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A Mixed Methods Exploratory Assessment of the Usefulness of Baltimore City Health Department's Trauma-Informed Care Training Intervention

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Abstract

Youth exposure to trauma is a significant public health problem in the United States, particularly in urban areas. Although trauma-informed care (TIC) training of service providers to address this challenge is increasing nationwide, we lack empirical evidence regarding the feasibility and acceptability of cross-organizational TIC training, including perspectives of training participants. The purpose of our study was to evaluate participating service providers' self-reported changes in knowledge about trauma, attitudes towards traumatized individuals, and beliefs in their capacity to provide referrals to trauma services after completion of the TIC intervention. Intervention participants represented a range of service sectors including government health and education agencies, social services, law enforcement, as well as nonprofits. Participants completed a pre-post quantitative survey assessing TIC-related knowledge, attitudes, and beliefs (N=88). A subset of participants was interviewed using a semi-structured interview format (n=16). Mixed methods were used to evaluate the intervention's impact on participants' knowledge about trauma and to understand participants' experience in the training. Quantitative results revealed significant improvements in TIC-related knowledge and attitudes. Five themes emerged from qualitative analysis of interviews: the intervention provided a framework for understanding TIC; useful lessons were learned from other participants; there was a need for outreach to upper-level management; real-life applicability was lacking; and guidance regarding next steps was wanting. Study findings suggest the training may be a starting point for enhancing service providers' capacity to address traumatized youth.

Keywords

Trauma; trauma-informed care; urban youth

Approximately one quarter of youth in the U.S. have experienced two or more traumatic events (e.g., physical, emotional, or sexual abuse; poverty; parental absence, incarceration, or addiction), with even higher rates for youth in urban areas like Baltimore City (30.7%) (HHS, 2014). Service professionals who interact with youth—including school staff, social workers, and law enforcement—can serve as potential gatekeepers for access to trauma services. However, many service professionals are unprepared to identify traumatized youth or to make referrals to treatment since addressing trauma in youth has not typically been part of their occupation (Taylor, 2005).

One promising approach to promoting referral of youth with a history of trauma to appropriate trauma service and support systems, and thereby improving mental and physical health outcomes, is educating youth service providers in trauma-informed care. Trauma-informed care (TIC) is a strengths-based, service delivery approach grounded in an understanding of and responsiveness to the impact of trauma that emphasizes physical, psychological, and emotional safety for both providers and survivors and that creates opportunities for survivors to rebuild a sense of control and empowerment (Hopper, 2010). Trauma-informed care involves a strengths-based paradigm shift from viewing youth social or behavioral issues as problems to be punished (“What is wrong with you?”) to signs of potential trauma requiring supportive intervention (“What happened with you?”) (SAMHSA, 2014). Previous studies have shown significant improvement in providers’ knowledge (Nicola, 2013; Perry, 2016) and attitudes towards youth that have faced trauma (Fraser, 2014; Kramer, 2012; Lang, 2016) after having participated in TIC interventions. Additionally, some studies found an improvement in participants’ willingness to refer traumatized youth to specialized treatment services (McMahon-Howard, 2013), as well as improvements in youth academic performance and decreases in externalizing/internalizing problems and attention/hyperactivity (Holmes, 2015).

Availability of TIC trainings is improving, but there are several limitations to current TIC training interventions and the studies that have evaluated these training interventions. First, many training interventions focus on training one service sector, particularly the child welfare system (Crale, 2013; Fraser, 2014; Kramer, 2012; Lang, 2016; McMahon-Howard, 2013; Nicola, 2013; Suzanne, 2016; Taylor, 2005). A previous qualitative assessment of TIC training for providers working with women who had substance use problems and trauma histories highlighted the importance of cross-sector approaches to promoting healing (Markoff, 2005). Training interventions focused on one service sector does not provide opportunities for cross-sector collaboration with other fields such as healthcare, education, law enforcement, and nonprofit organizations that also interact with traumatized youth. As a result, professionals in each system may use different frameworks to understand children and may have varying degrees of understanding of complex trauma (Taylor, 2005). Variations in knowledge and approaches can subsequently undermine services to youth, as youth with a history of complex trauma are at risk for being misunderstood, misdiagnosed,

and inadequately treated. Second, few assessments and related peer-reviewed publications of TIC trainings include professionals outside the child welfare system (Anderson, 2015; Holmes, 2015; Perry, 2016).

After the Baltimore unrest in April 2015, the Baltimore City Health Department (BCHD), together with its quasi-governmental partner Behavioral Health System Baltimore (BHSB), developed the Healing Baltimore initiative with support from the U.S. Substance Abuse and Mental Health Services Administration (SAMHSA) Center for Mental Health Services, National Center for Trauma Informed Care (NCTIC). An important commitment to Healing Baltimore was the pledge by former Baltimore City Mayor Stephanie Rawlings-Blake in July 2015 to have all frontline government workers trained in TIC, making Baltimore the first U.S. city aiming to provide TIC training for all government employees.

Pilot Study

A post-training survey was administered to 957 participants of an introductory TIC didactic training session in Baltimore City through funding provided by SAMHSA's NCTIC. The initial one-day training session provided participants with a general overview of trauma, including the signs and symptoms of trauma and the short- and long-term consequences that trauma can have on an individual's cognitive and behavioral development. Four types of agencies participated: government social services, government health and education, other government agencies, including law enforcement, and nonprofit organizations. All agencies invited to the first phase of the Healing Baltimore initiative were responsive and attended the training, and data from the post-training survey suggested the training was positively received by participants who completed surveys. Survey findings suggested that one of the key takeaways from the pilot program was identification of client-oriented solutions, specifically strengths-based approaches, as a feasible starting point for providing trauma-informed services. The majority of government workers, including those without a mental health and/or social work background (i.e. police officers, 311/911 operators) reported having learned from the training and having motivations to apply lessons learned towards their work with youth and families at their respective agencies. Preliminary results were used by BCHD staff to guide the development of a more comprehensive nine-month training intervention, which is the focus of the current study.

Current Training Intervention

Agencies that participated in the initial introductory TIC didactic training were invited to participate in the second half of the initiative, a nine-month implementation training program facilitated by consultants identified by SAMHSA's NCTIC who have expertise in TIC implementation. All the agencies that participated in the introductory didactic training were also represented in the implementation training stage of the initiative. Participants in the nine-month intervention were identified by their respective agencies to lead and implement trauma-informed approaches at their workplace. NCTIC consultants provided an initial two-day training (Oct 2015) in which they reviewed key points from the introductory TIC didactic then spent the majority of the training on technical assistance for participant agencies in implementing the six TIC principles outlined by SAMHSA (see Appendix A).

Upon completion of the initial two-day training, participants reached consensus with others from their respective agencies and on behalf of the agency they represented, signed a joint Memorandum of Understanding (MOU) with BCHD and BHSB. The MOU delineated expectations of full participation and commitment to full implementation of three changes to policies and/or practices to promote trauma-informed care principles by the end of the training program (Jun 2016). The MOU also included agencies' commitment to continuing to implement these trauma-informed approaches beyond the nine-month implementation training program. Although SAMHSA allocated a significant amount of funding and resources towards TIC training nationwide, no formal evaluation of this intervention has been conducted. Thus, we lack empirical evidence regarding the feasibility and acceptability of cross-organizational TIC training, including improvement of participants' knowledge and attitudes or the perspectives of training participants.

Current Study

Our study goals were twofold. First, we evaluated agency participants' self-reported changes in knowledge about trauma, attitudes towards traumatized individuals, and beliefs in capacity to provide referrals to trauma services after completion of the nine-month TIC intervention and agency implementation of TIC policies and practices. The top half of Figure 1 timeline summarizes the activities of the current training program. Based on a priori knowledge about TIC trainings (Fraser, 2014; Kramer, 2012; McMahon-Howard, 2013; Suzanne, 2016; Taylor, 2005), we hypothesized that there would be a significant improvement in participants' knowledge, positive attitudes, and positive beliefs upon completion of the training.

Second, our study obtained participants' perspective of the training grounded in a sequential explanatory mixed methods design (Gallo, 2016). Quantitative studies on the usefulness of TIC training -- specifically the impact of training on participants' TIC-related knowledge, attitudes, and beliefs -- employ established standards for measuring these domains (Fallot & Harris, 2006). However, quantitative data may miss contextual detail regarding the impact of the training on participants, or how the training might be improved. Qualitative methods complement quantitative methods by providing detailed descriptions or narratives regarding the impact of the training, including trainees' perceptions and experiences in participating in the intervention (Creswell, 2011). By applying a mixed methods approach to evaluating the training intervention, we aimed to gain a better understanding of participants' experiences with the training and how the training could be improved (Dowding, 2013).

Methods

Institutional Review Board approval was granted by Johns Hopkins Bloomberg School of Public Health, IRB00007234, Evaluating Baltimore City Health Department's Trauma-Informed Care (TIC) Training. This study had three main components, which coincided with the TIC intervention activities. The pre-survey was administered at the beginning of the first monthly TIC implementation training session and subsequent agency implementation of three TIC policies/practices. The post-survey was given at the conclusion of the last monthly TIC implementation training session. Semi-structured interviews with select participants

were conducted in the two months that followed the conclusion of the TIC training intervention. The bottom half of Figure 1 illustrates how the evaluation activities of this study coincide with the activities of the training intervention. Both the Methods and Results section presented here will be broken up by methodology.

Quantitative Methods

Participants—Four types of agencies participated: government social services (i.e., Mayor's Office of Human Services), government health and education (i.e., Baltimore City Public Schools), other government agencies (i.e., Parks and Recreation), including law enforcement (i.e., Baltimore Police Department), and nonprofit organizations (i.e., Mosaic Community Services). Agency directors determined which of their staff members would participate in the training.

Procedures—Data came from pre- and post-surveys administered by BCHD and BHSB staff at the beginning (October 2015) and at the conclusion (June 2016) of the nine-month implementation training. The pre- and post-surveys were administered to all Baltimore City government agency and nonprofit professionals that participated in the training (N=90). An online version of the survey was administered to participants not present at either the first or last training of the intervention. Participants provided informed consent to BCHD and their respective agencies and agreed to participate for the entire duration of the intervention. Participants were compensated for their time and participation by their respective agencies.

Measures—This study focused on a subset of measures from the pre-post surveys regarding changes in knowledge, beliefs, and attitudes in response to the intervention (Fallot & Harris, 2006).

Trauma-Informed Knowledge, Attitudes and Beliefs of Providers Scale: Knowledge about trauma, attitudes towards traumatized individuals, and beliefs about one's capacity to provide trauma-informed care services were assessed with a 38-item self-report scale (see Appendix B) adapted from the Trauma-Informed Self-Assessment designed by the National Center on Family Homelessness and the Institute of Health Recovery (Fallot & Harris, 2006), both of which work with similar populations as the ones served by the BCHD TIC training participants. The Trauma-Informed Knowledge, Attitudes, and Beliefs of Providers scale is a survey tool endorsed by the National Child Traumatic Stress Network to help organizations and survivors assess the degree to which they are trauma-informed. The scale has previously been used with service providers working with homeless populations. For the purposes of this study, the homeless-specific questions, which were not pertinent to the current study's sample, were omitted. Questions addressing participants' beliefs about their capacity to provide trauma-informed care services were based on the six TIC principles outlined by SAMHSA: 1) Safety, 2) Trustworthiness and Transparency, 3) Peer Support, 4) Collaboration and Mutuality, 5) Empowerment, Voice, and Choice, and 6) Cultural, Historical and Gender Issues (see Appendix A). Participants responded to all items using a Likert scale anchored with 1 (*strongly disagree*) to 5 (*strongly agree*). Reliabilities for the subscales were as follows: knowledge (Cronbach's alpha =.82), attitudes (Cronbach's alpha =.82), and beliefs (Cronbach's alpha =.89). Although this measure has been recommended

for assessing TIC knowledge, attitudes, and beliefs by the National Child Traumatic Stress Network (NCTSN), neither reliability coefficients nor uses of this assessment have been reported elsewhere in the literature. For each of the scales, a mean score was computed such that higher scores indicated greater knowledge about trauma and more favorable attitudes and beliefs.

Other covariates: BCHD staff also administered a brief form to gather information about sociodemographic characteristics such as organization affiliation (i.e., government law enforcement, government social services, government health education and nonprofit), race/ethnicity (African-American, White, Latino, Asian or Pacific Islander, Other), gender, age (18–34, 35–44, 45–54, > 55), educational attainment (high school, some college, college, graduate degree), role at agency/organization (direct service, management/administration), years in current position (< 1 year, 1–5 years, 6–10 years, 11+ years), native of Baltimore City (yes/no), and participation in any prior TIC training (yes/no).

Analysis Strategy—Data were inspected and cleaned for any data entry errors and outliers prior to undertaking any analyses. Wilk's test was used to test the assumption of normality and was found to be insignificant. Multiple imputation via Chained Equations (MICE; van Buren, 1999) was applied to missing data (>5% of values were missing). Paired t-tests were conducted to examine if there were any significant differences in mean scores of participants' knowledge, attitudes, and beliefs about TIC at the beginning and conclusion of the 9-month intervention training. Multiple regression analysis was employed to adjust for the potential confounding effects of the demographic variables noted earlier in this paper on the relationship between pre-post mean scores on knowledge, attitudes, and beliefs scale. STATA 13.0 was used for all statistical analyses.

Qualitative Methods

Participants—Semi-structured interviews were conducted two months following the intervention with a subset of participants (n=16) in the intervention. Participants for the semi-structured interviews were recruited using direct contact and word-of-mouth. Participants from Law Enforcement and Social Services were specifically targeted during recruitment for the interviews because group interviews with BCHD, BHSB, SAMHSA collaborators, and participating agencies suggested that Law Enforcement and Social Services greatly differed on several factors, including openness and readiness to adopt TIC policies and practices. In preliminary studies of the BCHD TIC training initiative (Damian, 2015), participants from Social Service sectors reported prior exposure to TIC training whereas Law Enforcement participants reported a lack of opportunities to learn about TIC principles in their field. Thus, we anticipated that interviews with key informants from Law Enforcement and Social Services would provide distinct and potentially differing perspectives on the effects of the current TIC training. BCHD and BHSB staff members overseeing the TIC intervention described the study to all training intervention participants, asked them if they were interested in learning more about the study, and shared the contact information of trainees with the research team. The research team member explained the study, clarified questions about the study's intent and human participant protection, and obtained informed consent. Interviews were digitally recorded and transcribed. Any

identifying information was removed in the transcription process. The Institutional Review Board at the Johns Hopkins Bloomberg School of Public Health approved all study procedures.

The sample for the semi-structured interviews (n=16) consisted of participants who volunteered to be interviewed in depth. Of the participants who were interviewed, the majority were African-American (81.3%) and female (87.5%). Most interviewees were from the social services sector (75.0%), while other participants came from law enforcement (12.5%) and other government agencies (12.5%).

Interview guide—The semi-structured interview guide (see Appendix C) was developed based on discussions with key informants (i.e. BCHD staff, SAMHSA training developers) and data from the pilot study described earlier that indicated what was of greatest importance to TIC training participants. Based on these inputs, the guide assessed four domains: 1) Usefulness of training, 2) General impact of training on organizational culture and climate, 3) Specific impact of training on organizational culture of safety, and 4) Impact of training on referrals of traumatized individuals. In this study we focused only on responses pertinent to usefulness of training. Participants were asked, *“Can you tell me about your experience in the trauma-informed care training program?”* and *“What about the training did you find most useful? Least useful? Why?”* All interviews were conducted by phone by the first author. Interviews were recorded and transcribed verbatim with any identifying information removed. The interviews took approximately 45 minutes. No incentives were provided to participants.

Qualitative analyses—Our overall approach might best be characterized as directed content analysis since the training program and our first pass at coding was guided by the SAMHSA’s training domains. The analysis was directed since we were looking for the four domains described earlier in this section. Two team members supervised by the first author reviewed each transcript and summarized the overall interview. We read each transcript carefully looking for themes which we then discussed in a group to reach consensus. In a second level of discussion, we considered how what we found was reflected in the SAMHSA content areas. Reviewers coded the transcripts broadly in order to identify emerging themes around the four domains noted earlier in this section. We used the constant comparative method, which involves taking one piece of data, such as a theme, and comparing it to the rest of the data to develop conceptualizations of the possible relations between various pieces of data (Boeije, 2002; Glaser, 1967; Wittink, 2006). Here we focused our attention on responses related to what participants found useful about the training and what improvements to the training they would propose. Trustworthiness was accomplished by using similar procedures for each interview: immersion in the data through multiple close readings by several coders, discussion by the study team, searches for discrepant cases, and debriefing after coding. We report themes that were evident in responses of 10% or more of sample participants (Wittink, 2006).

Results

Quantitative Results

Of the 90 pre-survey respondents, we excluded 2 (2.2%) who only completed the sociodemographics questions but did not respond to the rest of the survey. Although an item on participants' agency/organizational affiliation was included in the survey, only 25% of respondents answered this item. Thus, the study was underpowered to detect and compare differences in treatment effects among the different service sectors represented in the current study. Table 1 shows the demographics of the analytic sample ($N=88$). The mean age of study participants was 43.0 years (standard deviation: 13.6); most were female and African American. Most participants had at least a college degree and had previously participated in some form of trauma-informed care training.

Less than 10% of data was missing for any survey subscale item; missing data were handled using MICE, as noted in the Methods section. Improvements from pre- to post-test in mean scores for knowledge about trauma and trauma-informed care principles ($M= 3.19$, $SD= 6.68$, $p< 0.001$) and attitudes towards trauma survivors ($M= 1.60$, $SD= 5.67$, $p< 0.01$) were significant (Table 2). However, the difference in the pre-post training scores for beliefs about capacity to provide TIC was not statistically significant ($M= 2.74$, $SD= 25.25$, $p> 0.05$).

Qualitative Results

We identified two overarching themes pertaining to perceptions of the usefulness of the TIC training: *Strengths* and *Challenges*. We identified two subthemes related to Strengths: (1) *a valuable framework for understanding TIC*, (2) *useful lessons learned from other participants*, and three subthemes related to Challenges: (3) *need for outreach to upper-level management*, (4) *a lack of real-life applicability*, and (5) *a lack of guidance regarding next steps*.

Two themes supporting the usefulness of the training included *value of the SAMHSA framework* (reported by 44% of participants) and *hearing other organizations discuss their practices, struggles, and challenges* (reported by 13%). In several of the transcripts, participants expressed a belief in the value of the SAMHSA framework in providing a well-defined, concrete framework to support participants' understanding of trauma and TIC. Other participants expanded on the utility of the framework of going beyond "soft" aspects of trauma and TIC to understand the etiology of trauma, how trauma affects people's perceived self-efficacy, and whether trauma-affected individuals have the will power to do something. For example, one social services participant explained, "When you're being told 'this is trauma-informed,' it's a soft (term) and abstract. People need something very concrete and a well-defined framework and I think that is what was provided in the trainings." Moreover, for other participants, the scientific findings regarding trauma and its consequences also provided credibility to participants' own traumatic experiences. A participant from law enforcement explained, "(The training) lent credibility to my own work-related and personal experience at that time...in the understanding of how trauma affects the primitive brain and the physiology of it."

Additionally, participants found it useful to participate in training with multiple agencies from different sectors and as a result, see how the same strategies for TIC were being implemented across diverse work environments. As one social services participant described, “It was helpful that there were other agencies there. So it wasn’t just from one perspective. I was able to see how other people are implementing these same strategies in their programs. So just sitting listening to different perspectives, I found that helpful.”

Qualitative responses regarding what was not useful in the training were consistent with quantitative survey items in the scale assessing participants’ beliefs about their capacity to provide trauma-informed care, which did not show significant improvement. The quantitative survey items asked about participants’ familiarity with community resources and treatment services. Participants’ responses in the semi-structured interviews reinforced quantitative findings regarding the uncertainty of how to connect what was learned during the intervention to their respective workplaces and daily interactions with traumatized youth and families. Specifically, qualitative themes highlighting aspects of the training that were not useful included *lack of participation from upper-level management* (reported by 19%), *the intervention not having a lot of real-life applicability* (reported by 31%), and *the intervention did not provide next steps* (reported by 31%).

Participants’ comments regarding a desire for more concrete real-life applicability of the intervention and more specific next steps were consistent with the quantitative findings of no significant changes in participants’ beliefs in their capacity to either provide or make referrals to trauma services. The theme of “real-life applicability” included responses from participants who were uncertain of how the concepts of trauma and TIC practices related to their specific, day-to-day role and responsibilities. The theme of the intervention not having specified next steps referred to uncertainty about the implications of the training for participants’ respective organizations, including what types of resources and supports would be available to support their respective agencies in becoming more trauma-informed. Some participants were frustrated because although they found the information very useful, without the policy makers and higher administration receiving training, no substantial change could be implemented or sustained. A participant from the social services sector explained:

That was frustrating was to realize that this is my life work and so to find that the people that needed to be in the room weren't really in the room with me was a little frustrating because we have your front line people, your direct care people, and even your middle management people, but you really didn't have the upper-level administrative leadership in the room and the buy in. My concern was that this is going to be another one of those types of trainings that you go in and then nothing really changes.

Several participants also expressed that the training was too broad and did not provide more concrete techniques tailored to their workplace. Participants expressed difficulty in making the connection between the training and their daily work. A participant from law enforcement noted:

They (the trainers) gave a very broad training because they wanted to be flexible enough for any group that was there, whether it be social work or 311 operators or what have you, so it was very broad. And so, it wasn't obviously able to be very specific to a given environment because it was so broad. Just coming into it, it would have been helpful if it had been more law enforcement oriented for me.

Lastly, although the training covered various examples of successful TIC implementation, some participants still expressed uncertainty about plans post-training, particularly what TIC implementation would look like at their respective agencies. As one social services participant described:

I don't think (our organization) is prepared for it. I think it is difficult because they (the trainers) didn't really provide the next step. I think it was great in terms of teaching about trauma and its impact and how to talk about trauma, but I don't think they have the techniques or the interventions for organizations and organizations are really looking for something that is concrete and tangible.

Our mixed methods design allowed us to use information derived from the semi-structured interviews to complement and explain the data observed in the pre-post surveys. Participants' comments regarding the utility of the TIC framework for understanding trauma were consistent with the significant improvements we observed in quantitative analyses on participants' knowledge about trauma and attitudes towards traumatized individuals. The framework not only helped participants be more trauma-informed by better understanding the impact of trauma on the youth and families they serve and using a strength-based approach when interacting with traumatized individuals.

Discussion

Our study highlights the changes that occurred among government and nonprofit service personnel (i.e., Health and Education, Law Enforcement, Social Services) who participated in a nine-month TIC implementation training and learning collaborative. The findings suggest that the intervention is a means of increasing participants' knowledge about trauma and trauma-informed care principles, as well as improving their attitudes towards individuals who have a history of trauma, which is consistent with existing literature on various forms of TIC training interventions (Fraser, 2014; Kramer, 2012; Lang, 2016; Nicola, 2013; Perry, 2016). More specifically, the training intervention enriched participants' understanding of the signs of trauma. While change in beliefs about capacity to provide TIC was in a favorable direction, the pre- and post- scores were not significantly different from one another. Open-ended interviews with a sample of participants suggested that beliefs about capacity to deliver or refer for TIC did not change because participants were not empowered to make organizational change. While they discussed the value of the SAMHSA framework for understanding TIC and benefitted from hearing the perspectives of other participants, the need for management involvement, for real-life applications, and for training that provides concrete steps to take in the workplace was evident.

Our mixed methods study shows that a training program can improve knowledge and attitudes towards TIC in a city-wide intervention and also suggests ways in which the

training can potentially be strengthened. Our study highlights a remaining gap between trauma knowledge of trauma and attitudes and the perceived capacity to establish a therapeutic relationship with trauma survivors or to refer them to appropriate trauma recovery and treatment services in the community (Crable, 2013; Fraser, 2014; Hopper, 2010; Markoff, 2005). Certain subgroups within the sample may have experienced a significant improvement in beliefs about their capacity to provide TIC; however, the current study is underpowered to detect such an effect.

The lack of significant changes in participants' beliefs in their capacity to provide referrals to trauma services could also be related to the theme of not having upper-level management present during the intervention. Qualitative responses regarding the lack of leadership buy-in could explain why no significant changes in participants' beliefs in their capacity to either provide or make referrals to trauma services were observed in the quantitative data. Previous studies have also highlighted both the challenges and importance of engaging staff at all levels of an organization, particularly those in supervisory roles (Crable, 2013; Markoff, 2005).

The qualitative data provided additional information not otherwise gleaned from the survey results alone. For example, the theme regarding the usefulness of attending the training with other organizations highlighted the value of the cross-sector design of the intervention. As described in the beginning of this paper, the designers of the intervention were intentional about bringing together providers from different sectors. Based on the qualitative data, the participants appeared to be in agreement with the intervention designers and found value in communicating with and learning from providers from other sectors. This finding is consistent with a study noted earlier in this paper on TIC trainings for providers working with women who had co-occurring substance use problems (Markoff, 2005). Not only did the cross-sector design of the intervention allow participants to learn about shared challenges, as reported in the qualitative data; it also allowed participants who were less familiar with trauma and TIC to learn from the experiences of relatively more seasoned participants who have already begun taking steps to implementing TIC policies and practices in their own organizations.

This study has several limitations. First, the lack of a comparison group limits the ability to estimate intervention effects. Recruitment of a comparison group for this study was not feasible since all City agencies participated in the TIC initiative and identifying comparison individuals at the participants' respective agencies was beyond our funding and timeline constraints. Second, the participants in the intervention were recruited by their respective agencies; therefore, their responses and any observed changes may not be representative of the other personnel at those agencies. Third, uniform criteria for selecting participants were not established across agencies because each participating agency decided for itself which members of its workforce would participate in the training intervention. Fourth, the measure of knowledge, attitudes, and beliefs was recommended by the NCTSN but has not yet been validated. Moreover, the measures relied on participants' self-report, which is subject to socially desirable responding. Fifth, the study was underpowered to detect and compare differences in treatment effects among the different service sectors represented in the current study. Although an item on participants' agency/organizational affiliation was included in

the survey, only 25% of respondents answered this item. As the need for TIC receives greater attention, and more resources are subsequently allocated to train personnel outside the traditional healthcare system in TIC, future evaluation studies can be conducted to test differences in outcomes. Similarly, further validation of the scales used in this study is warranted. In addition, although the initial qualitative study design was set up to compare law enforcement and social service agency participants' ideas and themes, the political climate at the time this study was conducted made it challenging to schedule and conduct interviews with additional participants from law enforcement. While the participants in the semi-structured interviews may not be representative of the intervention participants, the purpose of the open-ended interviews was exploratory, striving for depth of understanding and not representativeness.

Conclusion

The current study has several research, practice, and policy implications. Future longitudinal studies should examine participants' perceived usefulness of the training over time. Longitudinal studies can assess whether participants continue to retain knowledge about trauma and TIC and hold positive attitudes towards traumatized individuals over time. Future studies can also examine potential positive spillover effects of the intervention on the knowledge, attitudes, and beliefs of participants' colleagues who did not attend the training. The data also suggests that the intervention may benefit from certain augmentations. For instance, booster sessions may help sustain interest and improve capacity to better recognize and address TIC. Additionally, more work should be done to engage upper-level management. One option is to provide grants that incentivize agencies/organizations' leadership to participate in TIC trainings.

Restructuring the intervention to meet the specific needs of different organizations should also be considered. While the cross-sector, multi-agency design of the intervention was well received by participants, designers of the intervention should consider adding breakout groups by sector in future iterations of the intervention. Breakout groups may provide participants with the space and time to discuss applications of the intervention and feasible ways of integrating TIC policies and practices specific to their workplace. Moreover, organizers of the training should work with city leadership to ensure that upper-level management from the various government agencies also actively participate in the training. Furthermore, the curriculum could be revised to include guest speakers sharing their experiences of successful TIC implementation, which may potentially benefit training participants in formulating next steps for TIC implementation and sustainability at their respective agencies. Future iterations of the training should also consider setting up periodic conference calls to maintain momentum from the training and allow participants to engage in an ongoing learning collaborative.

Last, this intervention was notable in being a citywide effort. Political leadership was important to program implementation and represented a joint effort by the Baltimore City Health Department and the Mayor's Office. Leadership from both these agencies successfully brought together individuals from different sectors, including providers outside the traditional healthcare system, which these individual entities would not be able to do on

their own. This study can potentially inform the development of other city-wide TIC initiatives by highlighting key implementation and evaluation issues requiring careful consideration.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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PUBLIC POLICY RELEVANCE STATEMENTS

Youth exposure to trauma is a highly prevalent public health issue in the U.S., particularly in urban communities. This study suggests policies that support trauma-informed care training may help service providers from different sectors—potentially including law enforcement, health, education, and nonprofits—develop greater understanding of the signs and impact of trauma and capacity to link the youth they serve with trauma services.

Figure 1. Timeline for trauma-informed care (TIC) training intervention activities and concurrent mixed methods study.

* KAB: Knowledge, Attributes, and Behavior

Table 1

Demographics of Analytical Sample in Baltimore City Health Department's Trauma-Informed Care Training Intervention (N=88). (Data from pre-post surveys administered during Baltimore City Health Department's TIC Intervention.)

Characteristics	Total * N (%)
Age, in years	
Less than 35	26 (44.8)
35–44	14 (24.1)
45–54	10 (17.4)
55 or more	8 (13.8)
Gender	
Male	22 (25.3)
Female	65 (74.1)
Race/Ethnicity	
African-American or Black	60 (71.4)
White	21 (25.0)
Latino	1 (1.2)
Asian or Pacific Islander	1 (1.2)
Other	1 (1.2)
Highest level of education completed	
High school	5 (6.76)
Some college	12 (16.2)
College	20 (27.0)
Graduate degree	37 (50.0)
Role at agency/organization	
Direct service (Frontline)	39 (44.3)
Management/Administration	49 (55.7)
Years in current position	
Less than a year	18 (20.7)
1–5 years	37 (42.5)
6–10 years	14 (16.1)
11+ years	18 (20.7)
Baltimore City native	
Yes	37 (43.0)
No	49 (57.0)
Participated in any prior trauma-informed care training	
Yes	51 (60.0)
No	34 (40.0)

* Column percentages may not add up to 100% due to missing values

Table 2

Adjusted Pairwise Comparisons of Pre-Post Changes in TIC Knowledge, Attitudes, and Beliefs.[/] (Data from pre-post surveys administered during Baltimore City Health Department's TIC Intervention.)

	Baseline Mean (SD)	Post Mean (SD)	Pre-post Difference (SD)	95% CI for Difference
TIC Knowledge	36.78 (4.80)	39.98 (4.48)	3.19 (6.68) ***	1.78 4.61
TIC Attitudes	28.26 (4.54)	29.86 (3.51)	1.60 (5.67) **	0.40 2.80
TIC Beliefs²	86.05 (18.18)	88.78 (18.36)	2.74 (25.25)	-2.62 8.09

**
p< 0.01

p< 0.001

[/] Covariates that were adjusted for in the analyses include the following: age, gender, race/ethnicity, highest level of education completed, role at agency/organization, years in current position, Baltimore City native, and participated in any prior trauma-informed care training. Change in TIC Knowledge and Attitudes remained significant and change in TIC Beliefs remained nonsignificant after controlling for these covariates.