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An Evaluation of Implementing Trauma-Informed Care Training in Healthcare Settings

Amanda Kis
University of Nebraska Medical Center

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Amanda Kis Cramer, Bachelor of Science
MSW/MPH Public Health Administration & Policy Concentration

Committee Chair: Jungyoon Kim, Ph.D.
Committee Faculty: Jeanette Harder, Ph.D.
Committee Preceptor: Charity Evans, M.D., M.H.C.M., F.A.C.S.
Other Committee Members
Liam Heerten-Rodriguez, MSW
Ashley Farren, MSN, MBA, RN

Title: An Evaluation of Implementing Trauma-Informed Care

Abstract

Background: Trauma-informed care (TIC) has recently become a popular topic in medical science. Many patients' health conditions have been diagnosed and treated purely as medical issues, yet emerging research indicates that trauma is sometimes the source of many physical and mental conditions. Implementing TIC education in healthcare systems may lead to preventing the onset of symptomology related to undiagnosed, chronic trauma experience.

Objectives: The primary goal of this Capstone project was to implement TIC training developed by *Trauma Matters Omaha* Coalition and assess preliminary evidence for changes in participants' confidence, clinical knowledge, professional knowledge, self-awareness, and assumptions and biases regarding TIC.

Methods: The *Trauma Matters Omaha* Coalition created a curriculum and evaluation tool to implement TIC education and measure the impacts. Collaborating partners included CHI Health and Project Harmony. This project used a train-the-trainer model; trainers completed the initial three-hour training and then deliver a one-hour training to their colleagues. Study participants (N = 164) included staff (N = 107) and students (N = 57) at Nebraska Medicine/UNMC and CHI Health. Training participants learned to define trauma and traumatic stress, to understand the impact of trauma on the brain and body, and to learn the foundations of TIC. This study used convenience sample. Investigators used pretest and posttest survey instruments, including the subscales of confidence, clinical knowledge, professional knowledge, self-awareness, and assumption/bias. Data were analyzed in SPSS using descriptive statistics, reliability tests, and paired samples t-tests.

Results: This Capstone project yielded an increased number of clinicians who are TIC trained and a preliminary analysis of the first 164 participants. Three areas of research were

divulged from this study including (1) increasing the amount of information on reliable subscales to be included in future measurement tools, (2) the realization that this training has yielded both clinically and statistically significant results in the areas of confidence (mean score change = .836, p-value = .001) and clinical knowledge (mean score change = .178, p-value = .001), and (3) has proved to be feasible to implement as a one-hour training. Most participants strongly agreed that they would recommend this training to their colleagues (mean score = 4.52) and it will have a positive impact on the care they provide (mean score = 4.35).

Conclusion: We conducted a pilot study of participants who had completed a one-hour training session that was designed to increase confidence, clinical knowledge, professional knowledge, self-awareness, and assumption/bias regarding TIC. The study pilot tested an instrument for internal consistency and reliability of five subscales. The conclusions are that the training was well-received and provided many promising leads for further research on refining a valid and reliable instrument.

Introduction

Placement Site

Nebraska Medicine/UNMC values innovation, teamwork, excellence, accountability, courage, and healing. Nebraska Medicine/UNMC can be described as the most esteemed academic health system in Nebraska. The system has thousands of providers in over 40 specialties serving the Midwest U.S. Nebraska Medicine and UNMC share the same mission statement: “To lead the world in transforming lives to create a healthy future for all individuals and communities through premier educational programs, innovative research, and extraordinary patient care.”

Issue

Title: An Evaluation of Implementing Trauma-Informed Care

Building a Trauma-Informed community is listed as a priority in the Douglas County 2016–2019 strategic plan ("Community Health Needs Assessment and Implementation Plan 2016–2019," 2016). Under the focus area examining injury and violence prevention lies the goal of reducing violent crime and building a trauma-informed community. Healthcare systems and medical providers have generally accepted the term “trauma” as associated with physical injuries or violence. Nebraska Medicine is a Level 1 Trauma Center; however, there is a medically established disconnect between what it means to be trauma-informed and to provide TIC (Evans & Farren, 2018).

The Substance Abuse and Mental Health Services Administration’s (SAMHSA) publication, *Concept of Trauma and Guidance for a Trauma-Informed Approach* (2014), describes “trauma” as “a prevalent, systemically detrimental, and expensive public health problem that can be overcome with support and interventions” (Huang et al., 2014). SAMHSA (2014) discusses that, “Individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life-threatening and that has lasting adverse effects on the individual’s functioning and mental, physical, social, emotional or spiritual well-being.” Kilpatrick et al. (2013) suggested that as many as 90% of their 2,953 study participants had experienced at least one or more traumatic events across the lifespan. SAMHSA estimates that nearly 61% of males and 51% of women have experienced at least one serious, traumatic event across the lifespan ("SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach," 2014).

Importance of Proposed

Trauma exacts a significant social, emotional, and economic toll on both patients and providers. A patient affected by trauma may also experience symptoms that result in avoidant

behavior, negative alterations in cognitive behaviors, and alterations in arousal or reactivity. For many years, the term “trauma” has been owned and established by surgeons. Medical texts such as *Trauma* (Moore, Feliciano, & Mattox, 2017), a leading comprehensive text, described trauma as a surgical term including every aspect of trauma including care for victims of war, serious injuries, and amputations. Providers have generally accepted “trauma” as medical terminology describing surgical care. The *Diagnostic and Statistical Manual of Mental Disorders* (DSM–5; American Psychiatric Association, 2013, 5th ed.) described trauma as an experience where “a person is exposed to a stressor, experiences intrusive, persistent symptoms, and experiences increased distress to the point of functional impairment” (American Psychiatric Association, 2013, p. 265).

Both academically and professionally, there is an established disconnect in the understanding of terms among medical and mental health providers. *Trauma Matters Omaha* is working to bridge the division starting with comprehensive trauma terminology and concepts. Patients who have experienced trauma are at risk for many adverse health outcomes. Omaha has only been deemed a trauma-informed Community since 2016. There is an opportunity to provide meaningful interventions that could improve the quality of care delivered in our community.

Relevance to Public Health and Gap in Knowledge

In his meta-analysis, Purtle (2018) argued that even while evidence-based interventions have not yet been established, the first step to meaningful organizational change is implementing staff training and community commitment to becoming a trauma-informed organization. Evidence links severe traumatic history to adverse health outcomes; patients with high Adverse Childhood Experience (ACE) scores are up to 5,000% more likely to struggle with addiction, mental illness, or to attempt suicide ("SAMHSA's Concept of Trauma and Guidance for a

Trauma-Informed Approach," 2014). As many as 90% of patients struggling with mental illness or substance misuse have experienced a traumatic event (Huang et al., 2014). In northeast Omaha, violent crime and deaths linked to homicide occur at three times the rate of other metro areas, and violent crime in Pottawattamie County occurs at twice the rate of the national average ("Community Health Needs Assessment and Implementation Plan 2016 – 2019," 2016). As systems aim to provide quality, comprehensive care, becoming trauma-informed is a key factor in improving outcomes for many patients.

Literature Review

Trauma-informed care is an organizational structure and treatment framework that involves understanding, recognizing, and responding to the effects of all types of trauma. TIC emphasizes physical, psychological, and emotional safety for patients and providers. People in the community can have a variety of traumatic experiences such as violence, childhood abuse and neglect, grief, loss, and natural disasters. Menschner and Maul (2016) described the effect of trauma to include impacts on academics, work, everyday behavior, health, and personal relationships (Menschner & Maul, 2016).

Systemic commitment to implementing a trauma-informed practice has recently increased significantly (Becker-Blease, 2017). Trauma impacts both mental health and physical health; symptoms of trauma can look like medical conditions. Some of the body functions impacted by trauma included issues with sleeping such as difficulty falling asleep, staying asleep, encopresis, bedwetting, and nightmares (Dowd, 2018). Food-related symptoms could include upset stomach, rapid eating, food hoarding, loss of appetite, and some eating disorders (Dowd, 2018). Emotional symptoms could include detachment, numbing, compliance, and fantasy (Dowd, 2018). Children and adolescents who cannot defend themselves are more likely

to experience symptoms that mirror depression, ADHD inattentive type, developmental delays, hypervigilance, aggression, anxiety, or exaggerated responses (Dowd, 2018). Related symptomatology includes diagnoses that mirror ADHD, ODD, conduct disorder, bipolar disorder, and anger issues (Dowd, 2018).

Purtle's (2018) *Systematic Review of Evaluations of Trauma-Informed Organizational Interventions that Include Staff Trainings* found 93 studies published on implementing TIC practices in large health systems. Of these, only 23 studies met inclusion criteria, which included evaluations of trauma-informed program/clinical interventions, exclusively qualitative evaluations; single-group, posttest only evaluations; and nonempirical descriptions of implementation processes. Overall, there was wide variance among the 23 studies in terms of methodologic approach and implementation. Most (17/23) used pretest/posttest design to evaluate results. Most of the studies reported no specific TIC curriculum. Only 4/23 studies mentioned the *Risking Connections* curriculum, and only 3/23 three studies mentioned the *National Child Traumatic Stress Network's* training. Most studies implemented a variety of training approaches.

Purtle (2018) noted some of the trainings included information explaining how trauma impacts the physical body and a patient's mental health. Additional strategies suggested including how to avoid retraumatizing patients, cultivating rapport, and defining common trauma terminology. Many of the trainings included strategies to reduce vicarious trauma and increase self-care among clinical staff. Overall, system-wide efforts to train staff about trauma-informed practices yield improvements in staff knowledge, attitudes, and behaviors for some period (Purtle, 2018). In his conclusion, he mentions TIC education does appear to increase staff knowledge and improve attitudes and behaviors. It is not clear how long the effects of the

interventions will last and how smaller scale studies can translate into use systemically. His final recommendations include developing more rigorous evaluation designs and refining a reliable measurement instrument to improve the evidence base for trauma-informed interventions to ensure patient care is maximized.

Weiss et al. (2017) implemented a one-hour trauma-informed care training in a health-care setting to 294 staff members. The study used a pretest/posttest design and revealed that clinical staff reported favorable attitudes towards practicing comprehensive TIC and reported increased levels of confidence integrating and delivering care with TIC principles. The results of the study included significant, favorable attitudes toward the integration of TIC ($p<.001$) and the level of clinical confidence increased significantly ($p<.001$) (Weiss et al., 2017).

Choi and Seng (2015) implemented and studied the results of a one-hour Trauma-Informed Care training developed for nurses in a perinatal health-care unit in a medical setting. Choi and Seng (2015) wanted to look at the pretest and posttest results in the domains of knowledge, skills, and attitudes related to trauma-informed practice. Participants reported a significant increase in knowledge related to trauma-informed practice ($p < .001$), self-reported trauma-informed skills ($p < .001$), and positive attitudes toward trauma-informed practice ($p < .001$). Overall, there was a significant increase in aggregate trauma-informed practice scores ($p < .001$). The participants were considered a convenience sample who arrived on time and stayed until the end of the session; each participant completed both the pretest immediately before the session and the posttest immediately after the session. Participants were not evaluated beyond the posttest distributed immediately after the training.

The *Trauma Matters Omaha* (2018) training may serve as a foundation for understanding patients who have experienced trauma and increasing clinical rapport with patients who have

experienced traumatic events. The training provides introductory clinical education on Post-Traumatic Stress Disorder, Adverse Childhood Experiences, epigenetics, biological impacts of trauma, Fight, Flight, or Freeze, the Traumatic Stress Response Cycle, and an introduction to the Four R's of TIC which is realization, recognize, respond, and resist re-traumatization. Blanch (2012) argues trauma is still a taboo subject; patients may find it very challenging to talk about the experience and get the help they need. After a patient experiences a traumatic event, it is important providers realize the patient may experience intrusive memories, images, body sensations, and thoughts. The study, *Tolerating Distress After Trauma: Differential Associations Between Distress Tolerance and Posttraumatic Stress Symptoms* (2014) explores how people who suffered trauma have a reduced distress tolerance which could have an effect on their health outcomes and compliance.

Fetzner, Peluso, and Asmundson (2014) reported patients who use maladaptive coping strategies to experience immediate relief of trauma-related symptoms but experience a steady recurrence of traumatic symptomatology. Fergus and Bardeen (2016) explored how traumatic rumination mentally contaminated patients, thus reducing a patient's ability to tolerate negative emotions. Many studies have linked trauma to a wide range of adverse health outcomes; therefore, it is a necessity that clinicians become skilled in differentiating symptoms related to trauma. Northcut (2017) argues the importance of considering the mind-body conundrum when planning trauma therapeutic treatment plants. While access to mental health care has been considered a long-term barrier, there are some resources that could be considered. One resource category, beyond traditional psychotherapy, is yoga and meditation classes. *Cultivating Mindfulness in Clinical Social Work* describes how yoga and a mindfulness practice can provide some relief of PTSD symptoms. Daigneault, Dion, Hébert, and Bourgeois (2016) studied 246

adolescents who experienced sexual assault and found that participants of mindfulness programs were able to more effectively help participants regulate symptoms trauma. Considering a wide array of resources could help improve both patient care and reduce barriers for staff members who experience vicarious trauma when providing care.

Methods

The overall purpose of this study was to pilot test an instrument, *Trauma Informed Care Curriculum Pre-training and Post-training Survey.* The instrument was developed by the Trauma Matters Omaha Coalition. The specific research questions included*:*

1. What is the internal reliability of the instrument's five subscales for confidence, clinical knowledge, professional knowledge, self-awareness, and assumptions/biases?
2. What is the preliminary evidence for pre/posttest changes among participants who completed the *Trauma Matters Omaha* training course in terms of confidence, clinical knowledge, professional knowledge, self-awareness, and biases/assumptions, and the posttest-only subscale measuring barriers?
3. What is the feasibility of delivering the *Trauma Matters Omaha* training course in terms of program evaluation, content, and course delivery?

Application of Theories/Theoretical Models

This project was implemented using the *Ecological Model of Public Health,* the *Social Determinants of Health,* and the *Six Key Principles of Trauma-Informed Care.* The ecological model helped to view problems considering intrapersonal, interpersonal, institutional, community, and policy factors. The ecological model helps illuminate the importance of having strong evidence to be able to implement TIC practices at an administrative level and trainer level. The *Social Determinants of Health* looks at the conditions and distributions of resources aligned

with the assessing unfair or avoidable differences in health status. The *Six Key Principles of TIC* by SAMHSA outline core components of implementing comprehensive TIC provider education.

Study Design

This pilot project used a cross-sectional study design. The investigators recruited 164 participants who completed the training that involved the *Trauma Matters Omaha* training. Most participants completed the training during staff meetings or planned education time. The pretest/posttest was administered immediately before and after training.

Copies of the pretests and posttests, designed by the *Trauma Matters Omaha* Coalition are included as Appendix A and B. The pretest instrument contained 17 items divided into five subscales: confidence (N = 4), clinical knowledge (N = 4), professional knowledge (N = 3), self-awareness (N = 2), and assumptions and biases (N = 4) (see Table 1). Each item was evaluated using a Likert-type scale from 1 = strongly disagree to 5 = strongly agree. The posttest instrument contained the same items plus additional items related to feasibility. The feasibility metrics included 1) program evaluation, which was measured using four open-ended response items regarding likes and dislikes about the course; 2) barriers, which was measured using 8 items on a Likert-type scale of 1 = not a barrier to 3 = significant barrier; and 3) program evaluation, which included 4 items measured using a Likert-type scale of 1 = strongly disagree to 5 = strongly agree.

Both pretest and posttest included demographic information and job characteristics of participants. Results are found in Figures 1 - 3. Most of the respondents were female (72%); White/Caucasian (82%); between the ages of 20 – 30 (45%) or 31 - 40 (23%); and either registered nurses (42%) or medical residents (34%). Of the 164 respondents, 54% (N = 88) were from Nebraska Medicine/UNMC and 46% (N = 76) were from CHI Health.

Figure 1: Count of Respondents by Role

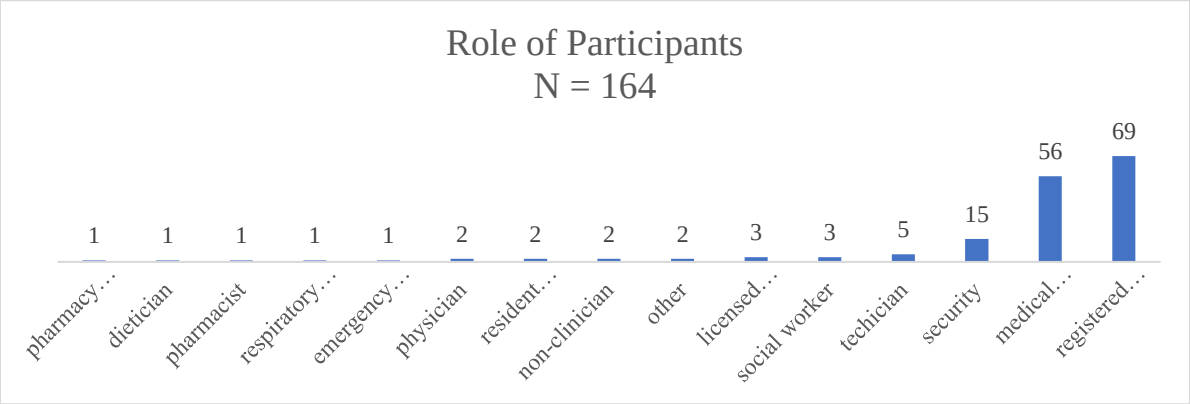


Figure 2: Count of Respondents by Age Group

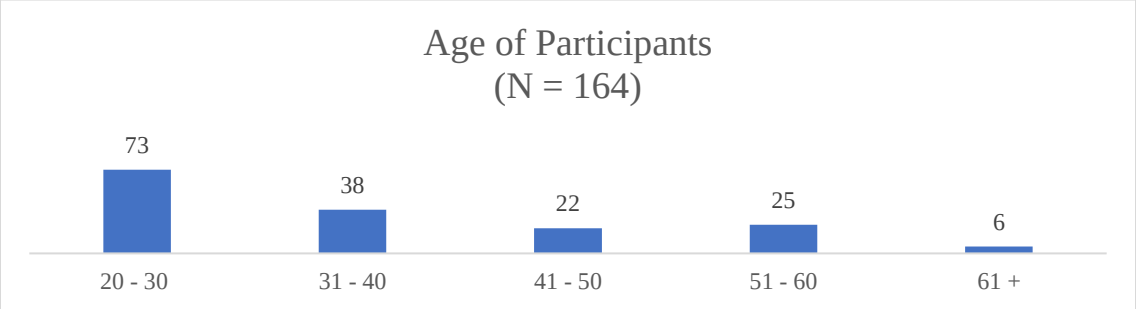
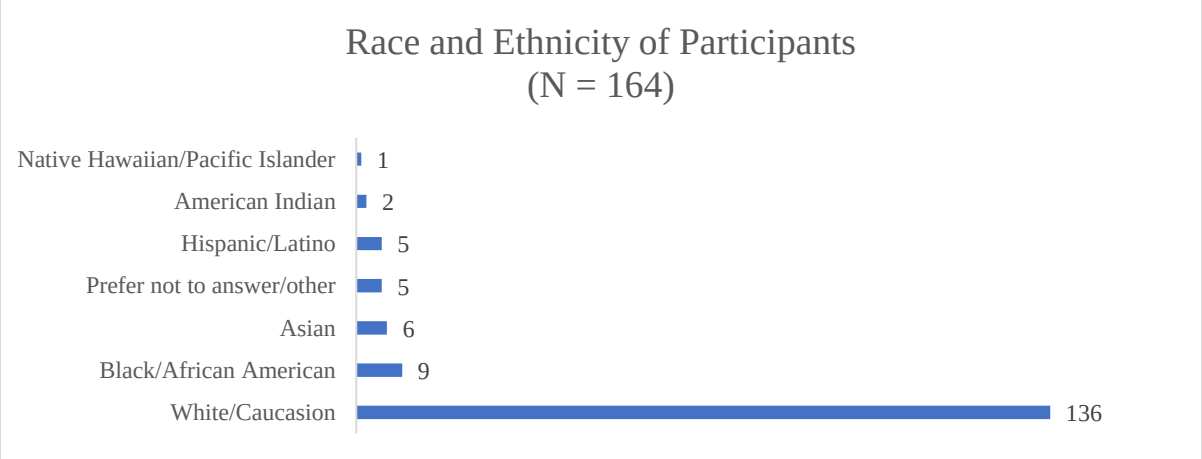


Figure 3: Count of Respondents by Race and Ethnicity



Data Collection Method

Both pre and posttests were administered by paper-and-pencil immediately before and after the *Trauma Matters Omaha* training. Participants were asked not to look at their pretest responses when completing the posttest. All pretests/posttests were completed on the same day as the training. Trainers who completed the training remotely scanned and emailed the pretest and posttests results to the investigators. The completed surveys were submitted to the *Trauma Matters Omaha* Coalition members and the investigators input the data into Microsoft Excel for analysis using SPSS descriptive statistics, internal reliability testing using Cronbach's alpha scoring, and paired samples t-tests.

Table 1. Instrument Subscales & Program Evaluation

Subscale	Items
Confidence	(8) I am confident in my ability to interact sensitively with a patient who has a history of traumatic events (childhood sexual abuse, domestic violence, etc.). (9) I am confident knowing how to respond to my patient after recognizing a history of trauma. (10) - (R) I do not feel confident recognizing when someone is re-experiencing a traumatic event. (14) I can explain what trauma is, including its effects.
Clinical Knowledge	(1) There is a strong link between childhood trauma and brain development. (11) - (R) There is no relationship between trauma experienced in childhood and mental and physical outcomes in adulthood. (13) The physical environment of the hospital can contribute to people feeling unsafe. (17) Certain events or environments can trigger a physiological and/or psychological response in a person related to their prior trauma. *(item labeled question 20 on the posttest)*
Professional Knowledge	(2) I have a good understanding of the meaning of "trauma-informed care" (3) - (R) "Trauma" refers to a serious or life-threatening physical injury that causes a patient to seek treatment. (7) I understand the clinical and scientific findings of the Adverse Childhood Experiences (ACEs) study.
Self-Awareness	(6) When working with trauma survivors (physical or emotional), certain triggers may invoke feelings in me not related to my work at hand. (16) I recognize my past trauma experiences may impact the way I interact with others.
Assumptions and Biases	(4) - (R) Individuals who are injured or sick as a result of high-risk behaviors are very likely to return with another injury/illness. (5) - (R) It is not my role to recognize a patient's previous trauma. (12) - (R) All patients can change their high-risk behavior if they only had the motivation. (15) - (R) I worry that I might upset others by discussing personal stressors.
Program Evaluation *	(17) This training was helpful for me in learning the long-term effects of trauma on patients. *(item labeled question 17 on the posttest)* (18) This training has changed the way I intend on caring for my patients. (19) My awareness of prior trauma will impact how patients experience the care I deliver. (21) I would recommend this training to my colleagues.

Notes: Questions and themes have been selected by Dr. Charity Evans and have been categorized by Amanda Kis utilizing information in professional literature (Choi & Seng, 2015; Purtle, 2018; Weiss et al., 2017). Response scales included 1 = Strongly disagree; 2 = Somewhat disagree; 3 = Neutral; 4 = Somewhat agree; 5 = Strongly agree; (R) denotes reverse scored.
* Indicates these items are only discussed in the posttest.

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Study Population and Sample

The study population focused primarily on healthcare professionals, students, or clinical staff employed at Nebraska Medicine/UNMC and CHI Health. We used a convenience sampling method and recruited our participants via personal invitations, emails, public invitations at Nebraska Medicine/UNMC departmental meetings, and system-wide calendar postings. A total of 164 participants were included in the study.

Statistical and/or Analytical Methods

Demographics were analyzed using descriptive statistics for age, role, and race/ethnicity (see Figures 1 - 2). The response scores on the instrument used reverse coding on a few of the variables when the expected answer was reversed including items 2 (R), 4(R), 5(R), 10 (R), 11(R), 12(R), and 15(R). Internal consistency of the instrument was assessed using Cronbach's coefficient α. A minimum alpha score of 0.70 was applied to the subscales (Nunnally & Bernstein, 1994). Tavakol and Dennick (2011) have noted that an instrument's reliability is closely associated with its validity and that an instrument is not valid unless it is reliable. In medical settings, calculating the Cronbach's Alpha is considered a common and expected practice, it measures how well questions capture concepts and constructs.

Items in each subscale were summarized using the mean score. A paired samples t-test was conducted to examine participants' changes in confidence, clinical knowledge, professional knowledge, self-awareness, and assumptions/bias. The mean and standard deviation of each subscale on the pretests and posttests were reported.

For feasibility items, we used descriptive statistics for barriers and program evaluation. In addition, barriers were further analyzed by role. The open-ended items for likes and dislikes (program evaluation) were coded and analyzed using frequency and thematic coding.

All data were analyzed and reviewed with the support of Capstone Committee members. The results will be presented to the *Trauma Matters Omaha* Coalition for review. The training program evaluation questions at the end of the posttest were analyzed to consider themes.

Results

Results are shown in accordance of the research questions: reliability, preliminary evidence of program effectiveness, and feasibility.

Internal Reliability

The first research question was: "What is the internal reliability of the instrument's five subscales for confidence, clinical knowledge, professional knowledge, self-awareness, and assumptions/biases, and the posttest-only subscale measuring barriers?"

Table 2 summarizes the consistency scores for the subscales. The confidence subscale has four items and has a Cronbach's Alpha score of .749; therefore, this subscale meets the criteria for acceptable internal reliability. After a face validity review of the knowledge items, the items were re-categorized into two sections in order to increase internal reliability. Thus, the revised knowledge scale included two sections: clinical knowledge (i.e., items 3, 11, 13, and 17), which showed an undesirable but acceptable Cronbach's Alpha score of .657; and professional knowledge.1, 2 and 7, which showed an unacceptable Cronbach's alpha score of .382. The self-awareness subscale (i.e., items 6 and 16), has a low rate of internal reliability with a Cronbach's Alpha score of .356. This scale and questions need to be reworked in order to create a higher rate of internal reliability. The assumptions and biases subscale (i.e., items 4, 5, 12, and 15) has a low rate of internal reliability with a Cronbach's Alpha score of .071. Further analysis, reconsidering the questions, and adjusting the assumptions and biases subscale will need to be completed.

Table 2: Reliability Results of Instrument Subscales (N = 164)

Subscale	Questions	Cronbach's Alpha Score	Interpretation
Confidence	8, 9, 10, 14	.747	Acceptable
Clinical Knowledge	3, 11, 13, 17	.657	Questionable
Professional Knowledge	1, 2, 7	.382	Unacceptable
Self-Awareness	6, 16	.356	Unacceptable
Assumptions & Biases	4, 5, 12, 15	.071	Unacceptable

Preliminary Evidence for Participant Changes

The second research question of this study was: "What is the preliminary evidence for pre/posttest changes among participants who completed the *Trauma Matters Omaha* training course in terms of confidence, clinical knowledge, professional knowledge, self-awareness, and biases/assumptions?"

Table 3 shows the results of the paired samples t-tests. All the subscales yielded statistically significant results or produced a p-value less than .05, so we reject the null hypothesis that there is no difference between the pretest and posttest means. A significant difference does exist in the perceptions of respondents before and after the training. Even if we take a deeper dive into individual results to consider changes, the results of individual items 6 and 16 still yield clinically significant findings.

Table 3: Paired T-Test Results of Subscales (N = 163)

Subscale	Pretest Mean	Posttest Mean	Standard Deviation of Mean Difference	Mean Difference	P-Value
Confidence	3.23	4.09	0.724	-0.863	.000
Clinical knowledge	4.41	4.58	0.476	-0.178	.000
Professional knowledge*	2.32	4.11	0.998	-1.787	.000
Self-awareness*	3.95	4.36	0.676	-0.414	.000
Question 6	4.02	4.37	1.004	-.356	.000
Question 16	3.87	4.35	.925	-.479	.000
Assumptions and biases*	3.36	3.51	0.585	-0.146	.002

Notes: Key: 1 = Strongly disagree; 2 = Somewhat disagree; 3 = Neutral; 4 = Somewhat agree; 5 = Strongly agree,
** Not considered a reliable Cronbach's alpha score.*

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Table 3.1 shows the mean score from the pretests and the posttests of the medical students, registered nurses, and “other” group of professionals. Medial Students and Registered Nurses appear to have more consistent changes in their mean score while “other” roles included in the study have less change in their mean score from the pre-test to the post-test.

Table 3.1– Mean Scores Pre and Post Test for Confidence by Role

Current Role	Pretest Mean	Posttest Mean	Standard Deviation of Mean Difference	Mean Difference	P-Value
Medical Student (N = 56)	3.10	4.02	.647	-.915	.000
Registered Nurse (N = 69)	3.26	4.17	.745	-.911	.000
Other (N = 39)	3.34	4.06	.751	-0.705	.000
Grand Total (N = 164)	3.23	4.09	.724	-0.863	.000

Feasibility

Tables 4 and 5 indicate what respondents shared on the posttest regarding feasibility metrics. For program evaluation, there were 107 responses. The most frequently mentioned “most liked” were that the course content was informative and easy to understand and the ACE's information and statistics. For the course delivery, respondents frequently mentioned participation and discussion. There were 81 responses of “least liked,” and the most frequently cited were that the program was too short, that they needed some skills direction, and desire for more training.

Table 4: Results of the "Most Liked" Part of the Training (N = 107)

Themes	Frequency
Course Content	
Informative and Easy to Understand	28
ACE's Information and Statistics	25
Increased Awareness, Exposed Biases and Assumptions	10
Videos	15
Ideas to Reframe Communication with Patients	8
Course Delivery	
Participation and Discussion	15
Presenter's Skill/Passion	9
Well-Rounded/Organized	7
Nothing	1

Table 5: Results of the "Least Liked" Part of the Training (N = 81)

	Frequency	Percent
	79	**47.9**
Not Applicable/Liked **Training**	24	**14.5**
Too **Short**	16	**9.7**
Lacking **Skills Direction**	10	**6.1**
Redundent	7	**4.2**
Videos	6	**3.6**
Not Enough Evidence	5	**3.0**
Personal Distress/Challenging Content	5	**3.0**
Technical Difficulties	4	**2.4**
Too Long	3	**1.8**
Required Participation	2	**1.2**
The Pretest & Posttest	2	**1.2**
Not Enough Videos	1	**0.6**
Trainer Skill	1	**0.6**
Total	165	**100.0**

For the feasibility metric of program evaluation, Table 6 indicates that participants generally agreed that the training was helpful in learning the long-term effects of trauma on patients (mean = 4.10), changed the way they intended to care for patients (mean = 4.34), and will impact how patients experience the care participants deliver (mean = 4.46). Many participants also reported that they would recommend this training to colleagues (mean = 4.52).

Table 6: Program Evaluation Summary (N = 164)

Program Evaluation Questions	Mean Score	Standard Deviation
(17) This training was helpful for me in learning the long-term effects of trauma on patients.	4.10	.979
(18) This training has changed the way I intend on caring for my patients.	4.34	.787
(19) My awareness of prior trauma will impact how patients experience the care I deliver.	4.46	.862
(21) I would recommend this training to my colleagues.	4.52	.812

Key: 1 = Strongly disagree; 2 = Somewhat disagree; 3 = Neutral; 4 = Somewhat agree; 5 = Strongly agree

For the feasibility metric of suggestions for improvement (open-ended question), respondents' comments were scored and coded for themes. Table 7 indicates suggestions from respondents on how to improve the current training or concepts to expand the *Trauma Matters Omaha* training. Only 42 respondents submitted feedback to improve future trainings.

Table 7: Program Evaluation Summary (N = 42)

Improvement Suggestions	Frequency	Percent
Skills Training	15	9.1
Unsure	7	4.2
More Peer Support/Education	6	3.6
Role Playing, Case Studies, Group Activities & Discussions	6	3.6
More In-depth Training	4	2.4
Case Studies	3	1.8
Patient Resources	2	1.2
Develop Healthcare System Protocols	1	0.6
Reduce Bias	1	0.6

For the feasibility metric of barriers, Table 8 illuminates the most common barriers to providing trauma informed care on a range of 1 = not a barrier to 3 = significant barrier. The most significant barriers reported from all participants were time constraints (mean = 2.06), desensitization (mean = 2.04), followed by lack of privacy (mean = 1.77). Subgroup analysis

showed that medical students reported slightly higher mean barriers than all other participants, but it is not known whether this mean difference is statistically significant. Registered nurses reported time constraints as their most significant barrier (mean = 2.03) and other professionals reported desensitization as the most significant barrier (mean score= 2.00).

Table 8: Average Barriers Score Summary (N = 164)

Barrier	Medical Student	Registered Nurse	Other	Grand Total
Time constraints	2.19	2.03	1.95	2.06
Lack of training.	1.8	1.6	1.86	1.73
Confusing evidence on what to do.	1.57	1.6	1.57	1.58
Lack of skills in providing trauma informed care.	1.83	1.7	1.68	1.74
Fear I may upset my patients after trauma.	2.06	1.72	1.7	1.83
Lack of a privacy or dedicated space to talk about sensitive topics.	1.78	1.76	1.76	1.77
Lack of support from supervisors/others in the system that you work with.	1.74	1.52	1.43	1.58
Current policies and procedures which may retraumatize a patient.	1.93	1.67	1.68	1.76
Desensitization of other healthcare providers to the impact trauma has on a patient.	2.17	1.97	2	2.04

Note: Average scores of each individual barrier item from the total group replaced missing data.

Discussion and Recommendations

Internal Reliability

Of the five subscales, there were two (confidence and clinical knowledge) that met acceptance criteria of reliability (Table 3). The low, or unacceptable, values for other three subscales indicate that the constructs may not have been captured successfully in the study. Thus, these subscales need additional work that considers several possibilities: 1) recategorizing items in new ways, 2) rewording items to improve consistency and reduce confusion, and/or 3) revisiting the literature to develop new items. For instance, the self-awareness subscale has two

items, and needs to either be eliminated or have additional items added for analysis using Cronbach's alpha. Further analysis could be done to consider the variation amongst types of roles included in this analysis to assess item variation.

Another possible explanation of the low reliability scores on the three subscales is that the study population was diverse, ranging from registered nurse to security personnel. It is possible that such divergence in role and clinical experience creates a bias in scoring. For example, one staff respondent stated that s/he did not "believe" the ACE's study. This likely reflects the difference in professional experience. An additional literature review for the concepts may yield insights into new items or new categories. Additional testing might examine a reorganization of the concepts. Even though further work needs to be conducted to improve the reliability and validity of the tool, the preliminary evidence may serve as a guidepost for improvement of the training.

Preliminary Evidence for Participant Changes

The instrument did show that the training holds promise in improving confidence and clinical knowledge, both of which were shown to be reliable subscales of the instrument. There was an improvement in mean score in every subscale. Even when you look at individual items of unreliable subscales, there is still statistically significant p-value score and mean improvement. On the confidence scale, which is reliable, respondents gained almost a full point. The results of the Clinical Knowledge subscale indicated that respondents reported higher level of knowledge at the start of the training than we expected (4.41 out of 1-5 scales), yet still experienced an increased mean (4.58). There was a large change in the professional knowledge scale, yielding 1.78 points of mean change from the pretest to the posttest. Results may indicate the program

contents are effective and suitable for increasing professional knowledge. Respondents still struggled with the assumption and bias questions from pretest to posttest.

This is consistent with the literature showing that training in TIC can improve knowledge, attitudes, and behaviors (Purtle, 2018; Weiss et al., 2017; Choi and Seng, 2015). Despite the fact that three of the subscales were unreliable, respondents still showed a demonstrated change based on the training. It is recommended that attention first be given to developing a reliable instrument before any conclusions about the training can be made. There is a need to consider factors that may have affected the outcomes of this study, such as age, gender, roles, or years of working experience.

Feasibility

Overall, the training was judged by respondents as highly feasible and enjoyable. Respondents generally reported they liked the training per the program evaluation questions. The content was viewed as understandable and informative. Respondents also reported that the training helped them to be exposed to bias about trauma, which is a finding consistent with previous research on providers' attitudes about the topic of trauma and how to explore the issue with patients (Blanch, 2012; Fetzner, Peluso, & Asmundson, 2014; Fergus & Barden, 2016). The course delivery was well-received as regarded for the ACEs, discussions, and opportunity for participation.

Barriers for all respondents were lack of time and desensitization. This finding is not unexpected and possibly the greatest challenge to advancing TIC among professionals; thus, it is important that department chairs and administrators who have influence on establishing education standards be aware of the need to include TIC as part of comprehensive patient care. For other respondents, desensitization was identified as a barrier. This may be since trauma is

vicarious in the healthcare setting, which means that desensitization to the severity of complexity of cases may be a coping method. It was interesting to note that the program evaluation responses showed respondents who had completed the training were most interested in acquiring additional training for skills and peer support. The course delivery venue that was preferred was focused on application of skills through the use of case studies and group activities.

Recommendations

Recommendations for improving reliability could include consulting with a methodology expert to revise the instrument used in this study. Some of the recommended strategies to focus on during expert consultation may include recategorizing items in new ways, rewording items to improve consistency and reduce confusion, or look at other tools with similar concepts. Another option may include revisiting the literature while focusing on analyzing the reliability of the subscales. Once the changes have been made, it would be recommended to test the tool with smaller groups of people to ensure the reliability of the tool is improving. Additionally, factor analysis might be considered as this case. Factor analysis is more exploratory ways of grouping variables, while reliability testing is more definitive ways of grouping variables. Since there has not yet been a validated tool in this area, factor analysis might be helpful at this time for these items.

The results from the preliminary results are promising. It is recommended to continue doing the training because the individual items are indicating that participants are experiencing some level of improvement. Investigators also recommend expanding the case studies included to have a greater impact and expose more bias and common assumptions in the healthcare system. Furthermore, it is recommended to further analyze the effectiveness of the TIC training based on

role to see if the training appears to be more or less effective for certain respondents based on roles within the healthcare system.

While it is generally feasible to conduct this training in one hour, it is recommended to either increase the number of trainings available in this series of trainings or increase the amount of time participants can spend in this training. It is recommended to include role plays, case studied, and small group discussion that may allow for more exposure of bias and provide participants an opportunity to learn and practice new skills.

Conclusions

We conducted a pilot study of participants who had completed a one-hour training session that was designed to increase confidence, clinical knowledge, professional knowledge, self-awareness, and assumption/bias regarding TIC. The study pilot tested an instrument for internal consistency and reliability of five subscales. The conclusions are that the training was well-received and provided many promising leads for further research on refining a valid and reliable instrument. Our study showed that all the subscales or individual items showed statistically significant changes between pretest and posttest. Since there are no known validated survey tools yet, making progress in developing a scale with acceptable reliability and another scale with questionable reliability could be considered an advancement in research.

The pilot study adds to the body of literature by having refined two subscales of an instrument can help us measure TIC education impacted, which has previously not been captured. Future projects may include revising questions regarding knowledge, self-awareness, and assumptions and biases. This pilot study provides data for another pilot study or a larger study. The confidence and clinical knowledge scales have yielded reliability scores that could be

retested for validity. The professional knowledge, assumptions and biases, and self-awareness scales need to be reworked and piloted. Researchers must continue to gain knowledge on how assumptions and biases impact patient care and develop evidence-based interventions that will be effective.

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Capstone Experience Reflection

Nebraska Medicine was a very pleasant Capstone site. I had the fortune of meeting many staff members and committed partners who are passionate about increasing knowledge about trauma throughout Omaha. The site offered many learning opportunities; working within a large has some pros and cons. Some of the pros were that many staff wanted to be involved, there are many rooms designated to learning, and there is no shortage of technology. Some of the cons were sometimes a lot of people are involved. For example, there were sometimes technology challenges that staff could have handled in a smaller organization. In a larger organization, there are departments in charge of technology, therefore, the assistance of other departments is required.

One thing that was different than expected was that my preceptors offered unconditional positive regard during this project. During this experience, I had the opportunity to build a great rapport with my Preceptors and our community partners. I expected to be part of a research project to be very rigid and somewhat stressful, but it was much more fun than I imagined. During this Capstone experience, I had the opportunity to help my preceptors develop protocols for program delivery. The protocols framed the exact way the pretest and posttest would be disbursed in order to make sure they were done the same way each time.

Many of the Capstone Experience activities were performed in Kiewit Tower. The pretest and posttest data were input and shared in an Excel fie. The data was transferred over to SPSS for analysis. It took hours to input the data into Excel. I learned that it is very helpful to use a desktop computer with a keypad to enter the data rather than using a laptop only without a keypad. This program was only made possible through the support of all the organizations who partner to form the *Trauma Matters Omaha* Coalition. Other key ingredients to making this

project a success included buy-in from department leadership within the Nebraska Medicine system and the departments overseeing violence prevention and trauma surgery.

The strengths that I brought to this project included a personal passion for advancing trauma knowledge on a large scale, and a familiarity with large clinical trial protocol developments. The greatest challenge during this project was personal feelings of confidence. Sometimes, I struggled because I wanted to make sure to do and learn as much as possible during this experience. Many of the data analysis concepts felt foggy; so, I had to relearn them since it has been quite a while since I have taken data analysis courses. This project helped me overcome this struggle and now I feel much more confident and competent using SPSS to analyze data.

My views about public health practice have been impacted significantly during this project; a lot can be done with little resources when a community comes together to share their knowledge and advocate for something important. The *Trauma Matters Omaha* program has not been funded or built into a budget; therefore, advancing it has required a passionate community of people to will it into existence. An ethical issue that I faced during this experience was the subscales were not coming back with a high internal reliability score. It is disappointing when you pour so much energy into something only to find that it will need to be finessed in order to increase the reliability score. The issue was resolved after accepting that it often takes years to develop a tool with a high internal reliability score.

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Other Committee Members
Liam Heerten-Rodriguez, MSW
Ashley Farren, MSN, MBA, RN

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Appendices

Application of Public Health Competencies: Form I

Appendix A: Copy of the Pretest

Appendix B: Copy of the Posttest