona have implemented higher reimbursements for these facilities, allowing them to hire more staff.

Florida has specialized centers for these children called Prescribed Pediatric Extended Care Centers (PPEC or PPECC). PPECs are not licensed or regulated as childcare centers but are considered alternative rehabilitative sites and are regulated by ACHA. In other states like



Delaware and Pennsylvania, PPECs are licensed as childcare centers and are regulated by the Office of Health Facility. In Maryland, two centers are comparable to PPECs but do not use that terminology. Multiple issues relating to the Board of Nursing and the Nurse Practice Act have been discussed in this study. Both organizations address those specific procedures that may be disallowed for nonmedically certified staff. Nurses working in childcare centers must be careful when they delegate tasks to a person who is not medically certified (Bruder & Borman Fink, 2004).

The study helped identify the lack of policies for CSHCN. The authors of this article made recommendations for each state as it related to their childcare policies and emphasized identifying a “zone of medical complexity.” An example of a “zone of medical complexity” can be a child with newly diagnosed seizures. When the child is newly diagnosed, intensive monitoring and frequent medication adjustment may be required. As the condition becomes stable and no longer needs complex medical care, the child can exit the “zone of medical complexity.” There will be some children who will never leave this zone, and others might never enter it. Helping identify this ‘zone’ and understanding the fluidity of the zone can help improve policies related to children with complex medical needs (Bruder & Borman Fink, 2004).

A 2016 AAP policy statement entitled “Financing of Pediatric Home Health Care” gave recommendations regarding pediatric home health care. The policy statement acknowledged that about 500,000 CSHCN in the United States require various medical and therapeutic services at home (Simpser et al., 2017). Over the last decade, the increased need for home health care services has been affected by multiple factors, including higher survival rates of extremely premature infants and miniaturization and simplification of medical equipment. According to the National Health Expenditure data, pediatric home health costs rose steadily from 2002-2010

(Simpser et al., 2017). This statement also addressed the financial factors affecting pediatric home health care. One is the lack of private health insurance benefits for comprehensive home health services, which include nursing, rehabilitation, durable medical equipment (DME), and respite care. Most providers are discouraged from caring for CSHCN because Medicaid payments may be less than the actual cost of the prescribed service (Simpser et al., 2017).

The AAP made recommendations in three categories to advocate for improvements in pediatric home health care. Recommendations for the regulatory category include recognizing the full breadth of pediatric home healthcare services as listed in the Patient Protection and Affordable Care Act. Public and private payers should incorporate pediatric home healthcare services into the essential health benefits (Simpser et al., 2017). Recommendations for the care delivery and payment category address the need for adequate payments for services, improvement of financial incentives, and denial of home health coverage because of the absence of conclusive scientific evidence. Recommendations for the care delivery and payment category address include for Center of Medicare and Medicaid (CMS) to analyze Medicaid pediatric home health care payment across all states. This can help ensure that eligible children have access to services.

### **Importance of Socialization**

Rehm & Bradley (2006) stated that social interactions are essential for emotional and psychological well-being and services to foster children's development and social adjustment. CSHCN and developmentally delayed children often cannot initiate social interactions with other typically developed children. CSHCN and those without them have better social outcomes with increased interactions. CSHCN, with increased peer interaction, tends to have improved social interactions, language development, appropriate behavior, and self-esteem. This study analyzed

the number and types of interactions engaged in school by CSHCN. The researcher used a standard ethnographic method of interviewing, observing, and reviewing documents. The sample included children ages 5-12 recruited from a statewide nurse case management program. All the children in this study used assistive devices like tracheal tubes, oxygen, feeding support, or wheelchairs. The setting was four elementary schools that hosted districtwide programs for children with severe to profound needs.

The researchers observed the children during their school day and documented interactions with their peers, caregivers, and teachers. The observational data were compiled and analyzed to present simple descriptive statistics about children's interactions. Data showed that while the CSHCN and their classmates participated in interactive activities designed to increase interaction, it was often limited by developmental, physical, or social barriers. This study showed that the children were willing and able to interact socially, although rarely with words or with physical boisterous (Rehm & Bradley, 2006). Nurses, teachers, and caregivers should encourage interaction between the children and assess missed opportunities for interaction.

### PICO Question

Will implementing an evidence-based educational intervention related to PPEC services increase pediatric healthcare providers' knowledge about PPEC services and their benefits?

**Population:** Pediatric Healthcare Providers at Nicklaus Children's Hospital.

**Intervention:** Providing an education intervention about PPEC services and their benefits for local pediatric healthcare providers on current PPEC services in Miami Dade County.

**Comparison:** Pediatric healthcare providers' knowledge before and after the educational presentation about PPEC services and their benefits. **Outcome:** Improve pediatric healthcare providers' knowledge about PPEC services and the benefits and services available for children with special healthcare needs.

### Definition of Terms

*Prescribed Pediatric Extended Care (PPEC):* These facilities allow Medicaid-eligible children from birth through age 20 with medically complex conditions to receive continual medical care in a non-residential setting. Approved patients can attend a PPEC for up to 12 hours per day.

Each center is individually owned and provides patients with nursing services, personal care, developmental therapies, and caregiver training (Agency for Health Care Administration, 2022).

*Agency for Health Care Administration (AHCA):* The Florida Legislature created AHCA as part of the Health Care Reform Act of 1992. The agency is responsible for administering the Medicaid program, licensing, and regulating health facilities (Office of Program Policy Analysis and Government Accountability (OPPAGA), n.d.).

*Children with special health care needs (CSHCN):* According to the Health Resources and Services Administration, CSHCN are children who have or are at increased risk for chronic physical, developmental, behavioral, or emotional conditions. They generally also require health

and related services of a type or amount beyond that required by children (Health Resources & Service Administration, 2021).

### **Theoretical Framework**

The Dreyfus of Skill Acquisition created by Stuart Dreyfus and Hubert Dreyfus (1980), is based on chess players and airline pilots. It postulates that students or nurses pass through five levels of aptitude: novice, advanced beginner, competent, proficient, and expert (Fraley, 2016). In this research, a Novice refers to a “beginner” who has no experience in PPEC. Novice providers in this research have no past knowledge about PPEC and have not cared for CSHCN. An advanced beginner can identify a CSHCN but has not cared for one or made referrals to PPEC. A competent provider has 2-3 years of experience with CSHCN and has made appropriate referrals to PPEC. Proficient providers are knowledgeable about services and can effectively make appropriate referrals. Finally, an expert provider knows about PPEC services and can effectively make appropriate referrals and educate other providers on PPEC services. Most participants are experts in their field of practice, but the Dreyfus Model of Skill Acquisition is used to help assess their experience as it relates to their knowledge about PPEC.

### **Methodology**

Plan phases include a literature review and collecting background information from local PPECs. Do phase included providing pediatric healthcare providers at Nicklaus Children’s hospital with a pre-survey to assess their current knowledge about PPEC services and their benefits. After completing the pre-survey, an evidence-based education intervention about PPEC services and their benefits was presented. The education intervention discussed the PPEC, staffing, regulations, and qualification needed for admission to a PPEC. Finally, the post-survey was presented to the participants after the educational intervention. The post-survey evaluated

the knowledge of the providers after the educational presentation. The study phase evaluates the provider's knowledge acquisition after the educational intervention. Act phase results can be presented via an educational intervention for discharging or pediatric healthcare providers. If results identify a lack of knowledge of PPEC services among pediatric providers, then recommendations can be made to PPEC providers. Recommendations can include changes in patient recruitment services and implementing a PPEC community liaison to provide educational PPEC in-services to pediatric providers in the outpatient and inpatient services.

### **Study Design**

This is a quantitative design: pre- and post-survey design. Participants' knowledge about PPEC services and benefits provided at a PPEC was evaluated with a pre-survey. After an educational intervention, a post-survey was completed. Participants' pediatric experience and recommendations to help increase their knowledge about PPEC services were evaluated.

### **Setting**

The setting was Nicklaus Children's Hospital in Miami, Florida. All participants are employees of this hospital.

### **Sample**

The participants of this quality improvement project are advanced practice providers that work at Nicklaus Children's Hospital. The goal was to have about 15-20 participants.

Inclusion criteria: a) be an advanced pediatric provider; b) be employed at Nicklaus Children's Hospital.

### **Intervention**

After approval from the Institutional Review Board at Florida International University and approval for NCH, the researcher was invited to the APP council meeting and given access

to the member's email list-server. The informed consent was emailed before the meeting and presented again on the presentation's first slide. The educational presentation was provided to the participants after they completed the pre-survey. The first question on the survey asked for consent to participate in the study. The author presented the educational presentation via a web-based platform "Teams" during an Advance Practice Council meeting at Nicklaus Children's Hospital.

### **Measures/Instruments**

The web-based program "Qualtrics" was used to produce the pre- and post-survey. Qualtrics allowed the surveys to be developed, edited, and then published. The program produced a link to the surveys, allowing for easier survey distribution via the online meeting.

### **Data Collection Procedures**

Participants were advanced practice providers who are members of the Advanced Pediatric Providers (APP) council at Nicklaus Children's Hospital. During the August 10<sup>th</sup>, 2022, APP council meeting, the members were asked to participate in the research study. The meeting was virtual, and the pre-survey link was provided at the beginning of the meeting and before the educational presentation. The pre-survey first question was for consent to participate in the study, and then participants were asked to provide an identification code. The ID code was used to link the pre and post-surveys. Demographic information such as specialty years of experience and educational level was also collected. The remaining questions relate to their current knowledge of PPEC services, ACHA regulation, and the practitioner's role. After the researcher presented the educational presentation, the participants were provided with the post-survey and asked to complete it before exiting the meeting. Participants were asked to reenter the same ID code used in the pre-survey.

**Data analysis**

Data analysis was conducted using SPSS and Excel. Descriptive analysis was used to evaluate the pre and post-survey results.

**Informed Consent**

Participants were given access to the informed consent via email before the presentation; this allowed them ample time to review the consent. The first question of the pre-survey was used to obtain informed consent. HIPAA compliance was followed. All APP council members were emailed a copy of the informed consent to allow them to review the consent.



## Results

### Demographics

The total number of participants was seven. Participants were asked, “What is the highest degree or level of school you have completed?”, 85% of the participants had a master’s degree ( $n=6$ ) (Table 1). All participants had pediatric experience; the average pediatric experience was 20 years. The average number of years practicing as an APRN/PA was 12.43 years. It can be concluded that all participants are experienced pediatrics providers, and 85.7% of them stated they have worked with children with special needs.

Data shows that ( $n = 5, 71.43\%$ ) of the participants stated they understood the PPEC and the services they provide. When asked if they cared for a child in a PPEC, 57.1% stated yes, and 42.9% stated no. Results showed that no providers ever referred a patient to a PPEC. When asked about referrals made in the last six months, 28.6% of them provided referrals to private duty nursing, and 28.6% went rehab centers but non referred to PPEC.

### Pre vs. Post Survey

A two-tailed paired samples  $t$ -test was conducted to examine whether the mean difference between Pre-Survey and Post survey differed significantly from zero. A Shapiro-Wilk test was conducted to determine whether the differences in Pre-Survey and Post survey could have been produced by a normal distribution (Razali & Wah, 2011). The results of the Shapiro-Wilk test were insignificant based on an alpha value of .05,  $W = 0.98, p = .978$ . This result suggests the possibility that a normal distribution produced the differences cannot be ruled out, indicating that the normality assumption is met.

The result of the two-tailed paired samples  $t$ -test was significantly based on an alpha value of .05,  $t(6) = -4.71, p = .003$ , indicating that the null hypothesis can be rejected. This

finding suggests that the difference in the mean of pre-survey and the mean of post-survey was significantly different from zero. The mean of the pre-survey was significantly lower than the post-survey.

Results indicated that the presurvey results were low (60%), which means the providers lacked knowledge of PPEC services and their benefits. After the providers were presented with the education intervention, the post-survey results significantly increased to 97%. It can be concluded that the educational intervention successfully increased the provider's knowledge of PPEC and its benefits. The results are presented in Table 2. A bar plot of the means is presented in Figure 1.

## **Discussion**

### **Limitations**

The main limitation of this research project is a small sample, participants' recruitment, and engagement. The researcher was unable to meet the goal of 15-20 participants. An email was sent before the August 10<sup>th</sup>, 2022, meeting to help increase the number of participants. A total of 17 participants attended the virtual meeting, and only 7 completed the surveys. During the meeting, the researcher encouraged participants to complete the surveys. Multiple messages were sent to participants via chat to help encourage participation. The meeting took place virtually via Teams, most of the participants had their cameras off, and engagement was difficult. The participants came from different pediatric specialists. Therefore, most lack chronicity experience and exposure to CSHCN. This could have affected the participants' interest in participating in the quality improvement project. After the quality improvement project, the researcher could only recruit 7 participants.

### **Implication for Advance Practice Nursing**

PPEC has been around in Florida since 1987, but despite its long history, many pediatric healthcare providers lack an understanding of PPEC and its services. This quality improvement project demonstrates that although advanced practice providers may have many years of experience, a lack of knowledge related to the benefits and services of a PPEC exists. Addressing the lack of knowledge can help providers make appropriate referrals to PPEC. This may be achieved by encouraging PPEC providers to evaluate the need for a community liaison. The liaison can go out to local primary and pediatric specialty offices and provide them with in-services related to PPEC services. Children's Hospital can invite local PPEC providers to provide their staff with in-services related to PPEC services. Finally, nursing and medical, educational institutions could include PPEC services in their pediatric curriculum. There is scarce research related to the benefits of PPEC services. The research available has been pioneered by Advanced Practice Nurses (APRNs). Having APRNs become pioneers in a research topic is essential to help advance our profession.

After evaluating this research and its results, it is vital to extend them to local PPEC and pediatric healthcare providers. The local PPEC should reevaluate its community outreach, recruitment, and interactions with its pediatric providers. Policies should be in place to help increase educational services to pediatric providers.

PPEC and children's hospitals can provide educational presentations about PPEC to pediatric healthcare providers in the inpatient setting and outpatient services at local children's hospitals. This does not need to be limited to APRNs and PAs but also social workers, case managers, doctors, and medical students. PPEC-based educational presentations can also be implemented in nursing and medical curriculum.

To help sustain change, policymakers at the state and federal level need to be educated on the services PPEC provide. Health policies must be implemented to better fund and increase access to more special needs children, especially those on private insurance.

APRNs can be the leaders in research as it relates to PPEC. Increasing conclusive scientific evidence on PPEC can help make them become evidence to practice in pediatrics. Future research can include evaluating the financial benefits of PPEC.

### **Conclusions**

This is a quantitative design: pre- and post-survey design evaluated the current knowledge of pediatric healthcare providers as it relates to PPEC services and their benefits. Participants were recruits from NCH and were pediatric healthcare providers with many years of experience. After completing the pre-survey, they were provided with an educational presentation related to PPEC. They completed a post-survey to help assess if the education presentation helped increase their survey scores. The results noted that their pre-survey results were meager even after participants stated they knew what a PPEC was. The post-survey results showed that the education presentation effectively provided education related to PPEC.

**Table 1***Frequency Table for Nominal Variables*

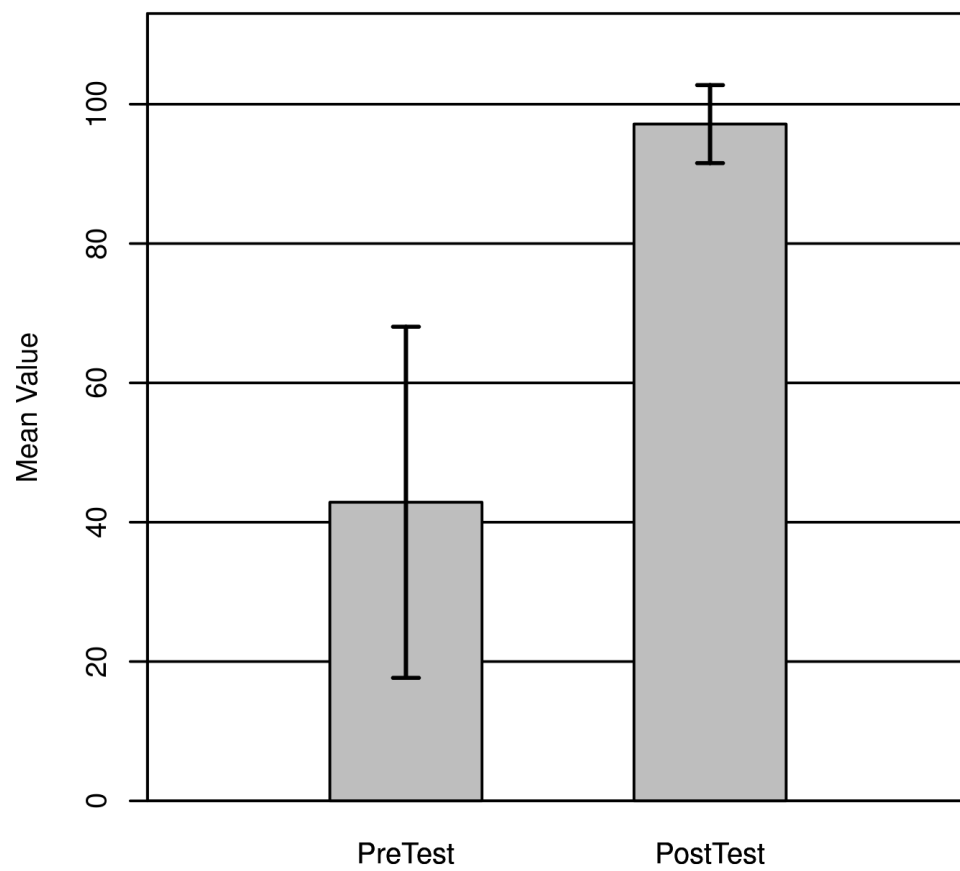
Variable	<i>n</i>	%
Highest Degree		
PhD	1	14.29
Master's degree	6	85.71
Missing	0	0.00

*Note.* Due to rounding errors, percentages may not equal 100%.

**Table 2***Two-Tailed Paired Samples *t*-Test for the Difference Between Pre-survey and Post-survey*

Pre-Survey		Post-Survey		<i>t</i>	<i>p</i>	<i>d</i>
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
42.86	34.02	97.14	7.56	-4.71	.003	1.78

*Note.* *N* = 7. Degrees of Freedom for the *t*-statistic = 6. *d* represents Cohen's *d*.

**Figure 1**

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## Appendix

### Pre-Survey

#### Demographics

1. What is the highest degree or level of school you have completed? (If you're currently enrolled in school, please indicate the highest degree you have received.)
  - Associate degree
  - Bachelor's degree
  - Master's degree
  - Doctorate
  - PhD
2. Number of years practicing in pediatrics.
3. Number of years practicing as an APRN/ PA?
4. Have you ever worked with children with special healthcare needs?
5. Do you know what a prescribed pediatric extended care center (PPEC) is?
  - Yes
  - No
6. Do you know what services PPECs offer?
  - Yes
  - No
7. In the past 6 months, have you referred any patients to any of the following?  
Select all that apply
  - acute care center
  - rehabilitation center
  - prescribed pediatric extended care center (PPEC)
  - Private Duty Nursing (PDN)
  - None
  - Other: \_\_\_\_\_
8. How many referrals to PPECs have you done in the last 12 months?
  - None
  - 1-3
  - 4-6
  - More than 6
9. Have you cared for an infant/child that has been discharged or is a patient in a PPEC?
  - Yes
  - No
  - I don't know

#### Part 2

1. What population does PPEC's serve?
  - birth to 20 years

- 6 months to 18 years
  - birth to preschool age
  - 6 months to 20 years.
  - I don't know
2. When approved for PPEC services, children can attend a PPEC up to a maximum of \_\_\_\_\_ hours per day ?
- 12 hours
  - 24 hours
  - I don't know
3. PPEC centers only provide services to medically fragile children who are bedbound.
- True
  - False
  - I don't know
4. Which of the following services are NOT provided in a PPEC?
- Wellness Check up
  - Physical, Occupational and Speech Therapy
  - Nursing Care
  - Respiratory Therapy
  - I don't know
5. After a child is admitted to a PPEC and their plan of care (POC) is developed, when must the POC be updated?
- 180 days
  - 30 days
  - 90 days
  - I don't know
6. Which of these children will not qualify for PPEC services?
- 4-year-old male, diagnosed with Autism. Mother denies any other medical diagnosis. Per mother he requires occupational and speech therapy.
  - Ex 26-week-old preemie, who was discharged from the NICU 2 weeks ago. He has an apnea monitor, but no continues oxygen. Per the medical records his diagnosis includes GERD, CLD and developmental delays. Current medications include Flovent, Famotidine, poly-visol and albuterol PRN.
  - 4-year-old, male diagnosed with seizures. For the last 3 months he has suffered 1-2 seizures per day. Current medication include Diastat, and Keppra .
  - I don't know
7. Per ACHA regulations, PPEC staff to patient ratio must be.
- 1 to 1
  - 1 to 5
  - 1 to 10
  - 1 to 3
  - I don't know

8. If a child receives PPEC services, they can NOT receive Private Duty Nursing (PDN) at home.
  - True
  - False
  - I don't know
9. Which of the following healthcare insurances currently cover PPEC services?
  - Florida Medicaid
  - Statewide Medicaid Managed Care Plans
  - Private insurances
  - I don't know
10. PPECs are staffed with all the following, except?
  - Registered Nurses
  - Licensed Practical Nurse
  - Physical, Occupational and Speech Therapist
  - Respiratory Therapist
  - Doctors/APRN
  - I don't know
11. Do you think pediatric healthcare providers (PCP, specialist) know about the services provided at PPECs?
  - Yes
  - No
12. How can PPEC providers better educate pediatric healthcare providers about their services?

### **Post Survey**

13. What population do PPECs serve?
  - birth to 20 years
  - 6 months to 18 years
  - birth to preschool age
  - 6 months to 20 years.
  - I don't know
14. When approved for PPEC services, children can attend a PPEC up to a maximum of \_\_\_\_\_ hours per day?
  - 12 hours
  - 24 hours
  - I don't know
15. PPEC centers only provide services to medically fragile children who are bedbound.
  - True
  - False
  - I don't know
16. Which of the following services are NOT provided in a PPEC?
  - Wellness Check up

- Physical, Occupational and Speech Therapy
  - Nursing Care
  - Respiratory Therapy
  - I don't know
17. After a child is admitted to a PPEC and their plan of care (POC) is developed, when must the POC be updated?
- 180 days
  - 30 days
  - 90 days
  - I don't know
18. Which of these children will not qualify for PPEC services?
- 4-year-old male, diagnosed with Autism. Mother denies any other medical diagnosis. Per mother he requires occupational and speech therapy.
  - Ex 26-week-old preemie, who was discharged from the NICU 2 weeks ago. He has an apnea monitor, but no continues oxygen. Per the medical records his diagnosis includes GERD, CLD and developmental delays. Current medications include Flovent, Famotidine, poly-visol and albuterol PRN.
  - 4-year-old, male diagnosed with seizures. For the last 3 months he has suffered 1-2 seizures per day. Current medication include Diastat, and Kepra .
  - I don't know
19. Per ACHA regulations, PPEC staff to patient ratio must be.
- 1 to 1
  - 1 to 5
  - 1 to 10
  - 1 to 3
  - I don't know
20. If a child receives PPEC services, they can NOT receive Private Duty Nursing (PDN) at home.
- True
  - False
  - I don't know
21. Which of the following healthcare insurances currently cover PPEC services?
- Florida Medicaid
  - Statewide Medicaid Managed Care Plans
  - Private insurances
  - I don't know
22. PPECs are staffed with all the following, except?
- Registered Nurses
  - Licensed Practical Nurse
  - Physical, Occupational and Speech Therapist
  - Respiratory Therapist
  - Doctors/APRN
  - I don't know
23. Do you think pediatric healthcare providers (PCP, specialist) know about the services provided at PPECs?

- Yes
  - No
24. How can PPEC providers better educate pediatric healthcare providers about the services they provide.