Trauma-Informed Care Training for Medical Students

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AUTHOR NOTES

Study data were collected and managed using REDCap electronic data capture tools hosted at the University of Texas Southwestern Medical Center (UTSW). This study was approved by the UTSW Institutional Review Board. Portions of these findings were presented as a poster at the 2020 Texas Psychological Association Convention, Virtual, United States. Research reported in this publication was supported by Children's HealthSM. The content is solely the responsibility of the authors and does not necessarily represent the official views of Children's HealthSM. We have no conflicts to disclose.

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INTRODUCTION

The Substance Abuse and Mental Health Administration (SAMHSA, 2014a) defines *trauma* as "a single event, multiple events, or a set of circumstances that is experienced by an individual as physically and emotionally harmful or threatening and that has lasting adverse effects on the individual's physical, social, emotional, or spiritual well-being" (p. 7). Further, *vicarious* or *secondary trauma* can be experienced through exposure to another individual's traumatic experiences rather than direct exposure to a traumatic event (SAMHSA, 2014b). Estimates suggest that about two-thirds of children experience a trauma before the age of 16, and more than 30% experience multiple traumas (Copeland et al., 2007; McLaughlin et al., 2013). Studies have also found that about 70% of adults have experienced at least one trauma in their lifetime (Benjet et. al., 2016). Vicarious trauma estimates are also high, with one study suggesting that 70% of social workers exhibited at least one symptom of secondary traumatic stress (Bride, 2007) and another suggesting that 50% of victim services workers experienced severe traumatic stress symptoms (Conrad & Kellar-Guenther, 2006).

Due to the high prevalence of trauma and secondary trauma and the associated potential adverse health outcomes for both patients and providers, it is imperative that medical and allied professionals receive training in trauma as a constitutive element of their professional development

The ramifications of trauma exposure and vicarious trauma on health across the lifespan have been well-documented. Immediate outcomes range from exhaustion, confusion, sadness, and anxiety to severe dissociation symptoms and intense intrusive recollections (SAMHSA, 2014). Responses to traumatic experiences can also include high-risk or self-injurious behaviors, disordered eating, and somatic complaints (e.g., Oral, et. al., 2016; Felitti et al., 1998; Shonkoff et al., 2012). If left unaddressed, trauma can significantly increase risk for mental and substance use disorders and chronic physical diseases (e.g., Dube et al., 2003; Felitti et al., 1998; Pierce et al., 2020). Other literature suggests that symptoms may be exacerbated in providers with a history of unresolved personal trauma (Michalopoulos & Aparicio, 2012). Furthermore, Sanglang and Vang (2017) found that severe trauma experienced by one generation can lead to increased trauma responses in the subsequent generation. This adds yet another layer to an already complex cyclical phenomenon.

Due to the high prevalence of trauma and secondary trauma and the associated potential adverse health outcomes for both patients and providers, it is imperative that medical and allied professionals receive training in trauma as a constitutive element of their professional development (Cook et. al, 2005). Trauma-informed care (TIC) is an approach designed to address the needs of individuals who have experienced trauma by promoting safety and empowerment and by avoiding re-traumatization (SAMHSA, 2014). TIC promotes early recognition of trauma-related symptoms for both patients and providers and has been identified as an important component in enhancing physical and mental health outcomes for patients and the workforce (e.g., National Child Traumatic Stress Network [NCTSN], 2019; Reeves, 2015). Increasing the number of professionals trained in TIC helps to ensure that individuals whose symptom presentation and treatment adherence are impacted by trauma get necessary supports to enhance outcomes. Further, practitioners

who are unaware of their client's trauma history can inadvertently cause iatrogenic harm through re-traumatization (Oral, et. al., 2016).

Despite the growing recognition of the importance of TIC, Ditcher and colleagues (2018) found in a survey of 263 family medicine residency programs that only 27.0% had TIC in the curriculum. For those programs with TIC training, only 4.6% of the program directors reported the training met patient needs "a great deal," and only 48.5% reported the TIC training "somewhat" met patient needs. This is of concern as medical and allied health service professionals are more likely to have initial contact with individuals who have experienced trauma. Additionally, studies have shown that providers training TIC have more patient centered interactions and increased patient satisfaction (Green et. al., 2015 via Oral et. al., 2016). Such research suggests a need to explore routes for delivering efficacious TIC training to healthcare trainees.

A review of the literature identified seven studies that evaluated TIC trainings for students in medicine and allied health fields. The results are compiled in Table 1.

Each study had limitations that need to be addressed in future research. Specifically, training length and format were found to be barriers to participation for graduate students in select studies. Additionally, most trainings were specific to medical students, which excludes allied health trainees engaged in significant contact with patients in healthcare settings. Lastly, there is a need for collection of more data to determine if and how students are impacted by TIC training and which students are more likely to be impacted by TIC training.

Table 1

Trauma-Informed Care Training Literature Review

Authors	Article	Year	N	Population	Summary	Limitations
Chokshi, B., Chen, K.-L. D., & Beers, L	Interactive Case-Based Childhood Adversity and Trauma-Informed Care Electronic Modules for Pediatric Primary Care	2020	35	Pediatric residents, attending physicians, medical students, and a fellow	Four self-paced e-modules were used to provide training on childhood adversity and trauma-informed care. Pre- and post-surveys indicated increased participant knowledge, attitudes, practice, and confidence	Delivered later in trainee development, lacked a follow-up survey.
Dueweke, A. R., Hanson, R. F., Wallis, E., Fanguy, E., & Newman, C.	Training Pediatric Primary Care Residents in Trauma-Informed Care: A Feasibility Trial	2020	33	Pediatric primary care residents	An in-person training included information about trauma, introduction of a screening tool for trauma. Pre- and post-surveys indicated increased favorable attitude and perceived competence. Pre-and post-chart reviews indicated a significant increase in trauma screening.	Training was delivered in-person which increases barriers. Survey was delivered at two time points, 4 months apart.
Elisseou, S., Puranam, S., & Nandi, M.	A Novel, Trauma-Informed Physical Examination Curriculum for First-Year Medical Students	2019	188	First- year medical students & faculty	Training was delivered in a lecture format, and researchers used a 5-point Likert scales to measure increases in participant knowledge and satisfaction.	In-person format, efficacy not measured, limited to medical students

Table 1 (CONTINED)

Goldstein, E. et. al.	Medical Students' Perspectives on Trauma-Informed Care Training	2018	20	Medical students	6-hour, in-person training was delivered over the course of 3 days via lecture, discussion, and practice to students at the University of California Davis medical students attending a summer institute. Qualitative data collected post-training revealed that students increased their ability to recognize signs and symptoms of ACEs and to respond to patient disclosure of ACEs.	Length of training, In-person format, limited to medical students
Pletcher, B., Oconnor, M., Swift-Taylor, M., & Dallapiazza, M.	Adverse Childhood Experiences: A Case-Based Workshop Introducing Medical Students to Trauma-Informed Care	2019	535	Medical students	Small group lectures on addressing ACEs through TIC along with case study discussions were delivered over the course of 3 academic years. Students completed a quiz testing knowledge post training and grades were applied to courses. Post-training quiz scores indicated that student proficiency in TIC knowledge increased.	In-person format, linking knowledge quiz to grades, limiting to medical students
Schmitz, A., Barry, C., & Hodges, K.	Adverse Childhood Experiences and Trauma-Informed Care: An Online Module for Pediatricians	2019	91	2nd year pediatric residents	A 25-minute online training module specific to pediatricians was presented as an optional training. Data from this module suggested participant knowledge and efficacy increased following completion of the training.	Population limited to pediatricians, number of responses to surveys (less than 12% for post survey)
Siegel, M., Gonzalez, E. C., Wijesekera, O., Finkelstein, K., Petricone, R., Glass, L., Lewis-O'Connor, A., Duffy, C., Quijije, N., March, G., & Bell, S.	On-the-Go Training: Downloadable Modules to Train Medical Students to Care for Adult Female Sexual Assault Providers	2017	32	Medical student volunteers	Students opted-in to complete three online modules addressing medical management of sexual assault (SA), simulated patient interview, and suggestions for practice. Students completed pre- and post-training knowledge assessment. Scores improved 20%.	Population limited to medical students, and content limited to female SA survivors. Knowledge was the only outcome assessed.

STUDY PURPOSE

Following a review of the literature and discussions with healthcare providers offering TIC in an integrated pediatric primary care setting, a brief, 45-minute online TIC training adapted for medical and allied healthcare students was developed. The current study tested the effectiveness of this training, which sought to expose students and trainees in healthcare fields to the concept of trauma and its effects on patients and providers. The training was also designed to offer practical guidance on providing TIC. Researchers hypothesized that study participants would experience gains in knowledge and perceived efficacy, as evidenced by pre- and post-training survey responses. Additionally, researchers posited that gains would be maintained over time, as demonstrated by scores on a 3-month follow-up survey.

METHODS

PARTICIPANTS AND PROCEDURES

Fifty-six medical and allied health students and trainees participated in this pilot study. Fifteen participants only completed the pre-training survey and so were excluded from pre- and post-training survey comparisons. Of the remaining 41 participants, 25 completed the 3-month follow-up survey and so were included in analysis of the pre-, post-, and 3-month follow-up surveys.

All study procedures were approved by the **[BLINDED]** Institutional Review Board. Academic deans submitted letters of approval for the recruitment of student participants. Medical and allied health students were recruited through an integrated pediatric primary care clinic and affiliated medical and allied health training institutions. Researchers collaborated with professors and clinical supervisors from affiliated universities and hospitals. To meet inclusion criteria for the study, participants had to be currently enrolled in an accredited program as a medical or allied health graduate student or trainee. Potential participants received an email from professors and clinical supervisors with an invitation to participate in the study. The email provided details regarding the study, including IRB contact information and a clause regarding voluntary participation. Participants consented to the study by clicking on a secure link to complete the pre-training survey in a web-based, HIPAA-compliant software platform designed to support data capture for research studies called Research Electronic Data Capture (REDCap; Harris et al., 2009). Participants were then given access to the training, and a unique personalized link to their post-training survey was sent via email within 48 hours of completing the initial survey. An automated email containing a link to the 3-month, follow-up survey was sent via REDCap to each participant three months after their completion of the post-training survey. Participation was optional, and no incentives were provided.

TRAINING DEVELOPMENT

Development of the training involved reviewing existing studies and assessing available TIC trainings, such as those used by the Texas Department of Family and Protective Services (TDFPS; 2019) and NCTSN (2019). The training also underwent a rigorous, tiered review process involving medical and behavioral health providers in a trauma-informed, integrated pediatric primary care clinic. Multiple iterations of the training were piloted with social work and medical students completing training at partner institutions.

The specific objectives of the training were for students to be able to differentiate among trauma, toxic stress, and ACEs; understand how trauma impacts the brain, child development, and health outcomes; discuss practical strategies for applying trauma-informed knowledge and care; and understand the importance of advocating for trauma-sensitive practices in medicine and behavioral health.

Training learning objectives include: 1). Differentiating among trauma, toxic stress, and ACEs; 2). Understanding how trauma impacts the brain, child development, and health outcomes; 3). Discussing practical strategies for applying trauma-informed knowledge and care; and 4). Understanding the importance of advocating for trauma-sensitive practices in medicine and behavioral health. The final training was divided into four sections: A). Essential Knowledge: Statistics on trauma and adverse childhood experiences (ACEs), SAMHSA's TIC principles, and multidisciplinary (e.g., neuroscience, medical, and behavioral health) knowledge on the impact of trauma; B). Clinical Skills: Pediatric case study is used to demonstrate practical skills; C). Trauma and the Provider: Information on the prevention and intervention for vicarious traumatization and potential steps for trainees with a personal history of trauma; and D). Practice: A vignette of an adult patient presenting for a medical visit with potential symptoms of trauma exposure and ungraded multiple-choice questions regarding the vignette. Allows participants to self-assess their knowledge. The final video was intentionally kept at 45 minutes to address concerns raised in the literature about length of time posing a barrier to participation for medical and allied health students.

MEASURES

A survey was developed to measure participant knowledge and perceived efficacy regarding TIC. Surveys from previous TIC training were reviewed for strengths and limitations. Specifically, surveys from the TDFPS TIC training (2019) for child welfare professionals and a study conducted by Elisseou, Paranam, and Nandi (2019) were used to inform the format, content, and length of the surveys. Survey questions relevant to the target participant population were created and reviewed by licensed medical and behavioral health professionals with knowledge of TIC. Initial survey items collected demographic data including participants' graduate programs, current years in the programs, previous hours of TIC training, and previous service in a trauma-informed organization. Next, five survey questions measured participants' perceived confidence in delivering TIC with 4-point Likert responses ranging from 1 = *Not Confident* to 4 = *Extremely Confident*, and one question measured participants' perceived importance of providing TIC with a 4-point Likert scale ranging from 1 = *Not at All Important* to 4 = *Extremely Important*. Participants' knowledge was measured using six multiple choice questions (e.g., Which strategies below are examples of trauma-informed care [select all that apply]?).

The survey was administered at three time points: pre-training, immediately post-training, and 3-months following the training. Training feedback questions were also incorporated into the post- and 3-month follow-up surveys but were not calculated as a part of the survey scores. The surveys were designed to take about 10 minutes to complete.

DATA ANALYSIS

All data were analyzed in SPSS (IBM Corp., 2017). A paired samples t-test was conducted on participant survey scores from T1 and T2. A one-way repeated measures ANOVA was then conducted on participant scores from T1, T2, and T3. To determine if the training differentially impacted knowledge and perceived efficacy, two additional one-way repeated measures ANOVAs were conducted. Due to repeated statistical tests on the same date, a corrected p-value of .01 was used to decrease the possibility of a type 1 error.

RESULTS

As shown in Table 2, a significant number of participants reported studying in physician's

Table 2

Participant Data

	Pre-/Post- (T1, T2) Sample		3-Month Sample (T1, T2, & T3)	
	n	**%**	**n**	**%**
Program				
Counseling	1	2.4	0	0
Medical	14	34.1	7	28.0
Public Health	2	4.9	1	4.0
Physician Assistant	21	51.2	15	60.0
Social Work	1	2.4	0	0
Psychology	2	4.9	2	8.0
Years in Program*				
1	8	19.5	6	24.0
2	14	34.1	10	40.0
3	17	41.5	7	28.0
4	1	2.4	1	4.0
Hours of Previous TIC Training				
1-2 hours	10	24.4	5	20.0
3-5 hours	1	2.4	0	0
6-8 hours	1	2.4	0	0
None	29	70.7	20	80.0
Previous TIC work or volunteer experience				
Yes	5	12.2	3	12.0
No	20	48.8	12	48.0
Unsure	16	39.0	10	40.0
Pre-Training level of TIC Confidence				
Extremely Confident	0	0	0	0
Very Confident	0	0	0	0
Somewhat Confident	8	19.5	3	12.0
Not Confident	33.	80.5	22	88.0

**One participant did not report years in program*

assistant 51.2% (n= 21) or medical programs 34.1% (n= 12). Most trainees 80.5% (n =33), reported a lack of confidence in delivering TIC prior to the training and a large majority 70.7% (n= 29) had no prior TIC training. Furthermore, 87.8% of trainees (n= 36) reported either no previous TIC work or volunteer experience or being uncertain about whether they had worked or volunteered in an organization that delivered TIC.

A paired-samples t-test was conducted to determine whether there was a statistically significant mean difference between the pre-training and post-training total scores. Participants (n=41) scored higher on the post-training survey (M = 10.46, SD = 2.11) than on the pre-training survey (M = 7.12, SD = 1.27). The increase of 3.34 was statistically significant, 95% CI [2.61, 4.07], t (40) = 9.22, p < .001, d = 1.44.

A one-way repeated measures ANOVA was conducted to determine if there were significant differences among participant (n= 25) scores for the pre-training, post-training, and 3-month follow-up surveys. There were no significant outliers, and the data was normally distributed, according to box plots and the Shapiro Wilkes Test (p > .05). The assumptions of sphericity were not violated according to Mauchly's Test of Sphericity X2 (2) = 1.18, p = .555. The test scores did elicit significant main effect differences, F (2, 48) = 35.14, p <.001, partial h2 = .59 with the following pre-training scores (M = 7.12, SD = 1.09), post training scores (M = 10.48, SD = 2.02), and 3-month follow-up scores (M= 8.40, SD= 1.56) (See Figure 1). Post hoc analysis with a Sadik adjustment revealed statistically significant differences across all three surveys.

Two additional one-way repeated measures ANOVAs were also conducted to determine if there were significant differences among perceived efficacy and knowledge scores from pre-training, post-training, and 3- month follow-up survey scores. There was a significant main effect difference in perceived efficacy scores F (2, 42) = 41.44, p < .001. There was also a significant main effect difference in knowledge F (2, 48) = 15.93, p < .001.

Participants completing all three surveys provided feedback on training quality and content. Of the 25 participants, 92.0% (n=23) reported they would recommend the training to others, 84.0% (n= 21) found the training engaging, and 76.0% (n= 19) stated the training increased their comfort with delivering TIC to patients. Additionally, 52.0% (n= 13) of trainees noted discussing TIC with colleagues following the training. However, only 8.0% (n = 2) sought additional TIC training. When asked how the training could be improved, 40.0% (n=10) suggested increased engagement, 8.0% (n=2) recommended enhanced content, and 40.0% (n=10) reported that no changes were needed.

This study sought to test the effectiveness of a brief, online 45-minute TIC training.

(The remaining 3 participants selected "Other" as a response). Qualitative training feedback elicited positive reviews of the training and requests for additional vignettes for practicing.

DISCUSSION

This study sought to test the effectiveness of a brief, online 45-minute TIC training. A paired sample t-test demonstrated a mean increase of 3.34 points for 41 trainees in pre- to post- surveys. Findings are similar to previous studies shown in Table 1 (Chokshi, Chen, & Beers, 2020; Dueweke et. al, 2020; Elisseou, Puranam, & Nandi, 2019; Goldstein, et. al. 2018; Pletcher et. al., 2019; Schmitz, Barry, & Hodges, 2019; Siegel et. al., 2017). Additionally, scores from pre-, post-, and 3-month follow-up surveys suggest that the training resulted in increased TIC knowledge and perceived efficacy among medical and allied health trainees. Previous studies have included pre- and post-training surveys, but only one study followed up with trainees over an extended period. Dueweke et. al. (2020) increased the period between pre- and post-survey, allowing four months between administrations. Despite the length of time, gains were still evident. However, there is no way to know if knowledge loss occurred over time due to the absence of an additional survey administered immediately post-training. Of note, researchers in the study provided participants with an index card containing a mnemonic device to help with recall of training material. It is likely that this allowed participants to retain information and demonstrate gains four months post-training. This information, along with the present set of findings, highlights the importance of continued education in TIC throughout trainees' professional advancement. Furthermore, frequency tables demonstrated that trainees with lower baseline TIC confidence and knowledge were more likely to respond at three-month follow-up. This may indicate that trainees who require more support could benefit from ongoing engagement.

Of note is the finding that 3-month follow-up survey scores were significantly higher than the pre-training scores and lower than post-training scores. This could be potentially explained by learning loss, given competing professional demands and milestones that trainees must simultaneously achieve while improving direct patient care. The finding that only 8.0% (n=2) of participants sought out additional trauma-informed care training three months following the initial training but over half, 52.0% (n=13) discussed trauma-informed care with their colleagues, due to the training, indicates an ongoing interest in TIC. Also relevant to this point is that 100% of participants reported increased confidence in delivering TIC three months following the training, and nine of the 12 participants who answered a question about whether they had advocated for TIC since completing the training responded in the affirmative. These results imply that TIC may be a gap in existing training structures. Brief, easily accessible, online content may be a viable pathway to fill this gap.

LIMITATIONS

This study is not without limitations. First, the small convenience sample from one geographic location limits generalizability. Future studies should aim to duplicate findings with a larger sample. One possible explanation for the relatively small sample size may have to do with the fact that no incentives were offered for participating. The initial e-mail containing consent information and the link to the pre-training survey was sent to over 100 medical and allied health students, and 56 individuals responded to the pre-training survey, 41 of them participated in the post-training survey, and 25 completed the 3-month follow-up survey. Competing tasks may have limited the number of students who were able to participate. Future studies should consider offering incentives to students to encourage their participation, particularly for longer-term follow-up.

Additionally, not all relevant fields of study were represented in our sample. A brief, online TIC training with other clinical students in allied health programs may yield increased data for comparison of results

across fields. Due to the small sample size, the present data was not sufficient to conduct such a comparison.

CONCLUSION

Despite these limitations, this study can be seen as a first step toward integration of a brief, online TIC training in the early phases of trainee development. The prevalence of potential patient and provider trauma creates a clear impetus for the continuation of this crucial work. Early receipt of this training would also inculcate trainees to operate from a lens of trauma-sensitive practice in any setting in which they embark. Within non-healthcare settings, these tools are valuable in understanding staff and client populations. Ethical codes across disciplines advocate for an increasing focus on multiculturalism and intersectionality. TIC highlights the pluralistic experiences within our society and demands empathic providers and leaders to serve our communities. Although the generality of results warrants further study, current data and literature indicate trauma is a pervasive phenomenon, and this study has shown the potential for efficacious and cost-effective methods to take early action to ensure that trainees are prepared to meet this demand. The findings also highlight the need for ongoing education and training to ensure retention of key concepts and practices and comfort among providers in implementing TIC.

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