Improving Care for Children Affected by Adverse Childhood Experiences

Jennifer Hawkins

Paper submitted in partial fulfillment of the
requirements for the degree of

Doctor of Nursing Practice

East Carolina University
College of Nursing

Date Finalized

July 28, 2020

Acknowledgments

I'd like to take this opportunity to acknowledge those who helped with this project, and those who helped me keep pushing forward through immense personal challenges. First, I must thank God for the sufficiency of His grace and strength to carry me. Next, I thank my husband, Wade, and children, Sydney, Anna, and Caleb for their many sacrifices and ongoing support while I studied and wrote for three years. I also appreciate the many prayers and words of encouragement from my parents, family, and friends.

I'd like to thank several individuals from the ECU College of Nursing, DNP program. Thank you, Dr. Jan Tillman. Your guidance as my project faculty over several semesters was instrumental in the success of this project. However, your influence as a mentor began years earlier and has been instrumental in my transition from a BSN nurse with aspirations to a now DNP-prepared nurse practitioner. I'm forever grateful, hope to prove your time was well invested, and to make you proud through my future career. I'd also like to thank Dr. Ann Bell. I'm sure you were unaware at the time, but you restored my confidence and my passion for this project in one summer semester. Thank you, Dr. Alexis Hodges for being my unwavering cheerleader through an incredibly difficult time. Thank you, Dr. Helene Reilly, for your support as my advisor, including last minute course changes made and encouragement along the way. Thank you, Dr. Michelle Skipper, for not only supporting me as a student facing grief but for modeling such personal grace and strength while facing your own grief simultaneously.

I thank Dr. Marian Earls, Kern Eason, and Molly Schloss for their contributions during the early project planning phase. I'd also like to thank Dr. Sandy Tripp for her support of this project, as well as Suzanne Freeman, Tracie Zeagler, and the many others from the project site that embraced this project for the children and welcomed me despite how busy they always were.

Dedication

To my daddy, Andy Jackson, who knew the negative effects of trauma during youth personally yet fervently believed that our past does not have to determine our future, especially if we turn to Christ. He demonstrated his belief in the recovery model and resiliency of the human spirit every time he ministered to a hurting soul confiding their own trauma in him, and there were many over the years. He was supportive of my work on this project and towards this DNP degree. Cancer took him 3 months before the completion. I dedicate this work primarily to his memory and will keep my promise to push forward and serve others as was in his heart to do.

To my mama, Jennifer Jackson. Only she and God know the full depths of trauma she faced, and the strength it has taken to overcome that trauma to be the woman we have known, loved, and admired all these years.

To the memory of my grandmother, Bernice Hill, another strong woman. She passed away 7 months before the completion of this project but supported my pursuits and expressed being glad to see a lineage of women who helped the sick and injured being carried forward.

To the memory of Aunt Hilda, who passed away November 2018. She cooked a meal for us every week until being hospitalized, to help support my family during my work on this DNP. To the memory of her son, beloved cousin Jim Anderson, who passed away unexpectedly 2 months prior to this being written. He offered his personal support along this journey as well.

To every child and teen that I worked with many years ago in the mental health system that had endured trauma and was trying to heal from it. Your stories and some of your subsequent negative outcomes broke my heart, but each of you taught me and inspired me with your overall resiliency. May you each continue to heal in your adult lives and may we all work to prevent the negative effects of traumatic ACEs on this and future generations of children.

Abstract

The deleterious health effects of ACEs are well documented in the literature. Addressing ACEs and the effects trauma may have on children is an important prevention strategy for individual and public health. The negative health consequences of trauma can be mitigated by children's resiliency, and resiliency can be supported and developed. Standardized screening for trauma responses and subsequent referral for further behavioral health evaluation and treatment when appropriate aligns with recovery-oriented and trauma informed care models' best practices. This quality improvement project implemented a screening and referral process for children ages 4 through 17 years of age in a rural but busy primary care clinic. The Pediatric Symptom Checklist (PSC) was used as a screening tool to help identify children with possible symptoms of responses to trauma from ACEs, as well as other mental health issues, as part of their annual well child checks. The process implementation demonstrated that the PSC could be used efficiently and effectively as part of the well child check to identify children that needed further evaluation and possible behavioral health treatment.

Key words: children, adverse childhood experiences, ACEs, trauma, screening, process implementation, Pediatric Symptom Checklist, trauma informed care, resiliency

Table of Contents

Chapter One: Overview of the Problem of Interest

Adverse childhood experiences (ACEs) can lead to poor health outcomes in youth and much later in life (Campbell, Walker, Egede, & Leonard, 2016). Some populations of children, such as those in foster care, are at high risk of the negative effects of traumatic ACEs (Whitt-Woosley, Sprang, & Royse, 2018). However, children can be resilient, and support can enhance resiliency to thus help decrease negative health outcomes (Bethell, Newacheck, Hawes, & Halfon, 2014). Primary care providers who are well-versed in trauma-informed care (TIC) can screen children for traumatic stress responses to ACEs and make appropriate referrals (American Academy of Pediatrics [AAP], 2016). This quality improvement project assisted a rural primary care center in North Carolina in implementing a screening and referral process for children.

Background Information

In 1998, a landmark research article known as The Adverse Childhood Experiences (ACE) Study was published documenting the strong correlation between adverse childhood experiences and increased risk for medical and behavioral health conditions in adulthood. The researchers originally identified seven categories of adverse childhood experiences which included psychological, physical, and sexual abuse; witnessing violence towards the mother; a member of the household having substance use or mental health issues; and a member of the household serving prison time. The researchers found a dose-response relationship: the more categories of adverse childhood experience that study participants indicated they had exposure to, the higher their risk for adverse health outcomes later in life. While outcomes such as higher rates of depression were anticipated, increased rates of chronic diseases such as cancer, heart disease, and diabetes likely came as a surprise to many when the article was published. Thus, the researchers highlighted adverse childhood experiences as a public health issue that needed the attention of primary care providers as well as all roles in the social work and health care sectors (Felitti et al., 1998).

Since that time, increasing national attention is given to the subject of identifying and addressing ACEs. The original seven categories of ACEs have been expanded to also include separation or divorce of parents and physical or emotional neglect (Centers for Disease Control, 2019). The correlations identified in the original study appear in more recent studies which continue to emphasize the importance of primary, secondary, and tertiary prevention efforts (Campbell et al., 2016; Felitti et al., 1998). Lapp, Ahmad, Moore, & Hunter (2019) and other researchers have demonstrated that there are neurobiological changes that occur as a result of the developing brain exposed to excessive stress. These changes may not only affect how a person cognitively processes events and makes decisions, but also how their body responds neurochemically. For example, the person with ACEs may have higher levels of cortisol present routinely and have a different cortisol response to stress later in life than the person without ACEs (Lapp et al., 2019). Even if the person does not make a poor health choice such as smoking, they still may be at increased risk of chronic diseases due to their neurochemical processes which were altered by ACEs. Thus, the impact on quality and quantity of life for the individual as well as societal impacts such as associated lost productivity and increased healthcare costs are immeasurable. Estimates place the costs of ACEs in the hundreds of billions of dollars (Cambell et al., 2016).

Children placed in foster care have an extremely high risk of having had adverse childhood experiences. It is estimated that from 80 to 93% of children in foster care have been victims of maltreatment-type trauma (Whitt-Woosley et al., 2018). The AAP (2016) advises to “assume that all children who have been adopted or fostered have experienced trauma” (p.7).

The U.S. Department of Health and Human Services' Children's Bureau (2019) annual report indicated that there were approximately 674,000 victims of child abuse and neglect in the United States in the fiscal year 2017. Concerted efforts on primary prevention of child abuse and neglect, which by default decreases certain ACEs and the need for foster care, is an ongoing public health need; however, secondary and tertiary prevention for children who already have had ACEs is equally important.

There is evidence that the impact of ACEs can be mitigated with interventions such as child-parent psychotherapy and trauma-focused cognitive behavioral therapy (Murphy, 2018). Newer modalities such as mindfulness-based, mind-body methods (MBMB) are demonstrating evidence in practice as well and may become a treatment method of choice for ACEs (Bethell, Newacheck, Hawes, & Halfon, 2014). However, therapy is not the only identified mitigating factor for ACEs. Resiliency is twice as high among children who have had ACEs when they have a supportive and engaged parent in their life (Bethell, Newacheck, Hawes, & Halfon, 2014). Parent figures, including foster parents, that are trauma-informed know how to respond to and support the child that has been previously exposed to trauma, and thus help increase the child's resiliency.

Not all children receive the support that they need to develop resiliency and heal from the trauma they have experienced. Some children that have traumatic stress demonstrate arousal responses, which are often seen as attention deficit hyperactivity disorder or even oppositional defiant disorder, and therefore the trauma at the root of the behavior may not be adequately addressed (Whitt-Woosley et al., 2018). Children may also experience somatic symptoms and complain, but these complaints may not be recognized as related to their traumatic experiences (AAP, 2016).

Significance of Clinical Problem

The AAP (2016) has identified the primary medical home as a resource to ensure that children that have experienced trauma are identified and receive the support that they need to build resilience. There has been national attention on the importance of trauma-informed care in recent years; however, screening for trauma or trauma responses as part of routine primary care of children has not become standardized (Flynn et al., 2015). The AAP has advised that pediatric primary care providers should implement practices that identify and address trauma exposure in children and should routinely screen all children in foster care for evidence of traumatic stress responses to ACEs (AAP, 2016; Flynn et al., 2015).

Question Guiding Inquiry (PICO)

A rural primary care center collaborated with a statewide program to serve as a trauma-informed pediatric primary care home with enhanced services for children in foster care placements. The primary care center was invested in quality improvement efforts to enhance care for all children served.

Population. Pediatric primary care providers as well as nurses and medical assistants (MAs) who see children were the population of interest.

Intervention. The intervention supported a primary care practice in the implementation of a psychosocial screening tool, the Pediatric Symptom Checklist (PSC), and referral process for further evaluation and appropriate treatment if needed. The PSC can be used to help identify children ages 4 through 17 years old that are possibly experiencing responses to trauma and thus may be at increased risk for poor health outcomes (Flynn et al., 2015).

Comparison. The practice was not screening for possible trauma responses with a standardized screening process. Developmental psychosocial screening tools were being utilized for infants through pre-school age children. The Patient Health Questionnaire (PHQ) was being used to screen adolescents for depression specifically, but it will not identify other types of symptom or behavior manifestations of possible trauma responses.

Outcomes. Providers were to use the screening tool with all children ages 4 through 17 years old that presented for well child checks (WCCs) or for an initial or comprehensive visit subsequent to placement in foster care. Children identified through the screening process were to receive behavioral health referrals as appropriate. The project evaluated the implementation of the screening and referral process. The number of children that screened positive and either had confirmation of current behavioral health services in place or received referral for services was included as part of the evaluation.

Summary

Adverse childhood experiences can have life-long deleterious effects on physical and mental health. Children in foster care are at high risk for the poor health outcomes associated with ACEs. However, the effects of ACEs can be mitigated through resiliency factors. Evidence-based treatments such as trauma-focused cognitive behavioral therapy and methods that strengthen the support the child is receiving from an engaged parent or parent figure can help build resiliency for the child (Bethell, Newacheck, Hawes, & Halfon, 2014). The AAP (2016) recommends that the medical home serve as a trauma-informed provider of care. Additionally, children in foster care should be screened using a validated tool for traumatic stress responses to ACEs and ensure appropriate referrals are made as needed. This project assisted a rural primary care center in implementing a screening process using the Pediatric Symptoms Checklist (PSC) and ensured a referral process for children that screened positive for possible traumatic stress.

Chapter Two: Review of the Literature

A review of the literature was performed to ensure the project topic is a relevant issue and to identify the most appropriate intervention based upon the literature. The topics of ACEs, trauma-informed care, trauma in children and specifically foster children, mitigating factors, and screening were reviewed. The literature endorses the relevance of the impact of trauma on children and their health trajectories, and the benefit of the primary medical home screening and referring for appropriate services.

Literature Appraisal Methodology

Sampling strategies. To collect literature for review, multiple databases and websites were used. OneSearch, a university search engine which accesses multiple databases was used extensively and provided thousands of articles based on search terms. Search terms used included: “trauma screening children” (returned 255 articles; one used); “impact of adverse childhood experiences” (returned approximately 31,000 articles; two used); “healthcare cost in the United States AND adverse childhood experiences” (returned approximately 8,000 articles; three used); “pediatric symptom checklist AND primary care” (returned 19 articles; one used). Additionally, websites of state and national organizations were accessed and searched including: The AAP, Community Care of North Carolina, North Carolina Pediatrics Society’s Fostering Health NC program, U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Centers for Disease Control, and the National Child Traumatic Stress Network.

Evaluation criteria. Articles greater than five years old were excluded unless they were sentinel articles or from a current website of a national authoritative body without a more current version of the article or resource available. Filters used in OneSearch as inclusion criteria were:

“less than five years old”, “English language”, “scholarly or peer-reviewed”, “medicine, nursing, psychology, social welfare & social work, public health, and social sciences” as disciplines, and by subject terms, such as those automatically related to the terms “trauma screening children” by the search engine. Titles and abstracts were further used to exclude articles that were less relevant to this project, such as screening for trauma having occurred versus the subsequent responses to trauma. Additional articles were selected from reference lists of previously read articles or website links. Ranking of evidence obtained was done using the Melnyk evidence hierarchy (Schmidt & Brown, 2015). Since children are a vulnerable population and the topics of trauma exposure and trauma responses are not easily ethically researched, randomized controlled trials (RCTs) are not prevalent. However, one level I article was located that included systematically reviewed treatment modalities for trauma in children (Cohen, Deblinger, & Mannarino, 2018). Another level I article systematically evaluated the literature on effectiveness of primary care interventions to address childhood traumatic stress (Flynn et al., 2015). One study on neurobiological responses to stress in adults with ACEs was included as level II evidence (Lapp, Ahmed, Moore, & Hunter, 2019). Four articles that qualify as cohort or case-control studies (level IV) were included. One relevant level V and one level VI article provide additional contextual support. Three level VII pieces of literature from national organizations were referenced as well as one level VII article particularly relevant to primary care ACEs prevention efforts (Burke-Harris, Silverio-Marques, Oh, Bucci, & Cloutier, 2017). Additionally, two sources of relevant data that do not qualify as studies were helpful in understanding the topic and impact.

Literature Review Findings

The literature reviewed included levels of evidence I through VII, on the Melnyk evidence hierarchy; each expounded upon the topic of interest (Schmidt & Brown, 2015). The long-term effects of neurobiological changes in response to stress can contribute to a lifelong negative impact on health outcomes for those who have adverse childhood experiences (Lapp, Ahmed, Moore, & Hunter, 2019). The expanse of health outcomes affected is dramatic and includes chronic physical and mental health conditions, well documented in the literature (Felitti et al., 1998; Centers for Disease Control, 2019; Campbell et al., 2016; AAP, 2014). The impact on individuals' quality and quantity of life can be immeasurable. The effects on society in terms of decreased productivity, increased health care costs, and relational aspects such as conflict and violence are without full measure as well, but financial costs are estimated in the hundreds of billions of dollars (Cambell et al., 2016). ACEs are a significant potential determinant of health throughout the lifespan.

Primary, secondary, and tertiary prevention of ACEs in primary care. However, prevention efforts aimed at addressing ACEs give hope. Primary prevention seeks to keep ACEs from occurring and finds strength in programs that support communities and families (Burke-Harris et al., 2017). This recognizes that social determinants of health are a complex and intricate web that can either securely uphold a child's growth and development or, conversely, become an entangling trap plagued with poor health outcomes. Primary care providers can advocate for policies that support children, families, and communities and aim to build the resiliency of individual families seen within their practice.

Secondary prevention of ACEs can have a positive impact by reducing the amount of exposure to trauma (Burke-Harris et al., 2017). Felitti et al. (1998) documented in their landmark ACEs study that there is a dose-response relationship between the number of ACEs encountered by a child and increased health risks for that child. The number of ACEs the child ultimately encounters could be reduced if families are supported and linked with resources.

Tertiary prevention of ACEs focuses on mitigating the impact that the pre-occurring events have on the person. Burke-Harris et al. (2017) aptly described this concept as promoting healing. Primary care providers are in a well-grounded position to help address all levels of prevention, including tertiary. They can serve in a key prevention role by screening children seen in their clinics, identifying those with traumatic stress responses to ACEs, and ensuring that the child is linked with appropriate treatment (Flynn et al., 2015; Bethell et al., 2017).

Increased risk for children in foster care. The U.S. Department of Health and Human Services (2019) reported that in the fiscal year 2017, approximately 674,000 children were verified victims of abuse and neglect in the U.S. While not all children in foster care are there due to abuse or neglect, up to 93% have been victims of maltreatment-type trauma (Whitt-Woosley et al., 2018). These statistics illuminate the increased risk of ACEs-related poor health outcomes these children inherently face. The literature confirms that the identification of foster care children with traumatic stress responses and linkage to appropriate treatment is an important part of pediatric primary care (AAP, 2016; Whitt-Woosley et al., 2018).

Resiliency of children with support. While children that have experienced ACEs, including children in foster care, are at increased risk of poor health outcomes, the literature reviewed speaks to the ability to effectively mitigate the impact. Children with supportive parent figures, including foster parents, are more likely to show resiliency (Bethell et al., 2014). Outside of the home, the community can offer protective factors. The family-centered medical home is identified as a protective factor in one study (Bethell et al., 2014). The AAP (2014; 2016) asserts that pediatric primary care practices, also known as medical homes, should work to identify traumatized children and help increase resiliency by supporting families, including adoptive and foster families.

Prevention strategy gap. A survey of pediatricians found that less than 11% were “very or somewhat familiar” with the Felitti et al. (1998) ACE Study and 32% reported that they usually did not screen for ACEs (Kerker et al., 2015; 2016, Results section, para 2). However, the majority of pediatrician respondents agreed that physiological stress in childhood negatively impacted brain development and future coping skills, which implies that it is not a topic that pediatricians dismiss as unimportant. Training to increase providers’ competence on the topic, including use of screening tools and best practices in discussing the topic of ACEs and trauma responses with parents, could help increase the rates of pediatricians, and presumably all pediatric primary care providers, addressing this prevention strategy gap (Kerker et al., 2015; 2016). The AAP (2014; 2016) offers resources to assist pediatric primary care practices.

Determination of best-suited screening tool. Review of the literature identifies numerous screening tools, and this synthesis will not seek to identify and expound upon them all. It is critical first to assert what information is sought by the screening before selecting an appropriate tool. Two overarching options emerge related to ACEs and trauma in childhood: one is to screen for the child being exposed to ACEs, and the other is to screen for traumatic stress responses to ACEs. Bethell et al. (2014) raised the question of whether screening for ACEs in children adds value compared to screenings that focus more on trauma responses. Finkelhor (2018) asserted that screening for the sequelae of ACEs, such as traumatic stress and behavioral health issues, may be more targeted and beneficial than screening for exposure to ACEs. The literature indicates that two-thirds of children will have an ACE before adulthood, and 20% will have three or more types (Choi et al., 2019). Since it can be assumed that children in foster care have likely had at least one ACE, nearly all would screen positive (AAP, 2016). Finkelhor (2018) discussed considerations that should be made before implementing screening, such as the availability of appropriate treatment services in the community. Screening without a plan for addressing positive findings could be considered unethical. Another consideration is how to sensitively and effectively screen for ACEs without risking re-traumatizing the child or parent. If the child’s resiliency has protected them from the physiologic and behavioral stress responses, a risk-benefit analysis may be warranted. The financial and nonfinancial costs to the child, parent, provider, and system of care of routine screening for ACEs when the child is coping effectively may not be well invested (Finkelhor, 2018).

Screening for trauma responses in children could be beneficial and without potentially unnecessary costs such as described above. Flynn et al. (2015) validated the value of screening to identify those with trauma responses as treatment improves outcomes. Review of the literature supports this approach without notable concerns. Certain quality metric requirements such as Medicaid’s early and periodic screening, diagnosis, and testing (EPSDT) are catalysts towards ensuring that psychosocial screenings occur (Flynn et al., 2015). The AAP (2014) provides resources and information on various screening tools that include symptoms of trauma responses but does not endorse the use of a certain one. Some screening tools are in the public domain and others have costs associated, including requirements of specialty trainings. A critical consideration for selecting a screening tool to use in primary care is the administration time. Just as cost may be prohibitive to implementation and sustainability of a routine screening, administration time beyond what is available in a standard visit may render it not feasible as well.

Pediatric Symptom Checklist (PSC) screening tool. A systematic review of the literature completed by Lavigne, Meyers, & Feldman (2016) looked at numerous quality screening measures for sensitivity and specificity. They noted that the PSC and the Strengths and Difficulties Questionnaire had both been studied extensively in the literature and had been recommended for use in primary care. Two other tools, the Ages and Stages Questionnaire-Social/Emotional (ASQ-SE) and the Brief Infant-Toddler Social Emotional (BITSEA) scored comparably. However, the latter two have not been studied as extensively and are for use in young children only (Lavigne, Meyers, & Feldman, 2016). The PSC is endorsed by the National Quality Forum (2018, July) as a psychosocial screening tool for ages 4 through 17 years old. It has the added benefits of being freely available in the public domain and is included in AAP's publication, *Bright Futures* (Massachusetts General Hospital, Psychiatry Department, 2019). It has been widely used not only in the United States but around the world and is available in many languages (Massachusetts General Hospital, Psychiatry Department, 2019). Several studies demonstrated that it can be successfully and sustainably implemented as a standardized screening (Massachusetts General Hospital, Psychiatry Department, 2019). The systematic analysis done by Flynn et al. (2015) included using the PSC to screen for trauma in children.

Preferred treatment modalities. Not all treatment modalities are equal in addressing trauma in children. The literature does identify options with proven efficacy, such as parent-child interaction therapy (PCIT) and trauma-focused cognitive behavioral therapy (TF-CBT) (Murphy, 2018). In a systematic review of numerous studies, including thirteen RCTs comparing TF-CBT to other psychosocial treatment models or waitlist groups for control, TF-CBT demonstrated superiority in effectiveness (Cohen, Deblinger, and Mannarino, 2018). Three studies in that systematic review focused specifically on youth in foster care or residential treatment facilities.

While various other treatment modalities may be effective, trauma-focused cognitive behavioral therapy is the first-line treatment option for children with positive screenings related to childhood trauma. However, the AAP (2014) notes that linking parents with resources, such as Triple P-Positive Parenting Program, can also prove beneficial. Addressing the trauma responses through behavioral health services and strengthening the ability of the parent figure(s) to provide a nurturing and supportive environment are going to improve the resiliency of the child and help mitigate negative health outcomes (Bethell et al., 2014).

Limitations of Literature Review Process

Limitations of the literature include evidence non-specific to primary care and no evidence specific to the field of nursing. The literature review process was not expounded upon for the specificity of the rural setting of the primary care clinic identified for intervention. As previously noted, literature at the highest levels of hierarchy were difficult to find for this topic, likely due to limited research completed on the sensitive nature of ACEs and the vulnerable population of children.

Discussion

Conclusion of findings. The findings from review of the literature indicated that ACEs significantly impact health outcomes throughout the lifespan. Children in foster care are highly likely to have had ACEs. They are a population with needs comparable to children with complex health conditions, and the primary care medical home is well-suited to help ensure those needs are met (AAP, 2014). Pediatric providers are advised by the AAP (2016) to screen and refer for appropriate treatment. Primary care providers may benefit from training and support on ACEs and trauma as the literature indicates that not all are well-versed on the topic or comfortable approaching it with families (Kerker et al., 2015; 2016).

The literature supports the value of screening children for symptoms of trauma responses to ACEs over screening for ACEs alone (Finkelhor, 2018; Murphy & Bartlett, 2019). The Pediatric Symptom Checklist emerged as the most appropriate tool to use based on factors such as how extensively it has been studied, its specificity and sensitivity in identifying psychosocial issues, the appropriateness of use in primary care, it being freely available in the public domain, and its applicability to a wide age group of youth (Lavigne et al., 2016; Flynn et al., 2015). For those who screen positive, referral to treatments appropriate for addressing trauma in children is warranted (AAP, 2016). Literature supports trauma-focused cognitive behavioral therapy as the most efficacious (Murphy, 2018; Cohen et al., 2018).

Advantages and disadvantages of findings. The advantages of the proposed intervention found in the literature include identification of a psychosocial screening tool that is well-validated, applicable to a wide age range of children, free, and does not take long to complete. Another advantage is that the positive impact of screening and subsequent treatment for trauma in children is proven worthwhile (Murphy et al., 2018). Disadvantages included limited research on the most efficacious screening tool for trauma responses specifically that is appropriate and feasible for use in pediatric primary care. Likewise, there is lack of a well-validated screening for ACEs in the pediatric population that covers all ACE domains (Koita et al., 2018). Limited literature specific to caring for children in rural settings where the most effective treatment, TF-CBT may not be available could also be viewed as a disadvantage.

Utilization of findings in practice change. The intervention would be implemented in the rural primary care center beginning with a scheduled training for providers that see pediatric patients and the staff that would participate in a screening and referral process for children. This included medical assistants, the nurse manager, referral coordinator, behavioral health clinician and quality improvement manager. The training would include an overview of the impact of ACEs on lifelong health outcomes and statistics of trauma experiences. It entailed trauma-informed care components, such as understanding how trauma responses in children may present vaguely, be misdiagnosed, and thus not effectively treated. Resiliency in children and trauma-response mitigating factors such as having a medical home, supportive parent figure(s), and receiving evidence-based treatment for trauma would be discussed. Benefits of implementing a structured screening and referral process including evidence supporting use of the Pediatric Symptom Checklist (PSC) in primary care as an efficient, valid, and reliable screening tool for identifying possible trauma responses in children would be a focus. Process specific training would be introduced including: who will provide the screening to the parent or foster parent and at what point in the visit; how scoring of the screening tool is interpreted; what score(s) warrant referral and how clinical judgment contributes to the decision; how results would be communicated to the parent(s) or foster parent(s); the referral process; and the follow-up processes to ensure linkage to treatment is secured.

Support would be provided to the practice during the implementation of the screening process and subsequent referrals. Data would be collected regarding number of screenings completed, missed opportunities for screenings, positive screenings, referrals made and any other disposition such as confirming that child is already receiving treatment.

Summary

Healthy People 2020 established national goals for health improvement of the population of the United States (Office of Disease Prevention and Health Promotion [ODPHP], 2019). Since ACEs have been proven to negatively impact both psychological and physical health, efforts to mitigate the effects of trauma in children aligns with the overarching goals of Healthy People

2020. These goals include themes such as prevention, elimination of disparities, and health promotion (ODPHP, 2019). Specifically, the implementation of a trauma screening and referral process for children through the medical home would address the goal to “Improve mental health through prevention and by ensuring access to appropriate, quality mental health services.” (ODPHP, 2019, Mental Health and Mental Disorders: Overview section). Furthermore, it aligned with Healthy People 2020’s Objective MHMD-6: “Increase the proportion of children with mental health problems who receive treatment.” (ODPHP, 2019, Mental Health and Mental Disorders: Objectives section).

The screening and referral process for trauma responses in children would support progress towards Healthy People 2020’s goal related to health and well-being in early and middle childhood, including objectives that address parenting and behavioral concerns (ODPHP, 2019). It would not omit addressing a goal to improve health indicators for adolescents; Healthy People 2020 acknowledges the impact of ACEs and trauma responses as part of the adolescent health goal discussion (ODPHP, 2019). Screening children for possible trauma responses would increase the likelihood of referral, treatment, and better short- and long-term health outcomes for these youth.

Chapter Three: Theory and Concept Model for Evidence-based Practice

The constructs of the project were developed after identification and analysis of key concepts including ACEs, trauma, trauma response, screening for trauma response, and resiliency. These concepts are interrelated, yet differentiation provided clarity for project development and evaluation. The theoretical framework of the project found roots in interpersonal relationship theories such as Travelbee's human-to-human relationship model (Nelson, 2015, p. 297). Recovery-oriented and trauma-informed care models are synergistic with interpersonal relationship theories and resiliency promotion (Substance Abuse and Mental Health Services Administration [SAMHSA], 2019). These models support evidence-based practice such as identification through screening (SAMHSA-HRSA CIHS, 2019, online section "Clinical Practice/Trauma"). The Iowa Model of Evidence-Based Practice was selected as the evidence-based practice change model to guide development, implementation, and evaluation of the project (Iowa Model Collaborative [IMC], 2017).

Concept Analysis

Multiple concepts were represented in this project and are interrelated, such as adverse childhood experiences and trauma. Adverse childhood experience is a concept originally identified by Felitte et al. (1998) in their landmark study. It has been further elaborated on in the literature since that time and is outlined by the CDC (2019) as well. While originally seven and later nine categories of ACEs were identified, the overarching concept remains the same. An ACE is a situation or event that a person lived through during their time of childhood growth and development that has the potential to negatively impact them physically and psychologically (Felitte et al., 1998; CDC, 2019; Deighton, Neville, Pusch, & Dobson, 2018).

It is important to note that an adverse childhood experience is not always traumatic and therefore the concepts are distinct (Bartlett & Sacks, 2019). There is also variability. Some ACEs are more likely than others to be experienced as traumatic, and individuals may experience the same ACE differently (Bartlett & Sacks, 2019). Thus, the same ACE may be traumatic for one individual and not for another (SAMHSA, 2014). Trauma as a concept can include acute physical harm but also includes psychological harm secondary to a person's perception of a situation or event as a threat to their safety or their sense of self and relationships with others (Stover & Keeshin, 2018; SAMHSA, 2014). Whether a physical or psychological experience or both, traumatic ACEs can have physical and psychological effects on a child (Felitte et al., 1998; CDC, 2019; Deighton et al., 2018).

Another concept that warrants definition is trauma response. Other terms for this concept include trauma reaction and post-traumatic stress symptoms. Post-traumatic stress disorder (PTSD) is an identified diagnosis in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), and the diagnostic criteria require "exposure to actual or threatened death, serious injury, or sexual violence…" (American Psychiatric Association, 2013, Posttraumatic Stress Disorder: Diagnostic Criteria section). Some ACEs would qualify a person to meet the DSM-5 PTSD diagnostic criteria for exposure to actual or threatened physical harm. However, not all do and yet may still be traumatic for a child based on the overarching concept of trauma. Marsac et al. (2016) listed post-traumatic stress symptoms (PTSS) which are largely aligned with DSM-5 diagnostic criteria for PTSD symptoms and include: persistent thoughts or flashbacks, attempts to avoid reminders of the trauma, dissociative features, increased arousal symptoms, and negative impact on cognitive processes or mood (American Psychiatric Association [APA], 2013). The AAP (2016) also identified both bodily function and behavioral responses to trauma. Though broken down categorically differently, these responses align with the PTSSs identified by Marsac et al. (2016) and the symptoms of PTSD identified in the DSM-5 (APA, 2013). However, since the focus is on children, the AAP (2016) further identifies how the symptoms may impact sleep, eating, toileting or be displayed as behaviors that could be misdiagnosed. For this project, trauma response is defined as any symptom or behavior that is likely related to the experience of trauma in the child’s life.

Since this project does not focus on the diagnosis of PTSD or other mental or behavioral disorders, but rather on screening for the possibility of symptoms and behaviors that may be trauma-related, screening as a concept warrants discussion. In *Bright Futures*, published by the AAP, screening is noted as one of the best ways to identify children and adolescents who may need treatment for psychosocial issues (Hagan, Shaw, & Duncan, 2017). The AAP (2016) suggests that while healthcare providers may use open-ended questions, the use of a screening tool has benefits such as providing more objective data that is easily shared with referrals. Screening is clarified throughout the literature as not being diagnostic (Hagan, Shaw, & Duncan, 2017). Trauma-response screening in this project is defined as the use of a formal screening tool to elicit reporting of signs and symptoms that may be related to trauma exposure. The primary targeted outcome for the project was that all children who presented to the project site during the implementation period and met criteria would be screened using the PSC. Criteria for screening included the child being ages 4- through 17-years old and presenting to the clinic for a well-child check or for an evaluation after placement in foster care.

Increased resilience is an outcome that could be measured within the scope of this project but is an impetus for addressing childhood trauma responses. Bartlett and Steber (2019) discussed resilience existing as a result of both personal and sociocultural factors that contribute to the child’s response to adversity. Traub and Boynton-Jarrett (2017) defined resilience as “good mental and physical health despite the assails of early adversity (the ability to withstand, adapt to, and recover from adversities)” (p. 2). Resilience in the context of this project is similarly defined as the ability to effectively cope and recover from the negative effects of traumatic ACEs that would otherwise increase the lifelong risk of poor health outcomes. The project sought to increase resilience by:

I. Identifying children that had signs and symptoms possibly related to traumatic ACEs through screening in primary care.
II. Referral of identified children for further evaluation and treatment.

Theoretical Framework

Recovery-Oriented and Trauma-Informed Care. Recovery is defined by SAMHSA (2019) as “…a process of change through which people improve their health and wellness, live self-directed lives, and strive to reach their full potential” (online section “Recovery and Recovery Support”). Recovery-oriented care and the concept of resiliency are interrelated. A focus on secondary or tertiary prevention of the negative effects of trauma affirms the belief that humans can have resilience and recovery from trauma is possible.

The concept of building resiliency and recovery-oriented care can be aligned with interpersonal relationship theories. Nursing and the social disciplines have many theories that explore the power of interpersonal relationships. Nurse theorist Joyce Travelbee’s human-to-human relationship model speaks to the goal of helping others either avoid or effectively deal with negative experiences that result in suffering (Nelson, 2015, p. 297). Interpersonal relationship theories such as Travelbee’s can be applied to psychological suffering of patients and the opportunities for healthcare providers to interact in a healing manner. The interpersonal relationships not only with healthcare providers, but with supportive parent figures and others can help improve resilience and recovery from trauma (Bethell, Newacheck, Hawes, & Halfon, 2014).

With the increased awareness of the impact of trauma that has come about through the ACEs and related studies, provision of trauma-informed care (TIC) in healthcare settings is gaining traction (Leitch, 2017). TIC is a model to be used in healthcare and other settings to promote resilience and shift the focus from "what is wrong with you" to "what happened to you" and "what do you need" (Substance Abuse and Mental Health Services Administration-Health Resources and Services Administration Center for Integrated Health Solutions [SAMHSA-HRSA CIHS], 2019, online section "Clinical Practice/Trauma"). Integral to the model are four care approaches, known as the "4 R's", which are:

- Realizes the widespread impact of trauma and understands potential paths for recovery;
- Recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system;
- Responds by fully integrating knowledge about trauma into policies, procedures, and practices;
- Resists re-traumatization (SAMHSA-HRSA CIHS, 2019, online section "Clinical Practice/Trauma").

These overarching four principals and the extensive resources and training available help guide healthcare providers and organizations as they seek to best support the many adults and children affected by trauma. They can be synergistic with a recovery-oriented care approach (Bartlett & Steber, 2019).

Application to practice change. The framework behind TIC was used to support the need for implementing a standardized screening tool to help recognize trauma responses in children in foster care. Introductory level training on TIC was provided, which strengthened the providers' and other staff's understanding of the prevalence of trauma and the potentially lifelong impact on health outcomes. Application of the model to the planning and training increased providers' and staff's awareness of symptoms and behaviors that may be related to trauma exposure versus pathology. TIC's alignment with resilience and recovery supported the value of identifying children experiencing trauma response symptoms so that referral to evidence-based treatment and resources could be provided.

Evidence-Based Practice Change Theory

The Iowa Model of Evidence-Based Practice. The Iowa Model of Evidence-Based Practice provides a systematic approach for those seeking to implement changes that align with evidence-based practice (Iowa Model Collaborative [IMC], 2017; Young, 2015). It was originally developed in the 1990s by nurses at the University of Iowa Hospitals and Clinics (UIHC) and the UIHC College of Nursing as they sought to implement research findings (IMC, 2017). It was heavily influenced by Roger's Diffusion of Innovations theory since the nurse leaders were ultimately working to diffuse what was learned in research into clinical practice (IMC, 2017). The model has been extensively studied and was revised as of 2015 and continues to prove its relevance and value in applying evidence-based practice changes (IMC, 2017; Hanrahan, Fowler, & McCarthy, 2019).

The model includes a step-by-step framework, including categorization of triggers for change, decision point questions, and next steps after each decision point (IMC, 2017; Young, 2015). An algorithm version of the Iowa Model Revised helps those seeking to implement a change visualize the process and follow through each step. The first step in the Iowa Model is the identification of a trigger issue or opportunity, and in the revised version there are five categories of these (IMC, 2017).

Next, there is a decision point: “Is this topic a priority?” (IMC, 2017, “Decision Point 1”). If this is affirmed, the next steps involve building a team and then gathering, evaluating, and synthesizing literature and other evidence on the topic (IMC, 2017, “Assemble, Appraise, and Synthesize”). Another decision point follows and asks, “Is there sufficient evidence?” (IMC, 2017, “Decision Point 2”). If the answer is “yes”, the team moves forward with planning and piloting the evidence-based practice change (IMC, 2017, “Design and Pilot”). The model provides additional guidance within this section since planning and implementation, even during the pilot phase, is complex and critical to the success of the project (IMC, 2017).

The final decision point is reached after the change is piloted and asks, “Is the change appropriate for adoption?” (IMC, 2017, “Decision Point 3”; Young, 2015, p. 446). If affirmed, the team moves towards integration of the change beyond the pilot project and ascertaining sustainability (IMC, 2017, “Integrate and Sustain”). From there, the team monitors the change and outcomes and then disseminates the results (IMC, 2017, “Disseminate Results”).

A key benefit of the Iowa Model is that it supports the overall process of improving healthcare quality through implementation of research and evidence-based practice, but also through closing the loop when projects do not go as originally hoped. For example, at each one of the decision points, the model guides for the next step if the answer is “no”. For example, in the second decision point, an answer of “no” then is followed by recommendation to consider expanding the body of evidence reviewed or to conduct research (Young, 2015). While it may not be the original team that moves forward with then designing a research study instead, by sharing that a deficit in the literature exists, they may inspire researchers to explore the topic. Alternatively, they may find sufficient evidence to proceed with a revised search (IMC, 2017, section "Decision Point 2").

Application of The Iowa Model. The Iowa Model Revised supported this project as an opportunity to implement an evidence-based practice of using a standardized tool, the PSC, to screen children and then refer for further evaluation if the screening is positive. The model provided structure and guidance to the project from start to finish. First, the opportunity was identified: children having trauma responses to ACEs but can benefit from identification and appropriate therapy. The partnering project site sees children in foster care and others at higher than average risk of experiencing traumatic ACEs but did not have a standardized screening process for identifying children that may be experiencing trauma responses.

The topic was identified as a priority for the project site, as they are partnering with other organizations to try to improve the health and well-being of children in foster care, and they value high-quality, evidence-based practice. A core team was formed to plan and implement the project. Core team members included: the DNP student, the pediatric provider who is a DNP-prepared nurse practitioner, the DNP student's university faculty—also a DNP-prepared nurse practitioner with pediatric expertise, and partners from a statewide organization focused on initiatives to improve the health and well-being of children.

The DNP student performed a systematic search of the literature and other bodies of evidence as outlined in the Iowa Model. The evidence was appraised for "quality, quantity, consistency, and risk" as directed by the model (IMC, 2017, "Assemble, Appraise, and Synthesize"). Team members critically evaluated the DNP student's findings and synthesis of the evidence. It was determined that there was “sufficient evidence” to “design and pilot the practice change” (IMC, 2017, “Decision Point 2”, “Design and Pilot”).

The Iowa Model continued to support the project with bulleted recommendations for design and piloting of the project. For example, resources and constraints had to be considered (IMC, 2017). The PSC was selected in part because it would not strain time or financial resources of the project site to implement it as an evidence-based screening for trauma responses. The Iowa Model advised to “prepare clinicians and materials” (IMC, 2017, “Design and Pilot”). During planning, a timeline was developed for the project, which included training to prepare clinicians and staff for the implementation of the screening and referral process and provide the materials needed to do so effectively.

The Iowa Model continued to provide guidance post-implementation of the pilot. The third decision point answer was reached in collaboration with project team members and project site leadership: the use of the PSC proved appropriate for adoption into practice (IMC, 2017, “Decision Point 3”). Key personnel at all levels had been identified and engaged early in the project development with sustainability in mind (IMC, 2017, “Integrate and Sustain”). Adjustments to workflow were made in Plan-Do-Study-Act (PDSA) cycles so that the change could ultimately be “hardwire(d)” into the system (IMC, 2017, “Integrate and Sustain”). Ultimately, results of the project would be disseminated to the project site, the university, and to the partnering state-wide organization to promote evidence-based, standardized screening for trauma responses in children and appropriate referral when warranted.

Summary

The concepts identified in the project are unique from each other yet interrelated. ACEs may be traumatic, but are not always (Bartlett & Sacks, 2019). Trauma can be either physical or psychological harm from situations or events that the person experiences as a threat to their safety or their sense of self and relationships with others (Stover & Keeshin, 2018; SAMHSA, 2014). A person may recover from the trauma, or they may experience trauma responses which present as physical, psychological, or behavioral signs and symptoms, or a combination thereof (Marsac et al., 2016; APA, 2013; AAP, 2016). Identification, referral, and subsequent appropriate treatment can help to improve resiliency and recovery in those that have experienced traumatic ACEs and is an important part of pediatric primary care (AAP, 2014, 2016).

Recovery-oriented and TIC models support this approach. Recovery-oriented care is rooted in the belief that individuals can experience change that leads to betterment of their lives (SAMHSA, 2019). TIC’s 4 R’s help provide a framework for providing care that is competent, sensitive, and synergistic with promoting resiliency and recovery (Bartlett & Steber, 2019; SAMHSA-HRSA CIHS, 2019). Standardized screening for trauma responses and subsequent referral for treatment when appropriate aligns with recovery-oriented and TIC models’ best practices. The Iowa Model of Evidence-Based Practice provides guides implementation of evidence-based practice changes and was used in this project for implementation of the standardized screening and referral process (Iowa Model Collaborative [IMC], 2017; Young, 2015).

Chapter Four: Pre-implementation Plan

Pre-implementation planning was completed to optimize the likelihood of project implementation success. Planning also accounted for the sustainability goals of the new screening and referral process. Project management involved assessing the organizational readiness for change, interprofessional collaboration, and risk analysis utilizing the Strengths-Weaknesses-Opportunities-Threats (SWOT) method. Specifics such as the planned budget, tools to be used, data collection methods, outcome measurement, and data analysis were defined. Plans for use of information technology to collect, manage, and evaluate data were outlined, as well as plans for protection of any potentially identifying patient information. All aspects of the project planning were developed with the overall project purpose in mind.

Project Purpose

The purpose of the project was to develop and implement a process for standardized, evidence-based screening and referral that would improve the care of children who have had traumatic ACEs and are experiencing trauma responses. Sustainability of the screening and referral process was a key focus, and as such, hardwiring the new process into the project site’s operations was part of the implementation plan. While the project purpose did not include direct care, the process implementation would support the rural project site in its efforts to provide high quality, trauma-informed primary care for the children served.

Project Management

Organizational readiness for change. The project site had demonstrated readiness for change. This was initially identified to the DNP student by the site’s participation in efforts to improve care for children in foster care through a collaboration with a statewide initiative. The project site allocated staff time to attend community-based meetings as part of the collaboration and had hosted guest speakers to present on foster care initiatives and trauma-informed care-related topics twice prior to this project. They welcomed this DNP student to pursue a project at their site that would improve care for children.

The project site has a culture and reputation of embracing initiatives and change. They employ a quality improvement nurse and display their progress in evidence-based practice metrics on bulletin boards. It was shared that a psychosocial screening for postpartum women to be completed when the women bring their infants in for well-baby checks had been effectively implemented at the clinic in the last year. The medical director who is an obstetrician/gynecologist at the center and the family nurse practitioner who was the pediatric provider during the project implementation collaborated to implement the postpartum screening after learning that it was evidence-based best practice. The nurse practitioner noted the organization’s willingness to embrace quality improvement efforts and change as a reason for her choosing the project site as her place of employment.

The project had the support of both organizational leadership and frontline staff which demonstrated readiness for change. The medical assistant and nurse practitioner that saw the pediatric patients had expressed their personal interest in supporting efforts that help address childhood trauma and increasing resilience. They both were open to discussing how to implement the screening and referral process into their workflow. The nurse manager welcomed the project as well, noting that the work and support of the DNP student would be beneficial.

Interprofessional collaboration. An interprofessional team’s expertise was utilized for the project concept development, planning, implementation, and evaluation. The employment positions held by those that collaborated on the project included directors (medical, program, and operations directors), program and unit managers, QI/QA and implementation specialists, direct care providers, support staff, the university DNP project faculty mentor, and the DNP-FNP student. They represented two statewide organizations, the project site, and the university. The disciplines of those involved in collaboration at various points in the project included:

- DNP-prepared family nurse practitioners;
- MDs, including a developmental pediatrician;
- social workers, including a licensed clinical social worker;
- RNs;
- a qualified mental health professional (QMHP);
- medical assistants; and
- administrative assistants (front desk staff).

The DNP project faculty mentor provided guidance and support to the DNP student leader throughout the project stages. The project concept evolved from collaboration between the DNP student, a developmental pediatrician, and a pediatric program manager at the organization where all three were employed. The DNP student's background includes serving children affected by trauma and those in foster care. The pediatrician has been recognized nationally for her work on addressing psychosocial issues in children through primary care. The program manager is accomplished in strategizing for statewide pediatric care improvements. The concept was to address ACEs and trauma in children through screening, in collaboration with another statewide organization that facilitates initiatives to improve pediatric primary care for those in foster care.

The DNP student project leader connected and collaborated with a program implementation specialist from the foster care initiative organization. A practice local to the student that was partnering in the initiative to improve health care for children in the foster system was identified. The selected project partner had shown commitment to the initiative and readiness to embrace further efforts to raise the quality of care for children in the foster system.

The program implementation specialist from the statewide initiative continued to serve as a member of the project team, providing printable resources and support in collaboration. The director of patient support programs at the project site and the pediatrics medical assistant that had been instrumental in the site's active participation with the initiative for children in foster care met with the DNP student to provide background and current status information specific to the project site. The director of clinical operations at the project site, an RN, provided ongoing support of the project from the time of request through dissemination of results by serving as an advocate and conduit of communication with the chief executive officer and management team. The nurse manager of the family medicine unit provided directional oversight regarding process logistics for implementation of the project. The DNP-prepared family nurse practitioner that provided care for the pediatric population served as the direct contact, expert clinician, and champion of the project once planning for implementation began and was the provider most involved in the screening and referral process. The role of the medical assistant was key as they would ensure that the screening had been completed, scored, and was available for the provider to review with the parent. They would also help facilitate the referral and fill out the DNP Project Data Collection Tool (see Appendix B) for each child, which would be critical for project evaluation. The front desk staff would provide the screening form to the parents upon check-in for any child that met criteria and ensure it was transferred to the medical assistant for each patient. Additionally, the project site integrated behavioral health staff would ultimately receive the referrals and provide further evaluation and follow-up. Their role would be critical to ensuring that the identification of the children through the primary care screening leads to evidence-based treatment for trauma if appropriate. One of the therapists at the project site specializes in working with children and is qualified to provide trauma-focused cognitive behavioral therapy (TF-CBT) as is evidence-based best practice for treating trauma.

Risk management assessment. A SWOT analysis was done for risk management planning. Multiple strengths were noted. The project concept was developed in consultation with a nationally recognized subject matter expert on children, ACEs, and trauma-informed care. It also had the support of a statewide organization with expertise and resources to help improve the quality of care in pediatric practices. The DNP project student leader's experience working with traumatized children and in quality improvement were of benefit. The interest and buy-in from the project site's management team was a significant strength. Finally, the current healthcare interest in the topic of ACEs, trauma, and trauma-informed care served as a strength as literature on the topic was becoming more readily available.

The project planning was not without weaknesses. One weakness was the limited opportunity to embed the screening and referral process workflow simply due to the small number of children in foster care seen at the project site. This limitation was mitigated by expanding the screening criteria to include all children within the age range who presented for a well-child check. This change was supported by the literature and thus nullified the limited number of opportunities as a weakness. Another possible weakness was that the literature does not yet identify a fully validated tool with specificity for trauma responses in children that is feasible for implementation in primary care routine screening. Thus, use of the evidence-based PSC screening tool would not be specific for trauma responses, though it has been proven effective at positively identifying those children who do have traumatic responses. The clinician would have to rely on existing documentation of trauma in the record and/or their rapport with the child and family to ask questions about ACEs and trauma. They would note trauma exposure on the referral to inform the BH clinician if it was known that the child had experienced trauma. However, this weakness would not negatively impact the care of the children, as children with non-trauma related psychosocial issues would also be identified and then diagnosed and treated appropriately after further evaluation.

Opportunities were abundant for the project. An interprofessional collaboration with statewide partners provided expertise, resources, and respectability of those partners to support the project. The national, state, and local focus on topics related to the project including the impact of ACEs on short- and long-term health outcomes, the importance of trauma-informed care, and the impact the pediatric primary care medical home can have all helped validate the project as relevant. This also provided the post-evaluation opportunity for the project to help advance the movement of implementing evidence-based, trauma-informed care by dissemination of the project design, outcomes, and recommendations for other sites seeking to implement trauma response screening and referral processes. Additionally, shifts in healthcare from fee-for-service to quality-based payment models and Medicaid reform in NC helped promote the value of the project as implementation of evidence-based practice and quality improvement. The project partner had the opportunity to increase revenue since PSC screening is a billable service.

Threats developed and receded throughout the project planning. One threat was the certain, yet unknown, change of Medicaid reform affecting the organization that supported the original project concept. This was mitigated by developing the project so that it could be effectively carried out in the project site with or without the available involvement of the original collaborating organizations. Another threat was that part of the originally planned data collection method would utilize billing claims data from current procedural terminology (CPT) codes, which may not be specific enough or available in a timely manner. For example, the same CPT code is used for multiple psychosocial screenings, so pulling data on the billing of that code would not provide reliable data on completion of the PSC screening. Likewise, the data may not be reliable if pulled too soon, as billing claims often has a time delay. Waiting weeks to months before pulling the data would not support the PDSA cycles needed for implementation nor would it support a timely project evaluation. This was mitigated by development of alternative data collection tools and methods that would not rely on claims data.

Organizational approval process. This DNP student had a pre-existing professional relationship with the project site as a former employee and from having worked with an organization that supported the project site through quality improvement practice support, data and analytics, and case management of complex patients. The director of clinical operations was contacted directly regarding the project, and she facilitated the project proposal communication with the chief executive officer. Additionally, the director connected this student with the pediatric provider at the project site, a family nurse practitioner (FNP), who engaged in discussion of project details with the student and agreed to serve as the site champion. The FNP site champion also discussed and advocated for the project with the medical director. After the director of clinical operations presented the project concept to the management team, the chief executive officer provided a signed letter of approval (see Appendix A).

Information technology. NextGen© was the project partner's electronic health record. The project plan included the process for the provider and staff to document within NextGen©. This served to hardwire in the screening and referral process, promote quality documentation that supports continuity of care, and meet billing and other regulatory standards of documentation. Documentation that the screening was completed, and the resulting score, would be in

NextGen©. Additionally, any knowledge of trauma exposure, the parent's agreement to or declination of referral for further evaluation, and referrals made would be in NextGen©. NextGen© would empower the project site staff to facilitate and track referrals made and note any follow up needed, thus increasing continuity of care.

However, use of a simple project data collection tool on paper during the project implementation phase would help negate the need for project evaluation-related chart reviews by the student in NextGen©. This would provide the DNP student leader and team most of the data needed for project management and evaluation without need for the DNP student to view individual patient records. It would be in addition to what the project site staff documented in NextGen©, but only for the project duration. Once the project was fully implemented and hardwired into routine processes, the need for this paper data collection tool would cease.

The quality improvement nurse at the project site would provide the DNP student data on well-child checks completed during PDSA cycle timeframes on children who met screening criteria. This data would be compared to the number of PSC screenings completed. Process improvements would be made during PDSA cycles based on analysis of the data.

Microsoft Excel® was the planned resource planned for collating and evaluating data collected from the site. Microsoft Word® was used to develop the DNP Project Data Collection Tool that could be printed in advance and easily filled out as each child was seen. PowerPoint® was planned to be utilized for creation of training presentation content and dissemination of project results.

Cost Analysis of Materials Needed for Project

The project was designed with cost containment in mind during the planning, implementation, and sustainability phases. For example, there are other screening tools available that are also appropriate for identifying possible symptoms of traumatic stress. However, some of these tools require specialized training or have costs related to purchasing or licensing of the tool. The time cost of administration of the screening tool was also a factor for consideration. Since the screenings will be done as part of the well-child visit for any child, or during the comprehensive evaluation of a child newly placed in foster care, it is imperative that the tool be succinct enough to facilitate completion within a small window of time. Tools that take thirty to forty-five minutes or more to complete would have decreased likelihood of being implemented successfully and sustained as part of a practice improvement. The PSC is free and requires no specialized course or training to utilize, and it can be completed in ten minutes (Massachusetts General Hospital, Psychiatry Department, 2019).

Planned costs of the project included providing a lunch for providers and staff so that the training could be done during a lunch hour. This would prevent additional costs to the organization in the form of provider and staff productivity that would be lost if training was scheduled during a time that they would ordinarily see patients. Additional costs for the training would be minimal but included the purchase of folders and printing of materials. The estimated cost for the planned training was $132.50 and would be covered by the DNP student. See Appendix F for budget details.

Additional costs to the organization would be minimal. Provider and staff productivity would not be impacted by project-related meetings, as they would be scheduled during the project site’s usual meeting and administration times. The organization would be able to print copies of the PSC, so no outside printing cost would be incurred.

Some benefits of the new screening and referral process may not all be quantifiable. For example, childhood trauma can have substantial financial consequences for both the individual and society; negative effects on income potential, physical and mental health treatment costs, and incarceration costs may all become factors (Centers for Disease Control, 2019). Thus, the benefits of early intervention to mitigate the negative impact of trauma may not be easily quantifiable, yet substantial. Additionally, the project site would benefit from reimbursement associated with the screening. While payor sources may vary, most of the children seen at the center are Medicaid recipients. Medicaid will reimburse $4.25 for each screening completed when code 96127 is billed (Community Care of North Carolina, 2018).

Plans for Institutional Review Board Approval

Though the project site does not conduct a formal IRB process, their management and clinical leadership team provides review of any proposed projects for approval. This student discussed planned aspects of the project in depth with the director of clinical operations and the FNP site champion through numerous phone and written interactions. Both the FNP site champion and the director of clinical operations helped present the project concept to the clinical leadership team, and the project was approved as previously stated.

The ECU IRB process involved completion of a Qualtrics survey that asked questions about the nature of the project and a description of the project in narrative form was provided. Based on the responses to those questions, the project was approved without need for further IRB review, as it did not qualify as research.

Plan for Project Evaluation

Demographics. Demographic information collected for project evaluation would be minimal and obtained through the DNP Project Data Collection Tool (see Appendix B). The following would be collected by the provider on the paper DNP Project Data Collection Tool:

- age of the child or adolescent in years;

- if the child or adolescent had a known history of an ACE and trauma;
- and if the child was currently in foster care;

Pie charts would be used for visualization. Further description of how the data would be evaluated and presented is described in subsequent sections.

Outcome measurement. The planned primary outcome measure of the project was the percentage of completed PSC screenings for children that presented to the project site and met criteria for screening. Criteria for screening included the child or adolescent between the ages of 4 years and 17 years and 364 days old presenting during the implementation period to the project site for a WCC; or meeting the age criteria and presenting to the clinic for an evaluation after placement in foster care. While an outcome of 100% of children screened would be ideal, a more attainable goal was set: 85% or greater of children who met criteria screened during the last PDSA cycle.

Additional secondary outcome measures were also planned for. The number of children who screened positive would be compared to the number of children for which referrals were made, with the goal being 90% of children screening positive having referrals. Data would be collected via checkboxes on the paper data collection tool to differentiate reasons for a referral not being made. This would provide categorical insight, such as that the child was already linked with appropriate services or that the parent declined referral. The specific data on the reasons for referral not being made could be looked at as a process measure. For example, if the number of referrals not made were for “other” reasons versus the parent declining or the child already being linked, then the process of ensuring the referral was made would be further focused on.

Further outcome measures were planned for to help illustrate the population affected, and the potential impact and value of the implementation of the screening and referral process. These outcome measures were:

- the number and percentage of children screened;
- the number and percentage of children that screened positive;
- the number and percentage of children that were referred for further evaluation;
- the number and percentage of children with known history of trauma or ACEs;
- the number and percentage that were in foster care;
- the number and percentage of those children in foster care that screened positive;
- the number and percentage of those children in foster care with positive screenings that were referred for further evaluation.

Evaluation tool. Multiple tools would be used in this project. The operational tool utilized was The Iowa Model©. Permission was obtained from the University of Iowa Hospitals and Clinics (see Appendix D). As previously stated, and described in depth, The Iowa Model of Evidence-Based Practice provides a systematic approach for evidence-based practice change (IMC, 2017; Young, 2015). Plan-do-study-act, or PDSA cycles, would also be used for evaluating process measures while working towards improving the outcome measures during the project implementation.

Data analysis. It was planned that clustered column charts would be used to track and demonstrate the progress made towards having 85% or greater of children that meet inclusion criteria screened using the PSC. It was also planned that clustered column charts would be used to show the total number screened, the number that screened positive (according to parameters), and the number that were referred. Additionally, clustered columns and pie charts would be used to track and show the percentage of children with known history of trauma/toxic stress/ACEs of total; that don't screen positive and that screen positive; the percentage of children that are in foster care of the total; the percentage of those in foster care that screen positive; the percentage of those children in foster care that screen positive and are referred for further evaluation; and age categories of those screened.

Cluster column charts were selected as the main tracking tool as they would clearly show proximity to the goal of 85% screening (when appropriate based on inclusion criteria). A column representing the total number of children that should have been screened with a shorter column beside it for the number screened makes the room for improvement visible. Likewise, the performance on the referral part of the process can be shown easily with columns: the column showing the number that screen positive and the column showing the number referred should be nearly the same height. Over time, clusters of columns from the previous PDSA cycles would allow evaluation of progress and targeted process improvement. Additionally, the use of pie charts will provide visual representation of additional data that may help the site and readers understand the demographics of the children screened and appreciate the potential impact of implementing this evidence-based practice change.

Data management. The data for the project would be managed through multiple means. As previously described, some data would be retrievable via the project site's use of their EHR to bill for WCCs, comprehensive evaluations for children newly placed in foster care, and for billing of the 96217 code for behavioral health related screenings. The QI/QA nurse specialist at the site would be able to retrieve that data and provide to the student. Other data would be tracked more manually, through use of the paper DNP Project Data Collection Tool, which would not include PHI. The student would visit the site and collect the completed data collection tools on a weekly basis. The student would assimilate the data into the Microsoft Excel® for analysis. The hard copies of the manually collected data from the data collection tool would be kept until August of 2020 and then destroyed through shredding. Though the data would not contain identifying information on the children such as name or date of birth, measures to secure the data collected as personal protected information (PPI) will be taken. Due to the relatively small community, small number of children in foster care in this community, and the ages and foster care status of the children having been collected, this could be said to be PPI. The data will be kept in a folder and locked in a secure bag if transported away from the project site. The project site providers and staff, and the university faculty mentor would have access to the data. Completed PSC tools would not be collected by the student as part of the project nor need to be reviewed by the student. The results such as specific scores or answers to specific questions from the PSC will not be recorded as part of the project; whether or not the child screened positive would be recorded, though the child would not be identified other than by date of screening, age in years, and foster care status.

Summary

Project pre-implementation planning was a critical component of the overall project. The importance of assessing organizational readiness for change, and of planning each specific aspect of the project with the purpose of the project and sustainability after implementation in mind were prioritized. The data collection, management, and analysis for the purpose of outcome measurement were also key components of the pre-implementation planning. Risk analysis strengthened the project by allowing for anticipation of possible barriers in advance, so that mitigation could be possible. The value of planning as part of project management cannot be overstated.

Chapter Five: Implementation Process

The implementation process planning occurred in collaboration with an identified project site and employees of that site as the primary participants. As discussed in Chapter Four, planning was instrumental to the project implementation. However, as should be anticipated with change management, adaptability was needed as lessons were learned and unforeseen circumstances including a global pandemic occurred.

Setting

The project setting was in a federally qualified health center (FQHC) located in a rural area of North Carolina. The community-based project site sits in close proximity to one of the most impoverished neighborhoods within the town and county. It provides critical healthcare access not only to patients that live within walking distance, but also to many from the surrounding rural areas. It is a non-profit and is governed by a board of directors that includes community members. While the center is partially funded by federal and other grants, it also depends on revenue from the billing of insurances for services provided. The center serves the those covered by Medicaid, Medicare, and private insurances, as well as those who are uninsured. Patients are not denied care for the inability to pay but may be billed. Many qualify for a sliding-fee payment scale through the center.

The project site provides primary care for all age groups. At the time of project implementation, there was a provider allocated to serve the pediatric population. The other primary care providers would see children only if needed, such as if the pediatric provider was on leave. Other clinical services include obstetrics and gynecology, dental care, behavioral health and laboratory services. Each of these categories of services has a clinic suite located on site, except for the integrated behavioral health services, which expanded to an office on the same block. All the clinics and services collaborate to ensure coordinated care. For example, a behavioral health provider can come make an initial contact with a patient in the primary care clinic if needed in an urgent situation. Additionally, the center participates in a partnership that provides medications to patients at a discounted rate if they are not covered by Medicaid and receives a grant to provide free medications to patients who meet financial criteria. Community outreach and support programs, as well as case management and disease education, are also available through the center.

Participants

As discussed in Chapter Four, interdisciplinary collaboration from multiple entities occurred in the planning of this project. However, the primary participants in this DNP project were employed by the clinic, except for the DNP student. The family nurse practitioner that routinely saw all pediatric patients served as the project champion at the site. She also was the clinician responsible for reviewing the screening results, discussing with the child and parent or guardian, and using clinical judgment to determine if referral to an integrated behavioral health clinician was needed.

The medical assistants that worked closely with the nurse practitioner had an active role in the project as well. They collected the completed paper PSC forms from the parents or guardians when bringing the child to the exam room. They then ensured that either the paper PSC was provided to the nurse practitioner, or they entered it into the EHR for her review.

The four front desk staff members of the primary care clinic were key participants in the project. It was their responsibility to ensure that the PSC screening form was provided at check-in to the parent or guardian of any child who met screening criteria. The front desk supervisor supported of the project. For example, she had staff members add a note beside the name of each child on the schedule who met screening criteria, which served as a visual prompt to hand out the PSC form.

Additional participants included the quality improvement nurse, the primary care clinic unit manager, the director of clinical operations, and the DNP student. The quality improvement nurse assisted by pulling data from the EHR and providing it in report form to the DNP student. This allowed for an alternative means of data collection that also negated any need for the student to access the EHR and PHI of the children who were screened. The primary care clinic unit manager supported the DNP student's presence during the project and would have been instrumental in phasing the project in with the other providers if the clinic had not been significantly impacted by the COVID-19 pandemic. The director of clinical operations participated in the project during the planning phase and helped garner the support of the executive leadership team for the project. The DNP student led the project planning, implementation, and completed the evaluation. The DNP student provided onsite support on a weekly basis during the implementation phase. This did not include any patient care or direct patient interaction but focused on process implementation and improvement through PDSA cycles.

Recruitment

As discussed in Chapter Four, the DNP student's pre-existing professional relationship with the project site and the project site's commitment to providing quality care for children helped facilitate with recruitment for participation. The family nurse practitioner agreed to serve as the project champion following a detailed meeting via phone call with the DNP student. As the project planning continued, the DNP student met with the medical assistants and gained their personal support. Both the family nurse practitioner and the medical assistants that worked closely with her verbalized personal interest in improving care for children affected by trauma. Despite their eagerness to improve care, the realistic challenges that would be faced such as time limitations and the likelihood of staff turnover were acknowledged.

Implementation Process

Planning for implementation was done in advance as previously described. Introduction of the screening and referral process would begin with training on ACEs, what signs and symptoms children who are responding to trauma may present with, and the benefits of screening and referral. Additionally, role specific instructions were to be provided to the project participants, including the front desk staff, the MAs, and the family nurse practitioner seeing the pediatric patients. The DNP student would provide copies of the PSC for the front desk, as well as copies of the DNP Project Data Collection Tools for the MAs and FNP to use.

It was anticipated that the paper PSC screening forms for the parent or guardian to complete would be provided by the front desk staff at check-in, collected by the MAs when they took the patient and parent to an exam room, and then passed to the FNP for review and assessment during the patient encounter. It was planned for the paper DNP Project Data Collection Tool to be completed each time a child that met screening criteria was seen, and for data from this tool to be used to provide insight regarding the process implementation and help guide improvements. For example, there were options to mark such as “No, missed opportunity” and “No, parent declined” under the section asking if a referral was made. The MAs would initiate the Data Collection Tool and the provider would complete it after the visit. It would then be placed in a marked folder for the DNP student to collect. The DNP student would visit the project site one to two times weekly for onsite support, PDSA cycles, and data collection. It was also planned for the QI nurse to pull data from the EHR as discussed in Chapter Four incrementally during the implementation process. Ultimately, it was planned for the project implementation to last twelve weeks, with the latter half of the project focusing on hardwiring the process in and onboarding an additional provider that saw pediatric patients occasionally.

Plan Variation

Adaptability is an important aspect of change management and was necessary during this project implementation. Changes were made to plans as a result of project site needs, PDSA lessons learned, staff resignations, and ultimately, the arrival of the global pandemic, COVID-19. The planned training was abbreviated per request from the project site leadership, and so it did not include lunch but was delivered during a scheduled clinical staff meeting. Though it was not as extensive as originally planned, it had the added benefit of educating clinical staff from other departments such as the dental clinic on ACEs and trauma responses in children. The role specific training still occurred as planned. The next changes made were related to the Data Collection Tool forms. It was realized that the binary options for whether the screening results were positive or negative did not reflect enough information for continued process improvement and so the DNP Project Data Collection Tool was revised (see Appendices B and C). Minor changes in where the forms were placed were made after the first PDSA cycle, to help the MAs and FNP remember to complete them.

The MAs and the FNP participants accelerated the plan for hardwiring the new process into their system, which was a positive change from the plan to do so near the end of the twelve-week implementation. They found the PSC form within the EHR easy to complete and so the MAs made it part of their process to input it immediately. The FNP also preferred this as she would then see it as part of the child’s chart review prior to entering the exam room, and not risk overlooking a paper form that may be lying on her desk among other papers. There was variance in this process over the weeks due in part to staff turnover, which will be discussed further in Chapter Six.

Alternative plans to phase in all the providers in the primary care clinic during the project implementation were begun when the project site leadership decided to move away from a model of having an identified pediatric provider. This change occurred subsequent to the resignation of the FNP project champion. However, the project had to end as a result of the arrival of COVID-19, and so the alternative plans for training additional providers and staff on the process could not be carried forward. The project site was suddenly inundated with adjustments to be made to appropriately respond to the pandemic, and the university issued guidance for all student placements in clinical sites to cease. Despite this, the project site gained the framework for the screening and referral process to implement when their resources allow.

Summary

The project was implemented in a rural clinic that provides primary care as well as other health services for all ages. Primary participants were employees of the clinic that interact with pediatric patients and their parents or guardians as part of a primary care visit. The implementation process was pre-planned, but adaptations were necessary during the course of the project. The most significant change came as a result of the global pandemic, COVID-19.

Chapter Six: Evaluation of the Practice Change Initiative

This DNP project sought to improve the quality of care for children by implementing a screening and referral process. Measures were established in advance to be able to evaluate the progress and overall success or deficits of the initiative. This section will discuss the participants in the project, the patients that the project may have impacted, and the outcomes-both intended and unintended-of the project.

Participant Demographics

Participants in this DNP project were employees of a rural primary care clinic. The primary participants were the family nurse practitioner that saw only pediatric patients, two medical assistants that worked closely with her, and four front desk staff members. Additional project participants included the front desk supervisor, the quality improvement nurse, the primary care clinic unit manager, the director of clinical operations, and the DNP student.

Patients and their parents or guardians were not considered participants to this quality improvement project, but since the project involved screening and referral, some demographic information was obtained while keeping the patient’s identifying information protected. This information was included to demonstrate the demographics of children potentially positively impacted by the process implementation. The PSC was to be completed by the parent or guardian of any child age 4 years through 17 years and 364 days old when they presented for a well-child check or foster care initial evaluation after placement. Additionally, adolescents over the age of 14-years-old were given the option of self-completing a PSC-Youth form. The breakdown of ages of children screened is shown in Figure 1. Of note, this data is based on information obtained from the Data Collection Tools that were completed. It is known that a Data Collection Tool was not completed for every well-child check or PSC screening that was done. Therefore, the data on the ages of children screened is known to be incomplete but Figure 1 reflects the distribution of ages for 36 of the children screened for which a Data Collection Tool was completed. Another demographic datum that was asked for on the Data Collection Tool included if the child had a known history of ACEs, trauma, or toxic stress. Only one was marked “yes”. Additionally, the tool asked if the child was currently in foster care; there were no Data

Collection Tools completed on a child in foster care, unless the child's foster care status was unknown to the provider.

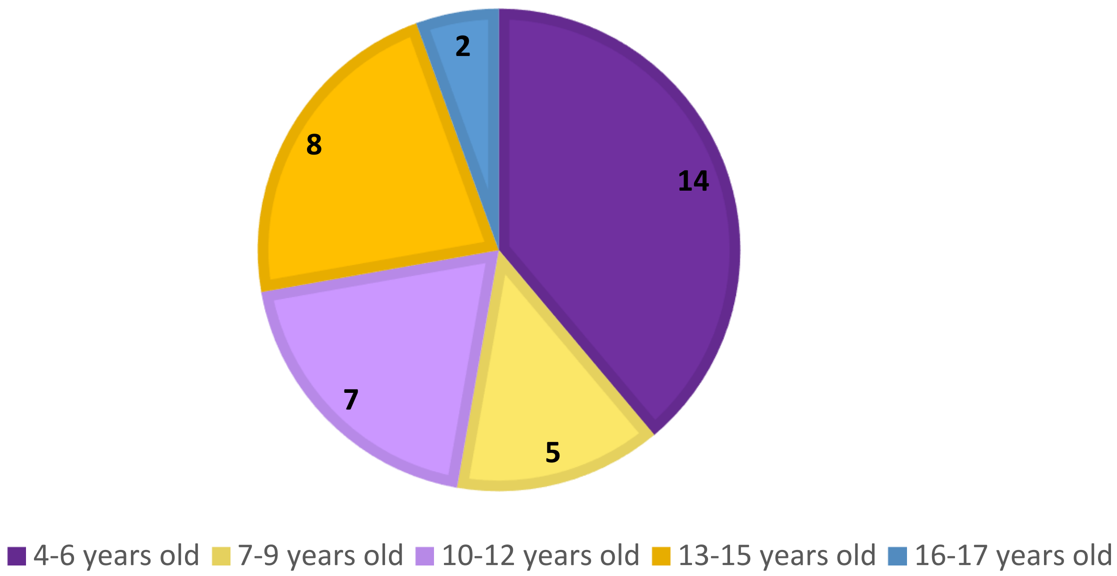


Figure 1. Data collection tool results: ages. Number of children screened in each age category based upon data received from Data Collection Tools completed. The numbers within the pie chart represent the number of children.

Intended Outcome(s)

The overarching intended outcome for the initiation of this DNP project was to improve care for children experiencing negative responses to trauma that resulted from adverse childhood experiences. It was recognized that this overarching, broad goal is multi-faceted and would need to be addressed incrementally and with an ongoing quality improvement perspective. Thinking of the intended outcome in terms of short-, intermediate-, and long-term outcome goals helped define what was achievable within the timeframe of this DNP project, and what the project site could continue to work towards on an ongoing basis. A long-term intended outcome is for all providers and staff at the project site to be well-versed in trauma-informed care, competent at identifying signs of possible trauma responses in children, and for optimum collaboration to occur between the integrated behavioral health and primary care clinicians. An intermediate goal outcome was for all providers who see children at the project site to complete training in use of the PSC as a screening tool for possible trauma responses or other behavioral health concerns and the process for referring for further evaluation.

This DNP project focused on a short-term intended outcome of successful introduction of a screening and referral process for children with possible trauma responses, or other behavioral health concerns found incidentally. The process would be piloted with the pediatric provider at the site. An outcome measure of 85% or more of children screened using the Pediatric Symptom Checklist by the last PDSA cycle was set. Additionally, a goal was set of having 90% or greater of children with a positive screening referred for further behavioral health evaluation.

Findings. The project met the short-term intended outcome of successfully piloting the screening and referral process with one provider. The first week of the project revealed how critical the front desk staff was in implementing the quality improvement project, as no screenings occurred due to unforeseen challenges the front desk faced unrelated to the project. However, the project progressed in the following weeks. During the last week of the project, 100% of children presenting for a well-child check were screened with the PSC, surpassing the 85% goal. This statistic was based on information obtained from the Data Collection Tool.

As noted previously, an identified weakness in the data collection for this project was the reliance on the Data Collection Tool to be completed. It was thought that this weakness could be mitigated by the QI nurse pulling critical process measure data from the EHR, including the number of well-child checks, foster care initial evaluations, and PSCs completed. However, it was found that the number of WCCs recorded by the provider and MAs on the Data Collection Tools was higher one week than the number reflected from the EHR. Most weeks, the EHR reflected the higher number of WCCs, as would be anticipated with the possibility of Data Collection Tool forms being accidentally omitted. No EHR data was available from the QI nurse for the last week of the project due to the impact of COVID-19 on her workload. Thus, it is necessary to surmise that the higher number of WCCs for each week when compared between EHR and Data Collection Tool results is likely the most accurate while acknowledging the fallibility of the data. Figure 2 shows the variance between data from the EHR and from the Data Collection Tools.

As also shown in Figure 2, the number of PSCs completed and reported varies between data from the EHR and data from the Data Collection Tools. The two MAs originally involved quickly adjusted to entering the PSC results into the EHR for the provider to then review electronically. However, after one MA resigned during the project implementation, other MAs who were not as familiar with the project or the pediatric workflow in general rotated with the pediatric provider. Week 4 and Week 5 reflect a dip in the number of PSCs entered electronically into the EHR, most likely due to the staffing change. Again, no EHR data was available for Week 6 due to the impact of COVID-19 on the QI nurse's workload. The higher number of PSCs for each week is trusted over the lower number. Since the PSCs in the EHR were confirmed as electronically present by the QI nurse, these numbers can be deemed as valid PSCs completed. Likewise, if the provider completed a Data Collection Form after reviewing a paper PSC and thus captured a PSC done, it was still done even if the MAs did not enter it into the electronic version in the EHR. A PSC could have been missed on the Data Collection Tool but entered into the EHR, or one could be entered into the EHR but a Data Collection Tool not completed. It should not have been possible to count a PSC twice since the QI Nurse reviewed them by unique encounters, and the provider completed Data Collection Tools on unique encounters. Overlap between the two data sets, for example one PSC being accounted for by both the EHR and the Data Collection Tool, is of no effect since the PSCs counted by the EHR and Data Collection Forms are not added together.

Comparing the highest number of WCCs from each individual week to the highest number of PSCs for that same week allows a week by week analysis of the percentage of children screened that met criteria for screening. As Figure 2 shows, this was higher on Weeks 2 and 3, decreased on Weeks 4 and 5, and then high again on Week 6. When the higher number of WCCs for each week is added for a total and compared to the total sum of the higher numbers of PSCs for each week, the data shows that 89% of the children who met criteria were screened. Granted, this statistic may be skewed by the weakness of data points previously noted.

While screening was the priority of the project, it was to be implemented in tandem with a plan for referral. Since the PSC was being used as a screening for eliciting reports of possible symptoms of trauma responses, a cut-off score to be used as a finite “positive” screening was not set. Rather, the parameters were that the PSC scoring or clinical judgement after discussion during the WCC could be used to determine a “positive” screening. Likewise, the clinician’s judgement was critical in determining if a positive response on the PSC, such as an indication of frequent physical complaints, warranted further evaluation by a behavioral health clinician or if it was not clinically relevant. This subjectivity, along with wording on the initial version of the Data Collection Tool that was not specific enough, contributed to there being a high number of screening results marked as “positive” that the provider did not feel warranted referral. This was discussed in a PDSA meeting and the wording was adjusted on the Data Collection Tool, version

2. There were 17 screenings marked as positive, which was 35% of the total number of children screened. Six referrals to behavioral health for further evaluation were made, or 35% of the positive screenings. This did not meet the original goal set of 90% of that screen positive being referred, but the lessons learned regarding whether a screening was positive or not or warranted referral or not are of value.

The family nurse practitioner (FNP) that was the identified champion of this project was the only provider at the practice that routinely saw pediatric patients. However, the NP rendered her resignation and the practice leadership opted to change their operations so that all of their providers in primary care would begin seeing children. It was originally planned that the screening and referral process would be phased in with the other providers, allowing for additional training and acclimation to both seeing children and this new process. However, both the project site and the university had to make sudden adjustments due to the COVID-19 pandemic. As such, the screening and referral portion of the project was not continued beyond the 6th week. Subsequently, the project site has onboarded numerous new primary care providers, and the opportunity exists for the site to strengthen the process based on lessons learned before implementing the screening process with additional providers.

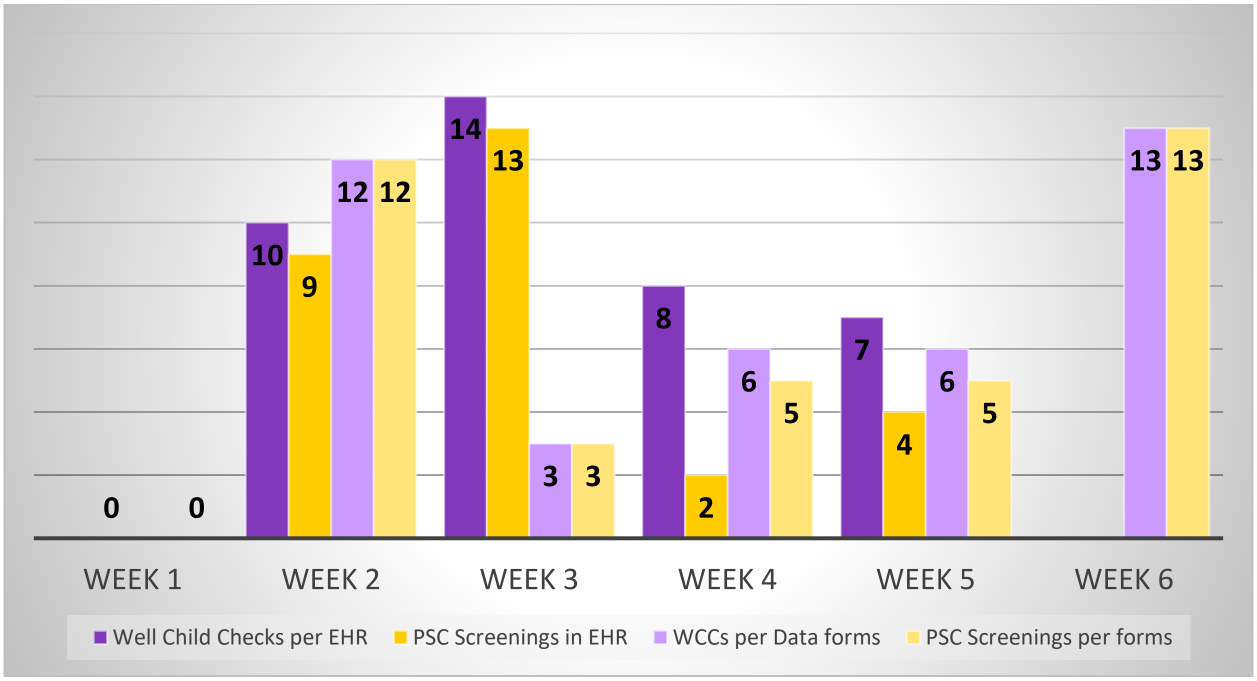


Figure 2. Results of data collection: WCCs and PSC screenings. The graph reflects the number of well-child checks and PSC screenings completed weekly. Two data sources were used: data from the EHR system and data from the paper Data Collection Tools completed.

Summary

The practice site underwent significant changes during the implementation of this initiative, including multiple resignations and responding to a pandemic. However, the overall project outcome sought for piloting implementation of a screening and referral process is demonstrated by the data. The goal of screening at least 85% of children that met criteria was achieved, and six children were referred for further behavioral health evaluation as a result of screening with the PSC. The practice site now has the option of strengthening and implementing the process with the full provider staff. If, as a result of this initiative, even one child receives the additional support needed to overcome trauma and thus decrease their risk of the negative outcomes associated with ACEs, then it was time well spent.

Chapter Seven: Implications for Nursing Practice

This project was conceptualized with the intent of serving as far more than a required academic exercise; it was driven by the deep desire of a nurse to make a difference in the health and lives of children. However, it could be said that the requirement of the project exercise as part of the DNP academic endeavor was conceptualized to serve a far greater purpose than a single project. It would help prepare the future advanced practice nurse and health care leader for a career in which the competencies developed and exercised as part of this project could help inspire and increase the success of many future health care improvement projects.

This chapter will introduce the *DNP Essentials* as developed by the American Association of Colleges of Nursing (AACN) in 2006. The *DNP Essentials* provide a curriculum and competency framework, so that all persons receiving the DNP degree will have the foundation and skillset to practice nursing at the most advanced level. The *Essentials* as applied in this project, demonstrate future practice implications for both the DNP graduate and the health care community.

Practice Implications

Essential I: Scientific underpinnings for practice. *Essential I* of AACN’s DNP Essentials focuses on the scientific basis and foundational principles of the nursing discipline and preparation of the DNP student to apply these to advanced nursing practice (AACN, 2006). It acknowledges the need for integration of nursing with a doctoral level knowledge base from “ethics, the biophysical, psychosocial, analytical, and organizational sciences” (AACN, 2006, p. 9). It directs DNP programs to increase nurses’ ability to use theories to identify and evaluate health related issues and effectively translate research findings to evidence-based practice (AACN, 2006).

The deleterious effects of ACEs are well documented in scientific literature. There is recognition from both health care experts and social science experts that addressing ACEs and the trauma responses they may cause is beneficial to children's growth and development (Flynn et al., 2015; Bethell et al., 2017). Resiliency can help children avoid the negative health consequences of trauma, and resiliency can be supported and developed (Bethell et al., 2017). Though the AAP has directed that practices that identify and address trauma exposure in children should be implemented in primary care, this has not become standardized (AAP, 2016; Flynn et al., 2015). This project applied scientific underpinnings to practice by implementing a standardized process to identify children with symptoms of responses to trauma and have them referred to behavioral health for appropriate services.

Essential II: Organization and systems leadership for quality improvement and systems thinking. *Essential II* is an important aspect of DNP programs as it focuses on leadership (AACN, 2006). The competencies it includes are critical to the DNP-prepared nurse being able to help improve the quality of care and address health disparities (AACN, 2006). It encompasses understanding the many aspects that affect healthcare and health outcomes on a micro or macro level, such as budgets and policies, as well as skills necessary for improving organizations and systems such as change management, effective communication, and ethical balance (AACN, 2006).

This project demonstrated the DNP nurse's opportunity to critically evaluate the most effective and efficient way to accomplish an evidence-based improvement in care. It was determined from review of the literature that screening for ACEs may not be as cost and outcome effective as screening for responses to the trauma of ACEs (Finkelhor, 2018; Murphy & Bartlett, 2019). While there was evidence to support use of numerous screening tools, the PSC was chosen from those at it could be realistically implemented into a busy pediatric practice's workflow (Massachusetts General Hospital, Psychiatry Department, 2019). The PSC screening tool was also budget friendly as it is freely available, does not require extensive additional training, and is supported by policies that allow practices to bill for reimbursement when it is used as part of a clinical visit.

Change management principles were applied in implementation of the screening and referral process. The Iowa Model of Evidence-Based Practice served as a framework for development, implementation, and evaluation of the project (IMC, 2017). The PDSA method was used to guide cycles of change and help identify how best to hardwire the new process into practice at the practice site. Practice implications were learned such as the importance of adequate training for clinician's on ACEs and trauma responses, as the clinician's judgment will ultimately determine if a concern identified through the PSC screening tool warrants referral for further evaluation.

Essential III: Clinical scholarship and analytical methods for EBP. AACN (2006) affirmed that while historically doctoral scholarship was focused on the generation of new knowledge through research, the clinical practice focused DNP programs empower nurses to perform doctoral scholarship by translating research into EBP. The expertise necessary to review literature critically and analytically is necessary for any doctoral scholarship endeavor and was a necessary step in the development of this project. The literature review and concept analysis done for this project have practice implications, as efforts to both establish EBP and standardize that practice to address ACEs and any associated trauma responses is still in the developmental stages nationally (Flynn et al., 2015). The project further met *Essential III* competencies by the design of an implementation plan for the screening and referral process; setting of process measures for evaluation; and use of informatics to analyze those measures. The project tracked numerous data points but focused on comparison of the number of PSC screenings completed to the number of well child checks (or evaluation of a child newly placed in foster care) to see that the screening process was hardwired into the system. With that foundation, EBP for quality of care provided to children with potential trauma response symptoms can be built upon.

Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare. AACN's (2006) *Essential IV* discusses the importance of the DNP prepared nurse's information systems and technology skillset. Information systems, including electronic health records, but also systems that allow for aggregation and analyzation of data are now an integral part of healthcare. The DNP graduate needs competencies in information technology to lead improvements in healthcare and health outcomes. This project utilized numerous information systems. First, the literature review was completed via use of databases, the university search engine, and various websites. The PSC screening tool was obtained electronically and printed for ease of completion for parents, guardians, or adolescents. However, it is available in the EHR used by the practice site, NextGen©. The medical assistants transferred the screening results to the EHR, and the provider was able to review along with other information about each child prior to going into the exam room. This has benefits such as negating the risk of the paper screening being lost or a scanned copy being essentially lost among a litany of other scanned documents in a child's chart. It provided a reliable means for data mining to see how many screenings were completed compared to well child checks. This has future practice implications as use of an electronic version of a screening available within an EHR versus a paper copy only allows for easier analysis for quality metrics and improvement. It is also noteworthy that nurses can serve as subject matter experts in advocating for EBP tools such as screenings to be added to an EHR if one needed is not available.

Essential V: Healthcare policy for advocacy in healthcare. *Essential V* is focused on ensuring that DNP prepared nurses are equipped to influence, participate in, and even lead healthcare policy development (AACN, 2006). Since policy affects all aspects of life, including healthcare, either directly or indirectly, the DNP prepared nurse can serve as an advocate for both individuals and populations by involvement in activities that impact policies. The intersections of policies and this project include the fact that the project site is a federally qualified health center (FQHC). As such, it provides critical access to services including well child checks for children and families that otherwise may not have access to healthcare. Additionally, reimbursement policies of health insurers help promote (or dissuade) practices from performing services such as screenings that are evidence-based. Since the PSC is endorsed by the National Quality Forum (2018, July), it is more likely to qualify for reimbursement as a psychosocial screening tool and does for NC Medicaid for example (Community Care of North Carolina, 2018).

Essential VI: Interprofessional collaboration for improving patient and population health outcomes. AACN (2006) identified *Essential VI* as an important part of the DNP graduates' preparation to function at the highest level of nursing in the modern, complex, health care system. It is a recognition of the value of interprofessional collaboration in aiming to achieve common goals as delineated by the Institute of Medicine (2001) for "safe, timely, effective, efficient, equitable, and patient-centered care." This project was birthed from interprofessional collaboration and could serve as pilot project to improve care for children affected by traumatic ACEs. The DNP student originally consulted with a developmental pediatrician who is known nationally for her work addressing psychosocial issues in children through primary care. The project planning involved collaboration between individuals from the university, the project site, and two statewide organizations. The project implementation was led by the DNP student but could not have occurred without the support and work of the interdisciplinary team at the project site.

Essential VII: Clinical prevention and population health for improving the nation's health. *Essential VII* focuses on the potential of clinical prevention to improve health outcomes for both individuals and populations (AACN, 2006). This project embraced the potential of the tertiary level of prevention to mitigate the short and long-term negative health effects of traumatic ACEs. Review of the literature had identified a prevention strategy gap: screening for ACEs, or trauma responses, is not widespread and therefore opportunities to intervene and potentially strengthen the resiliency of children are missed (Kerker et al., 2015; 2016.) Use of the PSC screening tool identified children that the provider referred to behavioral health for further evaluation.

A practice implication to note is that the PSC is not specific to trauma responses only, and it is not diagnostic. If the provider knows the child and family well or establishes rapport quickly, they may be able to elicit whether or not the child has had any traumas. However, it may be that the screening tool reveals psychosocial concerns that the primary care provider is not able to fully evaluate in the limited time of a single visit. This is when integrated behavioral health care can be convenient and helpful, but the same objective can be accomplished through referral to an appropriate outside BH provider if needed. The BH provider can do a more thorough diagnostic evaluation. For example, what appears to be ADHD per the PSC screening results may be the child's response to a trauma. Addressing the trauma appropriately may alleviate the

ADHD-type symptoms. Alternatively, it may be that the child has had no traumatic experiences but does have ADHD. It is documented in the literature that only 25% of children that need behavioral health services receive them (Foy, Green, Earls, and Committee on Psychosocial Aspects of Child and Family Health, Mental Health Leadership Work Group, 2019). The screening tool serves children well by identifying concerns which leads to improved care as those concerns are addressed.

Essential VIII: Advanced nursing practice. *Essential VIII* is identified by AACN (2006) to ensure that DNP graduates, regardless of specialty, are prepared with advanced skills that reflect the heart and discipline of nursing. The competencies include aspects of nursing such as assessment, design (planning), implementation and evaluation, notably similar to the most basic of nursing processes, but with expectation that it these skills can be applied in complex and varied settings, including systems (AACN, 2006). It also includes relational aspects of nursing, as the DNP prepared nurse will need to form and maintain relationships with patients, fellow nurses, and interdisciplinary teams in order to support each in the endeavor of attaining better health for themselves, their patients, or the populations served (AACN, 2006). This project required the DNP student to assess a population health need and the project site's ability to feasibly implement a process to address the need. Cultural sensitivity was necessary, and adjustments were made at times such as ensuring that the data collection tool did not get handed to a parent or adolescent, so that there were no misinterpretations that could cause alarm, shame, or damage rapport. Relationships were utilized and new ones formed with an interdisciplinary team to conceptualize, design, implement, evaluate the screening and referral process.

Summary

AANC's establishment of the *Essentials* serve as a guide to DNP programs across the nation and were interwoven throughout this DNP project. Practice implications for the DNP student's future as an advance practice nurse and health care leader were extracted throughout the experience. Practice implications for similar efforts to address ACEs and trauma responses in children as a tertiary prevention effort in primary care also abound.

Chapter Eight: Final Conclusions

The implementation and evaluation of this project provided findings relevant to pediatric primary care. Strengths, weaknesses, and limitations of the project are recognized and important to disclose, as well as acknowledgement of those who benefited from the efforts put forth. Finally, practice recommendations based on the planning, implementation, and evaluation of this quality improvement project are discussion worthy.

Significance of Findings

The review of literature conducted supported the idea that addressing ACEs from a tertiary prevention model may be best accomplished by screening for the responses to traumatic ACEs versus screening for ACEs alone. The project demonstrated that a standardized screening and referral process for possible trauma responses in children could be implemented efficiently and effectively in a pediatric primary care setting. Use of the PSC as the selected tool was instrumental in ensuring that the screening was accomplishable within the confines of a time limited WCC. It was found that using the PSC as the screening tool helped to not only identify possible trauma responses, but other psychosocial concerns that could be further evaluated if needed by the integrated behavioral health specialists. Despite a short interval for implementation shortened further by a global pandemic and several staffing changes, the desired outcome of having 85% of the children ages 4-17 years old who presented to the clinic for a WCC or foster placement evaluation was exceeded. Concerns were identified in 35% of those screened through the PSC tool; of those identified, 35% were ultimately referred for further evaluation. While it is entirely possible that some of the children referred were found to not need treatment or to need treatment for a condition that is not related to trauma exposure, ultimately, the process implemented resulted in identification of children that may need additional support.

If similar screening and referral processes were implemented on a large scale throughout pediatric medical homes, the myriad of negative health outcomes that can result from ACEs could potentially be decreased. This would support healthcare in concurrently performing tertiary prevention efforts post-trauma exposure as well as primary prevention efforts for mental illness, heart disease, cancer, and other conditions that traumatic ACEs are proven to contribute to later in life.

Project Strengths and Weaknesses

Project strengths, as previously discussed, included the support received, the cost-effectiveness, the accessibility and ease of use of the screening tool selected, and the integrated behavioral health aspect of the practice. The expertise shared with the DNP student by a nationally known developmental pediatrician, staff from several pediatric organizations, the seasoned pediatric provider and project site champion, and the DNP faculty guided the student and the project towards a solid framework. Use of the PSC as the screening tool helped the project to be cost-effective and efficient since it is freely available in the public domain, requires no formal, costly training, and can be administered and evaluated quickly. Having the integrated behavioral health services as part of the medical home made the referral part of the process easier, and thus served as a strength.

An identified weakness of the project was data collection. As previously discussed, the paper Data Collection Tool that was created by the DNP student could be easily forgotten. This resulted in little information being obtained regarding contributing factors when a PSC was not completed as part of a WCC, since if the PSC was not remembered, the Data Collection Tool was not going to be remembered either. The Data Collection Tool also had to be revised once a

PDSA cycle revealed that the selections for the screening result were too limited to accurately reflect the outcome of the screening.

Project Limitations

The project was limited significantly by time. The project implementation needed to occur within one college semester as part of the DNP program. This led the original implementation plan to be for approximately 12 weeks with a single provider. However, the site champion and pediatric provider rendered a resignation that would be end her role approximately 7 weeks into the implementation. Plans were then begun to transition the project to include the full provider staff that were going to see children. The COVID-19 pandemic arrived and dramatically affected both the project site's operations and capabilities, as well as the university's policy for student involvement at clinical sites. As a result, the actual implementation of the screening and referral process lasted approximately six weeks.

As described previously, the project faced limitations in the reliability of the data collected. Though two different data sources were used-paper forms and the EHR-there was still a reliance on human input for either and both were affected by human fallibility. This should be expected, especially in the context of a busy primary care practice when implementing a new process concurrently with staff turnover. Though neither data source was fully reliable for accuracy of whether a PSC screening was completed during a WCC, the two data sources together provided a meaningful overall picture of screenings occurring at the rates hoped for at the onset of this new process.

The project was also limited in scope to a quality improvement, process implementation project and intentionally did not include research aspects. While it may be interesting to know the outcomes of the referrals, subsequent evaluations, and possible treatments for the children affected by the process implementation, that information is beyond the purview of this project. However, there is an abundance of research literature available that provides rich data on the topic of trauma-focused therapies and other treatments and resources that can improved the resiliency of children affected by traumatic ACEs.

Project Benefits

The children and adolescents served at the practice site benefited as a result of this quality improvement project. The practice did not have a standardized screening in place to identify possible trauma responses previously, and the other psychosocial screening tools they did use were for either a younger cohort of patients or to screen adolescents for depression. Those screening tools also hold significant value but adding the PSC as a standardized part of the WCC for ages 4 through 17 years of age will help identify those affected by trauma, as well as those who may have other behavioral health issues not identified by a depression screening.

The practice site also benefited from the process implementation. The staff involved learned of the ease of use in administering the PSC and scoring, if they opted to use scoring as a determinant of referral in future applications. They learned that the PSC was already included in their EHR, so documentation could be streamlined and standardized, which helped with hardwiring the process in for sustainability in the future. The practice also benefited financially, as the PSC qualifies as an approved psychosocial screening that can be billed for. While the reimbursement is not the driver of the quality improvement project, it does help incentivize support for the process and offset any additional productivity cost derived from time spent on the screening.

Practice Recommendations

The adoption of practices that identify children that are affected by ACEs and link them with appropriate resources is recommended for all pediatric medical homes by the AAP (Committee on Psychosocial Aspects of Child and Family Health et al., 2012; 2016). However, the evidence base on the methodology is still developing. As described, the literature review conducted for this project led this DNP student to seek to implement screening for symptoms of trauma responses versus screening all children for exposure to ACEs; however, the literature found at the time of the search was limited and variable on that specific topic. There was not a well-validated pediatric ACEs screening tool available during the planning stage of this project either. However, there is a tool that has been proven to have face validity in a pilot study and is being studied further. This Pediatric ACES and Related Life-events Screener, or PEARLS tool was developed in part based on the work of Dr. Nadine Burke-Harris, a national expert on addressing ACEs with children and families (National Pediatric Practice Community on Adverse Childhood Experiences [NPPCACES], 2018). This tool, as well as others, may bring significant value to the screening, either in concert with a tool such as the PSC that identifies symptoms or as a preliminary screener followed by a more specific screening tool. It is advised that clinicians and practices continue to monitor the literature and the recommendations of reputable organizations, such as the AAP, for the most evidence-based guidance on screening for ACEs versus screening for responses to the trauma of ACEs.

The PSC was found to be an efficient and effective psychosocial screening tool that identified possible symptoms of responses to trauma during its use in this project, as found described in the literature review. While there are other tools available with greater specificity for trauma, and literature to support the use of those tools for evaluating trauma exposure and response, employing screening tools with much longer administration and evaluation times in the primary care setting as part of WCCs and foster care placement evaluations is likely not feasible. The PSC was successfully implemented, but it is worth acknowledging that the provider and staff still had to adjust to the addition of another process in the WCC workflow. Though this time spent is reimbursable via the psychosocial screening code billed, the reality is that the schedules were not adjusted to accommodate spending additional time during the visit, and it is not expected that they would be in most practices. Therefore, it is strongly advised that the amount of time to properly administer and evaluate the results of any screening tool be considered as part of the tool selection process. If this project were replicated, it would be worth exploring additional opportunities for streamlining the process so that the provider retained the greatest amount of time face-to-face with the child and family. The importance of adequate time to further assess any concerns identified through the screener so that the clinician can use sound clinical judgment regarding need for follow up or referral, cannot be overstated.

Adequate competency related to ACEs and trauma-informed care are key to the efficacy of a screening and referral process to address the negative effects of ACEs. Though the PSC screener is simple to administer and score, it is not diagnostic and proper evaluation of any marked concerns are necessary through interaction with the child and parent/guardian. The statements of the PSC will be answered subjectively by the parent/guardian (or adolescent), and interpretation of those answers and subsequent statements during interview will be subject to the clinical judgment of the healthcare provider. A provider who is competent in trauma-informed care will be able to identify the need for further evaluation if they recognize that a child is exhibiting several somatic symptoms, for example, to a previous trauma, even if the total PSC score is relatively low. Conversely, without competence in recognizing trauma symptoms, there can be missed opportunities even with use of a screening tool like the PSC to identify children and adolescents. If the clinician evaluating the screening results with the child and parent is not informed regarding the various symptoms of traumatic stress and looks only at the score versus the whole patient picture, an inaccurate assessment of the child's well-being may be reached. There are excellent, evidence-based resources for clinicians and primary care practices available through numerous reputable organizations including the AAP, the NPPCACES, and the National Child Traumatic Stress Network.

Final Summary

The negative health effects of ACEs are well-documented in the literature, and primary prevention of ACEs is not always possible. However, there is hope for the children and adolescents that face ACEs, as resiliency mitigates the damages trauma may inflict. Research findings indicate that resiliency in children is not a finite, innate characteristic, but one that can be cultivated and grown (Bethell et al., 2014). Pediatric medical homes have a unique opportunity to intervene and help change the trajectory of a child's health outcomes. This project explored and demonstrated the feasibility of implementing a screening and referral process during WCCs, to identify children that may be affected by traumatic ACEs and see that they and their parents or guardians receive the support needed to nourish their resiliency. May all who supported this project be rewarded with the knowledge that any expenditure of time, energy, or resources on the health, well-being, and potential of children is wisely invested in our collective future.

References

American Academy of Pediatrics. (2014). *Addressing adverse childhood experiences and other types of trauma in the primary care setting*. Retrieved from https://www.aap.org/en-us/Documents/ttb_addressing_aces.pdf.

American Academy of Pediatrics. (2016). *Helping foster and adoptive families cope with trauma*. Retrieved from https://www.aap.org/en-us/Documents/hfca_foster_trauma_guide.pdf

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. Retrieved from https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

American Psychiatric Association, American Psychiatric Association DSM-5 Task Force. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5. 5th ed*. Retrieved from https://dsm-psychiatryonline-org.jproxy.lib.ecu.edu/doi/full/10.1176/appi.books.9780890425596.dsm07

Bartlett, J. D. & Steber, K. (2019, May 9). How to implement trauma-informed care to build resilience to childhood trauma. *Child Trends*. Retrieved from https://www.childtrends.org/publications/how-to-implement-trauma-informed-care-to-build-resilience-to-childhood-trauma

Bethell, C. D., Newacheck, P., Hawes, E., & Halfon, N. (2014). Adverse childhood experiences: Assessing the impact on health and school engagement and the mitigating role of resilience. *Health Affairs, 33*(12), 2106-2115. doi:10.1377/hlthaff.2014.0914

Bethell, C. D., Solloway, M. R., Guinosso, S., Hassink, S., Srivastav, A., Ford, D., & Simpson, L. A. (2017). Prioritizing possibilities for child and family health: an agenda to address adverse childhood experiences and foster the social and emotional roots of well-being in pediatrics. *Academic Pediatrics 17*(7S). https://doi.org/10.1016/j.acap.2017.06.002

Burke-Harris, N., Silvério-Marques, S., Oh, D., Bucci, M., & Cloutier, M. (2017). Prevent, screen, heal: Collective action to fight the toxic effects of early life adversity. *Academic Pediatrics, 17*(7), S14-S15. doi:10.1016/j.acap.2016.11.015

Campbell, J. A., Walker, R. J., & Egede, Leonard E. (2016). Associations between adverse childhood experiences, high-risk behaviors, and morbidity in adulthood. *American Journal of Preventive Medicine, 50*(3), 344-352. doi:10.1016/j.amepre.2015.07.022

Centers for Disease Control. (2019). Adverse childhood experiences: About the CDC-Kaiser ACE study. Retrieved from https://www.cdc.gov/violenceprevention/childabuseandneglect/acestudy/about.html

Choi, K. R., McCreary, M., Ford, J. D., Rahmanian Koushkaki, S., Kenan, K. N., & Zima, B. T. (2019). Validation of the traumatic events screening inventory for ACEs. *Pediatrics, 143*(4), e20182546. doi:10.1542/peds.2018-2546

Cohen, J., Deblinger, E., & Mannarino, A. (2018). Trauma-focused cognitive behavioral therapy for children and families. *Psychotherapy Research, 28*(1), 47-57, DOI: 10.1080/10503307.2016.1208375

Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, Section on Developmental and Behavioral Pediatrics, Garner, A.S., Shonkoff, J.P., Siegel, B.S., Dobbins, M.I., Earls, M.F., Garner, A.S., McGuinn, L., Pascoe, J., & Wood, D.L. (2012, January; reaffirmed 2016, July). Policy statement: Early childhood adversity, toxic stress, and the role of the pediatrician:

Translating developmental science into lifelong health. *Pediatrics 129*(1). DOI: https://doi.org/10.1542/peds.2011-2662

Community Care of North Carolina. (2018). Update on coding for developmental & behavioral/mental health screening and maternal depression screening in the pediatric visit. Retrieved from https://www.communitycarenc.org/sites/default/files/2018-09/coding-for-developmental-behavioral-screening-revised-March-2018.pdf

Deighton, S., Neville, A., Pusch, D., Dobson, K. (2018, November). Biomarkers of adverse childhood experiences: A scoping review. Psychiatry Research. 269. (pp. 719-732). doi:10.1016/j.psychres.2018.08.097

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., . . . Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine, 14*(4), 245-258. doi:10.1016/S0749-3797(98)00017-8

Finkelhor, D. (2018). Screening for adverse childhood experiences (ACEs): Cautions and suggestions. *Child Abuse & Neglect, 85,* 174-179. doi:10.1016/j.chiabu.2017.07.016

Flynn, A. B., Fothergill, K. E., Wilcox, H. C., Coleclough, E., Horwitz, R., Ruble, A., . . . Wissow, L. S. (2015). Primary care interventions to prevent or treat traumatic stress in childhood: A systematic review. *Academic Pediatrics, 15*(5), 480-492. doi:10.1016/j.acap.2015.06.012

Foy, J.M., Green, C.M., Earls, M.F., & Committee on Psychosocial Aspects of Child and Family Health, Mental Health Leadership Workgroup. (2019, November). Mental Health

Competencies for Pediatric Practice. *Pediatrics, 144*(5). DOI: https://doi.org/10.1542/peds.2019-2757

Hagan, J.F., Shaw, J.S., & Duncan, P.M. (2017). *Bright futures: Guidelines for health supervision in infants, children, and adolescents.* 4th ed. Elk Grove Village, IL: American Academy of Pediatrics.

Hanrahan, K., Fowler, C., & McCarthy, A. M. (2019, May). Iowa model revised: Research and evidence-based practice application. *Journal of Pediatric Nursing*, doi:10.1016/j.pedn.2019.04.023

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century*. Washington, DC: National Academies Press.

Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14*(3), 175-182. doi:10.1111/wvn.12223

Kerker, B., Storfer-Isser, A., Szilagyi, M., Stein, R., Garner, A., O'Connor, K., . . . Horwitz, S. (2015;2016). Do pediatricians ask about adverse childhood experiences in pediatric primary care? *Academic Pediatrics, 16*(2), 154-160. doi:10.1016/j.acap.2015.08.002

Koita, K., Long, D., Hessler, D., Benson, M., Daley, K., Bucci, M., . . . Burke Harris, N. (2018). Development and implementation of a pediatric adverse childhood experiences (ACEs) and other determinants of health questionnaire in the pediatric medical home: A pilot study. *PloS One, 13*(12), e0208088. doi:10.1371/journal.pone.0208088

Lapp, H. E., Ahmed, S., Moore, C. L., & Hunter, R. G. (2019). Toxic stress history and hypothalamic-pituitary-adrenal axis function in a social stress task: Genetic and epigenetic factors. *Neurotoxicology and Teratology, 71*, 41-49. doi:10.1016/j.ntt.2018.01.011

Lavigne, J. V., Meyers, K. M., & Feldman, M. (2016). Systematic review: Classification accuracy of behavioral screening measures for use in integrated primary care settings. *Journal of Pediatric Psychology, 41*(10), 1091-1109. doi:10.1093/jpepsy/jsw049

Leitch, L. (2017, December). Action steps using ACEs and trauma-informed care: a resilience model. *Health & Justice*. https://doi.org/10.1186/s40352-017-0050-5

Massachusetts General Hospital, Psychiatry Department. (2019). Pediatric Symptom Checklist. Retrieved from https://www.massgeneral.org/psychiatry/services/treatmentprograms.aspx?id=2088&display=overview

Marsac, M. L., Kassam-Adams, N., Hildenbrand, A. K., Nicholls, E., Winston, F. K., Leff, S. S., & Rein, J. (2016). Implementing a trauma-informed approach in pediatric health care networks. *JAMA Pediatrics. 170*(1), 70–77. doi:10.1001/jamapediatrics.2015.2206

Murphy, D. & Bartlett, J. D. (2019, July 9). Childhood adversity screening are just one part of an effective policy response to childhood trauma. *Child Trends*. Retrieved from https://www.childtrends.org/publications/childhood-adversity-screenings-are-just-one-part-of-an-effective-policy-response-to-childhood-trauma

Murphy, R. A. (2018). How Medicaid and managed care can support evidence-based treatment in North Carolina that is informed by adverse childhood experiences. *North Carolina Medical Journal, 79*(2), 119-123. doi:10.18043/ncm.79.2.119

National Pediatric Practice Community on Adverse Childhood Experiences. (2018). *Frequently asked questions (FAQs): The Pediatric ACEs and Related Life-event Screener (PEARLS).* Retrieved from https://nppcaces.org/faqs/

National Quality Forum. (2018, July). *Behavioral health and substance use, Fall 2017 cycle: CDP report*. Retrieved from National Quality Forum website: http://www.qualityforum.org/Publications/2018/07/Behavioral_Health_and_Substance_Use_Fall_2017_Final_Report.aspx

Nelson, S. (2015). Theories focused on interpersonal relationships. In J. B. Butts & K. L. Rich (Eds.) *Philosophies and theories for advanced nursing practice. 2nd ed*. Burlington, MA: Jones & Bartlett Learning.

Office of Disease Prevention and Health Promotion. (2019). *2020 Topics and objectives*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders

Stover, C.S. & Keeshin, B. (2018, August). Research domain criteria and the study of trauma in children: Implications for assessment and treatment research. *Clinical Psychology Review, Vol 64*. https://doi.org/10.1016/j.cpr.2016.11.002

Substance Abuse and Mental Health Services Administration. (2014, July). *SAMHSA's concept of trauma and guidance for a trauma-informed approach*. Retrieved from: https://store.samhsa.gov/system/files/sma14-4884.pdf

Substance Abuse and Mental Health Services Administration. (2019). *Recovery and recovery support.* Retrieved from https://www.samhsa.gov/find-help/recovery

Substance Abuse and Mental Health Services Administration-Health Resources and Services Administration, Center for Integrated Health Solutions. (2019). *Trauma*. Retrieved from https://www.integration.samhsa.gov/clinical-practice/trauma-informed

Schmidt, N. & Brown, J. (2015). *Evidence-based practice for nurses: appraisal and application of research. 3rd ed*. Burlington, MA: Jones and Bartlett Learning.

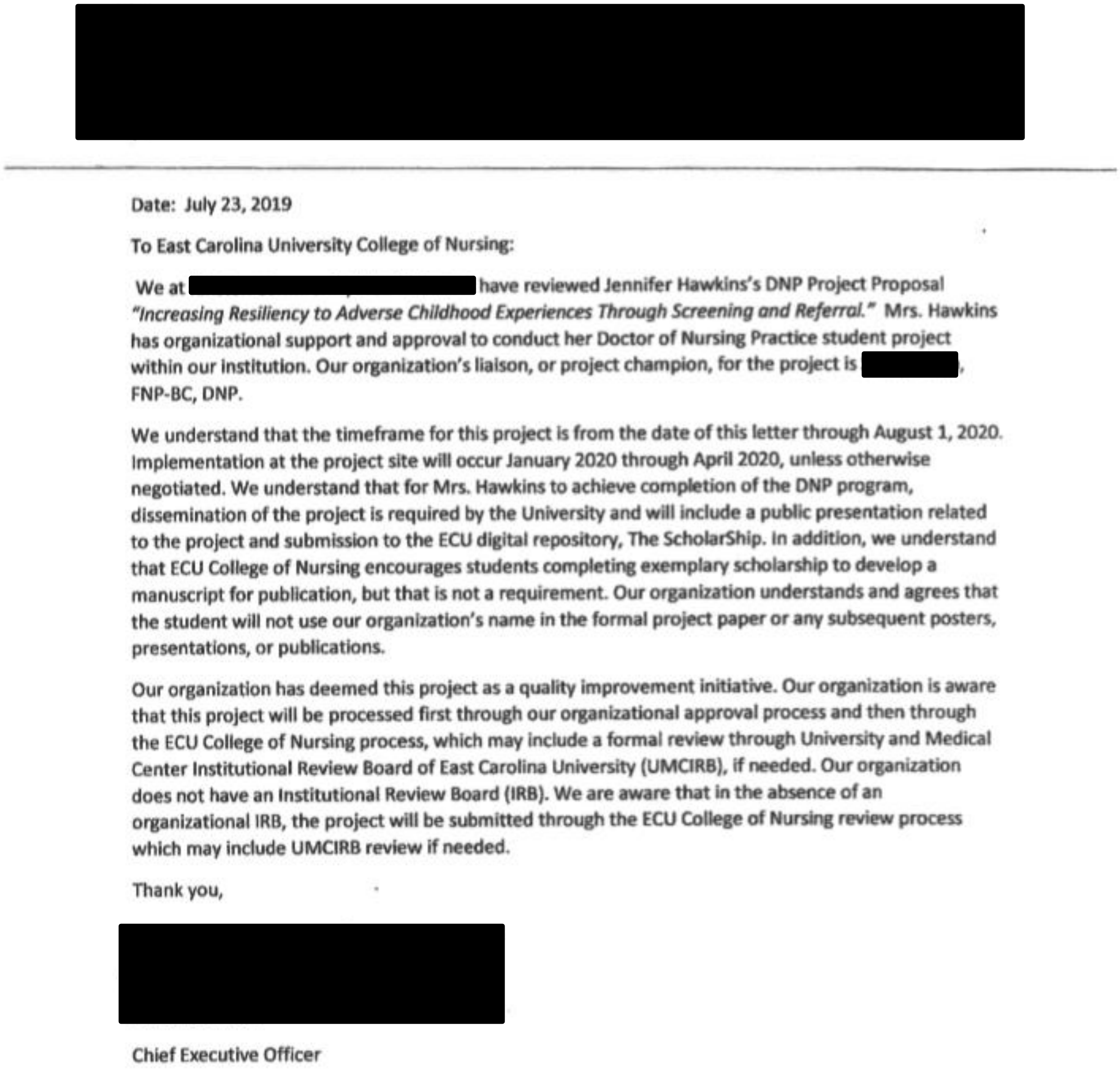
Traub, F. & Boynton-Jarrett, R. (2017, May). Modifiable resilience factors to childhood adversity for clinical pediatric practice. *Pediatrics 139*(5). DOI https://doi.org/10.1542/peds.2016-2569

U.S. Department of Health and Human Services, Administration for Children and Families, Administration on Children, Youth and Families, Children's Bureau. (2019*). Child Maltreatment 2017*. Retrieved from https://www.acf.hhs.gov/cb/resource/child-maltreatment-2017

Whitt-Woosley, A., Sprang, G., & Royse, D. G. (2018). Identifying the trauma recovery needs of maltreated children: An examination of child welfare workers' effectiveness in screening for traumatic stress. *Child Abuse & Neglect, 81*, 296-307. doi:10.1016/j.chiabu.2018.05.009

Young, M. (2015). Transitioning evidence to practice. In N. A. Schmidt & J. M. Brown (Eds.), *Evidence-based practice for nurses: appraisal and application of research. 3rd ed*. (pp. 445-446). Burlington, MA: Jones & Bartlett Learning.

Appendix A: Organizational Letter of Support



[redacted]

Date: July 23, 2019

To East Carolina University College of Nursing:

We at [redacted] have reviewed Jennifer Hawkins's DNP Project Proposal *"Increasing Resiliency to Adverse Childhood Experiences Through Screening and Referral."* Mrs. Hawkins has organizational support and approval to conduct her Doctor of Nursing Practice student project within our institution. Our organization's liaison, or project champion, for the project is [redacted], FNP-BC, DNP.

We understand that the timeframe for this project is from the date of this letter through August 1, 2020. Implementation at the project site will occur January 2020 through April 2020, unless otherwise negotiated. We understand that for Mrs. Hawkins to achieve completion of the DNP program, dissemination of the project is required by the University and will include a public presentation related to the project and submission to the ECU digital repository, The ScholarShip. In addition, we understand that ECU College of Nursing encourages students completing exemplary scholarship to develop a manuscript for publication, but that is not a requirement. Our organization understands and agrees that the student will not use our organization's name in the formal project paper or any subsequent posters, presentations, or publications.

Our organization has deemed this project as a quality improvement initiative. Our organization is aware that this project will be processed first through our organizational approval process and then through the ECU College of Nursing process, which may include a formal review through University and Medical Center Institutional Review Board of East Carolina University (UMCIRB), if needed. Our organization does not have an Institutional Review Board (IRB). We are aware that in the absence of an organizational IRB, the project will be submitted through the ECU College of Nursing review process which may include UMCIRB review if needed.

Thank you,

[redacted]

Chief Executive Officer

Appendix B: DNP Project Data Collection Tool

Demographics	Screening and Referral Process
Age of Child or Adolescent: _________ years old	Screening completed using PSC? ☐ Yes ☐ No, parent declined ☐ No, other reason:
Known history of ACE(s)/trauma/toxic stress? ☐ Yes ☐ No	Screening result: ☐ Negative, no or minimal concerns ☐ Positive, concerns identified
Currently in foster care? ☐ Yes ☐ No	Referral made? (skip if screening was negative) ☐ Yes ☐ No, parent declined ☐ No, already linked ☐ No, missed opportunity ☐ No, other reason:

Appendix C: DNP Project Data Collection Tool, Version 2

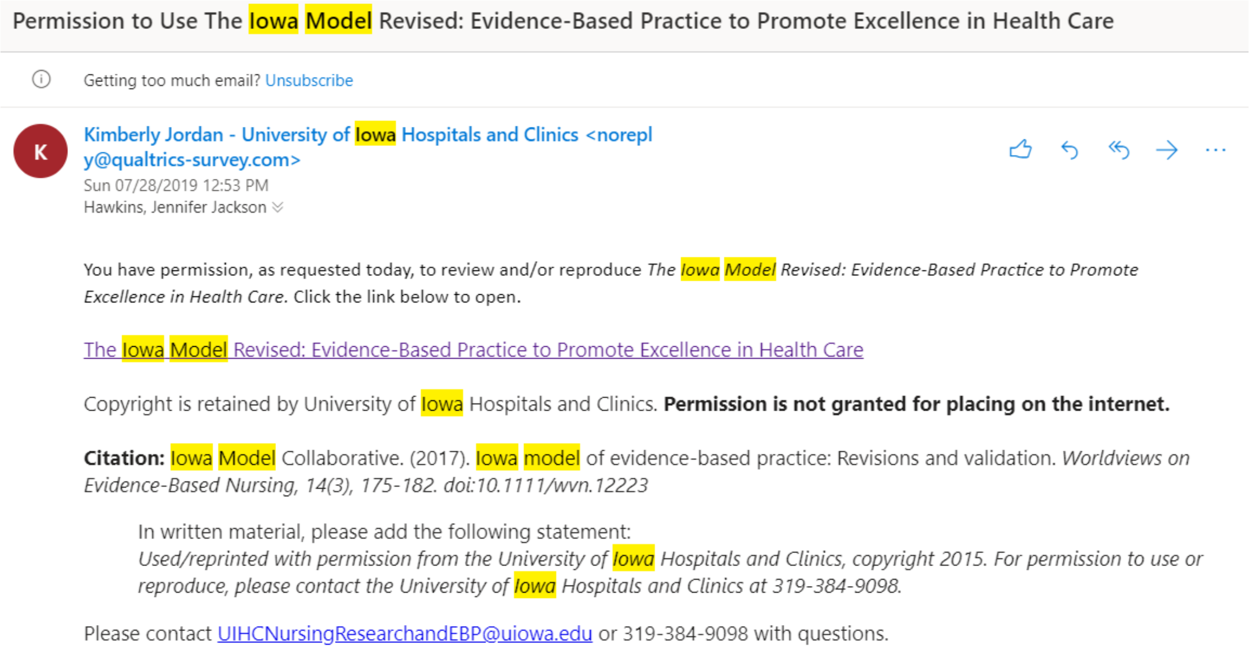
Demographics	**Screening and Referral Process**
Age of Child or Adolescent: ________ years old	Screening completed using PSC? ☐ Yes ☐ No, parent declined ☐ No, other reason:
Known history of ACE(s)/trauma/toxic stress? ☐ Yes ☐ No	Screening result: ☐ no concerns identified by PSC ☐ Concerns identified on PSC were not clinically significant upon further assessment ☐ Concerns identified but PSC score and significance per clinician's judgment were both low ☐ Concerns identified and clinician's judgment deemed concerns likely clinically significant
Currently in foster care? ☐ Yes ☐ No	Referral made? (skip if screening was negative) ☐ Yes ☐ No, parent declined ☐ No, already linked ☐ No, missed opportunity ☐ No, other reason:

Appendix D: The Iowa Model Revised

Removed for copyright. See Appendix E.

Note. Used/reprinted with permission from the University of Iowa Hospitals and Clinics, copyright 2015. For permission to use or reproduce, please contact the University of Iowa Hospitals and Clinics at 319-384-9098.

Appendix E: Permission to Use the Iowa Model



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

Getting too much email? Unsubscribe

Kimberly Jordan - University of Iowa Hospitals and Clinics <noreply@qualtrics-survey.com>
Sun 07/28/2019 12:53 PM
Hawkins, Jennifer Jackson

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

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

Copyright is retained by University of Iowa Hospitals and Clinics. **Permission is not granted for placing on the internet.**

Citation: Iowa Model Collaborative. (2017). Iowa model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing, 14(3), 175-182. doi:10.1111/wvn.12223*

> In written material, please add the following statement:
> *Used/reprinted with permission from the University of Iowa Hospitals and Clinics, copyright 2015. For permission to use or reproduce, please contact the University of Iowa Hospitals and Clinics at 319-384-9098.*

Please contact UIHCNursingResearchandEBP@uiowa.edu or 319-384-9098 with questions.

Appendix F: Project Budget

Project Budget			
Line Item	**Unit Cost**	**Quantity**	**Total**
Training			
Lunch (variety of foods from Chic-fil-A & store)	$10/lunch	10	$100
Folders-box of 25	$1.00	10	$10
Printing	0.15	150	$22.50
Total			$132.50