

ACE QUESTIONNAIRE IMPLEMENTATION: CREATING A
TRAUMA-INFORMED APPROACH IN AN INTEGRATED
COMMUNITY HEALTH SETTING

by

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ABSTRACT

Adverse childhood experiences (ACEs) are potentially traumatic events that occur in childhood (0-17 years) and can have a significant impact on adult high-risk behavior and chronic diseases such as heart disease, cancer, diabetes, and mental health disorders. Despite ACE screening being the recommended practice, primary care and community health providers do not consistently screen for ACEs. Screening for ACEs in these settings offers an opportunity for recognition, early intervention, and prevention of poor long-term health outcomes. This quality improvement project aimed to implement ACE screenings in a community health setting in southwestern Montana. Screening and identification of ACEs facilitated early interventions such as referrals to psychotherapy and would ultimately aid in the prevention of long-term negative health outcomes. The DNP student and lead behavioral health consultant (BHC) used the Plan Do Study Act (PDSA) framework to guide implementation. Data collection included ACEs administered, returned, scores, and referrals made. Data collection occurred over a six-week period. The Identified Adult ACE Questionnaire was included in new patient assessment packets and administered to all new behavioral health patients. Of the 18 patients who returned an ACE questionnaire, 14 (78%) completed a follow-up visit with a behavioral health consultant. The average ACE score was 3.83. Fifteen patients (83%) received referral resources for psychotherapy. Nine patients (50%) screened as “high risk” for poor long-term health outcomes. Implementing ACE screenings in a community health setting allows providers to screen high-risk patients and intervene with evidence-based practices to promote health and limit long-term negative health outcomes. ACEs, if recognized, can be mitigated through early intervention and trauma-informed care.

CHAPTER ONE

SIGNIFICANCE, PROBLEM, & LITERATURE REVIEW

Adverse childhood experiences (ACEs) are potentially traumatic events that occur in childhood (ages 0-17) and may include experiences of violence, abuse, instability, and neglect. The ACE questionnaire is a 10-question screening that addresses experiences of emotional abuse, physical abuse, sexual assault, emotional neglect, physical neglect, maternal violence, substance abuse within the household, household mental illness, parental separation, and an incarcerated household member. The screening categorizes the number of experiences from zero, one to three, and four or more. It also asks patients to summarize how their experiences affect their health as not much, some, or a lot. The accumulation of these experiences can increase the risks of injury, sexually transmitted infections, maternal and child health problems (including teen pregnancy, pregnancy complications, and fetal death), involvement in sex trafficking, and a wide range of chronic diseases and leading causes of death such as cancer, diabetes, heart disease, and suicide (Centers for Disease Control and Prevention, 2022). Data shows that the frequency and accumulation of ACE scores are more commonly seen in persons with low socioeconomic status and these patients are frequently seen in community health settings. If the ACE score is one to three with associated health conditions, the patient is at “intermediate risk.” If the ACE score is four or higher, even without associated health conditions, the patient is at “high risk” for toxic stress physiology (Aces Aware, 2019). Despite ACE screening being the recommended practice, primary care and community health providers do not consistently screen for ACEs. Screening for ACEs in these settings offers an opportunity for recognition, early intervention, and prevention of poor long-term health outcomes.

Background and Significance

Adverse childhood experiences are associated with a greater risk of experiencing risky health behaviors, chronic health conditions, low quality of life potential, and early death (Petruccelli et al., 2019). The relationship between ACEs, child development, and chronic disease in adulthood was first recognized in a 1998 groundbreaking study by Felitti et al. Traumatic events in childhood have long-term negative effects on the health of children and into late adulthood. The relationship between ACEs and chronic illnesses is dose related; more adverse experience exposure increases the risk of many adult and pediatric health conditions including diabetes, cardiovascular disease, cancer, poor sleep, depression, risk taking, and premature death (Rariden et al., 2021). These events disproportionately affect underserved and low-income populations commonly seen in community health centers.

Children and adolescents with ACEs can be affected by chronic toxic stress that ultimately impacts brain development as well as psychological and psychosocial development. Children born to mothers with ACEs are at a significantly increased risk for poor outcomes. Infants born to mothers with four or more ACEs had a 5-fold increased risk of poor physical and emotional health by the age of 18 months (Rariden et al., 2021). The more ACEs a child has been exposed to increases the risk of missed school days, behavioral problems, and below average academic performance. Chronic stress and associated exposure to adrenaline and cortisol not only impact a child's developing brain, causing challenges with focus, concentration and behavior, but can also lead to epigenetic changes, increasing the risk for intergenerational trauma.

Along with a greater chronic disease burden, high ACE levels are associated with greater healthcare utilization and costs in adulthood and are more prevalent in underserved and low socioeconomic status populations (Hargreaves et al., 2019). These populations are often seen in community health settings. ACE screenings in community health settings allows providers to screen high-risk patients and intervene appropriately.

Clinical Problem

Adverse childhood experiences are extremely common and can negatively impact childhood development that extends through adulthood. Approximately 61% of adults surveyed across 25 states reported they had experienced at least one type of ACE before age 18, and nearly one in six reported they experienced four or more types of ACEs (CDC, 2021). Screening for ACEs and utilizing a trauma-informed care approach can mitigate negative impacts and reduce occurrences of chronic diseases such as cardiovascular disease, cancer, diabetes, mental illnesses, and respiratory disease.

According to the CDC (2021), 1.9 million cases of heart disease and 21 million cases of depression could potentially be avoided with early intervention. A 10% reduction in ACEs in North America could equate to an annual savings of \$56 billion each year according to the CDC, (2021).

Despite growing recognition, only 4% of pediatricians actively screen for ACEs in children. Subsequently, only one third or fewer adults are screened at primary care encounters (Rariden et al., 2021). The effects of ACEs are significant and can be prevented. Identifying childhood adversities and using supportive interventions can reduce subsequent negative effects

such as increased educational and behavioral issues during childhood, and chronic illness and lower productivity in adults (Rariden et al., 2021).

Literature Review

Methods

An initial literature review of the databases PubMed, CINAHL, UpToDate: Clinical Decision Support System, Elsevier, Google Scholar, Proquest, MEDLINE, and the Montana State University Library was conducted using the search terms “adverse childhood experiences,” “ACE,” “community health centers,” “Behavioral Risk Factor Surveillance System (BRFSS),” “chronic disease,” “health disparities,” “trauma-informed care,” “ACE prevention,” “high-risk behaviors,” “violence prevention,” and “intergenerational trauma.” Inclusion criteria included full-text articles written in English, peer-reviewed articles, and articles published in the last ten years excluding the original ACE study completed by Felitti et al. (1998). Journal articles consisted of systematic reviews or meta-analyses.

Cause and Frequency of ACEs

Adverse childhood experiences are attributed to a variety of individual, familial, and community risk factors. Adversities include psychological, physical, or sexual abuse, maternal violence, emotional or physical neglect, household mental illness or substance abuse, growing up in a disadvantaged household or community, parental separation, and an incarcerated household member. Children exposed to these chronic stressors can experience not only psychological impairment but also epigenetic impacts on their developing bodies. This toxic stress response is characterized by a chronic dysregulation of the neuroendocrine and immune systems via the

hypothalamic-pituitary axis (HPA). This leads to multisystemic alterations, resulting in changes to the body's metabolic and epigenetic functioning and onset of diseases (Gilgoff et al., 2020). Adversity and traumatic events continue to build on an already fragile system affecting children and adolescents. These occurrences are then carried on through adulthood. Exposure to adversity early in life, particularly during sensitive periods of child and adolescent development, is especially problematic because of enhanced sensitivity and likelihood of permanent and long-term integration into regulatory biological processes (Gilgoff et al., 2020).

The 2016 National Survey of Children's Health used an expanded ACE screening tool and found that 45% of all children in the US have experienced at least one childhood adversity, and 10% of children are in high-risk categories, having experienced three or more ACEs (Rariden et al., 2021). The CDC (2022) found that 61% of adults surveyed across 25 states reported they had experienced at least one type of ACE before age 18. Nearly one in six reported they had experienced four or more types of ACEs. One recent national study found that Montana has among the highest reported ACE scores in the U.S. In this study, 52% of Montana children aged 0 to 17 reported at least one ACE, and 17% had three or more ACEs (Montana Healthcare Foundation, 2017).

ACEs are prevalent in all communities, though may disproportionately affect women, racial and ethnic minority groups, as well as those within a low socioeconomic status. Child maltreatment is more likely to occur in families afflicted by poverty (Hargreaves & Mouton, 2019). Poverty is already associated with poor health outcomes, confounding the issue. These are associated with ACEs, making them more common in populations of poverty and low socioeconomic status. Females have significantly higher ACEs than males. Individuals of

multiracial descent have significantly higher ACEs than all other races/ethnicities, while white individuals had significantly lower mean ACE scores. Generally, those with higher income/educational attainment had a lower mean ACE score than those with lower income/educational attainment. Individuals of sexual minority had higher ACEs than heterosexual individuals, with significantly higher ACEs in bisexual individuals (Giano et al., 2020). Identifying at-risk populations for higher ACEs in all settings, particularly community health settings is critical to improving health outcomes across all populations.

Impact of ACEs

ACEs are associated with the following negative outcomes: traumatic injuries, depression, anxiety, suicide, post-traumatic stress disorder (PTSD), cancer, diabetes, alcohol and drug abuse, unintended pregnancy, pregnancy complications, fetal death, HIV, sexually transmitted diseases, unsafe sex, low educational level (noncompletion of high school), unemployment, and household poverty (CDC, 2019). The Behavioral Risk Factor Surveillance System (BRFSS) data showed a graded dose-response relationship indicating that the risk of negative outcomes increased with the number of ACEs (Gilgoff, 2020).

Adult Health Outcomes

Higher ACEs are associated with an increase of adult cancer risk behaviors such as smoking, and among women, lower mammography and Pap screening rates in low-income populations (Mouton et al., 2016). Non-white race/ethnicity, low education, and low socioeconomic status are all significantly associated with reporting an ACE (Petrucci et al., 2019). Other reports have shown a four to 12-fold increased risk of alcoholism, drug abuse, depression, and suicide attempts among people who experienced four or more categories of

adverse childhood exposures, compared with those who had experienced none, as well as increases in poorer health behaviors, including a 1.5 to four-fold increase in smoking and 1.4-1.6-fold increase in physical inactivity and severe obesity (Hargreaves et al., 2016).

One of the most salient indicators of adult cardiovascular disease (CVD) risk are adverse childhood experiences. A study in a low-income population completed by Allen et al. (2019) found a strong association between ACEs and the probability of being a current smoker, less physically active, obese, or having a history of hypertension. However, they did not find a relationship between ACEs and cholesterol.

A comprehensive study on ACEs across an urban population also found that an increasing ACE score correlated with an increased risk for health risk behaviors and mental health problems (Wade et al., 2016). The odds for current smoking status, sexually transmitted infections, and history of substance abuse were highest for individuals with four or more ACEs. These individuals also yielded a statistically significant association with physical health problems such as CVD, asthma, and fractures (Wade Jr. et al., 2016). Risk factors increase significantly amongst low socioeconomic status (SES) participants. Amongst low SES participants, those with four or more ACEs had nearly nine-fold increased odds of mental illness compared to those with zero ACEs. Amongst low SES participants, those with four or more ACEs had over a seven-fold increase in the odds of sexually transmitted infections compared to those with zero ACEs (Wade Jr. et al., 2016).

A meta-analysis by Petrucelli et al. (2019) studied psychosocial/behavioral outcomes as well as medical outcomes. A clear graded relationship—the more ACEs one has, the higher the odds ratio associated with that negative outcome was observed for almost all of the

psychosocial/behavioral outcomes studied. These outcomes include: risky sexual behavior, alcohol problems, tobacco use, depressed mood, illicit drugs, poor health/quality of life, obesity, behavior problem, psychological distress, suicidal ideation, victim of violence, hallucinations, and panic/anxiety. The strongest association for a single ACE was being an adult victim of violence (Petrucci et al., 2019). For medical outcomes, there is a significant association at an ACE score of one for gastrointestinal disease, respiratory disease, somatic pain or headache, sleep disturbance, and fracture. Respiratory disease was the most strongly associated health outcome (Petrucci et al., 2019).

Healthcare Utilization

Higher ACE scores are associated with greater chronic disease burden and greater healthcare utilization in adulthood. In a study completed by Hargreaves et al. (2019), it was found that the percentage of emergency room visits (once or more than once) in the previous year rose steadily with increasing ACE scores. High numbers of doctors' visits were nearly twice as common among those with ACE scores of four or more vs. zero. A lower utilization of primary care and an increase in emergency department utilization rates may also lead to increase in hospitalization rates, higher healthcare costs and delayed interventions or treatments (Hargreaves et al., 2019). A higher chronic disease burden and lower primary care involvement makes persons with ACEs more susceptible to poor health outcomes, all while increasing healthcare costs and utilization. Identifying high-risk patients and those with positive ACE scores in primary-care or community health settings may reduce long-term overutilization and improve healthcare outcomes.

Evidence-Based Screening Tools: ACE Questionnaire

The original ACE scale was used to assess the effects of childhood adversities and included 10 items including emotional abuse, physical abuse, sexual assault, emotional neglect, physical neglect, maternal violence, substance abuse within the household, household mental illness, parental separation, and an incarcerated household member. The tool has since been revised to capture childhood adversities that reflect growing up in disadvantaged families, communities or schools (Rariden et al., 2021). The ACE screen is a reliable and valid tool with strong internal consistency (Cronbach's $\alpha = 0.88$). Screenings are categorized from scores of zero, one to three, and four or more. Assessing ACEs allows for early identification and supportive interventions to reduce subsequent negative impacts and improve long-term health outcomes.

Interventions

Barriers to Practice Change

While there is substantial evidence that high ACEs significantly impact overall health and long-term outcomes, ACE screenings are not widely used in primary care or community health settings. Clinicians may be hesitant to implement ACE screenings due to insufficient time to address positive ACEs, uncertainty of how to discuss past trauma or lack of trauma-informed care, perceived distress for patients and family members, and clinicians' lack of confidence or knowledge on the topic. However, high ACE scores only slightly increased the time of an office visit, with only 3% of patients with ACE scores requiring extra time (Rariden et al., 2021). Visits needing additional time only extended the visit by less than five minutes in 91% of the cases

(Rariden et al., 2021). It was also noted that clinicians reported ACE screenings easier than they anticipated, and comfort level rose with experience (Flanagan et al., 2018). The study also found that another perceived barrier for clinicians' readiness to screen for ACE was dependent on access to resources, including multidisciplinary behavioral health support.

Implications for Practice

Implementing ACE screenings with periodic physicals or chronic disease management is not only acceptable to patients but also helps clinicians explore social factors that influence health (Rariden et al., 2021). Several interventions have been identified to build resiliency and reduce the negative health consequences associated with ACEs. Providers can advance the health and well-being of children and families affected by ACEs by (1) identifying children and families in need through ACE screening, (2) offering empathetic and science-based anticipatory guidance, including expanded education and interventions related to healthy relationships, sleep, nutrition, physical activity, mindfulness, nature, and mental health, and (3) providing trauma-focused and human-centered resources and referrals when needed (Gilgoff et al., 2020).

Being trauma-informed includes providing a sense of safety conducting activities with trustworthiness and transparency, providing peer support, collaboration, empowerment through providing a voice and a choice; and responding appropriately in the context of cultural, historical, and gender issues (Substance Abuse and Mental Health Services, 2014). Through a trauma-informed care approach, providers can help empower patients by increasing resiliency factors such as emotion regulation and positive coping skills. Building resilience through trauma-informed care allows patients to adapt in healthy ways to previous traumatic experiences. Emerging research demonstrates resilience is cultivated through individual skills (emotional

intelligence, coping, and fostering healthy lifestyle choices), and nurturing supportive relationships (Ortiz, 2019). Fostering resilience through interventions such as mindfulness can increase individuals' adaptability, executive functioning, and decrease reactivity.

According to Marie-Mitchell & Kostolansky, (2019), creating a successful intervention and subsequent results requires a multifaceted approach to patient care. Multicomponent interventions that utilize professionals to provide parenting education, mental health counseling, social service referrals, or social support can reduce the impact of ACEs on child behavioral/mental health problems and improve the parent-child relationship for children 0-5 years. There is an increased benefit in utilizing a multi-system approach as opposed to a single intervention. In this systematic review, studies that improved child health outcomes included parenting education, mental health counseling, or both, and all but one delivered services via home visits (Marie-Mitchell & Kostolansky, 2019).

Interventions studied were divided into different levels of intensities. High-intensity interventions were multicomponent interventions including home visits that extended over 3-5 years, medium-intensity interventions were multicomponent interventions that included home visits or multiple follow-up visits over 4-18 months, and low-intensity interventions targeted at least one component such as social services or parental education. Multicomponent medium to high intensity interventions that utilized professional home visitors to provide parenting education or mental health counseling demonstrated the largest effects (Marie-Mitchell & Kostolansky, 2019).

Conclusion

Poor health outcomes resulting from adverse childhood experiences can be mitigated through a multisystemic and trauma-informed approach. Utilizing an integrated health model and using community-focused resources provides a comprehensive and clear opportunity for early identification, intervention, and treatment of ACEs.

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CHAPTER TWO

QUALITY IMPROVEMENT

IntroductionProblem and Rationale

Persons and individuals with a history of ACEs have an increased risk of developing chronic illnesses such as diabetes, heart disease, mental illness, and high-risk behaviors. According to 2017 national estimates, the Centers for Disease Control and Prevention (CDC) found that preventing ACEs could have reduced the number of adults who had heart disease by as much as 13% – up to 1.9 million avoided cases. Prevention could also have reduced the number of adults who were overweight/obese by as much as 2% – up to 2.5 million avoided cases of overweight/obesity. Finally, preventing ACEs could have reduced the number of adults with depression by as much as 44% – up to 21 million avoided cases of depression.

Positive ACE scores are more common in low-socioeconomic populations. This population is often seen in community health settings. On average, children living in low-income households tend to experience a greater number of ACEs than their higher-income peers (Wade et al., 2014). ACEs have become a public health crisis due to the profound negative effects of trauma throughout the lifespan. In 2021, community health centers served more than 30 million people nationwide. These health centers deliver primary health care to the nation's underserved individuals and families, including one in three people living in poverty and one in five rural residents (Health Resources & Services Administration, 2022).

Childhood trauma is not consistently assessed via an ACE screening and may be missed within initial health assessments in outpatient community health settings. ACE screening can facilitate early interventions and help prevent and reduce the accumulation of exposures as well as the risk for negative health outcomes. The CDC encourages education and program implementation on the federal, state, and community level to recognize, treat, and prevent ACE accumulation. Integrated care programs, such as those offered in community health centers focus on treating both the mental and physical aspects of health. These settings present excellent opportunities to incorporate ACE screening and offer swift interventions. Integrated health settings allow patients connect with their primary care provider, and see behavioral health specialists during that appointment if it is warranted. The purpose of this project is to implement ACE screenings for all new patients presenting to behavioral health specialists in a community health setting. Assessing all new patients for ACEs will allow for the identification for a referral if needed. These early interventions can improve child development, improve behavioral functioning, reduce the risk of accumulating more ACEs, and ultimately improve the quality of health and living in our communities.

Organizational Microsystem: A Five P's Assessment

Purpose

Community health centers help facilitate better patient outcomes and lower costs despite treating a more complex and poorer population in comparison to other healthcare settings. In addition to patient outcomes, the health center model of care in community health centers decrease the use of costly care choices, such as visits to emergency departments and hospitals (Health Resources and Services Administration, 2022). The site of this project implementation is

a community health center in southwest Montana. The center utilizes an integrated care model by incorporating mental health, primary care, and dental care as a “one-stop service”. Integrated care models aim to enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex, long-term problems cutting across multiple services, providers and settings. Integrated care models strive to improve health outcomes through patient education and empowerment through the provision of timely and effective self-care support (Sampalli et al., 2012).

Patients

This community health center provides care to individuals of all ages. Behavioral health services are currently only available for patients aged 18 and above due to provider availability. Patients are primarily low-income or uninsured. Services are offered on a sliding scale to ensure accessibility regardless of ability to pay. Established patients have access to primary care, dental care, behavioral health care, a pharmacy, case management, as well as access to educational programs like parenting classes and support groups.

Professionals

The practice currently consists of two medical doctors, two advance practice registered nurses, two pharmacists, six registered nurses, four medical assistants, two behavioral health consultants (BHC), and three behavioral health therapists (BFTs). Behavioral health consultants act on an “on call” basis and are available to see patients in primary care without appointments. Behavioral health therapists see clients for traditional scheduled therapy appointments. Patients will see a BHC for an assessment prior to receiving a referral to a BHT. The clinic is open Monday through Friday with some evening availability to increase accessibility.

Processes

All patients are first required to establish care with a primary care provider. If patients mention a behavioral health concern during their primary care appointment, the integrated model allows the primary care provider to bring in a BHC during that appointment for further assessment. Once the patient is established with a primary care provider, he or she can then request behavioral health services at any time. BHTs see clients for traditional 50-minute therapy sessions. BHCs offer initial behavioral assessments and are also available on an as-needed basis for patients seen in primary care. If a patient voices a mental health concern, or if a primary care provider is concerned, he or she will speak with the behavioral health consultant and give a “warm handoff”. Warm handoffs allow the primary care provider to voice their concern and give the BFC any background information necessary. The BFCs will then visit with the patient and assess the need for further mental health assessment. If further assessment is warranted, the BFC will give the patient a comprehensive assessment packet for the patient to fill out and return prior to their next appointment. If the patient would benefit, the BHC could then recommend follow up with a BHT for traditional therapy.

Follow-up appointments for new assessments can typically be made within one to two weeks. These appointments are booked for two hours with a BHC where they gather a comprehensive history and assessment. If a referral to a BHT is warranted, then the referral is made and the client is placed on a wait list. Timing for the wait list varies and clients can often wait up to 3 months for traditional therapy. If a client is in immediate need, the BHCs in the clinic can meet with clients regularly until they establish with a therapist. If patients do not require a BHT referral, then information is relayed back to the primary care provider.

Patterns

The behavioral health staff in this facility collaborate and meet daily to address patient needs or concerns. BHCs have an open-door policy and are readily available for consults and care discussion. This facilitates a collaborative work pattern that enables and empowers patients through the integrated care model. Patients are given full transparency and are able to play an active role their own care. Collaboration between primary care and the behavioral health team ensures a more holistic approach to patient care, increasing more positive patient outcomes.

Specific Aims

The purpose of this project aims to implement ACE screening for new patients with a goal of identifying individuals at high risk and providing an appropriate intervention. Early intervention will improve lifelong physical, social-emotional, and mental health. The project logic model (Figure 1) in the appendix describes short-term, intermediate, and long-term results and goals of the project in detail. Educating staff and patients on the effects and implications of ACEs will help create a trauma-informed culture of care that can help mitigate intergenerational ACE accumulation and trauma.

Organizations can promote and support ACE screenings through workflow integration, streamlined referral processes, and incorporating screenings into behavioral health (Rariden et al., 2021). The community health center in southwest Montana already utilizes an integrated care model simplifying the integration process. The organization's long-term goal is to incorporate screening into primary care, so all patients are screened. Positive scores (>4) ACEs will eventually warrant a BHC appointment. Utilizing this trauma-informed approach such as this

allows for identification, treatment, and further prevention to treat ACEs and promote health equity.

Context

The community health care center was chosen as it is an established community health center using an integrated care model with both primary and behavioral health care. In the 2019-2020 fiscal year, this center served 11,029 patients during 35,710 visits. Over 1,250 patients received behavioral health services during 8,551 behavioral health visits. More than 600 initial behavioral health evaluations were completed for established medical patients seeking to improve their health through behavioral health therapy. These initial evaluations helped the care team identify challenges faced by the patient and incorporate comprehensive, integrated care into the care plan.

Support for this project was provided and approved by the medical director of the clinic. The lead behavioral health consultant will serve as the site representative and will also gather the data. Other key stakeholders include a junior behavioral health consultant, as well as three behavioral health therapists. The behavioral health team including all BHCs and BHTs will receive education and information on the project initiative. The behavioral health consultants will be the primary distributors of patient assessment packets to new patients. Two primary care physicians and two advance practice registered nurses will also be involved in the referral process. Implementation of the ACE questionnaire will require an effort from all stakeholders including the nursing staff, primary care physicians and APRNs, behavioral health consultants, behavioral health therapists, and administrative staff.

Intervention and Implementation

The behavioral health team will receive education on ACE screening, their impact, and the importance of creating a trauma-informed care model. The Identified Adult ACE Questionnaire, included in Appendix A, will be printed and included in all new behavioral health assessment packets administered by two BHCs in the practice. Patients are referred to behavioral health by a primary care physician if concerns are declared during that appointment. The primary care provider then completes a “warm handoff” with the BHC and the BHC is able to see the patient within that appointment.

The patient and the BHC then schedule a follow-up assessment at a time that is convenient for the patient. The follow-up typically occurs in one to two weeks. Assessment packets are given to any patient that has been referred to the behavioral health team at the initial point of contact. The returned packets will be evaluated by the lead BHC and deidentified ACE scores will be entered into a shared Google spreadsheet. The spreadsheet will be shared with this writer and the BHC. Since the behavioral health team is currently seeing patients 18 and older, the adult screening will be used in this project implementation. Initiation of the ACE screen will begin in January of 2023. The screening will be printed and added to the current assessment packet. This will allow for a no-cost introduction and pilot study of ACE screenings in this community health setting. In the future, ACE screenings will be integrated into the EHR system.

After the follow-up assessment, the BHC can then refer the patient for traditional psychotherapy with a BHT as well as recommend further visits to primary care for medication initiation or management. Whether a person is referred to a BHT is dependent on their desire as well as recommendation from the BHC. If a patient has an ACE score of >4, it will be highly

recommended that the patient sees a BHT and a referral will be made. A notification of a score >4 will also be sent through the EHR to the primary care provider.

Project data will include how many ACE screens were given, how many ACE screens were returned, and how many referrals to BHTs or primary care physicians were made. We will also track the number of follow-up appointments to the BHC made as well as those no-showed. This data will be evaluated and entered into a Google spreadsheet by the BHC. Data columns will include the number of assessment packets/ACE screenings distributed, the number of packets returned, the number of ACE screening scores of >4, and the number of referrals made to BHTs or back to primary care. Secondary data may include previous or current diagnoses to discern correlation that helps providers explore social factors that may influence mental health. Patient data and personal health information will not be included in the findings to maintain patient confidentiality. Data will be added to the spreadsheet weekly.

Barriers to implementation and referrals may include an already taxed behavioral health program at the community health center. Patient wait lists to see a traditional therapist may extend up to three months and this may decrease the amount of impact data for this project. The health center is currently undergoing an update to their EHR system and an additional request to incorporate ACE screening into the system will likely be delayed. This will require some diligence on the behavioral health team to implement these screenings, as it will not be automatic through the computer system. Some patients choose to complete the assessment packet online, while some prefer to fill out the physical paper packet. This will decrease the amount of returned ACE screenings in assessment packets.

Other barriers may include a patient perception of intrusiveness in asking questions within the ACE questionnaire. However, adult patients in a study completed by Flanagan et al (2018) found that over half of the participants in the study who received the ACE questionnaire felt that the screening increased trust in their physician. The study also found that 75% of participants felt it helped their clinician know them better. Implementing ACE screening in this clinic will maximize the benefits of integrated care and will increase patient satisfaction, decrease costly healthcare utilization, and improve long-term health outcomes.

Evaluation

Table 1. SMART Goals

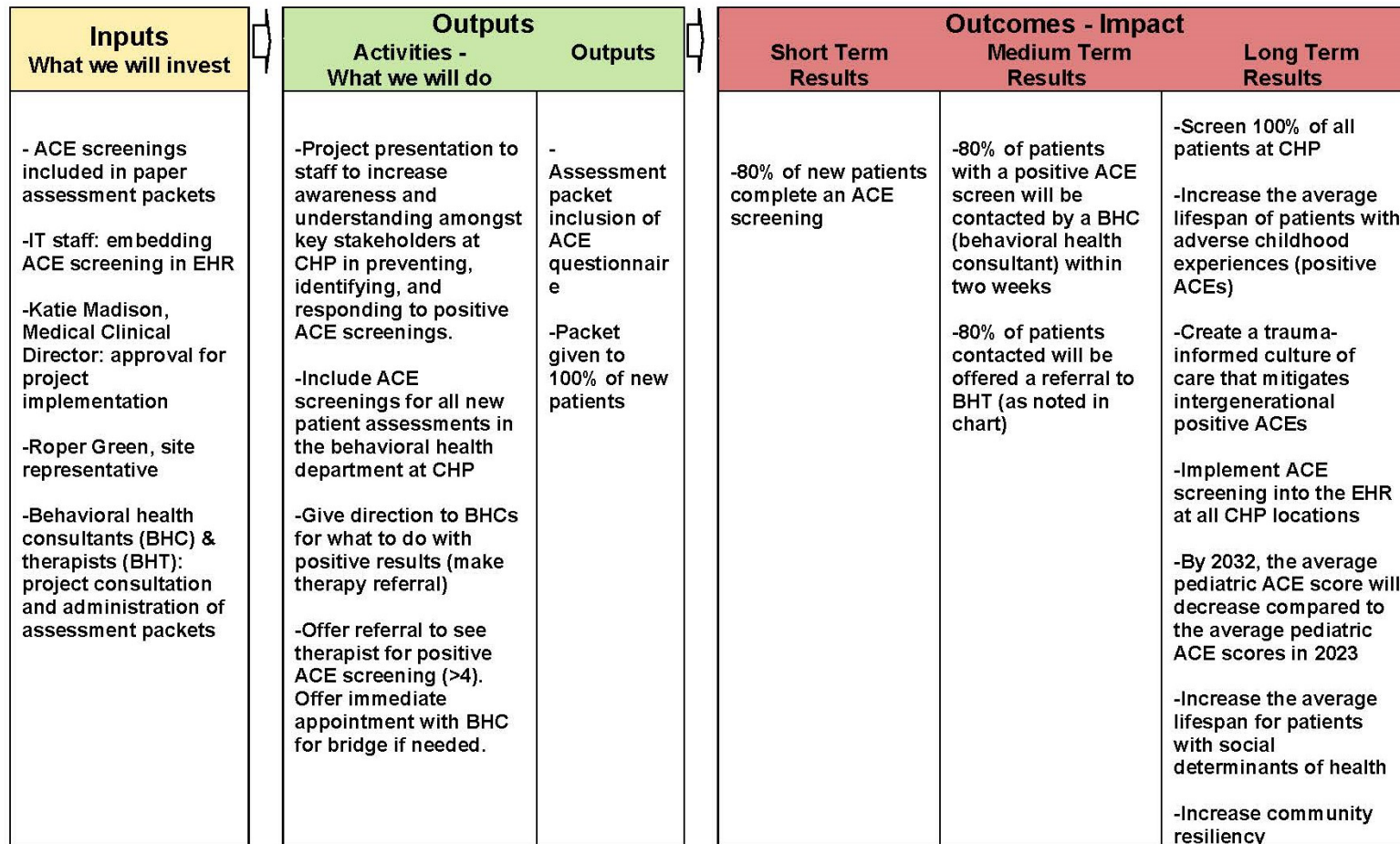
SMART Goal #1: 80% of new behavioral health patients will complete an ACE screening		
<ul style="list-style-type: none"> • ACE questionnaires will be printed by the lead BHC and included in each new patient assessment packet the week prior to implementation • The lead BHC will coordinate and implement packet distribution 		
Data to be collected	Method of Collection and who is responsible	Planned data analysis
Number of questionnaires given	The lead BHC will manually count the number of assessment packets/ACE questionnaires distributed. The lead BHC will then enter deidentified data into a Google spreadsheet	Weekly percentage calculations (Google): Number of ACE screenings returned divided by the number of ACE screenings given
Number and percentage of questionnaires returned	The lead BHC will manually count the number of assessment packets/ACE questionnaires distributed. The lead BHC will then enter deidentified data into a Google spreadsheet. The percentage of returned questionnaires will then be calculated based on the number distributed	Weekly percentage calculations (Google): (above)

Table 1 Continued

<p>SMART Goal #2: 80% of patients with positive ACE screen (>4) will be contacted by a BHC within two weeks</p>		
<ul style="list-style-type: none"> Returned ACE questionnaires will be evaluated and scored The patient will be contacted by a BHC Referrals for full assessment by BHC, referral for BHT, or referral to primary care will be discussed and offered 		
Data to be collected	Method of Collection and who is responsible	Planned data analysis
The number of positive ACE scores (>4) vs. the number of low to moderate (<4-0)	The lead BHT will manually calculate the number of positive ACE scores (>4) and enter deidentified data into the Google spreadsheet	Weekly percentages calculated in Google spreadsheet: Number of ACE screenings returned divided by the number of positive scores >4.
The number of patients that receive a referral based on positive ACE scores (>4)	The lead BHT will calculate the number of referrals given to each patient and enter deidentified data into the Google spreadsheet	Weekly percentages calculated in the Google spreadsheet: Number of ACE screenings given divided by the number of referrals given
<p>SMART Goal #3: The behavioral health team will create a trauma-informed culture of care that mitigates intergenerational positive ACEs as evidenced by a decrease in the average pediatric ACE score in 2032 compared to the average pediatric ACE score in 2023</p>		
<ul style="list-style-type: none"> Project lead/lead BHC will work with the IT department to build an ACE questionnaire into the EHR system All patients will then receive the ACE questionnaire at all initial primary care and behavioral health appointments 		
Data to be collected	Method of Collection and who is responsible	Planned data analysis
ACE screening scores, referrals, demographic statistics	End of year reports will be run by the project lead and compared to the previous years.	<p>Independent t-test could be utilized to see if there are statistically significant differences in yearly reports</p> <p>A trauma-informed culture of care will be measured by the implementation of ACE screenings to all patients by 2032</p>

Figure 1: Logic Model

Situation Statement: Persons with positive ACE scores have an increased risk of developing chronic illnesses such as diabetes, heart disease, mental illness, and high-risk behaviors and positive scores are more common in patients in a community health setting. Childhood trauma is not currently assessed via an ACE screening and may be missed within an initial behavioral health assessment at CHP. ACE screening can facilitate early interventions and help prevent and reduce the accumulation of exposures as well as the risk for negative health outcomes.



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CHAPTER THREE

QUALITY IMPROVEMENT

Adverse childhood experiences (ACEs) are potentially traumatic events that occur in childhood (ages 0-17) and may include experiences of violence, abuse, instability, and neglect. These experiences can increase the risks of injury, sexually transmitted infections, maternal and child health problems (including teen pregnancy, pregnancy complications, and fetal death), involvement in sex trafficking, and a wide range of chronic diseases and leading causes of death such as cancer, diabetes, heart disease, and suicide (Centers for Disease Control and Prevention, 2022). The Behavioral Risk Factor Surveillance System (BRFSS) data showed a graded dose-response relationship indicating that the risk of negative outcomes increased with the number of ACEs (Gilgoff, 2020).

The 2016 National Survey of Children's Health found that 45% of all children in the United States have experienced at least one childhood adversity, and 10% of children are in high-risk categories, having experienced three or more ACEs (Rariden et al., 2021). The CDC (2022) found that 61% of adults surveyed across 25 states reported they had experienced at least one type of ACE before age 18. Nearly one in six reported they had experienced four or more types of ACEs. One recent national study found that Montana has among the highest reported ACE scores in the United States. In this study, 52% of Montana children aged 0 to 17 reported at least one ACE, and 17% had three or more ACEs (Montana Healthcare Foundation, 2017). Identifying childhood adversities and using supportive interventions can reduce subsequent negative effects such as increased educational and behavioral issues during childhood, and chronic illness and lower productivity in adults (Rariden et al., 2021).

Review of the Literature

The ACE questionnaire addresses emotional abuse, physical abuse, sexual assault, emotional neglect, physical neglect, maternal violence, substance abuse within the household, household mental illness, parental separation, and an incarcerated household member. If the ACE score is zero, the individual is considered “low risk”. If the ACE score is one to three with associated health conditions, the patient is at “intermediate risk.” If the ACE score is four or higher, even without associated health conditions, the patient is at “high risk” for toxic stress physiology (Aces Aware, 2019).

Positive ACE scores are more common in low-socioeconomic populations, a population often seen in community health settings. On average, children living in low-income households tend to experience a greater number of ACEs than their higher-income peers (Wade et al., 2014). Another meta-analysis completed by Walsh et al. (2019) confirmed that lower childhood socioeconomic status is associated with a greater risk of ACEs and child maltreatment, compounding their situations. ACEs have become a public health crisis due to the profound negative effects of trauma throughout the lifespan. In 2021, community health centers served more than 30 million people nationwide. These health centers deliver primary health care to the nation’s underserved individuals and families, including one in three people living in poverty and one in five rural residents (Health Resources & Services Administration, 2022). Screening for ACEs in community health settings offers an opportunity for recognition, early intervention, and prevention of poor long-term health outcomes which will ultimately improve overall health in local communities.

According to 2017 national estimates, the Centers for Disease Control and Prevention (CDC) found that preventing ACEs could have reduced the number of adults who had heart disease by as much as 13% – up to 1.9 million avoided cases. Prevention could also have reduced the number of adults who were overweight/obese by as much as 2% – up to 2.5 million avoided cases of overweight/obesity. Finally, preventing ACEs could have reduced the number of adults with depression by as much as 44% – up to 21 million avoided cases of depression.

Screening for ACEs in healthcare settings can help recognize previous adverse experiences while mitigating their effects with trauma-informed care targeted at both mental and physical health. The data regarding implementation of ACE screening show that ACE screening does not excessively disrupt clinic workflow, providers report benefits to ACE screening, patients report both discomfort and support of a compassionately administered ACE screen, and both providers and patients identified (Rariden, 2021).

Integrated primary care and behavioral health clinics simplify ACE recognition and the connection between medical and behavioral health prevention visits. While ACE screenings can help recognize previous adverse experiences, it is imperative that both assessment and availability of follow-up resources are easily accessible. These resources can include access to an interdisciplinary team, including behavioral health, psychiatry, and social work (Rariden, 2021). Most importantly, recognition and early referral to a behavioral health specialist such as a therapist are critical to program success.

Through the identification of ACEs, healthcare providers can begin to inform care through a trauma-informed lens and create a comprehensive treatment approach to patient care at all levels, including behavioral health. Interventions such as parenting education, mental health

counseling, social service referrals, or social support can reduce the impact of ACEs on child behavioral/mental health problems. There is an increased benefit in utilizing a multi-system approach as opposed to a single intervention, which is another strength of an integrated behavioral health setting.

Clinical Problem

Childhood trauma is not consistently assessed via an ACE screening and may be missed within initial health assessments in outpatient community health settings. Documentation of the high prevalence of ACEs in the United States offers justification for screening programs and interventions to mitigate ACEs (Rariden et al., 2021). ACE screening can facilitate early interventions and help prevent and reduce the accumulation of exposures as well as the risk for negative health outcomes. The CDC encourages education and program implementation on the federal, state, and community level to recognize, treat, and prevent ACE accumulation. Despite ACE screening being the recommended practice, primary care and community health providers do not consistently screen for ACEs. Screening for ACEs in these settings offers an opportunity for recognition, early intervention, and prevention of poor long-term health outcomes.

Integrated care programs, such as those offered in community health centers, focus on treating both the mental and physical aspects of health. These settings present excellent opportunities to incorporate ACE screening and offer swift interventions. Integrated health settings, as utilized in this community health site, allow patients connect with their primary care provider, and see behavioral health specialists during that appointment if it is warranted. The purpose of this project was to implement ACE screenings for all new patients presenting to behavioral health specialists in a community health setting. Assessing all new patients for ACEs

allowed for the identification for a referral if needed. These early interventions can improve child development, improve behavioral functioning, reduce the risk of accumulating more ACEs, and ultimately improve the quality of health and living in our communities.

Aims/Purpose of Project

The purpose of this project aims to implement ACE screening for new patients with a goal of identifying individuals at high risk and providing an appropriate intervention. Early intervention will improve lifelong physical, social-emotional, and mental health. Our short-term goal was that 80% of new behavioral health patients would complete an ACE screening. From those screenings, the site representative would contact any patients with a positive ACE score (>4) within two weeks to schedule a full assessment, refer to counseling, or to refer to primary care for possible medication management. Educating staff and patients on the effects and implications of ACEs help create a trauma-informed culture of care that helps mitigate intergenerational ACE accumulation and trauma.

Organizations can promote and support ACE screenings through workflow integration, streamlined referral processes, and incorporating screenings into behavioral health (Rariden et al., 2021). The community health center in southwest Montana already utilizes an integrated care model simplifying the integration process. The organization's long-term goal is to incorporate screening into primary care, so all patients are screened. Positive scores (>4) ACEs will eventually warrant a BHC appointment. Utilizing this trauma-informed approach such as this allows for identification, treatment, and further prevention to treat ACEs and promote health equity.

Methods

Context

The community health care center was chosen as it is an established community health center using an integrated care model with both primary and behavioral health care. In the 2019-2020 fiscal year, this center served 11,029 patients during 35,710 visits. Over 1,250 patients received behavioral health services during 8,551 behavioral health visits. More than 600 initial behavioral health evaluations were completed for established medical patients seeking to improve their health through behavioral health therapy. These initial evaluations helped the care team identify challenges faced by the patient and incorporate comprehensive, integrated care into the care plan. The chosen community health site primarily sees low-income or uninsured patients and is an excellent site for mitigating the impact of ACEs.

The practice consists of two medical doctors, two advanced practice registered nurses, two pharmacists, six registered nurses, four medical assistants, one behavioral health consultant (BHC) who would serve as the site representative, and three behavioral health therapists (BHT). The BHC is available on an 'on-call' basis. He can meet patients within their primary care appointments or conduct full assessments for new behavioral health patients. BHTs are available for traditional 50-minute therapy sessions. Just prior to implementation, two behavioral health consultants resigned, leaving only one BHC to implement the ACE screenings.

The healthcare center works within an integrated health model. Once a patient is established with primary care, if he or she has a mental health concern, he or she can see a behavioral health specialist (BHC) within their primary care appointment. These new behavioral

health patients are given an initial behavioral health assessment packet which now includes the ACE screening.

Intervention

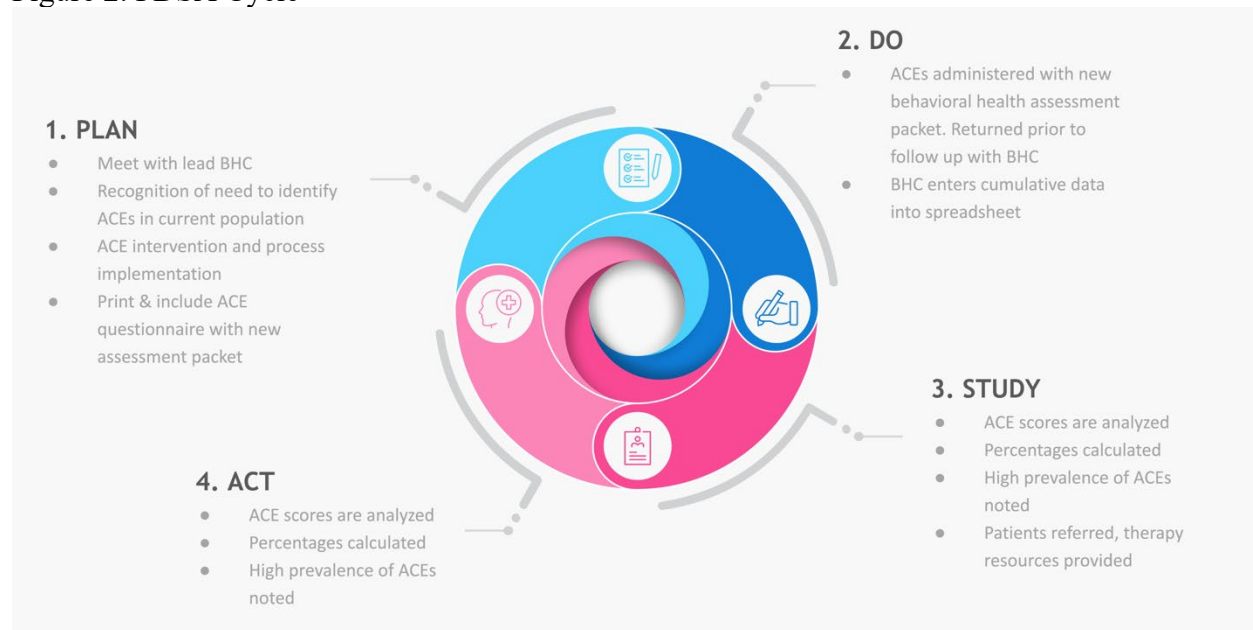
Prior to implementation, multiple meetings were held with the primary BHC to educate and identify possible barriers to the implementation itself. A project timeline was completed in collaboration with the primary BHC and all information was submitted to the Institutional Review Board (IRB). Approval was obtained from the IRB in December of 2022. The initial planning of this implementation included referrals to the BHTs in the clinic for psychotherapy if the patient scored ≥ 4 on their ACE screen. This was later recognized as a barrier due to the psychotherapy wait list extending up to six months. It was then decided that the lead BHC would offer referral resources for psychotherapists within the community. These resources included a comprehensive therapist list from psychologytoday.com and recommendations to contact various clinics.

ACE questionnaire implementation occurred over a six-week period beginning January 23, 2023. The lead BHC at the site printed the ACE screening (appendix A) and included the screening within each new assessment packet given to new behavioral health patients. The assessment packets were then returned to the BHC prior to the patient's follow-up appointment. The returned questionnaires were then assessed by the BHC and entered into a shared Google spreadsheet. Data entered into the spreadsheet included the number of ACE screenings administered; the number of ACE screenings returned, ACE scores divided into categories 1) zero, 2) one through three, and 3) scores four or more; as well as follow-up appointments made, no-show follow-up appointments, and the total number of positive scoring patients (>4) who

received referral resources. The six-week data collected period ended on March 3rd, 2023 and data was entered into the spreadsheet the following week.

The plan, act, study, do (PDSA) model was used to develop, implement, and study the data for this quality improvement project. Initial planning of this implementation aimed to assess data after each two-week PDSA cycle, however, due to last-minute staffing shortages, data was collected and entered once at the end of the six-week period. Initial planning also aimed to involve multiple BHCs within the clinic with hopes to both reach more patients and to divide the workload of data collection. Due to the resignation of two BHCs, this was not possible and the lead BHC took on the project implementation himself.

Figure 2. PDSA Cycle



Measures

The lead BHC analyzed the returned ACE questionnaires and entered the data into a shared Google spreadsheet. All data were based on the number of ACE screenings returned

(n=18). Percentages were calculated based on the number of follow-ups made and no-show follow-ups divided by the total number of ACEs returned. Percentages were calculated to describe the number of referrals made by dividing the total by the number of ACEs returned. Average scores in each category: 0, 1-3, and 4+ were calculated as well as the overall total average ACE score. Finally, percentages were calculated by the number of patients who defined their effect on health categorically as not a lot, some, and a lot.

Analysis

Descriptive statistics were used to describe the characteristics of the sample and to determine the presence and severity of positive ACE scores. The percentages of each component, including the number of patients who received a referral after a positive ACE score were divided by the total number of ACE screens returned. Percentages were calculated to quantify scores based on the sample.

Results

Of the 18 patients who returned an ACE screen, 78% of those patients completed a follow-up visit with a BHC. 22% of those patients no-showed for their follow-up appointments for unknown reasons. 83% of patients received referral resources for psychotherapy. Based on patient preference, these resources included referral to therapists within the community health center, or contact information for psychotherapists within the community. The 17% whom did not receive a referral either no-showed for their follow up appointment with a BHC or were unreachable.

The total average ACE score was a 3.83. ACE scores can range from zero to ten. Of these 18 patients, 50% reported an ACE score of four or more, placing them in a “high risk” category for poor health outcomes. The ACE questionnaire includes a question asking patients whether these experiences affect their health by ‘not much, somewhat, or a lot’. 22% of these patients reported that their experiences affected their health as ‘not much’. 22% reported they were ‘somewhat’ affected by these experiences, and 56% reported that they were affected ‘a lot’. The table in *Appendix B* summarizes patient scores and effect on health.

The project’s first SMART goal aimed to have 80% of new behavioral health patients complete an ACE screen. All new patients, or 100% of new behavioral health patients, seen within the six-week data collection period were screened.

The second SMART goal aimed to have the BHC contact 80% of patients with a positive ACE screen (>4) within two weeks. All patients who returned an ACE screening were contacted or had been attempted to contact by the end of this study. Due to staffing limitations, it was impossible to track the timing of when the ACEs were returned and when the patients were contacted. Some of the patients returned their packet to their primary care provider within the clinic which also delayed the return.

Discussion

Half of the patients assessed during this project implementation scored four or above on their ACE screen. If the ACE score is four or higher, even without associated health conditions, the patient is at “high risk” for toxic stress physiology (Aces Aware, 2019). 56% of patients reported that their experiences affected their health “a lot”. Nationally, nearly one in six adults,

or 17%, reported they had experienced four or more types of ACEs (CDC, 2022). These results indicate a high level of positive ACEs at a community level.

Utilizing the ACE screen for patients in community health settings may help recognize previous traumatic experiences and in turn help prevent future negative health outcomes. Earlier recognition of these adverse experiences can limit future exposure and help initiate appropriate treatment as early as their first appointment. Due to substantial evidence that a significant number of patients in community health settings may have adverse childhood experiences, it is recommended that early screening is completed and evidence-based interventions such as referrals for mental health counseling and education are initiated.

There were several limitations to this quality improvement project. It was planned that all new patient assessment packets would be administered by the lead BHC so that data regarding the number of packets administered in relation to the number of packets returned could be monitored. However, due to limited staffing, some packets were administered initially by primary care with instructions to then follow up with behavioral health. Thus, it is unknown how many packets were actually distributed. One of the largest barriers to implementation was the unforeseen staffing shortage at the clinic. The project was planned in accordance of having two or three BHCs administer and track new patient assessment packets. Two BHCs resigned, leaving only one lead BHC to administer and track new patient assessment packets. Each BHC is only able to complete three assessments per week. This limited the sample size and total amount of data available for this project. The low number of returned completed ACE screenings mean that the data will not show a true representative sample that is applicable to other settings. Unfortunately, staffing shortages are common in community health settings and this is likely

representative of many community health clinics nationwide. Almost all patients were given referral resources and it is unknown if these were specific to their ACE scores are in regard to previous or potential alternative diagnoses. Furthermore, collecting patient demographics such as age, sex, household income, and race could further describe the patient population.

Conclusion

Traumatic events in childhood have long-term negative effects on the health of children and into late adulthood. These events disproportionately affect underserved and low-income populations commonly seen in community health settings. Identifying at-risk populations for higher ACEs in all settings, particularly community health settings is critical to improving health outcomes across all populations. Implementing ACE screenings in a community health setting can allow providers to screen high-risk patients and intervene with evidence-based practices to promote health and limit long-term negative health outcomes. Furthermore, utilizing an integrated health model that provides access to behavioral healthcare can increase accessibility and care collaboration.

The community health clinic selected for this intervention plans to continue assessing for adverse childhood experiences with the ACE screen. Long-term, they hope to screen all patients annually and incorporate the assessment into the electronic health record system. This will ensure that all patients are assessed and appropriate interventions can be made if needed.

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CHAPTER FOUR

DOCTOR OF NURSING PRACTICE ESSENTIALS REFLECTION

DNP Essentials

The doctor of nursing practice program through Montana State University incorporated various essentials throughout the program and culminated all eight essentials into our final quality improvement (QI) project. While all essentials were met throughout the program, I will discuss a handful of exemplars that met specific essentials.

Essential III, Clinical Scholarship and Analytical Methods

In our Scholarly Writing course first semester, clinical scholarship and analytical methods for evidence-based practice was introduced to me and finalized with our final literature review project. It was my first attempt at analyzing evidence-based practice and synthesizing literature since my undergraduate classes over ten years ago. Daunting at first, this project was a cumulative representation of everything we had learned in the course throughout the semester.

After this course, I improved my skills of using analytical methods to critically appraise existing literature. Learning how to critically appraise evidence-based practice was an eye-opening practice and a skill I will use throughout my career. The most important use of this skill will be in my future practice. Being able to critically assess evidence, make an informed decision, and implement change will be a significant part in my future practice as a psychiatric and mental health nurse practitioner (PMHNP).

In this assignment, I was able to identify a process to evaluate outcomes of practice utilizing evidence-based practice. In the future, it will be necessary to use this skill for evaluating evidence and implementing process change in practice.

Essential VI, Interprofessional Collaboration

Interprofessional collaboration for improving patient and population health outcomes is a key aspect of becoming a doctor of nursing practice. As reflected by my Nursing 604 Evidence-Based Practice PICO (population, intervention, comparison, and outcome) project, I cultivated and employed effective communication along with collaboration to develop and document practice models. In this PICO project, I was able to work closely with a group to work towards a common goal.

Our PICO project was the largest, most comprehensive group project this semester. The project required a critique of relevant evidence, utilization of an implementation model, and culminated in recommendations for practice based on the evidence. Each week, our group met to discuss the progress we made, and what yet needed to be done. The most meaningful element of this experience, was the effective communication and group collaboration we had. This project advanced preparation in the interprofessional dimension of health care that enabled facilitation of a collaborative team functioning to overcome impediments to interprofessional practice (AACN, 2006). This will no doubt be an important skill to have when working in a collaborative practice as a psychiatric and mental health nurse practitioner (PMHNP).

Essential VII, Clinical Prevention and Population Health

Our semester long project on vulnerable communities was to research the homeless population in Montana. This primarily encompassed the DNP essential number seven: Clinical

prevention and population health for improving the nation's health (AACN, 2006). Throughout the semester, we analyzed epidemiological, biostatistical, environmental, and other scientific data related to individual and population health. We, as a group, were able to synthesize the analysis into a well-formed and thoughtful PowerPoint presentation. Through many hours of community survey and research, I learned more about the homeless population in Montana and perhaps more about the *why* than I had ever imagined.

Throughout this course, I learned how to better assess our community, recognize gaps and missing links, as well as consider what interventions would have the biggest impact. I was able to grow both personally, as well as interpersonally with this project. I have a better understanding of vulnerable communities which will be a large population of who I see as a PMHNP. Overall, I feel more informed to assess, diagnose, and treat special populations with more awareness in psychosocial and cultural diversity.

Cumulative Essentials Represented in a QI Project

Each course taken throughout the PMHNP-DNP program has introduced and focused on various DNP essentials. My QI project implementing adverse childhood experiences questionnaires (ACEs) to behavioral health patients at a community health clinic began in the fall of 2022. Throughout the process of development, site collaboration, literature review, assessment, implementation, data analysis, and review, I incorporated all eight DNP essentials within the project.

The entirety of the project began with DNP essential number one, scientific underpinnings for practice. Preparation to address current and future practice issues requires a strong scientific foundation for practice. Furthermore, it requires an integration of knowledge

from ethics, the biopsychosocial, analytical, and organizational sciences as its basis (AACN, 2006). After intense research and much collaboration with a site representative, we felt that this project would be beneficial not only for my learning, but for the community health clinic, its stakeholders and employees. Most importantly, it would benefit the community members seen in the clinic. ACE screening can improve clinical decision-making and prevent negative outcomes (ACEs Aware, 2019). The ethical, biopsychosocial, and analytical pieces of this essential were key in understanding the needs of the project site and ensuring all ethical and community needs were met prior to integration and analysis.

DNP essentials two through seven were heavily integrated into the project development and implementation. The previous utilization and incorporation of these essentials throughout my DNP program allowed me to implement these principles seamlessly. Leadership, evidence-based literature review, technology, advocacy, interprofessional collaboration, and clinical prevention all played major roles within this project and helped me succeed in its implementation. The eighth essential: advanced nursing practice stands alone but also represents a culmination of essentials one through seven because an advanced practice nurse needs to practice within each of these complexities. The AACN (2006) states that the DNP program prepares the graduate to:

1. Conduct a comprehensive and systematic assessment of health and illness parameters in complex situations, incorporating diverse and culturally sensitive approaches.
2. Design, implement, and evaluate therapeutic interventions based on nursing science and other sciences.

3. Develop and sustain therapeutic relationships and partnerships with patients (individual, family or group) and other professionals to facilitate optimal care and patient outcomes.
4. Demonstrate advanced levels of clinical judgment, systems thinking, and accountability in designing, delivering, and evaluating evidence-based care to improve patient outcomes.
5. Guide, mentor, and support other nurses to achieve excellence in nursing practice.
6. Educate and guide individuals and groups through complex health and situational transitions.
7. Use conceptual and analytical skills in evaluating the links among practice, organizational, population, fiscal, and policy issues.

The entirety of this project has prepared me to become a doctoral level advanced practice nurse and I will use these lessons throughout my career. I will be able to assess and analyze community or clinic-specific needs, use evidence-based practice to inform my decisions, collaborate with team members, provide culturally sensitive care, and use these skills to continually evaluate best practice for myself, my patients, and my community. I have learned that even if a project implementation does not go as planned, there is still much to learn from it. Instead of viewing different outcomes as failures, we can learn from that experience and choose to extract knowledge and information to make better decisions in the future.

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APPENDICES

APPENDIX A

ACE SCREEN

ACE Screen (Aces Aware, 2020)

Adverse Childhood Experience Questionnaire for Adults
 California Surgeon General's Clinical Advisory Committee



Our relationships and experiences—even those in childhood—can affect our health and well-being. Difficult childhood experiences are very common. Please tell us whether you have had any of the experiences listed below, as they may be affecting your health today or may affect your health in the future. This information will help you and your provider better understand how to work together to support your health and well-being.

<p>Instructions: Below is a list of 10 categories of Adverse Childhood Experiences (ACEs). From the list below, please place a checkmark next to each ACE category that you experienced prior to your 18th birthday. Then, please add up the number of categories of ACEs you experienced and put the <i>total number</i> at the bottom.</p>	
1. Did you feel that you didn't have enough to eat, had to wear dirty clothes, or had no one to protect or take care of you?	<input type="checkbox"/>
2. Did you lose a parent through divorce, abandonment, death, or other reason?	<input type="checkbox"/>
3. Did you live with anyone who was depressed, mentally ill, or attempted suicide?	<input type="checkbox"/>
4. Did you live with anyone who had a problem with drinking or using drugs, including prescription drugs?	<input type="checkbox"/>
5. Did your parents or adults in your home ever hit, punch, beat, or threaten to harm each other?	<input type="checkbox"/>
6. Did you live with anyone who went to jail or prison?	<input type="checkbox"/>
7. Did a parent or adult in your home ever swear at you, insult you, or put you down?	<input type="checkbox"/>
8. Did a parent or adult in your home ever hit, beat, kick, or physically hurt you in any way?	<input type="checkbox"/>
9. Did you feel that no one in your family loved you or thought you were special?	<input type="checkbox"/>
10. Did you experience unwanted sexual contact (such as fondling or oral/anal/vaginal intercourse/penetration)?	<input type="checkbox"/>
Your ACE score is the total number of checked responses	<input type="checkbox"/>

Do you believe that these experiences have affected your health?

- Not Much
 Some
 A Lot

APPENDIX B

EVIDENCE TABLE

Evidence Table

Citation: (i.e., author(s), date of publication, & title)	Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables Studied and Their Definitions	Measurement of Major Variables	Data Analysis	Study Findings	Strength of the Evidence (i.e., level of evidence + quality [study strengths and weaknesses])
<p>(1) Allen et al. (2019).</p> <p>Examining the prevalence of adverse childhood experiences and associated cardiovascular disease risk factors among low-income uninsured adults.</p>	NA	Retrospective RCT data retrieval	<p>Of 12,229 uninsured non-elderly adults randomly selected to apply for Medicaid, 5929 responded (48%)</p> <p>Sample demographics described in Fig.1</p>	<p>Ind: ACE screening, low-income non-elderly adults</p> <p>Dep: obesity/BMI (height, weight), cholesterol, BP, blood sugar (CVD risk factors)</p>	<p>BMI, BP, cholesterol, HgbA1C. Self-reported smoking, alcohol use, physical activity. Positive ACE screen associations with CVD health risk factors were examined</p> <p>Reliability: Benjamini-Hochberg procedure, which decreases the probability of a false discovery</p>	2-sided χ^2 measure of association, least squares regression, analyses conducted via STATA 14.1	<p>Linear regression models suggest a strong association between ACE burden and CVD risk</p> <p>Association of being a current smoker (14 percentage points, $P<0.001$), obesity (6 percentage points, $P<0.01$), being less physically active (10 percentage points, $P<0.001$), and having a diagnosis of hypertension (4.2 percentage points, $P<0.01$).</p> <p>Least squares in table IV.</p>	<p>QOE: Good</p> <p>Strengths: large sample size, reliable tools (ACEs, laboratory tests)</p> <p>Limitations: participants in Oregon may not be representative of populations across nation. Unable to examine causal relationships of ACEs and adult CVD, only associations</p> <p>Feasibility: Substantial evidence that adverse childhood events are associated with adult health outcomes, and low-income populations suggests a high benefit of incorporating trauma-informed care</p>
<p>(2) Chang et al. (2019). Associations between adverse childhood experiences and health outcomes in adults aged 18-59.</p>	NA	Cross-sectional design	1501 residents of Macheng, China, 18-59 years from 13 communities	<p>Ind: ACE score</p> <p>Dep: high-risk health behaviors (drinking/smoking)</p>	ACE-IQ, self-reports on alcohol and tobacco use, CES-D, PCL-C	Logistic regression models, chi-square tests and t-tests	Higher ACE scores were associated with higher risk of being lifetime drinkers (AOR = 1.09, 95% CI: 1.00–1.19), chronic diseases (AOR = 1.17, 95% CI: 1.06–1.28), depression (AOR = 1.37, 95% CI: 1.27–1.48), and PTSD (AOR = 1.32, 95% CI: 1.23–1.42) in adulthood.	<p>QOE: Good</p> <p>Strengths: Results in a middle-class country (prior studies in high-income countries)</p> <p>Limitations: Subject to recall bias, Possible causality noted</p> <p>Feasibility: Findings may facilitate better identification of individuals at risk and the development of effective interventions to protect children from abuse and violence</p>

(3) Danielson & Sanexa. (2019). Connecting adverse childhood experiences and community health to promote equity	Socio-ecological model	Systematic review	NA	NA	ACE screen	NA	NA	QOE: Fair Strengths: Community health focused, systematic review, comprehensive summarization of community-driven practice Limitations: Not an RCT Feasibility: Using a trauma-informed lens, community health becomes a powerful focal point for viable prevention and treatment options to address ACEs and promote health equity
(4) Giano et al. (2020). The frequencies and disparities of adverse childhood experiences in the U.S.	NA	Cross-sectional study	211,376 adults across 34 states	IV: BRFSS self-reported ACE screening DV: demographic variables	ACE screen, F-tests	Group differences were assessed by post-estimation F-tests Both sets of frequency analyses are weighted with corresponding 95% confidence intervals	Demographic characteristics in the sample found in Table 2, prevalence of ACEs in Table 3	QOE: Good Strengths: large sample size, post-estimation F tests are more conservative than traditional group difference tests (e.g., <i>t</i> -tests and ANOVAs) and may protect against type 1 errors when analyze a larger sample Limitations: BRFSS is self-reported and may be susceptible to bias Feasibility: Study aims to understand ACEs from a population-based perspective. Info can be used to tailor programs to those in high-risk categories
(5) Hargreaves et al. (2020). Adverse childhood experiences and health care utilization in	NA	Cross-sectional study	38,200 adults (mean age 54), two-thirds African American recruited from	IV: ACE screening DV: demographic variables, ER visits, doctor's visits, chronic	ACE screen	Odds ratios and accompanying 95% confidence intervals were computed	Odds ratios for those with >4 vs. 0 ACEs were 1.37 (95% CI 1.27-1.47) for 1-10 times and 1.8 (95% CI 1.29-2.52) for more than 10 ER visits, 1.37 (95% CI 1.18-1.59 for over 10 doctor's visits,	QOE: Good Strengths: Large sample size Limitations: Full article not available Feasibility: High levels of ACEs indicate a greater chronic disease burden and increased healthcare

a low-income population.			community health centers across 12 southeastern states	disease index scale			and 2.29 (95% 2.06-2.54) for three or more chronic diseases	utilization in adulthood. Demonstrates need to educate providers and patients to improve long-term health outcomes
(6) Houtepen et al. (2020). Associations of adverse childhood experiences with educational attainment and adolescent health and the role of family and socioeconomic factors: A prospective cohort study in the UK.	NA	Prospective cohort study	9959 participants for educational outcomes, 4917 for health outcomes (assessed at research clinic)	IV: ACE screen DV: Obesity, smoking/drinking, depression, illicit drug use	BMI, self-reported smoking, AUDIT scale for alcohol, clinical interview (depression), cannabis abuse screen	Odds ratios, analyses using data from multivariate multiple imputation, associations	Experiencing 4 or more ACEs was associated with double the odds of obtaining fewer than 5 GCSEs at grade C or above (OR 2.00 [95% CI 1.65–2.43, $p < 0.001$]) Higher ACE score was associated with lower educational attainment	QOE: Good Strengths: Large sample size Limitations: Use of multiple questionnaires over a long period of time resulted in a high proportion of missing data Feasibility: study suggests that intervention strategies should target a wide range of relevant factors, including ACEs, socioeconomic deprivation, parental substance use, and mental health
(7) Marie-Mitchell & Kostolansky (2019). A systematic review of trials to improve child outcomes associated with adverse childhood experiences.		Systematic literature review	22 articles describing 20 RCTs	NA	C-ACES Child health outcomes: behavioral or mental health problems, developmental or cognitive functioning, physical or chronic health problems, child biomarkers (BP/cortisol), and emergency or hospital utilization	Variable amongst studies	Multicomponent medium- to high-intensity interventions that utilized professional home visitors to provide parenting education or mental health counseling demonstrated the largest effects in reducing the impact of ACEs	QOE: Fair Strengths: studies included if they were an RCT design Limitations: findings may be influenced by publication bias Feasibility: Offers multicomponent interventions to help reduce the impact of ACEs

(8) Mouton et al. (2016). Adult cancer risk behaviors associated with adverse childhood experiences in a low-income population in the southeastern United States.	Epidemiologic	Prospective cohort study	22,227 adults aged 40-79 in the Southern Community Cohort Study	IV: ACE scores DV: Cancer risk behaviors	ACEs Smoking, alcohol consumption, BMI, cancer screening methods (5)	Odds Ratios	Higher ACE scores were related to increased prevalence of smoking (ORs 1.25 (1.05-1.50) to 2.33 (1.96-2.77), higher ACEs= lower mammography and pap screening rates	QOE: Good Strengths: Large study, cancer risk behavior focused Limitations: Self-reports and participant recall of the events Feasibility: Evidence applicable to a primary care/integrated health setting like CHP
(9) Ortiz, R. (2019). Building resilience against the sequelae of adverse childhood experiences: rise up, change your life, and reform health care.	NA	Meta-analysis, retrospective	96 articles that assessed health outcomes associated with the ACEs in the CDC-Kaiser ACE scale	NA	ACEs	Odds ratios	Exposure to multiple ACEs is associated with a wide variety of outcomes See Table 3. Resilience training through lifestyle medication counteracts negative health effects associated with ACEs	QOE: Good Strengths: Large number of articles Limitations: Retrospective study (response bias) Feasibility: Supports the need to screen the pediatric population
(10) Sonu et al. (2019). Adverse childhood experiences and the onset of chronic disease in young adulthood.		Cross-sectional study	86,968 respondents representing a nine-state adult population of 32 million	NA	BRFSS ACEs	Poisson regression models	Table 3, 4. Incidence rate ratios were highest in young adults and successively decreased among older adults	QOE: Fair Strengths: first to analyze patterns of association between ACEs and adult health disaggregated by age, preventative-focused Limitations: Associations, causal relationships, retrospective (recall bias) Feasibility: Identifying high-risk populations in a preventative manner

(11) Gilgoff et al. (2020). Adverse childhood experiences, outcomes, and interventions.	NA	Literature review	NA	NA	ACEs	NA	Providers can mitigate ACE consequences: Identification, Anticipatory guidance, and trauma- focused/human- centered resources	QOE: Fair Strengths: Outcome and intervention focused Limitations: NA
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APPENDIX C

IMPLEMENTATION RESULTS

Implementation Results

<i>Patient</i>	<i>ACE Score 0</i>	<i>ACE Score 1-3</i>	<i>ACE Score 4+</i>	<i>Effect on Health</i>
1			4	A lot
2	0			Not much
3			6	A lot
4		1		Not much
5	0			Not much
6			5	A lot
7			9	A lot
8			5	Some
9			7	A lot
10		2		Some
11			10	A lot
12		2		Some
13		3		Some
14			4	A lot
15		1		Not much
16		2		A lot
17		3		A lot
18			5	A lot