

IMPLEMENTATION OF TRAUMA INFORMED CARE
USING THE ‘ACE-10’ QUESTIONNAIRE: A QUALITY IMPROVEMENT PROJECT

by

Stacey Elizabeth Fast, MSN, RN

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

of

Doctor of Nursing Practice

in

Psychiatric Mental Health Nurse Practitioner

MONTANA STATE UNIVERSITY
Bozeman, Montana

May 2025

©COPYRIGHT

by

Stacey Elizabeth Fast, MSN, RN

2025

All Rights Reserved

TABLE OF CONTENTS

1. REVIEW OF THE LITERATURE	1
Background and Significance	2
Physiology of Toxic Stress.....	3
Screening.....	4
Trauma Informed Care.....	4
Significance In Montana	5
Methods.....	5
Overview of Studies.....	5
Search Strategies	6
Eligibility	6
Study Selection	6
Quality Assessment.....	6
Characteristics Within Literature	7
Synthesis of Literature	8
Characteristics of ACE and Trauma Screening.....	8
Implementation of Trauma Informed Care and Screening	9
Barriers to Implementation and Screening	10
Discussions and Conclusions.....	11
Summary	11
Implications for Practice	12
2. QUALITY IMPROVEMENT PROPOSAL	14
Introduction.....	14
Problem and Aim Statement	15
Needs Assessment.....	16
Questionnaire/Questionnaire.....	17
Quality Improvement Model.....	18
PurposeStatement.....	21
Methods.....	22
Implementation Summary and Timeline.....	22
Intervention and Implementation.....	24
Barriers and Challenges	29
Evaluation and Analysis.....	32
Safety and Confidentiality	32

TABLE OF CONTENTS CONTINUED

3. QUALITY IMPROVEMENT MANUSCRIPT	34
Contribution of Authors and Co-Authors.....	34
Manuscript Information.....	35
Abstract.....	36
Background.....	36
Local Problem.....	36
Methods.....	36
Interventions	36
Conclusion	37
Review of Literature.....	39
Conceptual Framework.....	41
AIMS/Project Purpose.....	42
Methods.....	43
Context.....	43
Interventions	43
Measures	44
Analysis.....	45
Results.....	45
Discussion.....	47
Overall.....	47
Limitations.....	49
Recommendations.....	54
Conclusion.....	50
4. ADVANCED NURSING ESSENTIALS REFLECTION.....	52
Domain 2: Person Centered Care.....	52
Domain 3: Population Health.....	54
Domain 4: Scholarship for the Nursing Discipline.....	54
Domain 9: Professionalism.....	56
CUMULATIVE REFERENCES CITED.....	58
APPENDICES.....	62
APPENDIX A: Prisma Diagram.....	63
APPENDIX B: Evidence Table.....	65

LIST OF TABLES

Table	Page
1. Table 1: Implementation Timeline.....	23
2. Table 2: SMART Goals.....	27
3. Table 3: Results: Post Education Quiz by Site Staff.....	45
4. Table 4: Results: ACE Questionnaire Screening	46

LIST OF FIGURES

Figure	Page
1. Figure 2.1: Quality Improvement Model used; Plan-Do-Study Act phases including the pre-planning, implementation, analysis, and evaluation processes.....	20
2. Figure 2.2: A process flow chart describing the intervention processes for inpatient ACE-10 screening.....	31

ABSTRACT

The effects of childhood trauma, in the form of ‘adverse childhood experiences, are detrimental to a person’s mental and physical health. Education and screening are pertinent components of trauma-informed care, both assisting in the identification of those patients who are at risk for poor health outcomes. A rural, critical-access hospital in Northeast Montana has no trauma-informed care policies or screening practices. As an educational component, the inpatient nurses and providers employed at this hospital were provided with a 15-minute presentation on trauma-informed care and adverse childhood experiences. All adult behavioral health patients admitted to the inpatient medical-surgical floor at this hospital were screened using the ‘ACE-10’ questionnaire. Scores from the questionnaire range from 0 = no adverse experiences to 10 = 10 unique traumatic experiences during childhood. Patients scoring four or greater were referred to outpatient mental health services during these six weeks. Post-tests after presentations resulted in an average passing score of 95%. Three adult behavioral health patients were admitted during the six weeks. The average ACE score of the three patients was 6.7. All three patients were transferred to the Montana State Hospital. Thus, no referrals were sent. Trauma-informed care practices were initiated at a rural critical access hospital, providing trauma education and screening practices.

CHAPTER ONE

REVIEW OF THE LITERATURE

Introduction

Several elements within an individual's life can influence their health. One aspect of patient health often omitted by practitioners is an assessment of past trauma and adverse childhood events (ACES). The landmark study on adverse childhood experiences (ACEs), spearheaded by the Centers for Disease Control and Prevention (CDC), Kaiser Permanente, and Dr. Vincent Felitti, was published in 1998. This study surveyed over 17,000 participants over a period of two years (Felitti et al., 1998). This study demonstrated a direct correlation between the effects of trauma and adverse childhood events upon the population's health, leading to potential harm and impaired functioning of the neurological, immune, endocrine, cardiovascular, and gastrointestinal systems (Felitti et al., 1998). Traumatic events include those in which a person, directly or indirectly, experiences a harmful or life-threatening event that negatively impacts that individual's ability to function (SAMHSA, 2014). Trauma is subjective and individualized for those who experience such events, which may include abuse, separation, isolation, or war and combat (Novilla et al., 2023). Adverse childhood events are those traumatic events that occur within an individual's first 17 years (Novilla et al., 2024). The exposure to trauma and adverse events is prevalent in the United States, with data reporting one in six adults experiencing four or more ACEs and nearly half (46%) of children facing at least one ACE during their youth (CDC, 2021). The CDC performed a comprehensive study of behavioral risk factors from 2011 – 2020, surveying adults within all 50 states and the District of Columbia, concluding that 17.3% of

adults in the U.S. reported four or more ACEs (Swedo et al., 2023). The reports collected from adults within Montana revealed a higher frequency of ACEs, with 22.3% of adults reporting four or more ACEs, which is 5% greater than the national average (Swedo et al., 2023).

The omission of a trauma history assessment will lead to an incomplete evaluation and identification of the patient's needs and health risks, resulting in poorer health outcomes (Novilla et al., 2023). Screening for ACEs coupled with an adult trauma history is a component of trauma-informed care (TIC). It must be a routine practice within healthcare provisions to promote optimal health and reduce the likelihood of re-traumatization (Novilla et al., 2024). TIC is based upon the recognition of an individual's experience with trauma and the devastating consequences it can have on their mental and physical health (Bunting et al., 2019; Forkey et al., 2021). Implementing TIC practices among hospitals and clinics is necessary if the objective is to improve the health outcomes of their patients and reduce the effects of 'toxic stress' (Bunting et al., 2019; Forkey et al., 2021).

Background and Significance

Adverse events during childhood consist of three main areas: those events that encompass abuse towards the child, challenges that disrupt the peace and harmony within the home, such as exposure to domestic violence, incarceration of a family member, etc., and lastly, issues with child neglect (Dumke et al., 2024). These adverse events are devastating to a child's physical and mental development, leading to immediate as well as long-term harmful impacts (Webster, 2022). Trauma results from direct or indirect exposure to an unhealthy physical or emotional threat (SAMSHA, 2014). Many reported traumatic events result from a life-threatening automobile accident, witnessing death or the unexpected death of someone close, physical or

sexual assault, and a significant injury or illness (Novilla et al., 2024). The nature of human beings often includes exposure to a traumatic event at least once in an individual's lifetime (Swedo et al., 2023). However, when that individual is consistently exposed to repeated trauma or when that individual lacks the resources, support, and resiliency to adapt via healthy coping, we see the result as toxic stress (Forkey et al., 2021).

Physiology of Toxic Stress

The American Academy of Pediatrics explains that 'toxic stress' is the physiological effect of recurring trauma and adverse events upon an individual's mental and physical health (Forkey et al., 2021). When a person is exposed to repeated or unprocessed trauma and adverse events during childhood, it can cause a flight-or-fight response that is prolonged, resulting in excess stress hormones, including cortisol, which lead to damage and inflammation of healthy tissues within the body (Herzog & Schmahl, 2018). As toxic stress continues, the hypothalamic-pituitary-adrenal axis (HPA) is stimulated, leading to an increased release of cortisol. This steroid-hormone affects nearly every system in the body (Cay et al, 2018). Excessive cortisol levels lead to chronic inflammation and decreased cell sensitivity to insulin, increasing a person's risk of developing Type 2 diabetes mellitus (Hamberger, Barry & Franco, 2019).

ACE studies have shown changes to structures of the brain, specifically a reduction of gray matter, along with a smaller hippocampus and anterior cingulate cortex, have been discovered in adults who experienced adverse events in childhood when compared to those who have not been exposed to these events (Herzog & Schmahl, 2018). These neurobiological abnormalities lead to decreased cognitive functioning and a reduction of higher brain functioning like emotional regulation and prioritizing tasks (Herzog & Schmahl, 2018).

Screening

When the original ACE study was published in 1998, it brought the impact of ACEs to light, increasing awareness towards the long-term adverse health effects that can develop (Dumke et al., 2024). Since the reveal of this landmark study, some healthcare institutions have acknowledged a link between adverse events and poorer health outcomes and thus have begun to screen for ACEs and trauma among their adult and pediatric patients. Despite the multitude of research studies that have been published surrounding this health concern, there is still hesitancy among many healthcare facilities to engage in a screening process for trauma and ACEs. Healthcare providers report several barriers and obstacles that must be addressed when instituting a standardized screening process for ACE and traumatic events. These barriers include a lack of time available to address the patient's trauma, minimal trauma-related education and training received during school, and a lack of available resources for those patients who are identified as needing additional help during the screening process (Forkey et al., 2021).

Trauma-Informed Care

The concept of trauma-informed care (TIC) within healthcare institutions began after the Vietnam War, as many soldiers returned after experiencing devastating trauma, which led to a greater need for mental health care resources and practices within healthcare institutions (SAMHSA). Since this time, further TIC provisions have been developed from the ACE study results, which concluded that there is a great need for patient care to incorporate practices that promote safety and support while minimizing the risk of re-traumatization (Bunting et al., 2019). TIC consists of three areas to focus on, including workforce development and training, screening for trauma history and adverse events, and lastly, organizational change consisting of policies

and procedure development, provision of a safe environment, and collaboration of services within the facility and community (Bunting et al., 2019).

Significance In Montana

The Centers for Disease Control and Prevention performed a nine-year study evaluating the frequency of ACEs among adults within the United States, comparing each state's results to one another and with the national averages. The state reporting four or more ACEs with the highest incidence was Oregon at 22.7%; however, tied for second at 22.3% of adults were Alaska and Montana, which is over 5% more than the national average of those adults reporting four or more ACEs, 17.3% (Swedo et al., 2023). Several factors play a role in Montana's high ACE frequency, including sociocultural and socioeconomic characteristics commonly seen in Montana, including a high rural and impoverished population, poor access to healthcare, and lack of social services, especially in rural communities. Montana's rural population from the 2020 Census was 33%, whereas the national percentage of those residing in rural areas was 20.3% during that same year (Health Resources and Services Administration, 2023).

Methods

Overview of Studies

The Montana State University (MSU) Library was utilized to access evidence-based research articles within the PubMed and Medline databases. Additional research was located via Google Scholar and secondary searches from published research references. Overall, 21 research articles were retrieved from the MSU library database search. Additionally, six studies were found via Google Scholar and from research study references.

Search Strategies

MSU database searches were performed using search terms: “trauma-informed care” AND “implementation” AND “ACES screening”. Search parameters were limited to published dates between 2014 and 2024, studies published in English, full-text available, and those that were peer-reviewed. A Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) model was used to discern through search results (Appendix A) (Rethlefsen & Page, 2022).

Eligibility

Articles reviewed included those published within the past ten years, available in English, peer-reviewed, and with full text available. Among these criteria, 21 articles were available from the MSU library database, and six were selected from Google Scholar and research references, yielding 27 articles.

Study Selection

Of those 27, seven were duplicates and removed from the final selection, leaving 20 publications. After reviewing the 20 articles, it was determined that 13 were literature reviews and not primary research; thus, they were removed from the final collection. The final collection of research includes seven research studies used for this review.

Quality Assessment

Of the final seven research studies reviewed, two are qualitative studies. One qualitative study collected data through focus group discussions among staff employed in five California pediatric clinics (Alvarado et al., 2023). The second qualitative study collected data via

individual interviews of healthcare staff within six pediatric clinics in California (Dumke et al., 2024). Two of the studies used a mixed-method approach, utilizing surveys with direct quantitative questions and open-ended qualitative questions for review (Gerlach et al., 2021; Schneider et al., 2020). One cross-sectional study used a quantitative approach via a 22 Likert-scale questionnaire distributed online, which was then completed by 179 healthcare professionals (Novilla et al., 2024). A second cross-sectional study is utilized in this review; however, this study includes both qualitative and quantitative data collection methods (Reid et al., 2022). The final research includes a prospective study using pre- and post-surveys among healthcare graduate students (Strait & Bolman, 2017).

Results

Characteristics Within Literature

Given the results of Dr. Felitti's landmark ACE study 26 years ago, one would expect screenings of ACEs to be used among all hospitals and clinics. However, the literature reveals a different picture. There has been a massive lapse in the implementation of trauma screenings as well as the development of TIC within most healthcare facilities. Studies have been implemented recently as this year (2024) to assess the understanding and readiness for implementing TIC practices within clinics and hospitals. Research continues to discuss the logistical issues surrounding the use of trauma questionnaires like the ACE questionnaire among primary healthcare facilities, 26 years after the ACE study was published. Overall, studies demonstrate that using questionnaires is beneficial for most patients. Similarly, implementing TIC is helpful for the clinic and hospital staff, along with their patients. Given this evidence, we still see hesitancy from healthcare institutions to adopt TIC policies and screening practices due

to several barriers, which could be remedied if practitioners were allowed more time with their patients to discuss such concerns, along with increased available behavioral health resources.

Synthesis of Literature

Characteristics of ACE and Trauma Screening

A provider could make assumptions as to which patients have experienced a substantial number of ACEs during their childhood based upon appearance and would miss several patients due to their own bias. Given the risk of bias, six of the seven studies reviewed support the use of a questionnaire to assess ACE and the history of trauma (Alvarado et al., 2023; Dume et al., 2024; Gerlach et al., 2021; Novilla et al., 2024; Schneider et al., 2020; Strait & Bolman, 2017). Reid et al. (2023) did not reject the use of a questionnaire within their research for TIC; rather, they did not discuss the use of a questionnaire in their report. The rationale for screening patients for ACEs is early recognition and action of potential sequelae that has developed from the effects of trauma. All seven studies emphasized the link between trauma and its detrimental impact on health including an increased risk for suicidality and other mental health conditions, chronic health concerns like cardiovascular disease, chronic obstructive pulmonary disease (COPD) and type 2 diabetes (Alvarado et al., 2023; Dumke et al., 2024; Gerlach et al., 2021; Novilla et al., 2024; Reid et al., 2022; Schneider et al., 2020; Strait & Bolman, 2017). Alvarado et al. (2023) found that overall, staff felt comfortable administering the screenings for ACE and trauma compared to other research that suggests physicians and staff may have discomfort with the topic due to their lack of preparation and training on the subject of trauma or because it may trigger their history of trauma (Dumke et al., 2024; Novilla et al., 2024). Three studies that assessed the effectiveness of screening from the patient's perspective suggested that patients and patient

caregivers responded positively overall to screenings, stating that it facilitated communication and assisted with building trust with their provider (Alvarado et al., 2023; Dumke et al., 2024; Schneider et al., 2020).

Implementation of Trauma-Informed Care and Screening

Despite the knowledge and research available about the potentially harmful effects trauma can have on one's health, many facilities have yet to incorporate TIC policies or are in the planning stages of creating a TIC environment within their facility by testing the waters with research. Several studies examined the research behind the logistics and ramifications of implementing TIC and screening policies. Two of the research studies examined the healthcare staff and providers' views of TIC, obstacles with, and thoughts on whether they found TIC beneficial for patients. Using surveys and open-ended questions, Reid et al. (2022) found that 92% of those surveyed either disagreed or strongly disagreed with the statement, "trauma-informed approaches are not relevant to my organization's core business" (p.107). Additionally, 81% agreed or strongly agreed with the statement, "I am highly motivated to learn more about trauma-informed approaches for patients with complex trauma" (p.107). Healthcare providers and staff who responded to the survey that researchers, Novilla et al. (2024) utilized, found 39% of respondents estimated 30-50% of their patient caseload experienced trauma and 29% stated they 'always' ask patients "what can be done to make them more comfortable during their appointment" (p. 12). Education of all providers regarding the core principles of TIC were discussed with recommendations to incorporate TIC in provider training curriculum (Novilla et al., 2024; Strait & Bolman, 2017) as well as continuing education for providers and other

healthcare staff to remain compliant and knowledgeable of the most current recommendations for implementing TIC (Novilla et al., 2024; Reid et al., 2023).

Qualitative studies reviewed the results of open-ended questions to gather information from those administering the ACE questionnaire and better understand their perceptions of the process. Those who administered the screening reported that screening patients using the ACE questionnaire increased their level of empathy and understanding and felt it opened the door for communication on a difficult subject (Dumke et al., 2024). Some concerns raised among the study's results include the fear that staff may 'trigger' patients by asking questions on the ACE questionnaire, although there were no reports of this occurring (Alvarado et al., 2023).

Barriers to Implementation and Screening

Each of the studies reviewed discussed barriers to the implementation of TIC and the use of ACE questionnaires. The need for additional education and training on trauma and its ramifications for staff and providers was proposed by several studies (Alvarado et al., 2023; Dumke et al., 2024; Gerlach et al., 2021; Novilla et al., 2024; Reid et al., 2022; Strait & Bolman, 2017).

Logistical barriers to the implementation of TIC and the use of ACE questionnaires include time restrictions of practitioners to properly review the questions and ample time to discuss their response and concerns (Alvarado et al., 2023; Dumke et al., 2024; Novilla et al., 2024), lack of institutional-wide policies on how to facilitate these processes and a need for administrative support (Gerlach et al., 2021; Novilla et al., 2024), concerns regarding who is responsible for performing the screening (Schneider et al., 2020) and the setting in which the

screening is taking place not allowing for safety and privacy concerns (Novilla et al., 2024; Schneider et al., 2020).

One of the more frequently reported barriers discussed is the limited number of resources available to refer patients to once the ACE screening is complete and needs are identified (Alvarado et al., 2023; Dumke et al., 2024; Gerlach et al., 2021; Novilla et al., 2024; Reid et al., 2023). Providers express concern that once a patient discloses a substance use issue or mental health condition, they will be empty-handed and unable to offer any assistance due to a lack of services or services that have more patients than they can serve.

Discussions and Conclusions

Summary

There is no denying the harmful effects trauma can have on a person's mental and physical health, as all seven studies refer to this concern as a basis for their research (Alvarado et al., 2023; Dumke et al., 2023; Gerlach et al., 2021; Novilla et al., 2024; Reid et al., 2022; Schneider et al., 2020; Strait & Bolman, 2017). If there were no risk of harm from trauma, there would be no need to create healthcare facilities that provide safe, trauma-informed care and no need to screen for a history of trauma and adverse experiences, but that is not what research has demonstrated. Screening has been beneficial in identifying those patients who are at risk for, or who have already developed, a substance use disorder, behavioral health condition, or chronic physical health issue (Schneider et al., 2020). Similarly, TIC has shown itself to be helpful in creating a stronger partnership between provider and patient and providing a safe environment that promotes well-being and healing (Novilla et al., 2024).

While there is evidence indicating support for the use of ACE questionnaires (Alvarado et al., 2023; Dumke et al., 2023; Gerlach et al., 2021) along with the implementation of TIC (Novilla et al., 2024; Reid et al., 2022), there are barriers to consider and address. The barriers have most likely led to the hesitancy of healthcare institutions to adopt TIC policies and their reluctance to utilize ACE questionnaires. Studies suggest that addressing obstacles, by providing facility-wide education and training, creating a feasible workflow to allow for more time with patients and the commitment to delivering more community resources would help to facilitate the adoption of TIC and ACE screening in hospitals and clinics (Alvarado et al., 2023; Novilla et al., 2024).

Implications for Practice

Incorporating a policy that includes the use of the *10-item Adverse Childhood Experiences questionnaire* (‘ACE-10’) for patients in the healthcare setting can assist the provider in identifying past trauma and adverse experiences in childhood that may lead to, or be the source of, a patient’s health condition (State of California Department of Healthcare Services, 2024). Addressing the source of the condition is more likely to result in positive health outcomes than only treating the symptoms. The ten topics covered on the ACE questionnaire will provide an opportunity for discussion and the patient to disclose subjective information pertinent to the patient’s care plan.

The utilization of the ‘ACE-10’ questionnaire is one component of TIC, providing an opportunity to identify and address a patient’s experience with trauma. Other elements, including compassionate care and providing a safe environment, are essential to TIC and should be applied throughout the entire facility. Providers should take the lead in this undertaking by setting an

example of TIC that assists in the creation of a facility-wide environment that promotes well-being and holistic health, leading to optimal outcomes for patients.

CHAPTER TWO

QUALITY IMPROVEMENT PROPOSAL

Introduction

The effects of trauma upon an individual are often indiscernible and not apparent to others. Trauma can be internalized and manifest itself in unhealthy behaviors and actions, leading to mental health conditions, addictions, and disruptions within one's normal physiological processes (Felitti et al., 2019; Hamberger et al., 2019; Webster, 2022). For a healthcare provider to create a complete case conceptualization for their patient, it is vital that they include an assessment of the patient's trauma history. This information will help create an exhaustive assessment of the patient's needs, directing interventions to support the greater likelihood of positive health outcomes. The 10-Item Adverse Childhood Experiences (ACE-10) questionnaire has demonstrated validity and reliability in assessing those events that have been determined to result in a trauma response for some (Kovacs-Toth et al., 2023). The 10-ACE questionnaire is short, asking only 10 questions, easy to understand for those with lower educational attainment, and has demonstrated an acceptable internal consistency with $\alpha=0.64$ and adequate internal validity, $p < 0.001$ (Kovacs-Toth et al., 2023).

This project will incorporate the screening of behavioral health patients 18 years and older, admitted to an inpatient medical-surgical unit within a rural critical access hospital in northeastern Montana, utilizing the 'ACE-10' questionnaire. The objective of using the 'ACE-10' questionnaire is to identify better interventions that target each patient's needs, incorporating trauma-informed care (TIC) within the inpatient department of this facility. Additional

components of this project include the education of medical and nursing staff on ACEs and TIC, and the assurance that each behavioral health patient over 18 years has a follow-up appointment at discharge to allow for better health outcomes and ensure continuity of care.

Problem and Aim Statement

The project site hospital is a critical access hospital in rural northeastern Montana. Within this facility, there are currently no trauma-informed care policies or procedures to guide staff and providers on the facilitation of this targeted form of care. To help facilitate TIC, it is recommended that a questionnaire be used to help identify and assess those patients who may require care that is sympathetic and directed towards their specific needs (SAMHSA, 2014). This project aligns with current research through the initiation of this provision by first educating medical and nursing staff employed at the project site hospital on ACEs and TIC and the use of the ‘ACE-10’ questionnaire. Secondly, nursing staff will identify those patients who have experienced childhood trauma using the ‘ACE-10’ questionnaire for each behavioral health patient 18 years and older, admitted to the inpatient unit at the project site hospital. Finally, inpatient nursing and medical staff will verify that each behavioral health patient (18 years and older) discharged from the inpatient unit has an appointment for follow-up care. This project will begin in January 2025 and will continue for six weeks. The aims which this quality improvement project is intended to achieve include the (a) improvement of patient mental and physical health outcomes; (b) incorporation of TIC within the inpatient department at the project site hospital; (c) educate nursing and medical staff on ACEs, TIC and the use of the ‘ACE-10’ questionnaire (d) identify those patients who are at the most significant risk for behavioral health and physical health morbidities with the use of the ‘ACE-10’ questionnaire.

Needs Assessment

The project site is a 25-bed critical access hospital in rural northeastern Montana. The immediate population of the county is estimated to be 7,000 (Montana Department of Health and Human Services, 2021); however, this hospital also serves residents of neighboring counties who cannot access some specialty services that the project site hospital provides. The surrounding counties have approximately 25,000 rural Montana residents (Montana Department of Health and Human Services, 2021). The site hospital does not have acute care mental health providers for Emergency or inpatient services. This site hospital contracts with a mental health service that provides initial mental health assessments and consultations for adult and pediatric patients through a tele-video system. This mental health service determines the appropriate care plan for that patient by recommending a hospital admission or discharge home on a contracted safety plan of care.

Each month, the project site hospital admits an average of four behavioral health patients (adult and/or pediatric) to the medical-surgical department who are in the care of the hospitalist scheduled for that week. Five family practice physicians are employed as hospitalists at the site hospital, alternating coverage on the inpatient unit every seven days. In most cases of behavioral health admissions, the patient is admitted voluntarily and not seen by a behavioral health provider after their initial consultation or during their inpatient stay. Upon admission and throughout each shift, the patient is screened by their assigned registered nurse for suicidal ideation, which is also done for all medical patients once upon admission. Beyond the suicidal ideation assessment, there are no additional behavioral health screenings offered for staff to use to help provide a more individualized plan of care for that patient. Most behavioral health

patients are admitted on a one-to-one status, requiring continuous monitoring by hospital staff while staying in a regular patient room. There is no behavioral health unit or room available to use with safety modifications for patients who report suicidal ideation. Due to the unavailability of nursing staff to monitor patients continually, the monitoring is often performed partly by certified nursing assistants (CNAs), emergency medical staff, and other available staff from different departments. The hospital staff at the project site receives no training or education on providing trauma-informed care or education regarding the ‘ACE-10’ questionnaire. One stakeholder interviewed at the project site commented that they feel “uncomfortable” monitoring behavioral health patients because they “don’t know what to say or what not to say”.

Consultation for this project has taken place with the site hospital's inpatient director of nursing (DON), along with inpatient staff and hospitalists. The DON states that she feels implementing the ‘ACE-10’ questionnaire would provide staff and providers with a more complete view of the patient’s condition. Staff, providers and the nursing director are all supporting TIC at the project site hospital and feel strongly that policies and practices should be created and implemented to improve the quality of care that is provided at the project site hospital.

Questionnaire/Questionnaire

The ‘ACE-10’ questionnaire (Appendix D) is just one of several trauma questionnaires that can be utilized in healthcare. The practitioner's choice of questionnaire depends on what aspect of trauma the practitioner is screening for. There are questionnaires designed to assess substance abuse, specific trauma-related symptoms, coping styles, risk for suicide or self-harm, and specific trauma-related psychiatric disorders (SAMHSA, 2014). They range in depth, number of questions asked, and time commitments to complete, some requiring multiple lengthy

sessions to complete, while others only a few minutes (SAMHSA, 2014). The ‘ACE-10’ questionnaire assesses adverse childhood events experienced prior to age 18 (Buchanan, 2023). The screening questions include a variety of intrafamilial discord and adverse events, including household dysfunction, emotional abuse, neglect, and physical and sexual abuse (Mei et al., 2022). The ‘ACE-10’ questionnaire was chosen for this project due to its short time requirements of ten minutes or less to complete asking ten questions, it can be completed in a self-reporting manner not requiring special training or certification to administer, has been determined to be free from bias, it has been found to be reliable and valid (Mei et al., 2022). The ‘ACE-10’ questionnaire is easy to score, allocating one point to each event experienced in childhood, with the maximum score equating to 10, and no adverse events experienced equating to zero. Research has demonstrated that a total score of four or greater equates to clinical significance for poorer health outcomes (Buchanan, 2023). The ‘ACE-10’ questionnaire has been determined, in research literature, to be an appropriate questionnaire to assist in identifying those individuals at risk for psychological and physical health disorders (Mei et al., 2022).

Quality Improvement Model

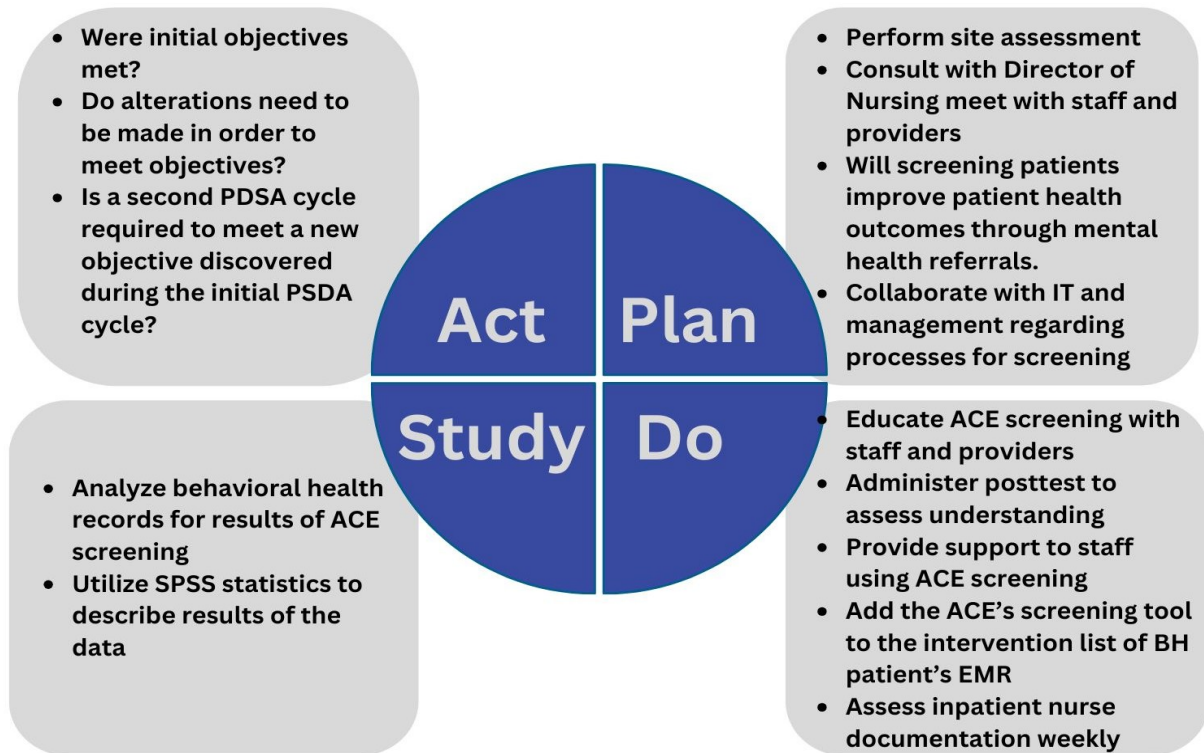
For this quality improvement project, the Institute for Healthcare Improvement (IHI) model for improvement was utilized, incorporating the Plan-Do-Study-Act (PDSA) cycle (Figure 2.1). The PDSA model assessed and refined TIC improvement opportunities within the project hospital site.

The aim and focus on which the PDSA cycle was built upon includes the implementation of TIC practice; the education of nursing and medical staff at the project site, along with screening behavioral health patients who are admitted to the project site hospital using the ‘ACE-

10 ' questionnaire, and the assurance that these patients receive follow-up care. The first 'plan' phase of this cycle incorporates the objectives of the project: Initiate TIC within the inpatient department to include a screening process that assists in identifying patients who are most vulnerable and at risk for medical and mental health disability, and improve patient health outcomes. The 'plan' includes a needs assessment regarding the implementation of TIC, specifically the inclusion of trauma screening, at the project site hospital, which was determined to be appropriate and supported by stakeholders at the facility. Processes regarding technical requirements, barriers that may develop, and ideas for addressing those barriers were discussed among stakeholders. Interventions for the project were developed during the planning phase after a review of the literature was completed. The "do" phase of the PDSA cycle will carry out the interventions that were developed in the planning phase. Nursing staff and medical providers will be provided with a brief education on ACEs, TIC, and the use of the 'ACE-10 ' questionnaire. This education will be provided at medical and nursing staff meetings. A post-test will be used to assess the level of understanding at each meeting. The "act" phase of the PDSA model will determine if the initial objectives established in the "plan" stage were met, and evaluation will be required to assess if further modifications are necessary to achieve the objectives, creating a second PDSA cycle.

Figure 2.1 Quality Improvement Model: Plan-Do-Study-Act

Aim: Improve TIC within the inpatient department at the project site hospital through the identification of patients who have a history of adverse events and/or trauma by incorporating the ACE's screening tool



Purpose Statement

This quality improvement project aims to incorporate TIC within a rural, critical access hospital's inpatient department by educating stakeholders on the use of the 'ACE-10 ' questionnaire, how to implement this tool, and the coordination of documenting the results. This screening will assist in identifying patients at the highest risk for poor mental and physical health outcomes. It will include the referral of these patients to outpatient mental health services to help reduce morbidity among this population.

The Substance Abuse and Mental Health Services Administration (SAMHSA) has created a set of principles to guide facilities and organizations in developing TIC policies and procedures. These principles include an organizational assessment; the selection of leaders or 'champions' of TIC policies; collaborate with community leaders and organizations; support and encouragement of patients to engage and take an active role in their care; provide screenings, assessments and treatment services and lastly; evaluate for continued sustainability (SAMHSA, 2023). Given time restraints, the project is limited in achieving all the suggested principles SAMHSA recommends. However, it incorporates the principle of screening and assessment with referral to services. Although it is not included among SAMHSA's principles, this project also incorporates an educational component for staff and providers, which is anticipated to improve buy-in and participation in the project. A lack of education on TIC has been noted within the research literature as a major limitation to the implementation of TIC practices among other healthcare institutions (Novilla et al., 2024). The intervention providing such education has been created to help prevent this barrier from developing within the project site hospital.

The ‘ACE-10’ questionnaire asks participants about their childhood experience with adverse events. These adverse events include abuse, neglect, insufficient access to basic determinants of health like food, heat in the home and access to healthcare, parents who were absent due to military service, incarceration or abandonment and the presence of substance users in the home (Felitti et al., 1998; Webster, 2021). Felitti et al.’s (1998) landmark study, in which researchers examined the effect of ACEs on a person's physical and mental health, concluded that there is a direct linear relationship between the quantity of adverse events experienced in childhood and future health outcomes. The ACE study conducted by Dr. Felitti and others, concluded an individual with an ACE score of 4 or more, using the ‘ACE-10’ questionnaire was consistent with a 390% likelihood they will develop chronic obstructive pulmonary disease (COPD), 460% more likely to experience depression and a 1220% increased risk of attempting suicide when compared to individuals who have no ACE’s (Felitti, 2002).

Methods

Implementation Summary and Timeline

This project will take place over a six-week period at a rural critical-access hospital in northeastern Montana. During the six weeks, behavioral health patients 18 years old and older, , admitted to the inpatient unit will be screened for trauma by the inpatient nursing staff upon admission using the ‘ACE-10’ questionnaire Inpatient nursing will document within the patient’s electronic medical record (Fig #) as to whether the patient completed the screening or refused and if completed, the number of ACE’s only under the ‘screenings’ tab within that patient’s EMR. The patient will not be required to disclose which of the ten events they experienced, only the total number. This will be done to ease the discomfort some may experience when the topic

of adverse events arises. Those individuals scoring four or more will be referred to outpatient mental health services if discharged home. When the nurse enters four or more patients, an electronic notification will be sent to the hospitalist after being informed of the patient's score from the screening. The referral process will include documented notification by the inpatient nurse that will be delivered to the current hospitalist. The discharge inpatient nurse and social service nurse will verify that the patient has been referred before the patient's discharge. The pre-implementation phase will occur before the six-week working phase of the project. The first working week of the project will consist of staff and provider education, along with training on the use of the ACE questionnaire, with the onset of screening to begin in the second week of the project. Screening of behavioral health patients admitted to the inpatient unit will continue for the next four to five weeks, with analysis and summaries completed in the final week.

Table 1: Implementation Timeline

Phase of Project	Pre-Implementation Phase	Working Phase Week 1	Working Phase Week 2	Working Phase Week 3	Working Phase Week 4	Working Phase Week 5	Working Phase Week 6
Project Interventions	On-site needs assessment	Education and training to Nursing, and medical staff	Inpatient nurses begin screening behavioral health patients	Continue screening behavioral health patients	Continue screening behavioral health patients	Continue screening behavioral health patients	Analyze data
	Meet with stakeholders						Report data to stakeholders
	Literature review	Collaborate with IT staff to incorporate ACE questionnaire into care plan options	Lead staff on screening and referrals	Lead staff on screening and referrals	Lead staff on screening and referrals	Lead staff on screening and referrals	Incorporate findings into manuscript
	Plan interventions		Address concerns/issues that arise	Address concerns/issues that arise	Address concerns/issues that arise	Address concerns/issues that arise	
	IRB approval	Copy and file hard-copy ACE questionnaire in the inpatient department	Review behavioral health patient charts to assess screening and referral, collecting data	Review behavioral health patient charts to assess screening and referral, collecting data	Review behavioral health patient charts to assess screening and referral, collecting data	Review behavioral health patient charts to assess screening and referral, collecting data	
PDSA Cycle	Plan	Do	Do	Do	Do	Do	Study/Assess

Intervention and Implementation

The specific area of focus within the project site hospital will be the inpatient medical-surgical unit. The stakeholders for this project include staff and providers who work with the behavioral health patients admitted to the inpatient unit for care, discharge planning nurses, department managers, hospital administration, information technology (IT) staff, and the patients. Interventions planned for this project include; the education of TIC, ACEs and the ‘ACE-10’ questionnaire, the use of the ‘ACE-10’ questionnaire as a questionnaire for behavioral health patients 18 years and older, and education on documenting the results of the ACE screening for staff and providers who work within this unit; the addition of the ‘ACE-10’ questionnaire as an intervention within the patient’s EMR will include input from nursing as to whether the patient refused the screening and the patient’s screening score; implementation and documentation of the ‘ACE-10’ questionnaire which was adapted from three versions to ensure that the questions were easily understood by those who may be at a lower educational level (APPENDIX E); referral to the project site’s outpatient mental health services for those patients who are scoring four or more on the screening. The ACE screening will be added to the intervention worklist within the patient’s EMR for behavioral health admissions 18 years old and older. This author expects that the data gathered from this project will assist the project site administration in creating future TIC policies and practices.

The pre-implementation phase of this quality improvement project includes assessing the need to implement TIC principles within the project site hospital. The project site has yet to develop TIC policies and/or provide TIC education for staff. The implementation of TIC is needed for this rural hospital given the high report of ACEs and suicidality within the state of

Montana (Swedo et al., 2023). An assessment of the organization is a vital step to assess needs, design specific interventions, and understand barriers to change (SAMHSA, 2023). This pre-implementation phase includes discussions with stakeholders to gather their input and appreciate their contributions and concerns towards this project, including collaboration with the IT department to create an ‘ACE screening’ intervention that can be added to a patient’s EMR.

The first working phase of the project, during week one, will include a brief ten-minute presentation for nursing and medical staff covering objectives of the project, a history of ACEs, the use and purpose of the ‘ACE-10 ’ questionnaire, and how the referral process to outpatient mental health will be facilitated. A post-test consisting of questions taken directly from the presentation will be distributed at each presentation to assess the level of understanding by participants, with the anticipated score of 100%. The second week of the working phase will include implementing ACE screening for all admitted behavioral health patients by nursing staff using the ‘ACE-10’ questionnaire provided. Admitted behavioral health patients will be given a paper copy of the ‘ACE-10 ’ questionnaire, which includes a short written explanation for the screening and how the information will be used to provide individualized care. Due to the possibility of reading inequities, the nurse will be instructed to give the patient a brief verbal explanation for the screening and ask if they would like the nurse to read the screening questions. Patients will be given time and privacy when completing the screening and will only be asked for their total score on the tool to avoid embarrassment and/or shame related to the topics asked. The second week of the working phase will include collaboration with the IT staff at the project site hospital to include an ‘ACE questionnaire score’ within the ‘screenings’ category that can be added to the patient’s EMR. Outpatient providers can then view this score to assist with

providing targeted care for these patients. When the nurse enters a score of four or more, a notification will be sent to the hospitalist on duty that week. During the second week of the project, hard copies of the ACE questionnaire will be added to other charting components, which are accessible to nursing staff, to distribute to behavioral health patients for completion. The screening intervention will persist through the fifth week of the project. Throughout weeks two through five, screening will continue along with analysis of the completion of screening, screening scores, and referrals made to outpatient mental health services. The final week of the project's working phase will include the data analysis, and the findings incorporated into a report for stakeholders, and will be incorporated into the manuscript.

The SMART goals (Table 2) established for the interventions included in this project's plan include 1. an increased knowledge of TIC and the ACE questionnaire evidenced by scores of 100% on the educational presentation post-test; 2. 100% of the behavioral health patients 18 years+, admitted to the in-patient unit will be offered the ACE questionnaire; 3. all in-patient behavioral health patients with an ACE screening score of 4 or greater will be referred to local outpatient mental health services upon discharge; 4. the author will collaborate with administration to create trauma informed care policies will be developed after the completion of this project for the project site hospital.

Table 2: Smart Goals

SMART Goal #1: Project site hospital nursing and medical staff working within the inpatient unit will increase their knowledge on TIC and the ACES questionnaire, as evidenced by 100% scores on an administered post-test given after each educational presentation.		
Description of strategies to be used to accomplish goals, including any resources: • Creation of a 10-minute PowerPoint educational presentation that discusses ACEs, the 'ACE-10 ' questionnaire, and TIC. • Presentations will be given during medical and nursing staff meetings • An anonymous post-test will be administered for all participants to assess the level of understanding.		
Data to be collected	Collection Process	Data Analysis
A post-test quiz will be given and collected after educational presentations.	Paper posttests will be distributed to staff immediately after the educational presentation and collected after giving participants time to complete. Post-tests will be anonymous, only including the staff member's role within the inpatient department.	Descriptive statistics will be utilized to assess the percentage of those participants scoring 100% on the post-test.

SMART Goal #2: 100% documentation by nursing staff for all behavioral health patients admitted to the inpatient medical-surgical floor of the project site hospital regarding the completion of the ACE screening, their score and charting done regarding referrals. This information will be entered into the patient's EMR and collected over a five-week period for all behavioral health patients admitted during this time.		
Description of strategies to be used to accomplish goals, including any resources: • Inpatient nurses will be provided with education on the 'ACE-10 ' questionnaire and how to chart the results of the screening on Meditech, and the need for communication with hospitalists for referrals. Nurses who discharge behavioral health patients will verify that a referral was placed prior to the patient's discharge • Coordination with the project site hospital IT department will add the 'ACE-10'questionnaire to the behavioral health care plan worklist within Meditech charting, along with an indicator on whether the patient obtained a referral to mental health services		

Table 2: Smart Goals Continued

Hard paper copies of the 'ACE-10' questionnaire will be available to nursing staff in the file cabinet at the nurse's station.		
Data to be collected	Collection Process	Data Analysis
Completion of the 'ACE-10' questionnaire by behavioral health patients and entered into the patient's EMR. If the patient declines the questionnaire, this will be noted within the ACES questionnaire record in the EMR	After a brief description of the 'ACE-10' questionnaire, the patient will be asked to review the questionnaire. A paper version of the 'ACE-10' questionnaire will be given to the patient if agreeable. The patient's ACE score will be entered into the patient's EMR.	All behavioral health admissions 18 years + will be assessed during the five weeks to determine if the patient was offered an ACES assessment. The percentage of completed questionnaires will be calculated using descriptive statistics.

SMART Goal #3:

All behavioral health patients admitted to the inpatient unit who are found to have an ACES score of four or more will be referred to outpatient mental health services upon discharge home per the hospitalist on duty. Referrals will be verified upon discharge by the discharge nurse.

Description of strategies to be used to accomplish goals, including any resources:

- The admitting nurse will enter the results from the patient's reported number of ACES into the patient's EMR.
- The worklist item 'ACES questionnaire' will indicate to the nurse that a score of 4 or more requires a mental health referral when the patient is discharged home.
- If the patient is transferred to a mental health facility, no referral will be placed at the time of discharge.
- The discharge nurse will verify that the patient has an appointment with outpatient mental health services upon discharge home
- The attending hospitalist will receive a notification of any behavioral health patient scoring 4+ on the 'ACE-10' questionnaire

Data to be collected	Collection Process	Data Analysis
----------------------	--------------------	---------------

Table 2: Smart Goals Continued

Results of behavioral health ACEs will be reviewed to determine if referrals were established for all patients with a 4+ ACE score.	Chart reviews will be performed on all inpatient behavioral health patients.	This information will be collected and tabulated into a graph form using descriptive statistics
SMART Goal #4: Trauma-informed care policies will be created for the project site hospital prior to the completion of this project to be approved by the medical staff at the project site hospital.		
Description of strategies to be used to accomplish goals, including any resources: Trauma-informed care policies of other healthcare facilities will be reviewed to assist with the creation of a new policy for the project site hospital. The draft of the policy will be reviewed by the inpatient nursing DON. Edits will be made if necessary, and a final draft will be submitted to the project site hospital medical staff.		
Data to be collected	Collection Process	Data Analysis
Examples of TIC policies from other healthcare facilities will be collected and reviewed	The Internet will be utilized to search for examples of TIC policies.	These policies will be reviewed to assess their appropriateness for the project site hospital.

Barriers and Challenges

A literature review indicates barriers to the implementation of TIC and screening. Obstacles include resistance to the implementation of the ‘ACE-10’ questionnaire by nursing staff due to workload constraints related to the large amount of computer charting that is necessary for new admissions (Dumke et al., 2024). Offering the patient a paper copy of the questionnaire, which can be reviewed by the patient in privacy and entered in the EMR later, may be better received since it is unnecessary to complete immediately upon admission. A second barrier may be the resistance of patients to complete the ‘ACE-10’ questionnaire due to embarrassment or

feelings of guilt and shame (Dumke et al., 2024; Bunting et al., 2019). It is anticipated that by only asking patients for the number of ACEs rather than explaining which specific ACEs they experienced, the likelihood of compliance will improve. A component of trauma-informed care includes the awareness of staff towards these concepts to increase empathy and understanding. This will assist in building a trusting relationship between the nursing staff and the patient, which may increase the likelihood of patient compliance (Dumke et al., 2024). A third barrier may lie in the patient's unwillingness to follow up with outpatient mental health care, or behavioral health providers may not be available to the number of patients being referred to (Dumke et al., 2024). Nursing staff and providers can create a conversation with the patient that includes the offer of a referral allowing the patient to decide as to whether they chose to follow up with care empowering the patient – shared decision making is an essential concept within TIC practice (Musicaro & Langer, 2022).

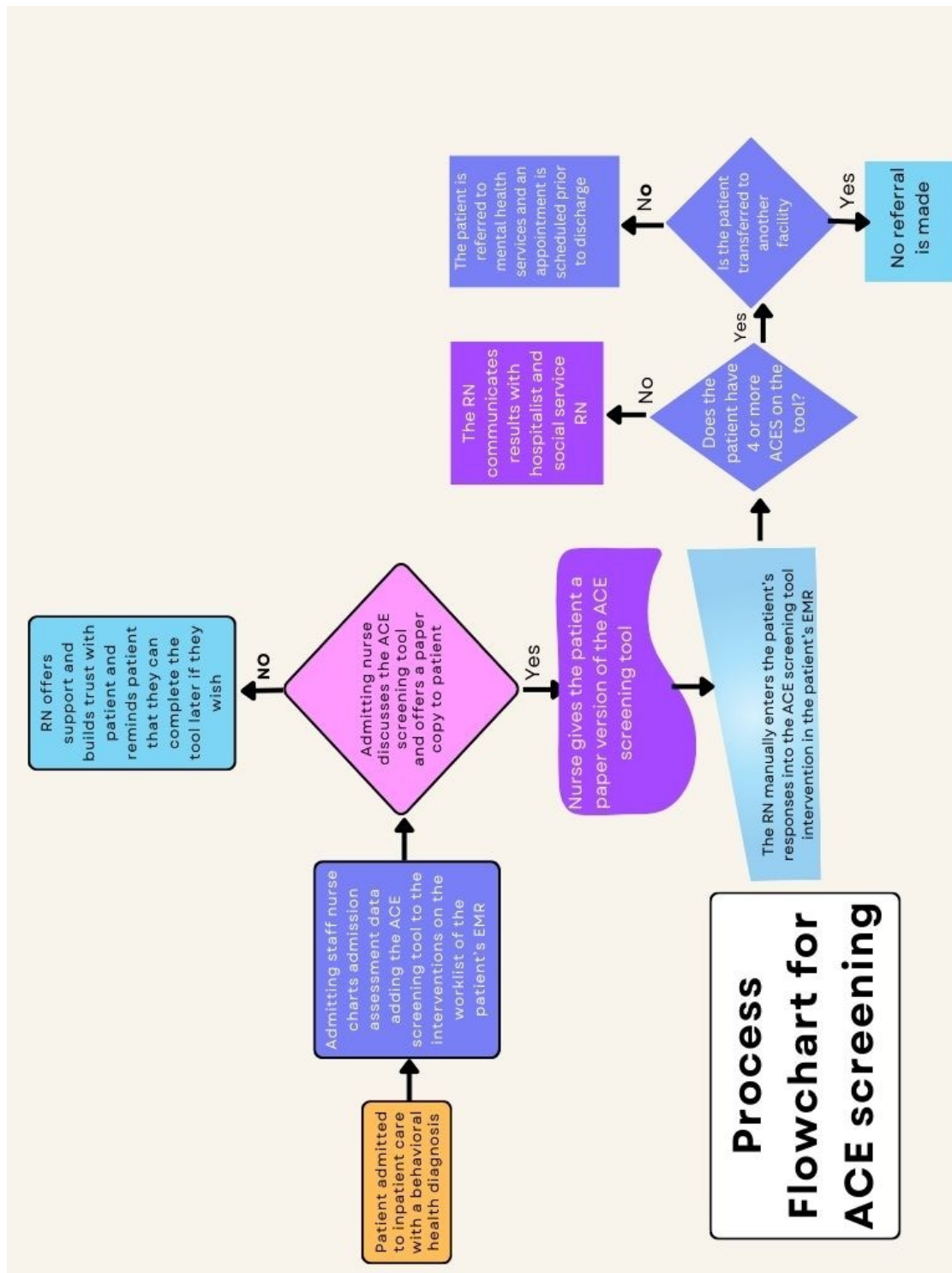


Figure 2.2: Process Flowchart for Behavioral Health Admissions

Evaluation and Analysis

This quality improvement project will occur over six weeks, with data collected and formatted using an Excel™ spreadsheet on a password-protected computer created by the author for posttest results over the project's first week. Patient EMRs will be accessed at the project site hospital by this author only to assess and track the use and documentation of the ACE questionnaire and results tracked onto a separate Excel™ spreadsheet. The data obtained will be analyzed via descriptive statistics to determine the frequency of completion of the ACE questionnaire by behavioral health patients, documentation by inpatient nursing staff, ACE questionnaire score results, and the frequency of referrals to outpatient mental health services for those with an ACE score of four or more.

Safety and Confidentiality

Patient and staff safety and confidentiality will be maintained throughout the project. Education and testing of staff and providers will be voluntary, and respondents will receive no compensation for their participation. Post-tests used to assess the staff and provider education include the member's role within the inpatient department only, and no names are included. The post tests will be viewed by the author only and kept securely in a manila folder until the completion of the project, at which time they will be shredded. The posttest results will be entered into a password-protected computer using an Excel™ spreadsheet. Patient's EMRs will only be accessed through the project site's password-protected computers, and data collected will be coded to include no patient identifiers to protect the patient's privacy. Stakeholders have met with the author and have expressed no concerns for staff or patient safety related to this project. This DNP proposal will be submitted to Montana State University's Institutional Review Board

(IRB) for approval in December 2024. The author has gained permission from the department manager and the Chief Nursing Officer to implement this project at the project site hospital, stating that approval from the ethics committee is not required.

CHAPTER THREE

QUALITY IMPROVEMENT MANUSCRIPT

Contribution of Authors and Co-Authors

Author: Stacey Elizabeth Fast, MSN, RN

Contributions: Content creation, content review

Co-Author: Marcy Hanson, PhD, MN, RN

Contributions: Content review, review, support, feedback

Co-Author: Amanda Lucas, DNP, APRN-CNS, RN

Contributions: Content review, review, support, feedback

Manuscript Information

Stacey Elizabeth Fast, MSN, RN, Marcy Hanson, PhD, MN, RN, Amanda Lucas, DNP, APRN-CNS, RN

Implementation of Trauma-Informed Care Using the Aces Questionnaire: A Quality Improvement Project

Status of Manuscript:

- ☒ Prepared for submission to a peer-reviewed journal
- ☐ Officially submitted to a peer-reviewed journal
- ☐ Accepted by a peer-reviewed journal
- ☐ Published in a peer-reviewed journal

Abstract

Background

Adverse childhood experiences are those traumatic events that occur within an individual's first 17 years of life. Continued exposure leads to toxic stress resulting in increased risk for mental illness and chronic medical diseases. Screening for these experiences is one domain of trauma-informed care and can assist in identifying patients who are at increased risk for poor health outcomes.

Local Problem

A rural critical access hospital in northeastern Montana has no screening process for adverse childhood experiences or trauma-informed care policies.

Methods

During six weeks, adult behavioral health patients admitted to the inpatient Medical-Surgical floor were screened for adverse childhood experiences using the 'ACE-10' questionnaire.

Interventions

Education was provided to both medical and nursing staff before the start of the project. A voluntary post-test was given to assess the level of learning and understanding. Collaboration with the hospital's information technology department resulted in the development of a custom 'adverse childhood experiences screening' intervention. Behavioral health patients 18+ were screened using the 'ACE-10' questionnaire and those scoring 4+ were referred to additional mental health services.

Results

Average scores of educational posttests were 99%, (n = 21). During the six-weeks, three adult behavioral health patients were admitted and screened. The average ACE score was 6.6, (n=3). Per protocol, providers received notifications of these scores, however all three patients were subsequently transferred to the state mental hospital resulting in zero referrals for outpatient follow-up.

Conclusion

Trauma-informed care practices were initiated via hospital staff education and patient screening.

Introduction

Trauma-informed care (TIC) was developed after the Vietnam War to provide compassionate, safe care for returning soldiers, aiming to build trust and prevent re-traumatization (SAMSHA, 2016). TIC consists of three areas of focus: (a) workforce development and training through education, (b) screening for trauma history and adverse events, and lastly, (c) organizational change consisting of policies and procedure development, provision of a safe environment and collaboration of services within the facility and community (Bunting et al., 2019).

Adverse childhood experiences are traumatic events within an individual's first 17 years of life (Novilla et al., 2024). Trauma and adverse events are prevalent in the United States, with data reporting one in six adults experiencing four or more ACEs and nearly half (46%) of children facing at least one ACE during their youth (CDC, 2021). The CDC conducted a comprehensive study of behavioral risk factors from 2011 to 2020, surveying adults in all 50 states and the District of Columbia, concluding that 17.3% of adults in the U.S. reported four or more ACEs (Swedo et al., 2023). The reports collected from adults in Montana revealed a higher frequency of ACEs, with 22.3% of adults reporting four or more ACEs, which is 5% greater than the national average (Swedo et al., 2023).

Despite the available research and the implementation of TIC practices within healthcare institutions for over 50 years, one rural, critical access hospital in northeastern Montana lacks any TIC policies, training, education, or trauma screening practices. With more than 20% of Montanans living with four or more ACEs, the addition of TIC policies and practices in Montana

hospitals may help to identify those patients at risk for poor mental and physical health outcomes.

Review of Literature

If a provider were to make assumptions about which patients have experienced more ACEs during their childhood, they would likely miss several patients due to their own bias. Given the risk of bias, six of the seven studies reviewed support the use of a questionnaire to assess ACE and the history of trauma (Alvarado et al., 2023; Dume et al., 2024; Gerlach et al., 2021; Novilla et al., 2024; Schneider et al., 2020; Strait & Bolman, 2017). The rationale for screening patients for ACEs is early recognition and action of potential sequelae that have developed from the effects of trauma. Reid et al. (2023) did not reject the use of a questionnaire within their research for TIC; instead, they did not discuss the use of a questionnaire in their report. All seven studies emphasized the link between trauma and its detrimental effects on health, including an increased risk for suicidality and other mental health conditions, chronic health concerns like cardiovascular disease, chronic obstructive pulmonary disease (COPD), and type 2 diabetes (Alvarado et al., 2023; Dumke et al., 2024; Gerlach et al., 2021; Novilla et al., 2024; Reid et al., 2022; Schneider et al., 2020; Strait & Bolman, 2017). Alvarado et al. (2023) found that overall, staff felt comfortable administering the screenings for ACE and trauma. However, in this study, as well as comparable studies, barriers to screening were noted to include the fear that staff may ‘trigger’ patients by asking questions on the ‘ACE-10’ questionnaire, and physicians and staff may have discomfort with the topic due to their lack of preparation and training on the subject of trauma or because it may trigger their history of trauma (Dumke et al., 2024; Novilla et al., 2024). Three studies that assessed the effectiveness of screening from the

patient's perspective suggested that patients and patient caregivers responded positively overall to screenings, stating that the screening facilitated communication and assisted with building trust with their provider (Alvarado et al., 2023; Dumke et al., 2024; Schneider et al., 2020).

Several studies examined the research behind the logistics and ramifications of implementing TIC and screening policies. Two of the research studies examined the healthcare staff and providers' views of TIC, obstacles, and thoughts on whether they found TIC beneficial for patients. Using surveys and open-ended questions, Reid et al. (2022) found that 92% of those surveyed either disagreed or strongly disagreed with the statement, "Trauma-informed approaches are not relevant to my organization's core business" (p.107). Additionally, 81% agreed or strongly agreed with the statement, "I am highly motivated to learn more about trauma-informed approaches for patients with complex trauma" (p.107). Healthcare providers and staff who responded to the survey that researchers, Novilla et al. (2024) utilized, found that 39% of respondents estimated 30-50% of their patient caseload experienced trauma, and 29% stated they 'always' ask patients "What can be done to make them more comfortable during their appointment" (p. 12). Education of all providers regarding the core principles of TIC was discussed with recommendations to incorporate TIC in provider training curriculum (Novilla et al., 2024; Strait & Bolman, 2017) as well as continuing education for providers and other healthcare staff to remain compliant and knowledgeable of the most current recommendations for implementing TIC (Novilla et al., 2024; Reid et al., 2023).

Qualitative research reviewed the results of open-ended questions to gather information from those administering the 'ACE-10' questionnaire to understand their perceptions of the process better. Those who administered the screening reported that screening patients using the

‘ACE-10’ questionnaire increased their level of empathy and understanding and felt it opened the door for communication on a complex subject (Dumke et al., 2024). Some concerns raised among the study’s results include the fear that staff may ‘trigger’ patients by asking questions on the ‘ACE-10’ questionnaire, although there were no reports of this occurring (Alvarado et al., 2023).

Conceptual Framework

For this quality improvement project, the Institute for Healthcare Improvement (IHI) model for improvement was utilized, incorporating the Plan-Do-Study-Act (PDSA) cycle (Institute for Healthcare Improvement, 2024). The PDSA model assessed and refined TIC improvement opportunities within the project hospital site. The aim and focus upon which the PDSA cycle (Figure 2.1) was built includes the implementation of TIC practice; the education of nursing and medical staff at the project site along screening of behavioral health patients who are admitted to the project site hospital using the ‘ACE-10’ questionnaire and the assurance of these patients receive follow-up care. The first ‘plan’ phase of this cycle incorporated the project's objectives: Initiate TIC within the inpatient department to include a screening process that assists in identifying patients who are most vulnerable and at risk for medical and mental health disability and improve patient health outcomes. The ‘plan’ included a needs assessment regarding the implementation of TIC, specifically the inclusion of trauma screening, at the project site hospital which was determined to be appropriate and supported by stakeholders at the facility. Processes regarding technical requirements, barriers that may develop, and ideas for addressing those barriers were discussed among stakeholders. Interventions for the project were developed during the planning phase after a literature review was completed. The “do” phase of

the PDSA cycle will carry out the interventions developed in the planning phase. Nursing staff and medical providers were provided with a brief education on ACEs, TIC, and using the ‘ACE-10’ questionnaire. This education was provided at medical and nursing staff meetings. A post-test was used to assess the level of understanding at each meeting. The “act” phase of the PDSA model determined if the initial objectives established in the “plan” stage were met. An evaluation was made to assess if further modifications were necessary to achieve the objectives and if creating a second PDSA cycle was required.

AIMS/Project Purpose

The project site hospital is a rural, critical access hospital in rural northeastern Montana. Within this facility, there are no TIC policies or education trauma screening practice guidelines to assist staff and providers with facilitating this targeted form of care. To help facilitate TIC, it is recommended that a questionnaire be used to help identify and assess those patients who may require care that is sympathetic and directed toward their specific needs (SAMHSA, 2014). This project aligns with current research through the initiation of this provision by first educating medical and nursing staff employed at the project site hospital on ACEs and TIC and the use of the ‘ACE-10’ questionnaire. Secondly, nursing staff will identify those patients who have experienced childhood trauma using the ‘ACE-10’ questionnaire for each behavioral health patient 18 years and older, admitted to the inpatient unit at the project site hospital. Finally, inpatient nursing and medical staff will verify that each behavioral health patient (18 years and older) discharged from the inpatient unit, has an appointment for follow-up care. This project will begin in January 2025 and will continue for six weeks. The aims that this quality improvement project is intended to achieve include the (a) improvement of patient mental and

physical health outcomes; (b) incorporation of TIC within the inpatient department at the project site hospital; (c) educate nursing and medical staff on ACEs, TIC and the use of the ‘ACE-10’ questionnaire (d) identify those patients who are at the greatest risk for behavioral health and physical health morbidities with the use of the ‘ACE-10’ questionnaire.

Methods

Context

The project occurred over six weeks in a medical-surgical unit within a rural Montana critical access hospital. This unit receives an average of four behavioral health patient admissions each month. The needs assessment of the hospital revealed that the facility offered no trauma-informed care policies, procedures, staff education about trauma, or screening practices to assess trauma and adverse childhood events. The administration at the project site was given a synopsis of the needs assessment results, and they were receptive to implementing this quality improvement project.

Interventions

During the project implementation, TIC education was provided via a 10 to 15-minute presentation for inpatient nursing staff and hospital and clinic providers. Following each presentation, a voluntary, anonymous, 4-question post-test was given to assess the level of learning from the educational session.

After receiving education, the nursing staff used the ACE-10 questionnaire to screen behavioral health patients aged 18 and older admitted to the inpatient unit. The questionnaire included 10 questions about adverse childhood experiences, which were scored from zero to ten.

Nurses documented whether patients completed or refused the screening and recorded the patient's reported score in the EHR. Patients with a score of four or greater were referred to outpatient mental health services if discharged home. An automatic alert was sent to the hospital list for scores of four or more, followed by a verbal notification by the nurse. The inpatient nurse and social service nurse ensured the referral before discharge. At the project's completion, a survey was created and sent to the inpatient nursing department to evaluate the nurses' views on this project. The survey consisted of three questions with a final option for narrative comments. The first question asked participants to assess their level of learning from the educational presentation and screening process on a Likert scale from 0 to 100, with zero equating to no new learning and 100 symbolizing the participant had no previous knowledge of ACEs or trauma-informed care. The second question used the same 0 to 100 scale, asking the participants to rate the frequency with which they consider their patient's ACE score after receiving education. The final intervention for this project includes the development of evidence-based TIC policies and procedures in the project sites' hospital-wide protocols.

Measures

The SMART goals established for the interventions included in this project's plan; 1. an increased knowledge of TIC and the ACE questionnaire evidenced by scores of 100% on the educational presentation post-test; 2. 100% of the behavioral health patients 18 years+, admitted to the in-patient unit will be offered the ACE questionnaire; 3. all inpatient behavioral health patients with an ACE screening score of 4 or greater will be referred to local outpatient mental health services upon discharge; 4. the author will collaborate with administration to create

trauma-informed care policies will be developed after the completion of this project for the project site hospital.

Analysis

Over the six-week project timeline, project SMART goals were assessed every week. Post-tests used to evaluate the staff and provider education were collated by the participants' role in the hospital. Descriptive statistics were used to calculate frequencies and average scores. These results were entered into a password-protected computer using an Excel™ spreadsheet. This author reviewed weekly admission records to analyze behavioral health patients' EMR records. These records were accessed through a password-protected computer at the hospital site. Data collected was coded when entered into the author's password-protected personal laptop computer each week.

Results

A total of 21 [n=21] questionnaires were collected (Table 3) with an average score of 95%.

Table 3: Post-test results by discipline.

Discipline	n=	Average score
Providers/Medical Staff	7	91%
Inpatient Nursing	12	97%
Administration	1	100%
Social Services	1	100%
Total Participants	21	95%

During the six-week project timeline, a total of three [n=3] adult behavioral health patients were admitted to the inpatient floor. All three patients were screened by inpatient nursing, revealing an average ACE score of 6.7 (Table 4). There were no referrals sent for follow-up mental health care at discharge, as all three patients were transferred to the Montana State Hospital for treatment.

Table 4: Behavioral Health Patient Demographics

BH Patient #	Patient's age	Patient's gender	Was screening completed? 1 = yes 2 = refused 3 = nurse did not offer	Explanation as to why RN did not offer. A = time constraint B = comfort level C= other	ACE screening score 0-10	If 4 or greater, was the patient given an outpatient referral to MH? Yes Or No	If no referral, What was the reason: 1 = patient was transferred to another facility 2 = The patient's score was not communicated with the MD 3 = Staff forgot to enter a referral prior to patient discharge
#1	43	F	1	NA	8	NA	1
#2	50	M	1	NA	10	NA	1
#3	28	F	1	NA	2	NA	1

Of the 11 [n=11] nurses who answered the first of the post-project questionnaires, six respondents rated their level of learning after the educational presentation at 100, with an overall average rating of 88. The second question utilized the Likert scale to assess the participants' awareness of their patients' ACE scores after completion of this project, where a zero score

indicates that the participant does not think about any of their patients' ACE scores, and 100 indicates that the participant feels about every patient's ACE score. Five of the 11 [n=11] responses to this question stated their awareness is 100, and the average score is 85. The third narrative question asked for the participant's thoughts about screening all adult patients within the inpatient department and referring those with an ACE score of four or more to behavioral health. There were eight [n=8] responses, seven of which were positive, and one response was neutral. Positive comments include, "I honestly think that would be incredibly valuable" and "I think that would be a great tool for all patients." The one neutral comment was, "I can see its value and overreach. I think we could present it as a voluntary screening to see if they could benefit from additional interventions."

Discussion

Overall

Trauma-informed care has improved patient compliance, promoted effective patient-centered communication, and improved the delivery of healthcare services while reducing adverse health outcomes (Orral et al., 2020). The overall objective of this quality improvement project was to incorporate TIC into the project site hospital inpatient department utilizing four domains of TIC included in the smart goals (Table 2): education and training, screening for trauma to identify those patients at the highest risk for poor health outcomes, referral to continued mental health services and finally policy development to incorporate facility-wide training and principles of TIC. TIC educational sessions were intended to provide resources and knowledge so that all participants who took the quiz would receive a 100% score; however, the

average overall score was 95%. For those participants who did not answer all questions correctly, the actual false question was the outlier consistently marked as incorrect. This was a negatively written true-false question, which is likely why it was consistently mismarked. Omitting this question changes the overall average to 100%. A post-project survey provided and distributed to the inpatient nursing staff indicated that this presentation was effective at providing educational material and changed the nurses' perspectives towards considering their patients' scores and how it affects their health outcomes.

It was predicted that 100% of all adult behavioral health patients admitted to the inpatient unit during the six-week period of the project would be screened using the ACE-10 questionnaire. Three adult behavioral health admissions were admitted during this time frame, with all three screened by nursing staff, meeting the 100% goal. All three patients were cooperative with the screening process. Patients were not asked to disclose their specific trauma, but only to count the number of experiences they had during childhood. This is more likely to ease any patient discomfort with their experiences by providing this information to a nurse with whom they may not be familiar.

Referral to continued services is necessary for TIC to provide continuity of care and reduce negative health behaviors that lead to disease and disability (SAMSHA, 2023). The smart goal for this intervention was to refer 100% of each adult behavioral health patient with an ACE 10 questionnaire score of four or greater to outpatient behavioral health care. Two of the three admissions had an ACE score above 4; however, all three admissions were transferred to the Montana State Hospital for further mental health care and did not receive a referral to outpatient care.

The final smart goal for this project is to develop facility-wide TIC policies for the project site hospital. The Substance Abuse and Mental Health Services Administration (2023) recommends that healthcare agencies create formal policies and procedures for the organization to ensure that these practices continue with leadership and staffing changes. This author initiated policy development; however, due to time constraints and limited availability of project site administration, this project component was not completed. Research supporting this intervention, along with examples of other healthcare organizations' policies and recommendations for implementation, was collated and shared with the nursing administration. The project cites administration voices' interest in this policy development; however, no further action has been taken.

Limitations

The six-week project timeline constrained the amount of data that could be obtained. Behavioral health admissions vary at the project site hospital, so another six weeks would have likely provided more admission data to review. With the small sample size, I cannot show generalizability in the results.

Offering the post-project survey to medical staff would have been beneficial in assessing their attitudes and beliefs regarding the implementation of TIC and ACE screening in the facility. Medical providers have many documentation requirements added to their responsibilities and may be more receptive to screening if it were performed by nursing. However, it is unclear what they think about the matter without their input.

Recommendations

Future research would be beneficial and appropriate in assessing and screening all adult admissions to the medical-surgical unit using the 'ACE-10' questionnaire to identify those patients who would benefit from additional healthcare services. During the project time, one inpatient nurse misunderstood the instructions for screening and screened a patient who was not a behavioral health admission. The nurse notified me that this patient's score was seven. This is consistent with the findings of the original ACE study, which showed that out of a sample size of 17,000, 25% of participants indicated two or more aces regardless of social or mental health standing (Felitti et al., 1998). A patient who appears professional, well-spoken, and educated may be assumed by providers to have no adverse events when, in reality, they have an extensive trauma history that goes unrecognized. Without screening, these patients may slip through the cracks of the healthcare system until their unhealthy behaviors and lifestyle choices lead to the development of disease and disability.

Conclusion

Trauma-informed care was initiated within the project site hospital's inpatient unit. The post-education survey demonstrated knowledge learned from the presentations provided to the medical and nursing staff. The post-project survey revealed a strong response from the nursing staff, indicating increased knowledge and understanding of the value of implementing TIC and ACEs among their patient population. Of the three behavioral health admissions and one medically admitted patient who were screened, the average ACE score was 6.7. Research has demonstrated that those individuals with ACE scores of four or greater have exponential risks for alterations in neurodevelopment, chronic health diseases, substance use, mental illness, and

earlier death. Implementing TIC in the healthcare arena can help improve patients' health outcomes, providing safe environments that facilitate trusting relationships and allow patients to take an active role in their care. Although no referrals were sent for additional outpatient mental health care during the project period, it is anticipated that trauma-informed care principles, including education, screening, and referral, are warranted and will continue at the project site hospital.

CHAPTER FOUR

ADVANCED NURSING ESSENTIALS REFLECTION

The American Association of Colleges of Nursing (AACN) has created an educational framework in, *Essentials: Core Competencies for Professional Nursing Education* (2021). The ten domains, competencies, and sub-competencies explain the components of the nurse's education, which is comprised of a unique body of knowledge that guides the nurse's professional role. Montana State University's (MSU) Doctor of Nursing Program has provided opportunities for students to excel in the role of an advanced practice registered nurse (APRN) with the offerings of extensive coursework and clinical studies caring for varying populations of patients throughout the program. I have selected four domains within AACN's *Essentials* to demonstrate how objectives of the program were met.

Domain 2: Person-Centered Care

Person-centered care is built upon a scientific foundation of knowledge, the care interventions are evidence-based and individualized, serving all aspects of the patient's health and wellbeing (AACN, 2021). My Advanced Clinical Practice courses II-IV allowed me to provide person-centered care consistently. Competencies included for advanced-level nursing education include fostering caring relationships and displaying advanced communication skills (AACN, 2021). During my Advanced Clinical Practice III and IV courses, my preceptors allowed me to interview patients, perform mental status examinations, and complete psychiatric evaluations with adult, geriatric, and pediatric patients. I refined my communication skills with patients based on preceptor feedback. My preceptor for Advanced Clinical IV resigned her

position and was moving out of state once my clinicals were completed. When she informed patients of this, many asked if I would be taking her position and if they could work with me. This was very flattering and reassuring as it reinforced that I met the objective of providing patient-centered care. I will provide individualized care for my future patients and remember to consider their circumstances, including psycho-social, environmental, spiritual, physical, and behavioral health influences.

Additional competencies include performing a comprehensive assessment and integrating advanced scientific knowledge into the decision-making process for the patient's plan of care (AACN, 2021). Advanced Clinical Courses II-IV's requirements include thoroughly assessing subjective and objective information and creating case formulations examining the patient's predisposing, precipitating, perpetuating, and protective factors. I learned what psychological assessments consisted of and how to go about performing these assessments in Introduction to Advanced Psychiatric Nursing, where I performed a mental status exam on a family member, and Advanced Clinical I, when I performed a complete psychological exam of a classmate via telehealth. Our individualized care plan is based upon the patient's assessment data and the scientific knowledge of best practices that we learned in additional coursework in Advanced Psychopharmacology. This course helped me identify symptoms of psychiatric illness and which medications would work best to help alleviate those symptoms while taking into consideration each patient's neurobiology, allergies, ability to metabolize medications, and co-morbidities. I learned that when prescribing psychiatric medications, one size does not fit all, and several factors can influence the effects of drugs. To provide optimal personalized care, these must all be considered before prescribing psychiatric medications.

Domain 3: Population Health

Population health educational competencies include the delivery of healthcare to a discrete group of individuals across various settings (AACN, 2021). The AACN has indicated that the advanced-level nurse plays a role in population health via multiple modalities, including advocating for populations, influencing policies, and challenging biases (AACN, 2021). These concepts were the core objectives of the course: Vulnerability and Healthcare in Diverse Communities. As a group project, three classmates and I spent the semester working on an assessment of a vulnerable population of our choosing. We selected the youth population and women of the Blackfeet Tribe in Browning, MT. For this project, we performed a community assessment, which included a neighborhood survey, a look into the history and significance of this population, and an evaluation of the available resources, current and potential risks, and healthcare provider and systems issues within that community. We examined health data for this community and compared it to national benchmarks and the population of Montana to assess where the most significant obstacles and detriments were. After we determined the current and potential risks, we selected reasonable strategies that could be put into place to reduce the vulnerability of the youth and female population within the Blackfeet Tribe. We organized our data into a PowerPoint™ presentation that was shared with our classmates. The health data and statistics we discovered for these populations were troubling and disheartening; however, it was reassuring to see tribal members working towards community-wide objectives to improve the Blackfeet tribe's overall health and well-being.

Domain 4: Scholarship for the Nursing Discipline

This domain includes competencies based upon the development, evaluation, and application of nursing knowledge to improve the quality of patient health (AACN, 2021). Nursing scholarship impacts best practice protocols and is translated through optimal clinical practice (AACN, 2021). Competencies in this domain include the translation of scientific evidence into nursing practice along with applications of quality improvements (QI) and research (AACN, 2021). The Evidence-Based Practice II and DNP Scholarly Project coursework included scholarly work required for two different QI projects. Collaborating with classmates on the first QI project, we developed a project to improve the medication reconciliation process. I researched the subject, concluding that this process was consuming time that occupied a large percentage of the patient's clinic appointment. Along with my groupmates, I created an AIM statement, SMART goals, and anticipated outcomes we hoped to see from the QI project. I created a Plan, Do, Study, Act cycle for the project and included the tasks and objectives that were contained within each component of the cycle. My work for my scholarly project incorporated the competencies within this domain, including the ethical considerations of scholarly work. I submitted my work to MSU's IRB prior to initiation of my project and operated it according to their guidelines. I have gained much knowledge about the processes involved with QI projects, composing manuscripts, and performing thorough searches amongst the available literature. This experience will assist me in future endeavors regarding submitting content to a professional journal or performing future QI projects.

The Advanced Pharmacology course provided me with many learning opportunities for best practices regarding prescribing psychiatric medications. During this course, I obtained my Master of Psychopharmacology certificate from the Neuroscience Education Institute (NEI),

working through psychopharmacology learning modules. These modules assisted with expanding my knowledge of psychiatric conditions and the neurobiology associated with those illnesses, as well as how medications can work to reduce their symptomology, bringing patients' relief and improved functioning. I continue to use the psychopharmacology knowledge I have gained and continue to expand on that knowledge with my extended NEI membership, keeping up to date on the most recent research and practice information.

Domain 9: Professionalism

The AACN states that nursing professionalism includes accountability and collaboration with other disciplines, while displaying nursing values of integrity, compassion, courage, caring, and autonomy (AACN, 2021). Professional competencies for the advanced-level nurse include promoting person-centered care, optimizing patient care outcomes while ensuring that patient care reflects nursing's core values (AACN, 2021). The core values of nursing have been at the forefront of every aspect of my DNP educational experience at MSU. I have always maintained a professional relationship with my professors, preceptors, and patients. I will maintain professional boundaries while expressing genuine care and concern for my patients. This can be challenging. However, this is necessary in an APRN's practice to facilitate a trusting, positive relationship with patients.

As a student representing the MSU DNP program, I always try to maintain a professional appearance in clean, professional clothing, always arriving on time to clinicals and when meeting with advisors. Keeping up on current topics in nursing practice has been the main objective in the Advanced Clinical IV didactic learning coursework, reading articles, and watching CME and

other YouTube™ videos on various subjects of the professionalism of nursing practice, including legal considerations, collaboration, and consultation. I continue to print journal articles and purchase books exploring behavioral health content to keep up with recent research and available modalities to share this information with my future patients.

Nursing's core values of respect, autonomy, and caring are demonstrated with each patient interaction I have had in clinical practice throughout Advanced Clinical II-IV. I have maintained and expressed these values and ethical considerations with patients when dealing with everyday issues as well as complicated and concerning ones, including drug use, abuse, financial strains, legal issues, and child custody concerns. I have participated in court hearings regarding patient conservatorship and guardianship, dealing with the dilemmas of patients' rights versus patient safety and concern for a patient's well-being. These experiences contrasting beneficence and non-maleficence have allowed me to see the broad scope of the DNP's responsibilities to their patients and how my role as an APRN may include them in my future practice.

CUMULATIVE REFERENCES CITED

- Alvarado, G., McBain, R., Chen, P., Estrada-Darley, I., Engel, C., Malika, N., Machtinger, E., McCaw, B., Thyne, S., Thompson, N., Shekarchi, A., Lightfoot, M., Kuo, A., Benedict, D., Gantz, L., Perry, R., Kannan, I., Yap, N., & Eberhart, N. (2023). Clinician and Staff Perspectives on Implementing Adverse Childhood Experience (ACE) Screening in Los Angeles County Pediatric Clinics. *Annals of family medicine*, 21(5), 416-423. <https://doi.org/10.1370/afm.3014>
- American Association of Colleges of Nursing (2021). *The Essentials: Core competencies for professional nursing education*. <https://www.aacnnursing.org/Portals/0/PDFs/Publications/Essentials-2021.pdf>
- Anda et al., 2010. Building a Framework for Global Surveillance of Public Health Implications of adverse childhood experiences. *American Journal of Preventative Medicine*, 39(1), 93-98. <http://doi.org/10.1016/j.amepre.2010.03.015>
- Buchanan, B. (2023). Trauma-informed Assessment Scales. *NovoPsych*. <https://novopsych.com.au/news/trauma-psychometric-scales/>
- Bunting, L., Montgomery, L., Mooney, S., MacDonald, M., Coulter, S., Hayes, D., & Davidson, G. (2019). Trauma Informed Child Welfare Systems-A Rapid Evidence Review. *International journal of environmental research and public health*, 16(13). <https://doi.org/10.3390/ijerph16132365>
- Dumke, K. A., Hamity, C., Peters, K., DiGangi, M., Negriff, S., Sterling, S. A., & Young-Wolff, K. C. (2024). Pediatric ACEs Screening and Referral: Facilitators, Barriers, and Opportunities for Improvement. *Journal of child & adolescent trauma*, 17(3), 877-886. <https://doi.org/10.1007/s40653-024-00632-7>
- Felitti, V.J. (2002). The Relation Between Adverse Childhood Experiences and Adult Health: Turning gold into lead. *The Permanente Journal* 6(1), 44-47.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American journal of preventive medicine*, 14(4), 245–258. [https://doi.org/10.1016/s0749-3797\(98\)00017-8](https://doi.org/10.1016/s0749-3797(98)00017-8)
- Gerlach, B., LaBrenz, C. A., Barczyk, A. N., Larkin, H., Van Diest, H., Morris, M., & Faulkner, M. (2021). ACE-Informed Responses in Central Texas: Findings from a Needs Assessment. *Soc Work Public Health*, 36(7-8), 820-831. <https://doi.org/10.1080/19371918.2021.1958118>
- Institute for Healthcare Improvement. (2024). Agency for Healthcare Research and Quality. Plan-Do-Study-Act Worksheet, Directions, and Examples.

<https://www.ahrq.gov/health-literacy/improve/precautions/tool2b.html>

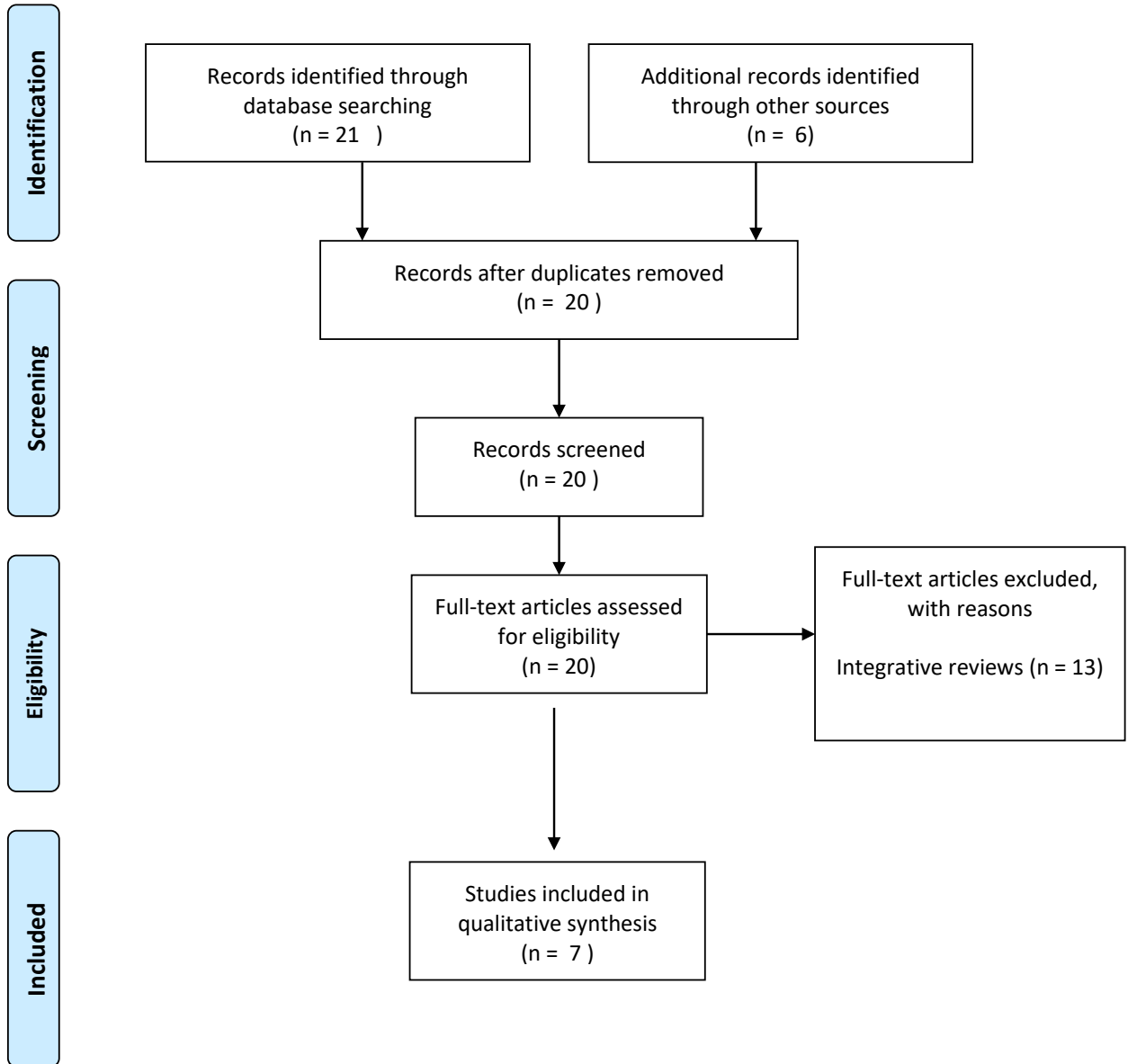
- Keeshin, B., Byrne, K., Thorn, B., & Shepard, L. (2020). Screening for Trauma in Pediatric Primary Care. *Curr Psychiatry Rep*, 22(11), 60. <https://doi.org/10.1007/s11920-020-01183-y>
- Kennedy, S., Jackson, K.R. (2022). PDSA Cycles: Improvement and Implementation. *National Implementation Research Network*. <https://nirn.fpg.unc.edu/blog/pdsa-cycles-improvement-and-implementation/>
- Mei, X., Li, J., Li, ZS. *et al.* Psychometric evaluation of an Adverse Childhood Experiences (ACEs) measurement tool: an equitable assessment or reinforcing biases?. *Health Justice* **10**, 34 (2022). <https://doi.org/10.1186/s40352-022-00198-2>
- Montana Department of Health and Human Services. (2021). Montana Population By County 2021. [Dphhs.mt.gov/assets/sltc/agingservices/Montana_PopulationByCounty_2021.pdf](https://dphhs.mt.gov/assets/sltc/agingservices/Montana_PopulationByCounty_2021.pdf)
- Musicaro, R. M., & Langer, D. A. (2022). Applying shared decision-making to screening for trauma and adversity in youth. *Child Abuse Negl*, 131, 105762. <https://doi.org/10.1016/j.chiabu.2022.105762>
- Pérez Jolles, M., Fernández, M. E., Jacobs, G., De Leon, J., Myrick, L., & Aarons, G. A. (2022). Using Implementation Mapping to develop protocols supporting the implementation of a state policy on screening children for Adverse Childhood Experiences in a system of health centers in inland Southern California. *Front Public Health*, 10, 876769. <https://doi.org/10.3389/fpubh.2022.876769>
- Rethlefsen, M. L., & Page, M. J. (2022). PRISMA 2020 and PRISMA-S: common questions on tracking records and the flow diagram. *Journal of the Medical Library Association* : *JMLA*, 110(2), 253–257. <https://doi.org/10.5195/jmla.2022.1449>
- Substance Abuse and Mental Health Services Administration (SAMSHA). (2023). *Practical Guide for Implementing a Trauma-Informed Approach*. <https://store.samhsa.gov/sites/default/files/pep23-06-05-005.pdf>
- Schneider, M., Mehari, K., & Langhinrichsen-Rohling, J. (2021). What Caregivers Want: Preferences for Behavioral Health Screening Implementation Procedures in Pediatric Primary Care. *Journal of clinical psychology in medical settings*, 28(3), 562-574. <https://doi.org/10.1007/s10880-020-09745-1>
- Sherfinski, H. T., Condit, P. E., Williams Al-Kharusy, S. S., & Moreno, M. A. (2021). Adverse Childhood Experiences: Perceptions, Practices, and Possibilities. *Wmj*, 120(3), 209-217.

- Spehr, M. K., Zeno, R., Warren, B., Lusk, P., & Masciola, R. (2019). Social-Emotional Screening Protocol Implementation: A Trauma-Informed Response for Young Children in Child Welfare. *Journal of Pediatric Health Care: Official publication of National Association of Pediatric Nurse Associates & Practitioners*, 33(6), 675-683. <https://doi.org/10.1016/j.pedhc.2019.05.003>
- Substance Abuse and Mental Health Services Administration. (2023). *Practical Guide for Implementing a Trauma-Informed Approach*. <https://library.samhsa.gov>
- Substance Abuse and Mental Health Services Administration. (2014) *Trauma-Informed Care in Behavioral Health Services: Treatment improvement protocol series. Chapter 4, Screening and Assessment*. <https://www.ncbi.nlm.nih.gov/books/NBK207188/>
- Swedo, E.A., Aslam, M.V., Dahlbreg, L.L., Holditch-Niolon, P., Guinn, A.S., Simon, T.R., Mercy, J.M. (2023). Prevalence of Adverse Childhood Experiences Among U.S. Adults – Behavioral Risk Factor Surveillance System, 2011-2020. *Morbidity and Mortality Weekly Report*, 72(26), 707-715.
- Yang, J. (2024). Number of hospitals in Montana in 2022, by ownership type. *Statista*. <https://www.statista.com/statistics/202883/number-of-hospitals-in-montana-by-ownership-type/#statisticContainer>

APPENDICES

APPENDIX A

PRISMA DIAGRAM



APPENDIX B

Evidence Table

Source	EBP-Related Issue	Design Type	Study Design and Study Outcome Measure(s)	Study setting and Study Population	Study Intervention	Key Findings
Author, Year	Describe the issue the article addresses and how it relates to your Research Q	Type of Article and Level of Evidence 1-5 (1 being highest for Critical Analysis, 2 for RCT, 3 for NCT, 4 for Cohort Study, 5 for Case Study, NA for others such as Prospective Study)	Describe Methodology of study such as interventions taken or questionnaires used	Describe location and characteristics (Such as demographics) of who was involved in the research.	How did the study use the intervention, i.e. the main variable?	What were the outcomes?
Alvardo, G. et al., (2023).	ACE Screening in a pediatric setting	Focus group data collection (4)	Qualitative study with a constructivist grounded theory approach. Data was collated via thematic content analysis	staff a 5 pediatric clinics in California	Assess staff experiences and perspectives regarding routine ACE screening in ped care	staff generally felt comfortable screening patients but were concerned when readily resources were not available. There was concern re: triggering patients, most care givers were positively receptive to the screening providing validation and a sense of relief. Clinicians and staff felt that screening overall helped to build trust
Dumke, K.A., Hamity, C., Peters, K., DiGangi, M., Negriff, S., Sterling, S.A., Young-Woff, K. (2024).	How to facilitate and implement ACE screening and referral programs in the pediatric settin. 1.) Assess ACE knowledge among healthcare professionals, 2.) prevalence of screening, 3.) implementation of ACE informed strategies	Qualitative, randomly selected (3). Interview recordings were analyzed using MAXQDA software.	Qualitative study using semi-structured interviews. Thematic analysis was used to identify themes.	Twenty interviews with pediatricians, nurses, social workers, referral organization staff among six pediatric clinics in Southern California	Questions covered 3 topics. Understanding of ACE's, experience with the use of ACE screening tool in pilot program, and opportunities for improvement	The ACES screening tool opens the door for communication with patients, creates empathy among caregivers, collaboration is used more frequently with allocation of resources. Barriers included the risk of embarrassment among patients, concern that family child services will be contacted, workload barriers regarding time to have a conversation that is needed.
Gerlach, B., LaBrenz, C.A., Barczyk, A.N., Larkin, H., Van Diest, H., Moris, M., Faulkner, M. (2021).	1.) indicators of trauma history in patients 2.) patient caseload with history of trauma 3.) perceived barriers to implementing TIC 4.) Physician training on the principles of TIC 5.) application of TIC strategies	Qualitative and quantitative (3)	Purposive and Snowball sampling, closed and open-ended on-line question survey. Qualtrics software was used to evaluate survey measures	85 Healthcare providers in central Texas	An online survey with 23 closed and open ended questions	Many healthcare providers do not use screenings for ACE (less than 10%). More education and resources are needed
Novilla, M.L.B., Bird, K.T., Hanson, C.L., Crandall, A.A., Cook, E.G., Obalana, O., Brady, L.A., Frierichs, H. (2024).	Investigate workforce knowledge, attitudes and practices, barriers and enablers to trauma-informed care in rural primary health.	Descriptive cross-sectional study (3).	Descriptive cross-sectional study using a 29-question on-line survey	179 Physicians and other healthcare workers including nurses, PA's DO's and NP's (anonymous)	The trauma-informed Care Physician Assessment Tool. 22 likertscale questionnaire distributed via the internet.	Barriers to implementing TIC were resources, time, provider stress and limited awareness of TIC. More training is needed regarding TIC. Physicians estimate >50% of their patients have a history of trauma
Reid, C., Bennetts, S.K., Nicholson, J.M., Amir, L.H., Chamberlain, C. (2022).	Trauma screening preferences and level of comfort among pediatric caregivers	Descriptive cross-sectional study using quantitative and open-ended questions (3).	Two main measures using KAP (knowledge, Attitudes and Practices Tool and BETICI, Barriers and Enablers to Trauma-informed Care Implementation	63 individuals from rural Victoria, Australia who provide care, are management and 'frontline staff'	68-item online survey developed using REDCap for data capture	Participants rated their knowledge and attitude favorably and noted that enablers and barriers included organizational support, referral pathways and resources available
Schneider, M., Mehari, K., Langhinrichsen-Rohling, J. (2020)	Trauma screening preferences and level of comfort among pediatric caregivers	Qualitative and quantitative (3)	Mixed-methods qualitative study sequential explanatory design to examine caregiver preferences for screening. Modified grounded theory approach for qualitative analysis purposes	149 Caregivers of pediatric patients in rural communities	Surveys were used for quantitative data and In person interviews for qualitative data	Results demonstrated that caregivers prefer to be screened by the PCP and for referrals and resources be discussed by the PCP. Results also showed that there is a desire for direct communication and there is a great need for family-centered, trauma-informed care services especially in rural communities.
Strait, J. Bolman, T. (2016)	ACE and TIC education	Prospective study (4)	Prospective study with pre and post survey after curriculum to assess students understanding of ACES and TIC	Graduate school students	ACE and TIC curriculum lasting 6 hours total (3 sessions lasting 2 hours each)	After the curriculum, students were more knowledgeable and reported that they were more familiar and more likely to use the concepts of TIC and ACE with their own patients