



Trauma-Informed Psychoeducation for Somali Refugee Youth in Urban Kenya: Effects on PTSD and Psychosocial Outcomes

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Abstract

The current study developed and implemented a trauma-informed psychoeducation (TIPE) intervention that is culturally relevant to urban Somali refugees in Nairobi, Kenya. A total of 141 Somali refugee youth completed 12 sessions of peer-led TIPE intervention. A series of pre- and post-tests revealed that TIPE made positive impacts on PTSD symptoms and psychosocial factors, with a differential effect observed according to baseline PTSD symptom report. Participants with high baseline PTSD scores (i.e. above clinical threshold) reported a significant decrease in PTSD symptoms and increase in perceived social support. In the meantime, those with no to mild baseline PTSD symptoms showed an increase in self-awareness of trauma responses and thus PTSD symptom report within the range of normalcy. This research supports the effect of a culturally relevant psychoeducation intervention in addressing the high mental health and psychosocial needs of the marginalized urban Somali refugee community in low resource settings.

Keywords Mental health · Refugee trauma · Intervention · Social support · Peer-led psychoeducation

Prolonged and excessive exposure to traumatic events induces the high prevalence of mental disorders among refugee populations. A comprehensive review study revealed that 4–86% of refugees had posttraumatic stress disorder (PTSD) and 5–31% refugees met criteria for major depressive disorder (Hollifield et al. 2002). Another meta-analysis of the data from 81,866 conflict-affected populations showed the prevalence rate of 30.6% for PTSD and 30.8% for major depression disorder (Steel et al. 2009). Common mental disorders (CMDs), such as anxiety, depression, and somatoform disorders, are also highly reported among refugee children and adolescents. Ellis and her colleagues (2008) indicated that the PTSD rate among refugee children ranges from 11.5 to 65% of the samples in studies with refugee children and

adolescents, including Bosnians (Goldstein et al. 1997), Cambodians (Hubbard et al. 1995; Sack et al. 1999), and Tibetans (Servan-Schreiber et al. 1998). In another systematic review based on 3,003 refugee children from over 40 countries (Bronstein and Montgomery 2011), the prevalence of CMD was 19 to 54% for PTSD and 3 to 30% for depression. While the prevalence rates fluctuate depending on circumstantial as well as methodological factors, some subgroups with high vulnerability and compounding hardships tend to show a higher risk of CMDs. In displaced Darfuri children, for example, the prevalence of PTSD and depression went up to as high as 75% and 38%, respectively (Morgos et al. 2008).

In spite of a high risk of CMDs related to intensified refugee trauma and displacement, mental health and psychosocial support for refugees often remains scant and inadequate during migration (Nickerson et al. 2011; Silove 2004). A majority of refugees experience protracted displacement in low-resource settings where mental health services are often neglected, thereby exacerbating mental health conditions (Tol et al. 2013). The local as well as national policy and social systems of host countries that dictate the implementation of health and social services are often not equipped with the capacity or preparation for refugee populations. With minimum protection under the United Nations High

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Commissioner for Refugees (UNHCR), refugees in transitional countries are politically, economically, legally, and socially marginalized and are neglected from basic services and healthcare including mental health services (Ventevogel 2014). Such living conditions during migration tend to be stressors that can contribute to extant distress and deteriorate mental health issues (Reed et al. 2012). The known risk factors for mental health issues among displaced refugees are varied, including but not limited to a dearth of social support in the host community, acculturation challenges, living in poverty, experiences of discrimination and xenophobia, legal sanctions, and crises in cultural identity (Bhugra and Becker 2005; Laban et al. 2004). In addition to these migration stressors, refugees continue to experience the lingering consequences of war trauma and conflicts in their home countries (Gerritsen et al. 2006).

To fill such gaps in refugee mental health support during migration, culturally relevant and adequate mental health and psychosocial support (MHPSS) that is grounded in the refugee community is essential. However, both availability and accessibility of proper services are of concern in most low resource settings. In addition, alien concepts and ideas of Western mental health treatment, either one-on-one counseling or pharmaceutical therapy, are often seen as taboo and tend to provoke stigma around mental health among refugees, even when it is openly accepted that all of the refugee community is affected by numerous adversities and traumas that exacerbate mental health (De Jong 2006). Building culturally relevant and adequate services in the host community is a consensual direction, which involves multilateral stakeholders, both international and local, in the development of interventions (Jordans et al. 2009). In the meantime, a community-grounded effort to enhance the awareness around mental health issues in the refugee community is essential. To address the needs for MHPSS and lack of adequate community-based interventions, a low-cost and yet sustainable intervention model should be necessary. A psychoeducation intervention using a peer-based model can be one such model.

The current study was developed as part of a community initiative to build the capacity of local mental health service providers, paraprofessionals, and peer mentors with a focus on developing a community-based and culturally sensitive intervention informed by refugee trauma. Currently, there are gaps in the literature using psychoeducation as a stand-alone intervention, although many studies revealed the impact of psychoeducation as a part of a larger composite of interventions (Jordans et al. 2011; Kruse et al. 2009; Peltonen et al. 2012; Qouta et al. 2012; Staub et al. 2005). The current study developed and implemented a psychoeducational intervention that is contextually relevant and trauma-informed, Trauma-Informed Psychoeducation (TIPE), in order to address these noted gaps in the urban refugee

community. This study explores the effect of the TIPE on both mental health and psychosocial domains among Somali refugee youth affected by multiple refugee traumas, using a pre- and post-intervention evaluation.

Method

Participants and Procedure

Somali urban refugees in Kenya, an extreme example of a protracted refugee crisis, have faced chronic deficiency in proper support for mental health and psychosocial needs since the Somali civil war (Pavanello et al. 2010). An urban business district called Eastleigh, an outskirts of Nairobi, Kenya, known as Little Mogadishu, is where tens of thousands of asylum seekers and refugees from Somalia have settled to seek sanctuary. The current study was developed as part of Eastleigh Youth Project supported by USAID, Kenya, in order to address various psychosocial issues that Somali refugee youth face due to community violence and conflicts with the local community. The study was hosted at a local community-based organization (CBO) run by Somali doctors, counselors, and community leaders, who were also a core part of the project.

For sustainability of the intervention, the project team mobilized and organized community youth leaders in the Somali community and provided a training of trainer (TOT) workshops to build capacity for youth leaders to facilitate a peer-led psychoeducation. A total of 25 youth leaders participated and completed a week long TIPE TOT training that was developed and culturally adjusted by the authors. After additional training on facilitation and program monitoring and evaluation, 10 trained youth leaders were paired with five community health counselors to provide a peer-led intervention that consisted of 12 sessions over three months. The TIPE modules adopted existing psychoeducational modules to promote refugee resilience (e.g. The Center for Victims of Torture 2008), while combining components of peace education, such as conflict resolution, management skills, and problem-solving methods (UNESCO 2005) in order to reflect the local concern around the high prevalence of community violence and conflicts in the local community. The TIPE sessions included education on multifaceted impacts of trauma on the body, mind, social relationships, and spirituality, followed by psychosocial competencies, such as emotional coping and problem solving, community and support systems, and conflict management skills (See Table 1 for details). To avoid pathologizing trauma responses, the TIPE manual utilized common colloquial terms related to mental health (i.e., cultural idioms of distress) that were identified by local community partners and counselors, including *welwel* and *buqsanaan* (being anxious), *murug* (sorrow),

Table 1 Trauma-Informed Psycho-Education (TIPE) session outline

Session	Title	Topics
Pre-session	Orientation	Introduction of TIPE, pre-intervention measure
1	Introduction	Introduction of participants, Setting group norms, Value tree activity, Future agenda
2	Culture & Migration	What is culture? Group discussion: Living in Somalia vs. living in Eastleigh, Acculturation/Migration stress, Cross-cultural communication
3	Stress & Trauma	What is stress, what is trauma? Impacts of trauma (bio-psycho-social-spiritual effects), Body mapping, Abdominal breathing
4	Mind & Body	Impacts of trauma on mind and body, Somali expressions of stress & trauma, Progressive relaxation, Mindfulness
5	Trauma & Relationships	Abuse and violence, Types of abuse, Types of violence, Mindfulness exercise
6	Hidden trauma	Stigma, Collective trauma, Collective healing
7	Grief and healing	Three stages of healing, Healing metaphors, Stone & Flower exercise, Self-care, Religious coping
8	Helping others & Building social support	Communication styles, Active & deep listening, Community resource mapping
9	Conflict resolution & peace building	Conflict management styles, “I” statement, Empathy exercise, Problem-solving skills
10	Community building	Ecomap (connecting community needs with resources), Leadership types and skill building
11	Community Theatre (Drama activity)	Group story-telling & Drama presentation
12	Closure	Reflection, Closing ritual, Future plan for support group

qaracan (shock), instead of using western terminology such as PTSD and depression (Im et al. 2017). Participants were provided refreshments along with small reimbursements for transportation (200 KSH equal to approximately 2 USD) for each session that they attended.

Due to the high mobility and strong inclination of anonymity of refugee populations displaced in urban settings, a snowball sampling strategy was adopted to mobilize and recruit participants. Youth in the local context was defined very roughly and ranged approximately between mid-teens and early thirties. In fact, operationalizations of “youth” commonly vary by organizations (cf. 15–24 as per UNICEF definition vs. 15–35 according to The African Youth Charter; UNESCO 2016). Moreover, the age range in this study had to be flexible because the Somali refugee community face a significant challenge in birth registration due to forced migration and cultural practice. A total of 250 Somali youth (88 males, 143 females, and 19 unknown) were recruited and 145 among them completed all 12 sessions. The relatively low completion rate (58%) was due to the interference caused by insecurity, such as frequent police crackdown and occasional bombing in Eastleigh, which caused migration of many participants and their families for safety reasons. No significant differences were found in demographics, trauma experiences, and PTSD score between completers and non-completers of the intervention. As a pilot intervention and the first of its kind in an urban Somali community in Nairobi, Kenya, the current research was conducted without randomized control trial (RCT) design due to concerns of practicality and feasibility as well as ethical challenges that were raised by Somali community leaders.

No Social and Behavioral Research Institute Review Board (IRB) can be found in Kenya, other than the Kenya Medical Research Institute (KEMRI) guidelines and standard operating procedures (SOPs) that are designed for biomedical research (National Ethical Review Committee 2004). Therefore, the research was approved by the authors’ institutions in the United States and a community advisory board (CAB) was formed and consisted of local service providers and community leaders in Eastleigh. The research materials, including TIPE manuals and questionnaires, were reviewed and approved by the CAB in order to ensure inclusion of local perspectives and enhance protection of participants in the study. The project team, including interpreters and staff of the Somali clinic, also received a two-day training on human subjects’ protection, informed consent, and confidentiality, based on the Research Ethics Training Curriculum developed by Family Health International (Rivera and Borasky 2009). Each participant was fully informed about the purpose and procedure of the intervention and research before signing a written consent form in both Somali and English. The project ethics as well as procedures were monitored by both CAB and the Office of Kenya Transitional Initiative (KTI), USAID.

Measures

To assess the effect of TIPE intervention, a psychosocial assessment survey was administered before and after the intervention. The questionnaire commenced with a short introduction of the Eastleigh Youth Project and purpose of the TIPE. The questionnaire consisted of four parts: trauma

exposure, mental health needs, psychosocial factors, and demographics.

Trauma

A list of refugee youth trauma was developed based on the community needs assessment that the first author conducted as part of the Eastleigh Youth Project. Ten items of trauma experiences were used to assess two main areas of concern in the community: war-related trauma (i.e., experience of war, forced migration, living in a refugee camp) and community violence in Eastleigh (i.e., police harassment, injury from community violence). Response items were Yes (1), No (0). Scales were summed; higher scores indicated a greater number of trauma events experienced.

PTSD

To assess the impact of trauma on mental health this study adopted the PTSD Check List – Civilian Version (PCL-C) that is comprised of 17 items to assess and screen PTSD, which is commonly used with refugee populations, including the Somali population, in previous studies (e.g. Robertson et al. 2006; Yeomans et al. 2010). A 5-point Likert scale, from 1 (not at all) to 5 (almost always), was used along with a calendar and a visual scale of glasses filled with various levels of water (adopted from Terheggen et al. 2001). The scale comprised of questions on hyperarousal, reexperiencing, and numbing. The scale was summed; higher scores indicated higher levels of PTSD. The PCL-C had a Cronbach's α of 0.91 for this sample.

Psychosocial Factors

Since the TIPE intervention was designed for youth population in general, rather than clinical cases only, non-mental health measures were also critical to assess the effect of TIPE. Such domains include social functioning, behavioral and attitudinal changes, and perceived social support, all of which can show improvement in social adjustment and other competencies that the last few sessions of TIPE were devoted to. Psychosocial factors measured were: (1) positive attitudes toward violence (5-items: e.g. "War is often necessary," "Violent crime should be punished violently"); (2) sense of community (5-items: e.g. "I feel I belong to this community," "I want to contribute to my community"); (3) social support (7-items: e.g. "I have some people who care for me"); (4) emotional coping (3-items: e.g. "I care about my own body signs"); (5) problem solving (3-items: e.g. "There are many ways to solve and get out of a problem"); and (6) awareness around mental health and psychosocial needs (4-items: e.g. "I think some mental health problems are natural responses to traumatic events"). Questions were

designed by the community leaders, psychiatrists, and counselors and vetted by the community advisory board. A 5-points Likert scale, from 1 (not at all) to 5 (almost always), was used along with a calendar and a visual scale of glasses filled with various levels of water: no water in a glass for 1, a glass half-full for 3, and a full glass of water for 5 (adopted from Terheggen et al. 2001). Scales were summed; higher scores indicated a greater presence of each psychosocial factor.

In this sample, Cronbach's α at baseline for psychosocial factors were: 0.714 for violence, 0.754 for sense of community, 0.800 for social support, 0.571 for emotional coping, 0.852 for problem solving, and 0.572 for awareness. The majority of the psychosocial factor scales exhibited high levels of internal consistency ($\alpha > 0.70$), except for emotional coping and awareness. As a measure of internal reliability, Cronbach's α is affected by the intercorrelations between items and the number of items. Fewer items in a scale reduce α while more items in a scale increase α (DeVellis 2011). The emotional coping and awareness scales were composed of few items and dropping any would likely lead to a 2-item scale, which is less than ideal as the breadth of the construct being measured would likely be inadequately anchored (Eisinga et al. 2013). Thus, the authors elected to retain the original scales and respective items; however, we wish to be transparent that these two scales have only moderate internal consistency (DeVellis 2011).

All measures were developed in English first and translated into Somali. The local clinic staff including five active community health counselors with a college education who participated in a reconciliation meeting for translation and back-translation of measures as well as TIPE materials. Both English and Somali versions were provided to participants and each person chose a language they preferred based on their comfort and competence level. The survey was administered a week before and after the TIPE and the post-intervention questionnaire include only mental health needs and psychosocial factors to avoid redundancy of collected information regarding past trauma and demographics.

Data Analysis

Among all completers, four who did not report age and gender were excluded from data analysis. Descriptive analyses, including multiple response analysis, were performed to determine the prevalence of trauma and trauma related psychological outcomes among respondents. Differences in demographics and trauma experiences between refugee youth whose PTSD symptoms improved and did not after the TIPE were assessed using Chi square and independent t-tests. Paired sample t-test analyses were used to assess the differences between pre- and post-TIPE outcomes, such as PTSD score and psychosocial factors. Paired sample t-tests

were used to assess how effective the TIPE intervention was in reducing PTSD scores and improving psychosocial factors. Paired sample t-tests were also used to assess if there were differences in the intervention's effectiveness between high and low-no PTSD symptom groups. A high symptom group was defined as having moderate to severe PTSD symptoms (PCL-C scores of 40 or above out of 85; $n=45$), while a low-no symptom group was defined as having none to low PTSD symptoms (scores below 40; $n=96$).

Finally, a logistic multiple regression was conducted to assess whether war-related and community-related trauma and baseline psychosocial factors were associated with PTSD symptom improvement. Logistic regression was performed in a sequential fashion; block groups of variables were entered in three steps and model variables were selected based on statistical significance and theory. Linearity of the continuous variables with respect to the logit of the dependent variable was assessed via the Box-Tidwell procedure. A Bonferroni correction was applied using all 19 terms in the model resulting in statistical significance being accepted when $p < .00263$ (Tabachnick and Fidell 2007). Based on this assessment, all continuous independent variables were found to be linearly related to the logit of the dependent variable. There were no studentized residuals with a value greater than three standard deviations, indicating extreme outliers were not a problem. All data analyses were completed using SPSS 23 Windows.

Results

Demographic Variables

In the valid sample ($N=141$), the average age was 20 ($SD=2.42$) and Somali youth had lived in Eastleigh for an average of 7.48 years ($SD=4.91$). Fifty-six percent were female and 48% had an elementary education or less. The majority (75%) had migrated from Somalia, but 20% were born and raised in Kenya. In terms of living arrangements, 59% ($n=61$) of respondents were living with at least one parent, 65% ($n=60$) lived separately from either parent, and 31% ($n=28$) had lost at least one of their parents. The majority reported strong (32%) to very strong (54%) religious beliefs. Those who reported high PTSD symptoms (scored 40 or above) were significantly more likely to live with either parent and have lower religious beliefs than youth with a no/low PTSD score (See Table 2).

PTSD and Trauma Prevalence

On average, Somali refugee youth reported having been exposed to about five ($M=5.06$, $SD=3.98$) traumatic events in total. With respect to trauma type, Somali refugee

youth had experienced 1.44 ($SD=1.42$) war-related traumatic events and 1.81 ($SD=1.54$) community-related traumatic events, on average. According to independent samples t-tests, there were significant differences between the no/low and high PTSD score groups in the total number of trauma experienced and in the number of war- and community-related trauma experienced; equal variance assumed. The high PTSD group had experienced more total trauma ($M=7.71$, $SD=3.96$), more war-related trauma ($M=2.04$, $SD=1.49$), and more community-related trauma ($M=2.89$, $SD=1.51$) when compared to the no/low PTSD group ($M=3.98$, $SD=3.41$; $M=1.19$, $SD=1.32$; $M=1.38$, $SD=1.30$), respectively. With respect to specific trauma items, only loss of family members and separation from family were not significantly related to PTSD severity among respondents (See Table 3).

Effects of TIPE among No/Low PTSD and High PTSD Groups

Paired sample t-tests that compared PTSD scores of pre- and post-TIPE intervention showed no significant symptom reduction with the total sample. There was a clear divide, however, between symptom and non-symptom groups in terms of impact of TIPE on PTSD and other psychosocial domains, such as sense of community, social support, and awareness. Both no/low and high PTSD groups showed a significant change in PTSD symptom scores, and yet the direction was the opposite. For youth with no/low PTSD, their post-TIPE symptom score significantly increased from 27.42 ($SD=6.67$) to 34.48 ($SD=12.83$), indicating a possible increase in self-awareness of symptoms. In the meantime, those whose PTSD score was above the threshold (scored 40 or above) reported significantly lower PTSD symptoms after the TIPE, from 50.09 ($SD=7.52$) to 31.93 ($SD=13.86$). In both groups, post-intervention PTSD scores stayed below the cutoff point and only 11 participants reported that their PTSD score remained higher than 40, which accounts for 24.4% of the high PTSD group. Participants with no/low PTSD scores showed a significant increase in sense of community and awareness, while perceived social support significantly improved in the high PTSD symptom group. There were minor changes in other psychosocial factors, but the differences were not statistically significant (See Table 4).

Logistic Regression

A sequential logistic regression using three steps (enter method was used for each block of variables) was performed to ascertain the effects of various factors in PTSD symptom reduction after TIPE intervention. The variables included in the regression model were demographic variables (gender, age, and education), trauma exposure (war-related trauma

Table 2 Demographic variables & differences between Somali refugee youth with no/low and high PTSD

Categorical Variables	Total (N = 141) <i>N (%)</i>	No/Low PTSD (N = 96) <i>N (%)</i>	High PTSD (N = 45) <i>N (%)</i>	χ^2	<i>p</i>
Gender					
Male	59 (44%)	42 (46%)	17 (40%)	0.446	0.578
Female	76 (56%)	50 (54%)	26 (61%)		
Education					
No Education	18 (13%)	10 (10%)	8 (18%)	4.275	0.233
Dougsi	14 (10%)	12 (13%)	2 (4%)		
Elementary	35 (25%)	26 (27%)	9 (20%)		
Secondary	74 (52%)	48 (50%)	26 (58%)		
Country of Origin					
Kenya	27 (20%)	16 (18%)	11 (29%)	2.849	0.241
Somalia	95 (75%)	70 (80%)	25 (66%)		
Other	4 (3%)	2 (2%)	2 (5%)		
Living with Parent(s)					
No	43 (41%)	35 (49%)	8 (25%)	5.093	0.024*
Yes	61 (59%)	37 (51%)	24 (75%)		
Separating from Parent(s)					
No	32 (35%)	23 (34%)	9 (36%)	0.022	1.000
Yes	60 (65%)	44 (66%)	16 (64%)		
Loss of Parent(s)					
No	62 (69%)	20 (53%)	9 (33%)	1.613	0.303
Yes	28 (31%)	18 (47%)	18 (67%)		
Religious beliefs					
None to Medium	17 (14%)	6 (7%)	11 (29%)	11.470	0.003**
Strong	38 (32%)	25 (31%)	13 (34%)		
Very Strong	64 (54%)	50 (62%)	14 (37%)		
Continuous Variables	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>t(df)</i>	<i>p</i>
Age	20.00 (2.42)	19.93 (2.34)	20.29 (2.64)	-0.797(134)	0.544
Years in Eastleigh	7.48 (4.91)	7.03 (4.86)	8.42 (4.92)	-1.578(139)	0.947

Note: * $p < 0.05$; ** $p < 0.01$

and community violence exposure), and baseline psychosocial factors (endorsement of violence, sense of community, emotional coping skills, problem solving skills, social support, and awareness). As shown in Table 5, Model 1 which included demographics only was not statistically significant, $\chi^2(2) = 0.43$, $p = .979$. Model 2 which added trauma exposure was statistically significant, $\chi^2(4) = 10.577$, $p = .035$, which explained 13.5% (Nagelkerke R^2) of the variance in PTSD symptom reduction and correctly classified 62.6% of cases. The only significant predictor in Model 2 was community-related trauma, demonstrating that those with higher levels of community violence trauma have 1.75 times higher odds of reducing PTSD symptoms. Lastly, model 3 which added psychosocial factors was statistically significant, $\chi^2(13) = 26.460$, $p = .015$. The model explained 31.3% (Nagelkerke R^2) of the variance in PTSD symptoms and correctly classified 71.7% of cases. Of the predictor variables, only three were statistically significant: community-related

trauma, religiosity, and emotional coping skills. Participants who experienced community-related trauma had 2.02 times higher odds of reducing their PTSD symptoms after the TIPE intervention. Participants with strong religious beliefs had 7.59 higher odds of reducing their PTSD symptoms after the TIPE intervention. Similarly, participants with higher emotional coping skills prior to the intervention had 1.28 higher odds of reducing their PTSD symptoms after the TIPE intervention.

Discussion

The current study aimed to assess the effect of a community-based psychoeducational intervention on mental health and psychosocial outcomes, such as PTSD, sense of community, different coping manners, perceived social support, and awareness. Overall, participants reported significant

Table 3 Trauma experienced and differences between Somali refugee youth with no/low and high PTSD symptoms

Trauma	Total (N = 141)	No/Low PTSD (N = 96)	High PTSD (N = 45)	Statistics	
	<i>M (SD) / N (%)</i>	<i>M (SD) / N (%)</i>	<i>M (SD) / N (%)</i>	<i>t(df) / X²</i>	<i>p</i>
Total Trauma	5.06 (3.98)	3.98 (3.41)	7.71 (3.96)	−5.751 (139)	0.000***
War-related trauma	1.44 (1.42)	1.19 (1.32)	2.04 (1.49)	−3.405 (139)	0.001**
Experience of war	63 (45%)	36 (38%)	27 (60%)	6.275	0.018*
Loss of family members	38 (27%)	21 (26%)	17 (38%)	3.936	0.066
Separation from family	27 (19%)	17 (18%)	10 (22%)	0.403	0.525
Living in refugee camp	40 (28%)	20 (21%)	20 (44%)	8.405	0.004**
Forced migration	39 (28%)	21 (22%)	18 (40%)	5.030	0.028*
Community Violence trauma	1.81 (1.54)	1.38 (1.30)	2.89 (1.51)	−6.071 (139)	0.000***
Injury from community violence	33 (23%)	16 (17%)	17 (38%)	7.617	0.010**
Observation of community violence	47 (33%)	21 (22%)	26 (58%)	17.772	0.000***
Arrest by the police/soldier	69 (49%)	39 (41%)	30 (67%)	8.315	0.006**
Experienced violence in Eastleigh	50 (36%)	23 (24%)	27 (60%)	17.390	0.000***
Witness violence in Eastleigh	64 (45%)	34 (35%)	30 (67%)	12.071	0.001***

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 4 Pre- and Post-Tests of effects of TIPE on PTSD symptoms and Psychosocial Factors for no/low PTSD (N/L) & high PTSD (H) Symptom Groups

			Pre	Post	Paired Sample T-Test		
			<i>M (SD)</i>	<i>M (SD)</i>	<i>t</i>	<i>df</i>	<i>p</i>
PTSD Symptoms		N/L	27.42 (6.67)	34.48 (12.83)	−4.476	95	0.000***
		H	50.09 (7.52)	31.93 (13.86)	8.188	44	0.000***
		Total	34.65 (13.02)	33.65 (13.11)	0.608	140	0.544
Psychosocial Factors	Violence	N/L	5.72 (4.24)	5.48 (3.77)	0.450	94	0.654
		H	6.78 (4.87)	6.18 (4.35)	0.703	44	0.486
		Total	6.07 (4.51)	5.75 (3.97)	0.694	142	0.489
	Sense of Community	N/L	6.98 (3.76)	6.35 (3.21)	−3.005	95	0.003**
		H	6.67 (3.49)	7.84 (3.25)	−1.674	44	0.101
		Total	6.83 (3.69)	8.19 (2.71)	−3.542	143	0.001***
	Emotional Coping	N/L	6.35(3.01)	7.23 (2.94)	−1.960	86	0.053
		H	7.15 (3.08)	6.74 (3.53)	0.515	38	0.609
		Total	6.55 (3.15)	7.13 (3.08)	−1.271	126	0.206
	Problem Solving	N/L	9.47 (4.27)	10.16 (3.21)	−1.250	86	0.215
		H	10.26 (3.51)	9.90 (4.26)	0.397	38	0.603
		Total	9.66 (4.09)	10.13 (3.57)	−0.738	126	0.462
	Social Support	N/L	4.60 (2.55)	4.94 (1.89)	−1.011	94	0.315
		H	3.67 (2.54)	5.33 (2.50)	−3.278	44	0.002**
		Total	4.29 (2.56)	5.04 (2.10)	−2.756	142	0.007*
	Awareness	N/L	6.21 (3.64)	7.62 (3.37)	−2.683	86	0.009**
		H	8.44 (3.68)	8.15 (3.68)	0.347	38	0.731
		Total	6.87 (3.79)	7.76 (3.75)	−2.010	126	0.047*

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

improvement in sense of community, social support, and mental health awareness, although the overall change in PTSD symptoms was minor and insignificant. The TIPE

intervention, however, showed strong divergent effects in youth with different levels of psychological needs. As anticipated, youth with high PTSD scores reported a significant

Table 5 Demographic, trauma and psychosocial factors regressed on PTSD symptoms improved and unimproved using logistic multiple regression (N = 101)

Variables	Model 1			Model 2			Model 3		
	<i>B</i> (<i>SE</i>)	<i>ExpB</i>	<i>p</i>	<i>B</i> (<i>SE</i>)	<i>ExpB</i>	<i>p</i>	<i>B</i> (<i>SE</i>)	<i>ExpB</i>	<i>p</i>
Demographics									
Gender	0.129 (0.435)	1.137	0.767	0.122 (0.471)	1.129	0.796	−0.060 (0.554)	0.942	0.942
Age	0.046 (0.089)	1.048	0.601	0.074 (0.095)	1.077	0.437	0.044 (0.116)	1.045	1.045
Education (no education)			0.902			0.962			0.568
Education (dougisi)	0.371 (1.089)	1.449	0.734	0.163 (1.203)	1.177	0.892	1.466 (1.339)	4.332	0.273
Education (elementary)	0.374 (0.957)	1.453	0.696	−0.150 (1.053)	0.861	0.887	0.085 (1.122)	1.088	0.940
Education (Secondary)	0.588 (0.879)	1.800	0.504	0.131 (0.967)	1.140	0.892	0.578 (1.005)	1.783	0.565
Trauma									
War-related				−0.064 (0.191)	0.938	0.740	−0.209 (0.223)	0.812	0.350
Community violence-related				0.558 (0.171)	1.748	0.001**	0.702 (0.211)	2.018	0.001***
Psychosocial Factors (Baseline)									
Religious beliefs (None-Medium)									0.007**
Religious beliefs (Strong)							2.027 (0.902)	7.590	0.025*
Religious beliefs (Very Strong)							0.341 (0.818)	1.407	0.677
Violence							0.016 (0.075)	1.016	0.835
Sense of Community							−0.123 (0.094)	0.885	0.193
Emotional Coping							0.242 (0.116)	1.274	0.037*
Problem Solving							−0.042 (0.088)	0.959	0.634
Social Support							−0.141 (0.128)	0.868	0.270
Awareness							−0.044 (0.083)	0.996	0.958
Constant	−1.869 (1.928)	0.154	0.332	−3.042 (2.085)	0.048	0.145	−3.501 (2.496)	0.030	0.161
Model X ²	0.043			10.577			25.731		
Model Sig	0.979			0.032*			0.012*		

Missing data on PTSD and Psychosocial Factors was excluded from analysis

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; Male is referent for Gender, No education for Education and None to Medium for Religious beliefs

decrease in PTSD symptoms after the TIPE. This change was at a clinically meaningful level and below the cutoff point (i.e., from 50 to 32 on average). On the other hand, for refugee youth with no or low PTSD symptoms at baseline, the intervention significantly enhanced their awareness around the impact of trauma on body and emotional well-being and, as a result, increased PTSD symptom scores below clinical threshold. This implies that PTSD symptoms might be already present in the majority of refugee youth, whether minor or severe, but low awareness in trauma responses likely hinders recognition and acceptance of trauma responses until exposure to psychoeducation. This corroborates previous research on the primary effect of psychoeducation in facilitating the understanding of mental health consequences and symptoms (Lukens and McFarlane 2004) and even in increasing report of mental health symptoms (Carlson et al. 2010). The low baseline report of PTSD can also be explained in the context of high stigma around mental health among Somali refugees. The intervention setting might not be fully developed as a safe environment for participants to openly report mental health symptoms during

pre-intervention assessment. Also, undeveloped rapport and trust between participants and the research team might lead to underreporting of PTSD. For example, eight out of 10 participants who reported no symptoms (i.e., the minimum score of 17) later expressed PTSD symptoms ranging from 22 to 60 ($M = 36.10$, $SD = 14.81$). Such a considerable change is likely related to increased willingness to report and engage with the research and intervention team. In fact, the TIPE promoted perceived social support among participants, particularly those with high PTSD symptoms. This suggests that a peer-based psychoeducational group helped build a support system among participants, as well as between youth and local clinic and providers, which helped enhance participants' sense of community. The findings of this study confirm the positive effect of psychoeducation on resilience factors and psychosocial functioning that may buffer distress and mitigate negative impacts of trauma.

This study also explored the main factors that contribute to PTSD symptom reduction to help understand how the intervention works for refugee youth with common and yet varied needs. The regression model elucidated how factors

such as different types of trauma exposure, levels of religious beliefs, and emotional coping style influence the improvement of PTSD symptoms among Somali refugee youth. Participants with moderate levels of religious belief, rather than mundane or fervent religious beliefs, were more susceptible to positive change in PTSD symptoms. This result is aligned with previous studies on how religious coping mitigates risk factors for psychological distress and mental health symptoms (Leaman and Gee 2012) and how negative and positive religious coping strategies are associated with distress and trauma-related outcomes (Gerber et al. 2011). Report of low religious belief, possibly translated into discontent in religion or low religious support, is likely to impede coping strategy and resilience and thus aggravate distress after traumatic events (Ai et al. 2003). Overly strong religious faith or extremist religiosity, on the other hand, tends to lead to fatalistic attitudes toward traumatic events and interrupt participation in secular treatment or services, and thus can negatively affect efficacious medical or psychosocial interventions (Brierley et al. 2012). Also, the regression model showed that psychoeducation works better for those who are prone to an emotional coping style, which confirms the known effect of emotion-focused coping in addressing psychological distress and traumatic challenges (Johnsen et al. 2002). This study also showed responses to trauma-informed psychoeducation can be varied as per the types of trauma experiences among participants. For those highly exposed to community violence, psychoeducational interventions had more effectively enhanced PTSD symptoms after the intervention. It implies that trauma responses to community-level adversities and violence can be mitigated through a group-based intervention and basic psychoeducation that helps enhance a sense of community and perceived support available in the community. Although time of trauma exposure was not measured in the current study, this finding also suggests that time between trauma events and intervention effectuate symptom severity and reduction, which indicates the importance of timely intervention to trauma regardless of the type (Steel et al. 2009). This study underlines the effect of a community-based peer-led intervention on both PTSD and psychosocial factors, such as social support, sense of community and mental health awareness.

Despite providing meaningful contributions, the authors recognize several limitations of the study. More rigorous intervention designs, such as randomization, control group, or multiple measures, might add better evidence to undergird the findings of this study. The immense challenges in conducting controlled research in an unsafe setting with such a highly unstable refugee community created multiple obstacles. Multiple bombings and police crackdowns during the time of the TIPE intervention substantially affected the local staff's ability to perform controlled research. Although the current sociopolitical context of urban Kenya created

multiple challenges in the community and the population, adding a mathematical model to the current sampling strategy, such as respondent-driven sampling, might help provide a more systematic approach to this hidden population in the future. Another limitation of this study was adopting a PTSD score as the main mental health outcome. Although it is a logical decision to consider PTSD as a main mental health outcome of a trauma-informed psychoeducational intervention, application of the Western concept of PTSD has long been criticized by many scholars (De Jong 2006; Hinton and Lewis-Fernandez 2011; Hollifield et al. 2002). As Miller and Rasmussen (2010) pointed out, daily stressors, such as poverty, poor livelihood, discrimination, family violence, and lack of social support, tend to mitigate or exacerbate the mental health of refugees in post-conflict areas. Therefore, programs for urban refugees should consider multifaceted adversities, such as safety of living, political threats, and community violence in developing and evaluating mental health and psychosocial interventions.

As one of the few studies with this particular population (i.e., urban Somali refugees in Kenya), this study attempted to show the effect of a culturally grounded psychoeducational intervention in addressing the complex needs of the urban refugee community for mental health and psychosocial support. Refugees and asylum-seekers in urban settings are significantly underrepresented in academic research due to the high mobility and invisibility of the population, and yet this group remains the most vulnerable among the vulnerable, facing a significant gap in available services and support. The current study argues that trauma-informed psychoeducational interventions can be useful and feasible in a low-resource refugee community and the peer-led and community-based approach of the TIPE in particular can enhance the receptivity to the intervention and thus the positive impact on psychosocial issues and distress (McFarlane 2012). For a continuum of care and support, future interventions can be embedded in existing programs or be delivered as school-based interventions that will be highly cost-effective and have great potential for sustainability (Betancourt et al. 2013). As many studies indicated, psychoeducation is highly applicable to various settings (Donker et al. 2009). Trauma-informed psychoeducation can be especially instrumental in creating a safe space for building social support and processing collective experiences of trauma, such as community violence, to release psychological distress while increasing awareness around mental health and building a sense of community.

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Compliance with Ethical Standards

Disclosure of Interest Hyojin Im has no conflict of interest to disclose. Jennifer F. Jettner has no conflict of interest to disclose. Abdilkadir H. Warsame has no conflict of interest to disclose. Maimuna M. Isse has no conflict of interest to disclose. Dalia Khoury has no conflict of interest to disclose. Avina I. Ross has no conflict of interest to disclose.

Ethical Standards and Informed Consent All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation [institutional and national] and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

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