BREAKING THE CYCLE OF ADVERSE CHILDHOOD EXPERIENCES: A PROGRAM EVALUATION

by

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A scholarly project submitted in partial fulfillment
of the requirements for the degree

of

Doctor of Nursing Practice

in

Psychiatric and Mental Health

MONTANA STATE UNIVERSITY
Bozeman, Montana

April 2019

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DEDICATION

To my husband, Eddy, who encouraged and supported this venture, even when the cost was his own comfort and countless hours apart.

ACKNOWLEDGEMENTS

The members of my committee have each challenged me to dig deeper into the literature and into my own depths of capability in order to make this project what it is. Dr. Peter Degel, Laurie Glover, Marcie Hanson, and Dr. Dale Mayer, in addition to their roles as CEO, FNP, educators, and researchers, have selflessly dedicated their time and efforts. To each, I am deeply thankful. Dr. Mayer served as my project chair and provided thoughtful guidance through the process. Her kind, honest, and humble professionalism is unmatched.

Montana State University College of Nursing has been an abundant source of wealth in knowledge, support, and guidance. Excellence in our respective fields of nursing is forged at all levels, thanks to the dedication and character of the individuals that make this institution great.

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ABSTRACT

Adverse childhood experiences (ACEs) are specific types of childhood trauma, that, when experienced, have been found to have dose-response relationship to poor health outcomes later in life, namely, many of the leading causes of death in adults. ACEs include psychological, physical, or sexual abuse, witnessing violence against the mother, living with household members who were substance abusers, mentally ill or suicidal, or who are imprisoned. Recognizing a need for intervention to disrupt this ACE to illness trajectory, The American Academy of Pediatrics has called upon medical providers to address ACEs through screening and community-building. Since there is currently no guideline for how to address ACEs, the purpose of this scholarly project was to evaluate the Lewis and Clark County Health Department (L&CHD) ACE program for effectiveness and alignment with evidence-based practice. Using the Centers for Disease Control and Prevention manual titled Introduction to Program Evaluation for Public Health Programs (IPEPHP), an evaluation was completed. Steps included engaging stakeholders, describing the program, developing an evaluation plan, gathering credible evidence, and analyzing the evidence in order to develop conclusions and make recommendations. The L&CHD ACE program was found to be a largely progressive model that is consistent with most program goals and literature. Those who participated in the program tended to complete the program successfully, however, a majority of those who were referred to the ACE program either chose not to take advantage of the referral or declined to participate in the program. This finding was unexpected and warrants further inquiry. It appears that an integrated behavioral health model may be more effective for engaging potential participants, where they are able to initially meet with mental and behavioral health experts in the familiar primary care setting.

CHAPTER ONE

INTRODUCTION

Background

In 1998 Felitti and colleagues published a seminal study known as the adverse childhood experiences (ACE) study which identified a dose-response relationship between chronic childhood stress and many of the leading causes of death in the United States (U.S.). In an unprecedented effort, 9,508 members of the Kaiser Permanente health plan responded to a 250 question survey where seven categories of childhood trauma, called ACEs, were evaluated against measures of health status, disease, and adult risk behaviors. These seven categories include: Psychological, physical, or sexual abuse, violence against mother, living with household members who were substance abusers, mentally ill or suicidal, or imprisoned. The researchers reported that over half of the participants had experienced at least one ACE, while 25% had experienced 2 or more ACEs. Results of this study indicated a relationship between the number of ACEs and health risk behaviors and diseases including drug and alcohol abuse, mental illness including depression and suicide attempts, ischemic heart attack, chronic obstructive pulmonary disease (COPD) and cancer, among others (Felitti et al., 1998). Additional research has increased our knowledge of the extent to which ACEs negatively impact an individual's mental and physical health throughout their lifetime (Cuijpers et al., 2011; Garner et al., 2012; Stevens, 2015). This discovery of a relationship between ACEs and

adult health has been referred to as “the largest, most important public health study” (Stevens, 2012, para 1) of all time.

According to Felitti and colleagues (1998) the ACE study documented that a single violence-based ACE doubled the incidence of both perpetrating violence on others and enduring further victimization as adults. These probabilities increase further with additional ACE exposures (Whitfield, Anda, Dube, & Felitti, 2003). For those with one ACE, the probability of having exposure to other ACEs was 65-93% (Felitti et al., 1998), which was correlated to child victims being more than twice as likely to victimize others or be victimized again as adults. This becomes a cycle of traumatization that is handed down from one generation to the next in the form of perpetuated ACEs. Disruption of the intergenerational transmission cycle of ACEs has been identified as key in preventing ACE-associated sequelae (Anda & Brown, 2007) yet surprisingly less than one percent of pediatricians report screening for ACEs 17 years after the study was published. The American Academy of Pediatrics (AAP) has called upon providers to not only involve themselves in early detection but also focus on community interventions that reduce “threats to healthy brain growth”, namely ACEs (Garner et al., 2012). The AAP theorizes that the ecobiodevelopmental model explains that many adult diseases should be considered developmental disorders that can only be alleviated through the reduction of toxic stress (Garner et al., 2012). Despite these strong policy statements, the AAP does not have recommendations for timing of screenings, tools used, or intervention models.

Problem Statement

At this time, little peer-reviewed literature is available that encompasses all aspects of addressing high ACE scores or that provides guidance to providers or programs. Albeit limited, publications describing successful systems for screening and addressing ACEs across the U.S. have occurred in recent months, providing a new evidence-based framework for comparison. In an environment where current healthcare systems continue to fail to address ACEs through early screening and/or intervention, despite the demonstrated negative effects of ACEs on health outcomes, provides an opportunity to address this national public health crisis (Andra et al., 2006; Cuijpers et al., 2011). More research and program evaluations are needed to grow the body of evidence on decreasing ACEs (Corwin & Vieth, 2017).

Purpose Statement

The purpose of this project is to complete a program evaluation of Lewis and Clark County Health Department's (L&CHD) current approach to addressing high ACE scores in primary caregivers of children. This evaluation will contribute to development of evidence-based recommendations for improvements that serve to reduce the number of repeated ACEs and chronic stress impacting generations in Lewis and Clark County, Montana.

Authors Personal Experience

The passion for understanding and addressing adverse childhood experiences (ACEs) is derived from my personal and professional experiences. Personally, I have often felt that I live a double-life, if you will. My mother was very nurturing to the needs of infants and my maternal grandparents were the quintessential doting, nurturing, and consistent figures of our modern model family. At once, however, I experienced multiple ACEs during my childhood. My adolescence and early adult life were confusing and at times difficult, especially with regard to relationships. Through years of self-reflection and outside encouragement and guidance, I was able to first realize a love for self and then develop healthy relationships and boundaries. In doing so, my awareness of my own resilience grew, and the root of this resilience seems to be grounded in the early attachments I experienced, although interventions were also needed to give me space to process my experiences. My interest in disrupting ACE transmission across generations lies in my own experience, somewhere between healthy attachment and behavioral interventions including residential treatment and foster care. In nursing, the area between health and interventions typically occurs in public health settings through screening, hence the pursuit of public health program evaluation for this project. There appears to be a combination for the perfect storm, if you will, in my personal experience for both experiencing adverse events and for overcoming the effects of these ACEs. Understanding and defining this combination that has allowed me to become a well-adjusted adult has become not only the topic of my doctoral school scholarly project, but also my life's work: to help others to overcome their own trauma. By no

means do I claim expertise outside of my training as a psychiatric nurse practitioner and the lessons learned while doing this project.

CHAPTER TWO

REVIEW OF THE LITERATURE

Definition of Key Terms

Adverse Childhood Experiences (ACEs): Specific events occurring between birth and 18 years of age that are categorized, specifically, by the original study authors into 7 types of occurrence. These include emotional, physical, and sexual abuse; violence against the child's mother; or living in a household with someone who abuses substances, is mentally ill or suicidal, or has ever been incarcerated (Felitti & Anda, 1998).

Caregiver: For purposes of this project to describe one person primarily responsible or involved in the child's care, who is expected to continue in this role throughout the child's development. Traditionally, this would be the mother or father, but may also be a grandparent or other family member, foster or adoptive parent, guardian, or other person providing most care to the child.

Intergenerational Transmission: Phenomenon in which parents who have experienced ACEs tend to raise children who experience similar ACEs (Madigan, Wade, Plamindon, Maguire, & Jenkins, 2017).

Toxic Stress: Previously described as chronic stress, it is the sustained stress response system activation that results in physical and structural changes that lead to negative health consequences (Oral et al., 2015).

Inclusion Exclusion Criteria

Inclusion and exclusion criteria for this review of literature included information from the last 10 years that was peer reviewed, published in English, and obtained from primary sources when available.

Databases

Databases were identified in conjunction with Montana State University librarians in order to ensure a comprehensive literature review. Those selected include Cumulative Index of Nursing (CINAHL), Web of Science, Medical Literature Analysis and Retrieval System Online (MedLinePlus), Published International Literature on Traumatic Stress (PILOTS) and Psychological Information Database (PsychINFO). Search terms included 1) adverse childhood experiences AND adult, 2) adverse childhood experiences and intergenerational transmission, 3) approach AND adverse childhood experiences, 4) adverse childhood experiences AND public health approach, 5) adverse childhood experiences AND prevention.

Public Health Approach

The public health approach is the most commonly described means for addressing ACEs at all levels. It is comprised of primary, secondary, and tertiary levels of prevention. Primary prevention involves stopping ACEs before they occur and is typically the least costly of the three levels of prevention (Covington, 2013). Primary prevention efforts present the most potential for far-reaching change through improved

individual and community resilience as well as decreased resource disparity (Oral et al., 2015). Secondary prevention includes identification and early intervention of ACEs as well as targeted prevention efforts in child maltreatment (Covington, 2013; DeRavello, Aebita, & Brown, 2008). Tertiary prevention efforts typically involve treatment of illness or impairment directly related to health risk behaviors occurring as a result of ACEs, such as addiction (DeRavello et al., 2008).

Mikton and Butchart, (2009) conducted a systematic review on the prevention of child maltreatment and reported multiple public health interventions that can aid in preventing ACEs and their effects. Three types of public health interventions have been found helpful in reducing risk factors for child maltreatment, including home-visiting programs, parent education, and child sexual abuse prevention programs. Prevention of child maltreatment was reported when home-visiting, parent education, abusive head trauma prevention and multi-component interventions were used.

There are many types of home visiting programs and these programs serve many purposes such as improving pregnancy and breastfeeding outcomes or preventing child abuse, for example. Home visiting programs of all types appear to be some of the most studied and documented public health interventions. The most commonly reported home visiting programs, of all home visiting types, combined primary and tertiary prevention for the caregiver-child dyad (Covington, 2013; Oral et al., 2015). MacMillan et al. (2009) described the evidence-based home-visiting program called Nurse-Family Partnership (NFP), which was shown to improve child and caregiver outcomes for dyads that included children in the 0-5 age group. In Montana, NFP is shown to save the state

approximately $2130 per family per year in Medicaid funds related to child abuse and neglect, while also reducing the instances of child abuse and neglect in these families by 38% (Miller, 2017).

Neuro-physiology of ACEs

Stress response involves activation of both the hypothalamus-pituitary-adrenal axis (HPA) and the sympathetic nervous system. These systems work in tandem to allow quick response to the stressor, followed by a quick return to baseline state. This response induces physical changes that promote adaptive behavior and is believed to be beneficial when the stress response lasts for a short time (Oral et al., 2015; Johnson, Riley, Granger, & Riis, 2013). Physical changes as a result of sympathetic activation include norepinephrine and epinephrine release resulting in increased blood pressure, pupil dilation, bronchodilation, increased force and rate of cardiac contraction, increased glycolysis and increased blood sugar. Physical changes resulting from HPA activation include hypothalamus secretion of corticotropin-releasing hormone (CRH), which activates the pituitary to release adrenocorticotropic hormone (ACTH), which then signals the adrenals to release glucocorticoid, specifically, cortisol. CRH also stimulates release of many other hormones, including antidiuretic hormone (ADH), prolactin, and growth hormone. Collectively, these hormones result in water retention, increased blood pressure and cardiac output, lipogenesis, increased levels of serum amino acids, and both anti-inflammatory and pro-inflammatory processes as well as immunosuppression and enhanced humoral immunity systemically (Clayton, McCance, & Forshee, 2012).

ACEs can be, in and of themselves, chronically stressful or can cause chronic stress, which is now referred to as toxic stress due to its long-term effects on neural and immunogenic development (Johnson et al., 2013; Oral et al., 2015; Read, Fosse, Moskowitz, & Perry, 2014; Garner et al., 2012). The long-term effects of toxic stress lead to both physical and behavioral changes. Some of the more obvious correlations of toxic stress to physical health conditions include hypertension and coronary artery disease, pulmonary hypersensitivity such as asthma and hay fever, fatigue or insomnia, ulcers, type 2 diabetes mellitus, tobacco use and substance abuse, to name a few (Clayton et al., 2012).

Changes resulting from toxic stress have been studied extensively. Varese and colleagues (2012) published a metanalysis which indicated that those experiencing childhood adversity are far more likely to experience psychosis. Read and colleagues (2014) published a systematic review of works describing how childhood adversity and psychosis are similar. Their work indicated multiple processes affected in the developing mind that result in both chemical and structural changes, which correlate to similar change and appear permanent in the case of psychosis. Specifically, changes within the HPA axis include increased size of the pituitary that is associated with increased reactivity to stress hormones during adolescence, followed by decreased reactivity later on, which correlates to increased size during psychotic debut or first occurrence of psychotic symptoms, followed by decreased size during chronic psychosis. Additionally, early chronic stress is associated with increased synaptic counts for both excitatory and inhibitory CRH synapses within the paraventricular hypothalamic nucleus, which is

typically enlarged in psychotic patients (Read et al., 2014). Chronic stress results in chronic elevation of cortisol, which is associated with hypertension, cardiovascular disease, insulin resistance, obesity and type 2 diabetes mellitus (Read et al., 2014; Johnson, 2013). Other changes observed in those experiencing early childhood stress that also occur in psychosis include reduced glucocorticoid receptor messenger ribonucleic acid (*GR* mRNA) expression, atrophy of excitatory apical dendrites, altered neuronal activity in parvalbumin-containing neurons, and reduced hippocampal volume, which is associated with memory deficits and reactivity to emotional stress. Similar changes are found in the frontal and prefrontal cortex, where gray matter volume is also reduced, which correlates to cognitive dysfunction. Dopaminergically, this decreased prefrontal cortical activity occurs with increased striatal activity, which is often described as a correlate of severity in psychotic symptoms and neurocognitive dysfunction. Brain derived neurotrophic factor (BDNF) is reduced systemically in both those experiencing early chronic stress as well as those experiencing psychosis as compared to counterparts (Read et al., 2014). BDNF is a neuronal growth factor associated with both acquisition and extinction of anxiety (Higgins & George, 2013).

Though humans are distinguished by the developmental need to be physically and emotionally attended in order to properly develop and survive, animal models have provided great insight into the importance of early nurturing maternal relationships for development of the HPA as well as for development of life-long immune response (Johnson et al., 2013). In animal models, offspring of highly nurturing mothers are found to demonstrate a well-regulated HPA response to stress while animals with low-nurturing

mothers had exaggerated HPA responses to stress. The primary difference appears to be the differential epigenetic expression of glucocorticoid receptor genes, where increased expression and receptor proliferation occurs with increasing nurturance. It was found, however, that placing animal offspring born to a low-nurturing mother with a high-nurturing surrogate resulted in similar HPA development as seen in those born to high nurturing mothers. Immunologically, early development of the thymus in animals is stunted when maternal rearing was replaced with nursery care, that is, animal infants are placed in the care of human caregivers in a nursery setting. Additionally, the balanced CD4+ to CD8+ lymphocytes profile found in maternally reared animal offspring was found to have dramatically decreased CD8+ lymphocyte counts in those receiving nursery care. These changes appeared permanent after all animals were placed in identical living conditions at one year of age (Johnson et al., 2013).

Mitigating the Physiologic Effects of ACEs

Much effort has been placed on managing and reducing the effects of ACEs. No meta-analysis has been conducted on the studies published to date addressing mitigation of the physiological effects of ACEs, though many key focus areas have come to light in behavioral studies. Most important, perhaps, is the development of nurturing and supportive relationships with adults (Bethell et al., 2016; Bethell et al., 2017b; Brown et al., 2017; Chesmore, Weiler, & Taussig, 2017; Sege & Browne, 2017). These relationships contribute to development of resilience through positive childhood experiences (Sege & Browne, 2017). Bethell and colleagues (2016) describes a nearly 3-

fold increase in the occurrence of emotional, mental and behavioral (EMB) problems in those experiencing ACEs, which increases to nearly 7-fold increase when ACEs co-occur in children with little or no resilience. Additionally, a study of maternal ACEs correlation to infant outcomes at 18 months indicates a two-to-five fold increase in child biomedical and psychosocial risk when maternal ACE scores are 4 or greater. It is thought that this may be related to disrupted attachment directly related to the mothers' psychosocial stressors or lack of attunement to behavioral and affective needs of the child (Madigan et al., 2017). Ironically Learn (2015) reported that "… when caregivers reported more adverse childhood experiences, they also tended to report lower levels of relational frustration, and teachers tended to report more problem behaviors in their child" (p. iv). Older adults with ACEs and complex post-traumatic stress disorder (PTSD) struggle with typical PTSD symptoms as well as dysfunctional disclosure of their ACEs and/or PTSD-inducing event, suggesting ongoing relational dysfunction (Krammer, Kleim, Simmen-Janevska, & Maercker, 2016).

Over nearly four and one-half years, between 2013 and 2017, an ACEs workgroup identified key features for addressing ACEs. These recommendations included: emphasis on the centrality of relationships, regulation of emotion and stress to brain development, relationship-centered methods to engage individuals, and "building the resilience and nurturing [that] science [has] revealed to be at the root of well-being" (Bethell et al., 2017b, p S36). Sege and Browne (2017) describe the necessity of promotion of parental mental health and education, promotion of equitable environments

in education and policy, and supportive opportunities for constructive community engagement as key in development of supportive relationships and community building.

Work with high-risk individuals and communities as well as individuals identified as experiencing ACEs demonstrates the importance of promoting relationship-building and overall wellness through replicable initiatives. Brody and colleagues (2016) found that participation in primary prevention, family-centered programs produced a stress-buffering effect in psychosocial outcomes, catecholamine levels, and inflammatory responses. His work went on to target diabetes status in youth with ACEs in a group with some of the highest diabetes prevalence in the country. Youth identified as having ACEs and their families participated in a program to enhance positive parenting over the course of seven meetings. This program was found to ameliorate the 37.3% increased risk for pre-diabetes that occurs with each one-point increase in ACEs in this population (Brody et al., 2017). Bethell and colleagues (2016) used mindfulness and mind-body exercises to both reduce parental stress and increase child self-awareness and engagement. They demonstrated that resilience is best promoted when parents aren't stressed. Oral et al (2015) describe Circle of Security, which aims to improve parent-child attachment and the universal Positive Parenting Program, or Triple P, which separately targets individual, family, community, and societal levels as potential avenues for improvement are performed in a group setting. More evidence-based practice options for prevention and management of ACEs, including parent child interaction therapy and child parent psychotherapy, are emerging (Oral et al., 2015, p 230).

While early intervention is important, hope is not lost for older children or adults with ACEs who did not receive early intervention. A study on the correlation of coping skill use with mentor relationship in pre-adolescent foster-children demonstrated that high quality relationships result in increased use of support-seeking and active coping skills in only 6 months (Chesmore et al., 2017). The short-term nurse practitioner initiated Empower Resilience Intervention used by Chandler and colleagues (2015) in young adults with ACEs was effective in interrupting the "ACE to illness trajectory" (p. 413) through education and health promotion offerings. Some believe that acknowledging ACEs and their effects is intervention in itself (Waite, Gerrity, & Arango, 2010). In fact, Felitti (2017) described an ACEs questionnaire used during office visits where responses indicative of ACEs resulted in follow-up discussion during the visit. This simple practice resulted in a 35% reduction in office visits and 11% reduction in emergency room visits amongst 130,000 members.

Provider and Patient Concerns

The slow integration of ACEs screening and treatment into practice despite repeated calls to action for providers to do so has resulted in multiple studies questioning why providers and agencies have not acted (Ellis & Dietz, 2017; Forstadt, Cooper, & Andrews, 2015; Kalmakis, Chandler, Roberts, & Leung, 2017; Waite et al., 2010). Many providers cite lack of preparedness for addressing trauma in the primary care setting, naming concerns with training, provider competence and confidence, and a belief that this will be time consuming (Ellis & Dietz, 2017; Forstadt et al., 2015; Gillespie &

Folger, 2017; Kalmakis et al., 2017). Other providers expressed concerns about possibly damaging the patient-provider relationship or re-introducing the trauma (Gillespie & Folger, 2017; Waite et al., 2010).

In contrast to the providers' concerns, Gerrity and Arango (2010) report that patients' participating in ACEs screening and intervention studies want to be asked about ACEs and Waite et al (2010) further identify that spontaneous disclosure tends to be quite low. Gillespie and Folger (2017) describe that when asked about ACEs, many parents express gratitude toward the provider that they no longer have to avoid the topic or keep it secret. Ellis and Dietz (2017) describe caregivers who bring their children in to pediatric settings for well-child checkups as making efforts to do the best they can for their children. Wiig et al. (2017) noted that mothers identified two different issues when thinking about their future parenting by indicating a desire to provide their children with "…the love and predictability that they had lacked themselves…" (p. 32) while also hoping "… to prevent their children from experiencing the childhood trauma they had suffered". Without intervention, development of parenting skills other than those experienced themselves may be difficult to impossible (Wiig, Haugland, Halsa, & Myhra, 2017).

Professionals experienced in screening and treatment of ACEs describe inquiry into past abuse as both strengthening the patient-provider bond as well as empowering individuals to effectively participle in their own healthcare in a functional and sustainable way (Edwards, Dube, Felitti, & Anda, 2007). In direct contrast with provider concerns previously described, Gillespie and Folger (2017) demonstrated that primary care

providers conducting ACEs screenings in office report improved patient relationships without feeling time constraints or parental resistance to discussions about past trauma. Assisting adult patients to develop resilience is fostered by clinicians (Forstadt et al., 2015). ACEs inquiry by providers is described by Waite and colleagues (2010) as an "ethical imperative" (p. 53) since failure to ask perpetuates human suffering through trauma and violence.

Provider Training

Many programs exist that promote provider readiness for screening and treatment of ACEs. The focus of each program was largely on patient-provider relationships. Brown, King and Wissow (2017) combined the conclusions of 3 systematic reviews and stated "trusting, personal relationships between patients and providers and among collaborating providers, are a critical element of successful trauma-informed integrated care" (p. S94). One way to develop these relationships is through patient-centered care. The Substance Abuse and Mental Health Services Administration (SAMHSA) defines trauma informed approach with key principles. Providers who utilize the trauma informed approach are shown to have higher patient satisfaction related to increased patient-centered interactions (Oral et al., 2015). Evidence suggests provider readiness training for discussions about ACEs does not require extensive training (Oral et al., 2015; Wen, Miller-Cribbs, Coon, Jelley, & Foulkes-Rodriguez, 2017). One program, called Professional ACEs-Informed Training for Health (PATH), demonstrating success evidenced by provider feedback occurred over 4 hours and addressed how to have

discussions about ACEs, how to educate patients about ACEs effects on health, and how to formulate treatment plans that consider the patients ACEs (Wen et al., 2017).

Key components of provider training include provider understanding of their role. Providers shouldn't try to fix the identified ACEs-related problems but should, instead, ask questions, listen to the responses, and demonstrate acceptance of the patient (Waite et al., 2010; Wen et al., 2017). Providers must be familiar with community resources for when referral is required, though outside referrals related to ACE screening findings are reported to be uncommon (Gillespie & Folger, 2017; Waite et al., 2010).

Screening

Screenings, as defined by the National Institutes of Health, are "tests that look for disease before you have symptoms" (MedlinePlus, 2018, para. 1). It is important that ACEs screening occurs regularly in order to prevent the onset of toxic stress in children (Harris et al., 2017). ACEs screening can occur in many locations and as part of primary, secondary, or tertiary prevention efforts. This review of literature clearly identifies that the few existing ACEs screening programs often screen children in the pediatric provider's outpatient office where the pediatric provider reviews the screening results (Bethell et al., 2017a; Ellis & Dietz, 2017; Felitti, 2017; Gillespie & Folger, 2017; Pachter, Lieberman, Bloom, & Fein, 2017; Wen et al., 2017). Despite knowledge of neurological deficit resulting from early childhood ACEs, children are often overlooked and their trauma goes unrecognized due to their limited ability to self-advocate (Grimes,

2017). This is especially concerning since children with ACEs often have more than one mental health issue (Waite et al., 2017).

Screening approach appears to be an important component of the screening process. While rationale for screening should be explained in order to prevent or alleviate parent concerns of judgement or bias, it's also important that screening be administered by a trusted professional with whom the patient(s) have established rapport (Brown, King, & Wissow, 2017; Johnson et al., 2017). Screening should not only include ACEs but resilience as well (Bethell et al., 2016; Gillespie & Folger, 2017; Pachter et al., 2017). Many validated tools exist, such as the 10-question ACEs questionnaire, National Survey of Children's Health (NSCH)-ACE (Bethell, 2017a), Adult Attachment Interview and Connor-Davidson Resilience Scale (CD-RISC) (Gillespie & Folger, 2017).

Gillespie and Folger (2017) describe their efforts to prevent ACEs in children by screening caregivers for ACEs during routine 4-month well-child check-ups. This program was developed in consideration of the intergenerational transmission phenomenon, where identifying and addressing the effects of ACEs in caregivers may result in caregiver behavioral changes that decrease the likelihood of repeated ACEs for their children. The researchers report that this screening process was found by providers to improve the overall appointment quality and is feasible despite limited resources and time constraints.

U.S. Health Care System and ACEs

Given the developmental implications of ACEs and the current focus in the U.S. on healthcare spending, we appear more willing and able to systemically address ACEs at all levels of prevention. Though lawmakers are typically concerned with solutions to high-cost healthcare resulting from established health conditions, the non-traditional preventive focus appears to be gaining popularity amongst lawmakers, given Felitti's findings in reduced healthcare utilization and, thus, healthcare expenditures (2017). Ethically, it is clear that continued hesitation to address ACEs will "keep sending children… to stand at the end of a very long line and wait for treatment that might be unattainable" (Grimes, 2017, p. S19) in the current healthcare system. Work groups and task forces across the country have developed frameworks and implemented and evaluated programs for addressing ACEs. Repeatedly described was the need for comprehensive, interdisciplinary care where healing and resilience are facilitated (Bethell et al., 2017b; Ford, 2017; Forstadt et al., 2015; Felitti, 2017; Grimes, 2017; Melville, 2017; Read et al., 2014; Traverso-Yepez, Rourke, & Luscombe, 2017).

Psychiatric Advanced Practice Registered Nurses Role in ACEs Screening and Management

Modern health care often operates in a system described as having "silo mentality" (Traverso-Yepez et al., 2017, p.343), where specialties exist for treating specific conditions or age groups. This results in psychiatric providers often remaining outside the front lines of prevention efforts. The psychiatric advanced practice registered

nurses' (APRN) role includes assessment, education, psychotherapy, and medication management. Interactions between patients and psychiatric APRNs tends to occur when patients have reached or are nearing a crisis state after referral from other providers. While many suggest that psychiatric APRNs should be embedded in primary healthcare settings, this is not often the case (Solstis-Jarret, 2016). Efforts to specifically address ACEs in caregiver/child dyads conclude similarly that integration of psychiatric services at the primary care level is necessary (Bethell et al., 2017b; Ford, 2017; Forstadt et al., 2015, 2015; Felitti, 2017; Grimes, 2017; Melville, 2017; Read et al., 2014; Solstice-Jarret, 2016; Traverso-Yepez et al., 2017).

Nursing Theory

Neuman's Systems Model has been used to guide nursing practice (Neuman, 1996). Theoretical models strengthen the basis for nursing practice and advance our knowledge about the health of individuals and families. Neuman's model informed this project by providing a framework in which community-based nurses assisted families with the management of environmental stressors associated with ACEs. This model also supported the development of primary, secondary and tertiary nursing interventions that can be used in this project addressing ACEs.

Neuman's Systems Model is described as a "comprehensive conceptual model that clearly operationalized the concepts… relevant to nursing" (Masters, 2015, p. 134). In developing this model, Neuman incorporated multiple disciplines and theories as well as her own nursing expertise and beliefs such that the "client system in interaction with the environment is the domain of nursing concern" (Masters, 2015, p. 129). Client

system is the term used for person and can be a single person, group of persons, many groups, or a social issue.

Each client system consists of variables that interact with internal and external environments as well as each other. These variables include physiological, psychological, sociocultural, developmental, and spiritual variables. Each system is described to have innate protective mechanisms called lines of defense and resistance. Environment is defined as any/all internal or external factors affecting the client system, which serve to categorize environment into three sub-systems: internal, external, or created. Neuman identifies health as system stability. The nurses' role, then, is maintenance of system stability through preventive measures (Masters, 2015). The nurse must explore a systems' full reality by assessing each client system and his/her/its interacting environment while considering each of the variables comprising a client's system (Masters, 2015). The variables are different for each client system and identification allows for understanding of how environmental factors affect the client system toward dysregulation or a stable state.

CHAPTER THREE

PROCEDURES

Scholarly Project

This project was a program evaluation of the ACEs Action Program of Lewis and Clark County, Montana. The ACEs Action Team includes pediatricians and nurse practitioners from one local pediatric office and Lewis and Clark County Health Department (L&CHD) employees including a home-visiting social worker and supervising nurse. L&CHD staff involved in the program are also part of a larger Healthy Families Home Visiting program.

The L&CHD 2016 Health Improvement Plan has a broad goal for maternal child health which focuses on addressing and reducing the instances of ACEs by the year 2019 (L&CHD, 2016). A program evaluation to assess program structure, function and effectiveness was conducted using the steps developed by the Centers for Disease Control and Prevention (CDC) Introduction to Program Evaluation for Public Health Programs (IPEPHP) (2011).

This project was submitted to Montana State University Institutional Review Board. Confidentiality requirements of Health Insurance Portability and Accountability Act (HIPAA) and L&CHD were observed. This evaluation included analysis of de-identified data collected since the ACEs Action Program inception in 2015.

Lewis and Clark County

In Lewis and Clark County (LCC), the occurrence of factors that contribute to ACEs is often higher than the national averages. For example, in LCC 10% of children reported living with an alcoholic parent 14% of children live in poverty, and over 10% of children report being physically forced to have sexual intercourse (L&CHD, 2016; Montana Department of Public Health and Human Services (DPHHS), 2013). Over 33% of children in LCC reported having a parent with poor mental days in the previous month (L&CHD, 2016). Additionally, there were 3,028 reported instances of child abuse and neglect in 2015 in LCC, however, this number doesn't account for duplicate reports (L&CHD, 2016). The suicide rate for LCC is currently known to be 19.3 per 100,000 (L&CHD, 2016) while the national rate is 13.1 per 100,000 (CDC, 2017b).

Procedures

Program Evaluation Overview

Program evaluation is the means by which program effectiveness and accountability are demonstrated to stakeholders. A program evaluation serves to demonstrate efficiency as well as reduced morbidity and mortality or improvement in risk factors (CDC, 2011). All measures used to complete this program evaluation followed the steps outlined in the IPECHP, which includes six steps: 1) Engage stakeholders, 2) Describe the program, 3) Focus the evaluation, 4) Gather credible evidence, 5) Justify conclusions, and 6) Ensure use of evaluation findings and share lessons learned (CDC, 2011).

Steps of Program Evaluation

Step 1: The first step was to engage stakeholders, specifically those who are involved with the L&LC Health Department ACEs Action Team, those affected by the ACEs program, and those who will be involved with the users of this program evaluation. Stakeholders included-L&CHD staff, local pediatricians, staff from and the L&CC Board of Health. Meetings will be held with available stakeholders to discuss their interest level in the L&CC Health Department program to reduce ACEs, including their perception of program importance, expectations for the program, resources available for the program, and further questions they feel are important for program evaluation.

Step 2: The second step involved describing the current program in a manner which clarified the components and intended outcomes of the ACEs Action Program of Lewis and Clark County, Montana. This step described the current program need, targets, outcomes, activities, outputs, resources, and outcomes. The context and stage of program development were also be addressed during this step. A visual representation, also known as a logic model with theoretical support from Newman's Systems Model (1995), was developed to illustrate the relationship between the between the L&CHD's ACEs Action Team program activities and the programs intended outcomes.

Step 3: Step three focused on developing an evaluation plan, which included a review of program utility and feasibility. The evaluation design used depended upon the information collected in the previous two steps and included evaluation questions developed from this information. It was expected that a goal-based evaluation would be

appropriate using the L&CHD's broad goal of addressing and reducing the instances of ACEs by the year 2019 (L&CHD, 2016).

Step 4: This step involved gathering credible evidence and required consideration of indicators, sources of evidence, the quality and quantity of evidence available, and logistics. Evidence available for this evaluation included de-identified information collected by the L&CHD ACEs program including the number of referrals, number of participants' in the program and outcomes including the number of families who successfully completed the program, number who declined to participate, number who referred out, and number who could not be reached for participation.

Step 5: During this step the analysis of data collected in the previous four steps will be analyzed in order to generate and justify conclusions about the program. These conclusions are then compared to program goals and stakeholder values.

Step 6: The last step of program evaluation requires that evaluation findings be shared. A presentation to stakeholders will be provided and recommendations will be presented to the L&CHD supervisor of the Healthy Families Home Visiting Program in a written format.

CHAPTER FOUR

RESULTS

Step 1: Engage Stakeholders

Stakeholders are described as those involved with program operations, those affected by the program, and those who are intended users of the evaluation findings (CDC, 2011). Program operations of the ACE Action Team occur primarily at the Lewis and Clark City County Health Department (L&CCHD), within the Healthy Families Home Visiting Program. L&CHD staff working in this program were identified stakeholders at the program operations level. During the course of this project, L&CHD staff members have included two registered nurse (RN) supervisors and one home-visiting social worker. Referrals to this program come from members of the ACE Action team who provide primary pediatric care at a local pediatric office. Unfortunately, these pediatricians were not available during this project and their input as stakeholders was not available. Screening procedures discussed herein are provided by L&CHD program staff who work with the referring providers.

Stakeholders affected by the program include the program participants and the county Board of Health, represented by the Health Officer. Though program data was obtained, this information was de-identified and the anonymity required for this evaluation did not allow for patient identification and interview. The L&CHD does not request that participants complete an evaluation of the program or a satisfaction survey.

Stakeholders identified as intended users of the information obtained from this evaluation include the ACE Action Team and the Lewis and Clark County Board of Health. ACE Action Team members will be able to use this information to modify their program while the Board of Health can make recommendations for funding and expansion of this program.

Stakeholder involvement by Health Families Home Visiting Program staff members was ongoing throughout this evaluation and included dialogue as well as provision of all available de-identified data about the ACE Action Team program. This involvement assured accuracy in information, as well as a robust account of program initiation and direction. Board of Health involvement included a single interview and email dialogue with the representing Public Health Officer, where the program concepts, expectations, and support were discussed.

Step 2: Describe the Program

Need

The goals for maternal child health programming in L&CHD's 2016 Health Improvement was focused singularly on decreasing incidences of ACEs within the county. While ACE scores are not tracked specifically, other information on the health of the community is available that includes some of the individual ACEs as well as factors that contribute to ACEs. These include instances of child abuse, substance abuse, poor parental mental health, instances of domestic violence, and suicide rates. Professionals working with traumatized individuals need education on ACEs and this education must

include information on the effects of ACEs and should be addressed during clinic visits. This education should include information on the effects of ACEs. This program's existence is dependent upon the screening, referral, and therapeutic behaviors of all professionals involved, including the providers who refer clients to the L&CHD ACEs action Team program and all L&CHD staff members.

Targets

Currently, ACEs screening by primary caregivers occurs at four-month well-baby check-ups at one ~~a~~ local pediatric office. This pediatric office sends referrals to L&CHD when primary caregivers have screened positive for four or more ACEs. Additionally, referrals are occasionally sent to L&CHD without screening questionnaire completion when the provider identifies at-risk families in which ACEs are identified in either the primary caregiver(s) or child or when problem behaviors emerge that are suspected to be associated with ACEs. These referrals may come from the pediatric providers office or from other L&CHD programs, such as its affiliated primary care clinic.

Professionals who interact with traumatized individuals have been identified by the L&CHD safety officer as all L&CHD personnel and agency staff at the local pediatric providers' office. Additionally, other community providers and human services organizations have been identified for further program outreach through education. Agencies working specifically with children and families have been prioritized first, while any agency that requests ACEs training or information is provided by L&CHD staff if resources allow.

Outcomes

All efforts by the ACEs Action Team are toward reducing ACEs instances county-wide. This starts with education of personnel who work with traumatized individual on the effects of ACEs and importance of identifying and addressing them. Those receiving the ACEs training will be better able to support all individuals with whom they interact.

Caregivers referred to L&CHD will be provided education on ACEs effects and individualized resources available for mitigating them. This education and resource utilization will help caregivers disrupt the transmission of ACEs to the next generation by providing tools and support for changes in their own behaviors. Such behavior changes might include substance abuse treatment and/or cessation, use of resources that reduce limitations related to poverty, and participation in health and mental health promoting activities. The goal is that as a result of these educational training, caregivers may experience improved quality of life and be able to promote improved quality of life for their child/ren. It is believed that education will improve indicators of community health, including decreasing instances of reported child abuse, parental substance abuse, poor parental mental health days, and suicides.

Activities

At the time of ACE Action Team inception, the nurse program manager for the L&CHD Home Visiting program was designated an ACE Master Trainer. This designation comes with completion of an intensive program created and taught by ACE study co-pilot Dr. Robert Anda and ACE fieldwork pioneer Laura Porter. As an ACE

Master Trainer, the program manager trained all interested L&CHD staff and provided ACEs trainings throughout the community. However, this person left L&CHD in 2017, approximately 2 years after the inception of the ACE Training Program. This individual worked to establish community and regional partners in order to expand the referral program and also oversaw home-visiting staff activities. The individual now responsible for management of the Home Visiting program is a nurse experienced in family home visiting and maternal child health, however, is not an ACE Master Trainer.

Caregiver screening is overseen by three of the six pediatric providers at one local pediatric office. The pediatric office sends referrals to L&CHD when primary caregivers have screened positive for four or more ACEs. Occasionally, referrals are made without identifying four or more ACEs via screening when the caregiver discloses how ACEs are interfering in their role as caregiver.

All referrals are entered by the pediatric office into the community-wide, Health Insurance Portability and Accountability Act (HIPAA)-compliant, electronic referral system called Connect. L&CHD employees are alerted to these referrals via email when an electronic referral is received. The L&CHD social worker phones the caregiver, providing a reason for the call, including more information on ACEs effects as well as the option of further information and resource referral through a no-cost home or office visit. Attempts to reach referred parties occur within three days of referral receipt and at least three attempts are made to reach them within this three-day span. Each interaction, and attempted interaction, with referred parties is documented in Connect. Anytime the referral is updated, L&CHD employees and the referring provider are alerted via email.

Visit content and location, as well as length of caregiver participation in the program, vary by case. Cases are closed when both the referred party and L&CHD social worker agree that maximum benefit has been reached.

Outputs

As a result of professional education, frequency of patient screening for ACEs should increase with subsequent referrals to L&CHD. Referral numbers to L&CHD should increase and, as a result, the number of high-ACE caregivers who are reached with education and resource information should increase.

Resources

The ACE Action team is made up of trained professionals already providing services in roles that include other duties. The program did not require additional full time equivalent (FTE) staffing, however, program expansion, if needed, may require additional resources. Program goals include expansion to all providers of primary care to children. At the time of this evaluation, the referral count did not justify increased staffing. Material resources provided to caregivers are typically flyers provided by other agencies, describing their services. Some handouts printed or copied at L&CHD are provided occasionally. The referral system used within the ACE Action Team was already in place within the community and is used for other referrals as well, meaning there is no additional input required for maintenance specific to the ACEs Action Team.

Logic Model

The logic model in Table 1 serves to provide quick reference to goals of the ACE Action Team and the actions taken by this team to reach those goals. This comparison helps to focus the evaluation by identifying the environmental interactions, present or needed, which Neuman's Systems Model theory describes as key to any program's success.

Table 1: Logic Model: ACE Action Team program goals and actions taken in support of goals

Program Goals	Actions
1. Train all L&CHD employees on ACEs and their impact on individuals and families	ACE Master Trainer, who was program supervisor at time, provided one training to all interested L&CHD employees (35 employees attended).
2. Get referrals from local primary care providers	L&CHD receives referrals from its own primary care clinic and from one local pediatric clinic.
3. Expand program	• Early conversations were conducted with 2nd local pediatricians' office, who showed interest in participating. • ACE Master Trainer, who was program supervisor at time, provided trainings upon request to interested community groups that work with traumatized individuals.
4. Support community health plan goals of reducing ACEs county-wide	• ACE Action Team formation and program implementation based upon successful program at Children's Clinic in Portland • Program content similar in topics to the Children's Clinic in Portland
5. Utilize Evidence Based Practice (EBP) when available	• Program development involved discussions with Childrens Clinic Portland program developers. • Program developer and initial supervisor monitored the online collaborative living document

Table 1: Logic Model: ACE Action Team program goals and actions taken in support of goals continued

	describing ACE best practices through 3/14/15.
6. Demonstrate utility and feasibility	Track number of referrals to and from the program, number of participants, and successful program completions.

Step 3: Focus the Evaluation Design

This evaluation is goal-based, meaning the focus was on comparing program inputs to outputs and intended goals to actual results. Evaluation design is based upon four standards: utility, feasibility, propriety, and accuracy (CDC, 2011). These standards will be addressed below under each standard.

Utility

Utility describes the purpose of the evaluation, intended users of the results, and addresses any special needs of stakeholders. Evaluation utility is described as three separate components. These components include the purpose of the evaluation, intended users of the information obtained in the evaluation, and the specific stakeholder's needs.

Evaluation Purpose: This evaluation reflects on processes of the ACE Action Team members at L&CHD. As the first evaluation of this program, program intentions and expectations were evaluated against activities and outcomes. Additionally, the processes of L&CHD ACE Action Team were compared to those of other, similar programs with documented success for process validation.

Evaluation Users: ACE Action team members, L&CHD administration, and the Board of Health are the intended recipients of this evaluation. Information can be used to make adjustments to program processes, increase outreach, and expand the program as these items relate to internal processes, funds allocation, and community partnership and support. Other stakeholders, such as the local pediatric clinic, as well as potential stakeholders, such as other primary care providers, may also be able to use these evaluation findings and incorporate new screenings and/or referrals into their practice.

Stakeholders Needs: ACE Action team developers and members at L&CHD want to know that the work they are doing is based on best-practice evidence. L&CHD administration needs to see that the program is beneficial to both program participants and to community providers/partners. The Board of Health needs to know that issues related to ACEs are being effectively addressed in the community.

Feasibility

The feasibility standard describes the programs stage of development, program intensity, and means of measuring the intended focus.

Program Stage & Intensity: Programs exist in one of three stages: planning, implementation, or maintenance. Though initiated in October 2015, this program alternates between implementation and maintenance stages. Program developers and ACE action team members wish to expand the reach of the program in order to inform professionals about ACEs effects and establish more referral partnerships with other primary care providers. The most established and robust components of the program are

the resources available to provide to infant caregivers, which is updated regularly by L&CHD program staff. Program numbers have been relatively low as compared to the believed need in the community because program staff and developers recognize that the caregiver intervention can be intensive and time consuming for the L&CHD staff members. It is important to note that intensive programming is necessary for significant contributions to improving outcomes (CDC, 2011), which is consistent with this program's goals. Part of this evaluation serves to describe the resource commitment on part of the L&CHD ACE Action team members in order to provide guidance on program expansion.

Means of Measuring the Intended Focus: Measurable outcomes for the program include the number of referrals to and from the program, number of program participants, and number of successfully completed cases. In time, these numbers will be linked with the community-wide instances of child abuse, substance abuse, poor parental mental health, instances of domestic violence, and suicide rates. However at this time, the program has not been in existence long enough to establish such a relationship. Key program components and procedures in this program will be compared to those of other, similar programs with documented success, including the presence of comprehensive, interdisciplinary care in the primary setting, ACEs and resilience screenings which occur at well-child checks, primary care providers feeling equipped to discuss ACEs and their effects, and early intervention when ACEs are identified. Additionally, programs for addressing ACEs must have a central focus on relationship building and relationship education as well as education on building resilience and controlling emotions and stress.

Referrals to support groups and ongoing advocacy for equitable community environments are also identified components of effective ACEs mitigation.

Propriety

Propriety identifies if the ability of the evaluation to detect unintended consequences and ensures that the experiences of those affected by the program are included in the evaluation. This evaluation examined all aspects of the program through interview of ACE Action Team members and the Safety Officer as well as by examining existing, de-identified program data collected by L&CHD staff. Useful data regarding the experiences of program participants was not available because such data is not collected by L&CHD. Similarly, information on the effectiveness of the ACE education for professionals was also not available for the specific L&CHD group. The experiences of L&CHD ACE Action Team Members was described in this evaluation.

Accuracy

Accuracy questions ensure that the evaluation was broad enough to detect program success while also addressing the specific needs of the stakeholders. This evaluation specifically addressed the needs of stakeholders. It compares the program processes and components to best practices for ACEs screening and intervention. This comparison helps to make topics of program effectiveness and areas to increase focus become more apparent.

Step 4: Gather Credible Evidence

Evidence is described for goals related to professional development processes and also for program processes and components of the patient-focused portion of the program. Table 1 described program goals identified by the L&CHD program staff and the Safety Officer and names actions taken to work toward those goals. With these goals in mind, indicators were developed for each program goal as described in Table 2, shown below.

Table 2: Indicators for program goals

Program Goal	Indicator
1. Train all L&CHD employees on ACEs and their effect on health	1.1 L&CHD has specific plan for providing ongoing ACEs education to employees to remind and reinforce concepts and also inform new employees
2. Get referrals from local primary care providers	2.1 Referral numbers tracked by source, including specific provider 2.2 Referral numbers are monitored for consistency and drops in referral counts are followed up on with referring providers
3. Expand program	3.1 L&CHD program staff provide ACEs training to outside organizations that work with traumatized individuals (at least two annually) 3.2 L&CHD program staff engage outside resources regularly (at least one per month) to increase sources of referrals 3.3 L&CHD program staff engage outside resources regularly (at least one per month) to increase resources to which participants can be referred
4. Support community health plan goals of reducing ACEs county-wide	4.1 Program content provided to participants includes educational components in at least five topic areas, which are measured regularly 4.2 Four topic areas, which are also community health indicators, decrease at next measure (either every 2 or 10 years)

Table 2: Indicators for program goals continued

5. Utilize EBP when available	5.1 Home visiting approach is used 5.2 Participant education includes information on the importance of caregiver-child relationships for resilience-building as well as resources for building these relationships 5.3 Participant education includes the importance of regulating emotions and stress and methods and/or resources to do so 5.4 Participant education includes information on the importance of parental mental health and resources to promote this 5.5 Participant education includes information on the importance of community engagement and some such opportunities or groups are described 5.6 L&CHD engages in work to support equitable policy and education for those experiencing the effects of ACEs 5.7 L&CHD program staff provide community providers education and support to increase providers ability to address ACEs in-office
6. Demonstrate utility and feasibility	6.1 L&CHD program staff track numbers of referrals to and from program, participant numbers, successful program completion numbers 6.2 L&CHD program staff track time required to address referrals who do not participate 6.3 L&CHD program staff track average number of visits for participants that successfully complete the program 6.4 L&CHD staff anonymously survey program participants for satisfaction and effectiveness

Evidence Gathered

Evidence gathered reflects on whether current practices and procedures align with the identified indicators in Table 2. This evidence for each indicator is detailed below and described further in Step 5: Justify Conclusions, where it is analyzed. All evidence gathered occurred via direct questioning of current and former L&CHD Home Visiting program staff and the former Safety Officer via verbal or email responses. Data on

referral counts and participation was generated from Connect by L&CHD staff and de-identified prior to release.

Indicator 1.1: L&CHD provided a one-time training to all interested employees, which totaled 35 individuals. Additional trainings have not been offered. Approximately two years after program inception, the ACE Master trainer, who was also the Home Visiting program supervisor, left L&CHD and there is currently no ACE Master Trainer on staff.

Indicator 2.1: Referral numbers are tracked at L&CHD by referring agency, not by specific providers or programs. Referring agencies include one local pediatric office and staff at the L&CHD.

Indicator 2.2: The number of referrals is tracked and reported annually or as requested. Check-ins with referring providers are not conducted specifically to discuss referral counts.

Indicator 3.1: The first Home Visiting program supervisor was an ACE Master Trainer who conducted training on ACEs and their effects. These trainings were provided as requested by outside organizations, totaling one formal training to a local clergy group in 2016.

Indicator 3.2: L&CHD Home Visiting staff interact with both adult and pediatric primary care providers several times per week. Staff report discussing referrals for ACEs with these providers occasionally. Sometimes, the cases are more appropriate for other

programs, such as Nurse Family Partnership (NFP) and are referred to these directly without coming through the ACE Action Team.

Indicator 3.3: L&CHD Home Visiting staff interact with community providers of primary care and mental health services several times weekly. During these interactions, the potential for referrals to these services are discussed almost always.

Indicator 4.1: Program content is tailored to each caregiver's specific situation and needs. Every program participant receives education on ACEs and their effects. This includes describing how children are affected by child abuse, substance abuse, poor parental mental health, instances of domestic violence, and suicide. It also describes how each of these ACEs can be transmitted intergenerationally.

Indicator 4.2: New data describing community instances of the five identified health indicators is not available at this time but is anticipated to be available in 2019.

Indicator 5.1: L&CHD Home Visiting staff connect with referred caregivers and offer services in a convenient and comfortable place for the caregiver. This can be in the home, at the L&CHD, or in a public place.

Indicator 5.2: L&CHD staff provide caregiver education on ACEs and their effects, which includes the importance of addressing caregiver ACEs, in order to disrupt intergenerational transmission. Informational websites are recommended by L&CHD staff and community resources are recommended when appropriate. These community resources typically include support groups or referrals to case management or therapy.

Indicators 5.3 & 5.4: L&CHD staff provide education to caregivers on ACEs and their effects, including dysregulated emotions and how these can lead to or contribute to poor parental mental health as well as how inappropriate expression of stress can cause disrupted attachment between child and caregiver. Informational websites, a handout on stress-releasing activities, recommendations for community support groups and referrals to other providers in the community are also provided to caregivers.

Indicator 5.5: L&CHD staff encourage caregivers to participate in community support groups. Specific education on the importance of community engagement is not provided.

Indicator 5.6: L&CHD Home Visiting program staff advocate for all home visiting programs that they oversee. This advocacy includes interacting with community providers at least weekly. Additionally, the former Safety Officer worked to establish ACEs education within L&CHD and this program for addressing ACEs. At this time, ongoing education summits provided by L&CHD staff members are not available internally or externally.

Indicator 5.7: The founding members of the ACE Action Team within L&CHD worked with one local pediatric provider to establish the program. Founding members from L&CHD engaged the other pediatric provider in the area in discussions but did not onboard them. Topics of discussion have not focused on provider training that enables primary care providers to address ACEs in-office, but rather has focused on completing ACEs screening and referring caregivers to L&CHD staff for follow-up.

Indicator 6.1: Referral numbers, referral numbers by provider location, successful program completion numbers, and count of number referred but not participating are all tracked by L&CHD.

Indicator 6.2: L&CHD program staff estimate time required to address referrals who do not participate to be approximately 10 minutes. This time includes calling the referred caregiver and briefly explaining the purpose of the call, program purpose and available resources. This time also includes logging in to Connect and entering attempted calls and results of these calls. Occasionally, these cases take more time as a result of time spent discussing the case with the referring provider, but this is rare as providers tend to use Connect to make referrals.

Indicator 6.3: L&CHD program staff do not track number of visits for each participant who successfully completes the program, however, this information can be determined through case review.

Indicator 6.4: L&CHD program staff do not survey program participants in any way.

Referral and Participant Count: Graphic depiction of this data is found in the Appendix. Referrals to the ACEs Action Team were initiated in July 2015. Referral count for 2015 totaled two referrals, both from the local pediatric clinic. Data on participation was not available for 2015 as both cases carried over into 2016. In 2016, L&CHD received one referral from its own primary care clinic and six referrals from the

local pediatric clinic. L&CHD referred one of these cases out to another program. Two referrals successfully completed the program and two referrals did not participate. The remaining referral was closed in 2017. In 2017, the program received two referrals from the L&CHD primary care clinic and another 13 from the pediatric office. They referred one case back to the L&CHD primary care clinic for psychiatric services. Eleven referrals were closed in 2017 and the remaining five were closed in 2018. For the 11 closed in 2017, six referrals did not respond to inquiries by L&CHD program staff, two chose not to participate, and three successfully completed the program. As of 7/10/2018, only one referral had been received from the pediatric clinic and none from the L&CHD primary care clinic. Six cases were closed between January 1, 2018 and July 10, 2018. Of these, four referrals did not respond to inquiry, one declined services, and one successfully completed the program.

Step 5: Justify Conclusions

Data Analysis

The data gathered largely supports the identified indicators for each goal. Referral and outcomes data lend insight to where the ACE Action Team program is most effective. Findings are discussed for each program goal. A report card summary is found in Table 3.

Goal 1: Train all L&CHD employees on ACEs and their impact on individuals and families. This goal was identified by the L&CHD Safety Officer. The Home Visiting program supervisor at time of program development and inception provided one

optional training, open to all interested L&CHD employees. Thirty-five employees attended. Costs of certifying another ACE Master trainer or bringing in an outside ACE Master trainer to provide ongoing trainings is prohibitive for L&CHD. Development of an independent-study training course for current employees and new-hires may be an alternate option until live trainings can resume.

Goal 2: Get referrals from local primary care pediatric providers. Referrals come primarily from one local pediatric office. L&CHD program staff state that only three of the six providers within this practice are screening patients and sending referrals. The most referrals received from this practice in a single calendar year totals 13, which may not be an accurate number of high-ACE caregivers seen in their office. Providers from this practice did not respond to requests for participation in this evaluation, however, their input as stakeholders is needed and a member of the L&CCHD should follow up with these providers. L&CHD does not track the specific provider sending the referral, however, tracking by referring provider and discussing referral counts may support increased referrals by addressing provider concerns that may interfere with their decision to screen and/or refer to the program. There is another pediatric primary care practice and several other primary care providers who see infants and children in the area. Recruitment of these providers into the program may be a consideration for L&CHD at this time.

Goal 3: Expand the program. One outside training was provided to a clergy group that requested it. This training was provided by the former ACE Master trainer on

staff. While there is not another ACE Master trainer on staff at this time, L&CHD can refer anyone requesting the training to the local Child Wise group to which all area ACE Master trainers belong and request a free training, though availability of trainers is not guaranteed. Given the high frequency with which L&CHD Home Visiting program staff already interact with primary care providers throughout the community, initiating more conversations about ACEs and referrals to the program may be a consideration for L&CHD program staff. Additionally, there is another pediatric primary care practice and several other primary care providers who see infants and children in the area and recruitment of these providers into the program may be a consideration for L&CHD at this time, especially if the current trending number of referrals to the program are a true representation of need. Other potential agencies to recruit as referral sources include the labor and delivery unit of the local hospital as well as local obstetricians.

Goal 4: Support community health plan goals of reducing ACEs county-wide. Part of the general education about ACEs that all participants receive includes information pertaining to the four health indicators L&CHD wishes to affect: a decrease in instances of reported child abuse; parental substance abuse; poor parental mental health days; and suicides. New reports of these four health indicators for the county are expected in 2019. At this time, program numbers are not likely sufficient to affect these counts.

Goal 5: Utilize EBP when available. Key program components reported in the literature include the use of a home visiting approach, which is the structure of L&CHD's

program. Important educational components reported in the literature include a focus on the centrality of relationships for resilience building, the importance of caregiver regulation of emotions and stress, and the effects of poor caregiver mental health on the child (Bethell et al., 2016; Bethell et al., 2017b; Brown et al., 2017; Chesmore et al., 2017; Sege & Browne, 2017). L&CHD staff provide education on each of these topics and also provide information including local and web-based resources. While Sege and Browne (2017) name one important component of reducing transmission of ACEs intergenerationally to be community engagement, the ACEs Action Team only encourages participation in community support groups. L&CHD staff may consider providing additional education on the importance of community engagement for both caregiver and the caregiver-child dyad, including a list of local community organizations or groups where caregiver and child involvement serve to strengthen their relationship to each other and to their community. Advocacy by L&CHD staff for equality in education and policy for those with high ACE scores largely occurs at the administrative level while program staff advocate as needed for individual caregivers or dyads. The most discussed educational component in the literature for addressing ACEs was regarding provider education and comfort in screening for and discussing ACEs in office (Ellis & Dietz, 2017; Forstadt et al., 2015; Gillespie & Folger, 2017; Kalmakis et al., 2017). While many child and adult primary care providers do not screen for ACEs due to lack of perceived confidence or lack of understanding of the effects of ACEs, this may be changed through short educational interventions (Oral et al., 2015; Wen et al., 2017). The L&CHD staff do not currently provide education on ACEs to pediatricians or family

practice providers, nor do them education them on how to address ACEs as part of their practice and may consider adding these efforts in the future. Given the high frequency with which referred caregivers decline to participate in the L&CHD program, an in-office intervention may prove more effective and reach more high-ACE caregivers than the program does as currently structured. Gillespie and Folger (2017) describes a sense of caregiver-perceived closeness and relief when primary care providers address ACEs, suggesting L&CHD efforts could be shifted toward preparing primary care providers for addressing ACEs in office.

Goal 6: Demonstrate utility and feasibility. At this time, the information tracked by L&CHD includes numbers and organizational sources of referrals and numbers of participants, refusals, and successful program completions, which is especially important when determining time required of L&CHD staff for this program since ACEs Action Team is not their only responsibility. Other important information L&CHD program staff may consider tracking includes actual time spent addressing referrals who do not participate and number of visits and time required to reach successful completion status. This information would provide more accurate information on actual time required of employees such that expansion can be planned. Additionally, surveying participants for program effectiveness and satisfaction could help guide further program development. Gathering some historical and demographic data in these surveys may also support L&CHD in determining an actual cost savings associated with the education they provide.

Table 3: Report card summary

Goal	Strengths	Suggested Areas for Improvement
1. Train all L&CHD employees on ACEs and their effect on health	1. One training was provided to all interested staff in 2016	1. Continue refresher trainings Implement new-hire training
2. Get referrals from local primary care providers	1. One local pediatric primary care office and one L&CHD primary care clinic provide referrals	1. Offer provider education to participating pediatric office/s so that all pediatric providers participate in caregiver screening for ACEs 2. Evaluate participating pediatric providers use of referral program 3. Expand referral sources to include second pediatric primary care practice & other adult and child family practice providers
3. Expand program	1. Training to outside organizations was offered and provided on one occasion on 2016	1. Increase discussion of ACEs when interacting with community providers 2. Consider recruiting obstetricians and labor and delivery unit of hospital to screen for ACEs and refer caregivers w/ high ACE scores to L&CHD
4. Support community health plan goals of reducing ACEs county-wide	1. All program participants receive general education on ACEs that includes the four community health indicators monitored	2. Need more participation in the program to affect these community health indicators
5. Utilize EBP when available	1. Program utilizes home-visiting structure 2. Educational on and list of local resources regarding: caregiver-child relationship and building resilience, stress and emotional regulation, and	1. Include education on the importance of community engagement and provide list of local resources with which dyads can engage 2. Shift L&CHD program staff focus to providing primary care provider

Table 3: Report card summary continued

	the effects of parental mental health on child 3. Community support group utilization by caregivers is encouraged by L&CHD	support and training for addressing ACEs in office
6. Demonstrate utility and feasibility	1. L&CHD tracks number of referrals by provider location, number of participants and number of successful completions	1. Track time required to address referral that declines services 2. Track number of visits required for successful program completion 3. Anonymously survey program participants for program satisfaction, effectiveness and collect historical and demographic information

CHAPTER FIVE

RESULTS

Implications for L&CHD ACEs Program

Data Collection For Expansion

The goals of this program evaluation demonstrate utility of the ACEs program and confirm that this program aligns with best practice evidence for addressing ACEs in primary caregivers of children. A total of six caregivers successfully completed the ACEs program at L&CHD, although 25 caregivers were referred to the program, indicating a 24% completion rate of referred cases since this program was started in 2015. The development, implementation, and maintenance of the ACEs program did not require additional staffing at either the L&CHD or in the referring providers' offices. It is recommended that staff at the L& CHD collected the following information: the average time investment by L&CHD staff for cases that successfully complete the program, the number of clients who do not complete the program after referral, and those who opt out or cannot be reached would be useful information for the program to gather in order to best determine their capacity for program expansion. Once this expansion capacity is better understood, L&CHD may consider adding other referring providers. Such providers could include all primary care providers to children as well as women's health care providers who interact with pregnant women and mothers.

Data Collection For Utility

The ACEs program exists within L&CHD in the Home Visiting department, which also utilizes NFP, which is evidence-based and has positive outcomes. The data collected for NFP allows for demonstration of actual dollars saved per participating family, specifically with regard to costs associated with child abuse and neglect that have been avoided as a result of the program. Data collection for the ACEs program that mirrors that of NFP would allow for similar cost analysis and the ability to mirror data collection efforts for a program within the same department may not require additional resources. Additionally, a survey of participant satisfaction and the perceived effectiveness of the program would allow staff to review the expectations of participants and their needs against the program activities. At this time, it appears the program is sustainable and effective, though additional data collection would confirm this conjecture.

Program Momentum

L&CHD's 2016 Health Improvement Plan identifies maternal child health goals that focus singularly on the reduction of ACEs. This, coupled with the robust knowledge demonstrated by the program staff and present and former Safety Officers on ACEs and their effects, indicates that L&CHD is proactive in implementing strategies for addressing this relatively new field that is ACEs intervention. At the time of this writing, the job posting for a new Home Visiting Program Nurse Supervisor just closed, meaning the program will see it's 3rd nurse supervisor in as many years. Additionally, the program social worker and L&CHD Safety Officer are new to their positions within the last 6

months. The Home Visiting program consists of only two staff members who are overseen by the Safety Officer. Considering this turnover and the fact that there is no ACE Master Trainer in L&CHD, as well as the sharp decrease in referrals to the program in 2018, it appears these evaluation findings come at a pivotal time and may serve to renew dedication to the program. Additionally, a renewed ACEs education program for L&CHD staff may be considered such that all new employees are trained on ACEs and their effects and current employees are offered refresher courses. Another department of L&CHD has a partnership with Intermountain, a local child and family behavioral health service provider. Here, a clinical Social Worker employed by Intermountain is located within and serves patients in the L&CHD primary care clinic. Additionally, Intermountain started the network program called Elevate Montana, which L&CHD is an affiliate of, in addition to many other organizations. The goal of Elevate Montana is to elevate the health of Montana's children through partnership, information and idea exchange, and assistance to each other. L&CHD may explore the possibility of utilizing an affiliate of Elevate Montana or Intermountain for ongoing ACEs training.

Comparative Evaluation

The program is consistent with the literature in terms of procedures and program components. The only area that appears un-addressed by L&CHD, but has proven to be of high importance to child caregivers, is the ability of primary care providers to address ACEs in the primary care office without being referred out (Waite et al., 2010; Wen et al., 2017). The L&CHD ACEs program will need to look toward providing education and support to primary care providers of children in order to enable in-office

interventions. The potential for trainings was in place at the time of program inception, given that the L&CHD had an ACE Master Trainer on staff. L&CHD may consider adding this expertise again so that training on ACEs and the effects of ACEs is available for providers in the community. Without the input of referring providers, it is not clear at this time if the providers feel comfortable screening for and addressing ACEs in-office. Felitti and Anda, the original authors of the ACE study (1995) reported that over half of respondents have experienced at least one ACE and approximately 25% had experienced two or more ACEs. This high prevalence of ACEs is similarly anticipated for LCC, given the community statistics for higher-than-national-average suicide rates, poor mental health days, drug abuse, and reports of child abuse (L&CHD, 2016; DPHHS, 2013). Referral counts to L&CHD are not consistent with Felitta and Anda's findings, however, coming in far lower than expected. Pediatrician input could clarify if this because the providers are not screening consistently, not finding ACE scores of four or greater in caregivers, or if the providers are already addressing most instances of caregivers with high ACE scores in-office.

Implications for Pediatric Providers

Addressing ACEs In-Office

The meaning of the findings of the program evaluation would be more applicable to area providers if provider input was available during this project. None-the-less, evidence on provider behavior surrounding ACEs screening and intervention appears to be consistent across studies, in that providers often feel they cannot or should not ask

about ACEs due to their own lack of knowledge or comfort level in doing so, or for concerns of time during the appointment (Ellis & Dietz, 2017; Forstadt et al., 2015; Gillespie & Folger, 2017; Kalmakis et al., 2017). The most robust findings during a literature review for this project, however, surround the importance of primary care providers addressing ACEs in-office and findings also describe the minimal inputs required to assist providers in feeling equipped for such inquiry with their patients (Brown, King, & Wissow, 2017; Johnson et al., 2017; Oral et al., 2015; Wen et al., 2017). In addition to program expansion through increasing the number of primary care providers who refer caregivers with high ACE scores to the L&CHD, it may be worthwhile for L&CHD to host half-day training for community primary care providers of children. Such programs are shown to improve provider comfortability and knowledge for addressing ACEs (Oral et al., 2015; Wen et al., 2017). The availability of continuing education credit for participation may serve as an incentive for attendance.

Universal Screening

Felitti and Anda (1998) clearly describe the multitude of long-term health effects associated with ACEs. Some experts even suggest that ACEs be considered a developmental disorder (Garner et al., 2012). Like other developmental disorders, screening should occur both universally and routinely such that new or worsening trauma situations can be identified and potentially disrupted. No recommendation for screening intervals was found.

Implications for Psychiatric Mental Health Nurses

Traditional Role Implications

Intake assessment by psychiatric mental health nurses typically includes a robust social and family history where issues of trauma are often discussed. The inclusion of an ACEs screening may provide specific discussion points for the provider and patient. Not only will this ACEs information assist the psychiatric mental health nurse in understanding their clients' whole condition, but education on ACEs and associated health effects to the client will serve as an intervention in and of itself. In the event that clients are referred back to primary care for maintenance therapy, inclusion of the ACE score in the referral report may also guide the primary care provider to discuss specific issues or triggers with the patient during follow-up.

Integrated Behavioral Health Role Implications

The ACEs Action Team program currently exists as a partnership between primary care providers for children and the L&CHD Home Visiting program staff. The potential role for psychiatric mental health nurses in this program depends largely on the integration of behavioral health into primary care settings, which is not currently the practice of the referring pediatric agency, nor is it a reimbursable service at this time. Integrated behavioral health is the model of the L&CHD primary care clinic, which is likely the reason the clinic seldom refers to the ACEs program. Behavioral health clinicians and psychiatric mental health nurses are embedded within the clinic and are typically available to address needs and issues as they are identified.

Conclusions

The role of the psychiatric nurse practitioner in addressing ACEs appears to be changing, with a shift toward earlier patient contact and intervention as seen in the integrated behavioral health model in place at the L&CHD primary care clinic. The necessity of this shift from healthcare silos toward integrated behavioral health is amplified by the implications for poor patient health outcomes when ACEs have occurred, as reported by Felliti and Anda (1995). Patients who have received ACEs screening generally report that the screening was welcome, but that results need to be discussed with someone who is familiar and trusted, such as the primary care provider (Gerrity & Arango, 2010; Gillespie & Folger, 2017). It is unclear why most of the high-ACE caregivers referred to L&CHD do not participate in the L&CHD ACEs program, but it is clear that this transition to treatment must be overcome. When the mental and emotional health of patients has been affected by ACEs, it's important that the primary care provider have resources available in-office, such as a psychiatric nurse practitioner. This presence allows for a warm-handoff that may be key in keeping patients engaged in addressing the ACEs.

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APPENDIX

APPENDIX

REFERRAL COUNTS AND OUTCOMES

Table A1: Referral counts by agency and year

Referring Agency	Referred To	2015 Total	2016 Total	2017 Total	2018 Total
Pediatric Office	ACE Action Team	2	6	13	1
L&CHD Primary Care Clinic	ACE Action Team	0	1	2	0
ACE Action Team	Partnership for Home Visiting Program	0	1	0	0
ACE Action Team	L&CHD Primary Care Clinic	0	0	1	0
Annual Referral Count To ACE Action Team:		**2**	**7**	**15**	**1**

Figure A1: Referral outcomes by year

