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Psychosocial intervention for war-affected children in Sierra Leone

Leila Gupta and Catherine Zimmer

Background
There are no psychosocial interventions to address both educational needs and psychological distress among displaced children in post-conflict settings.

Aims
To assess the psychosocial status of displaced children enrolled in the Rapid-Ed intervention; and to determine whether the Rapid-Ed intervention alleviated traumatic stress symptoms that interfere with learning among war-affected children in Sierra Leone.

Method
A randomly selected sample of 315 children aged 8–18 years who were displaced by war were interviewed about their war experiences and reactions to the violence before and after participating in the 4-week Rapid-Ed intervention combining basic education with trauma healing activities.

Results
High levels of intrusion, arousal and avoidance symptoms were reported at the pre-test interviews conducted 9–12 months after the war. Post-test findings showed statistically significant decreases in intrusion and arousal symptoms ($P<0.0001$), a slight increase in avoidance reactions ($P<0.0001$) and greater optimism about the future.

Conclusions
The findings suggest potential for combining basic education with trauma healing activities for children in post-conflict settings, but confirmatory studies using a control group are needed. Conducting research in post-conflict settings presents unique challenges.

Declaration of interest
None. Funding detailed in Acknowledgements.

On 6 January 1999, the Revolutionary United Front rebel group attacked the capital city of Sierra Leone. During the invasion, around 40 000–50 000 people were killed and 500 000 civilians fled the country.[1] Countless children saw family members being burned alive, dismembered by machetes or tortured. Both the nature and magnitude of warfare stressors vary from conflict to conflict, as do the psychosocial effects produced by these events. Research from war-torn countries indicates that higher levels of exposure to traumatic events among children are associated with higher levels of post-traumatic stress disorder.[2–8] In response to the conflict, Plan International collaborated with the Ministry of Youth, Education and Sports, and the United Nations Education, Scientific and Cultural Organization (UNESCO), to implement a psychosocial pilot project aimed at normalising displaced children's lives and alleviating psychological distress by participating in nonformal education, trauma healing and recreation activities. The major objectives of the pilot project were: (1) to assess the psychosocial status of displaced children enrolled in the Rapid-Ed intervention; and (2) to determine whether the Rapid-Ed intervention reduced trauma symptoms that interfere with learning.[9]

Methods

Procedure

The pre-test psychosocial assessment was administered at Trade Center and Grafton camps for internally displaced persons between 12 October and 2 November 1999, approximately 9–12 months after the rebel invasion. The post-test survey was administered between 5 December 1999 and 10 January 2000, 4–6 weeks after participants completed the nonformal education, trauma healing and recreational activities at both camps.

Sample selection

Enrollment in the camp schools was mandatory for all school-age children registered at Grafton and Trade Center camps. The sampling approach was based on three strata:

(a) camp site;

(b) gender – a balance of about 50% for both male and female;

(c) class level at the camp schools.

A total of 315 displaced children aged 8–17 years were randomly selected from the handwritten school registration lists provided by the Ministry of Education, using rolled dice. All the participants were interviewed in their mother tongue, Creole, for the pre- and post-test surveys. A total of 97% of the pre-test sample was re-interviewed for the post-test 4–6 weeks after completing the intervention. Nine children returned to their village after completing the pre-test, resulting in a 3% reduction in the post-test sample ($n=306$).

A detailed written and verbal explanation of the purpose of the assessment, confidentiality issues and the voluntary nature of the survey was provided to the supervisors at both camps prior to administering the interviews. Written authorisation to participate in the assessments and the intervention was obtained by Plan staff from camp supervisors in the presence of the children. Verbal permission was also obtained from each child before conducting the interviews. Six camp teachers participated in training to learn how to implement the Trauma Healing Module of the intervention.

Instruments

All 315 children who participated in the surveys were interviewed individually by four locally trained female research assistants at their respective camps. The semi-structured pre-test questionnaire written in Creole contained four parts. Part I included basic demographic items; Part II included a list of 34 'exposure to war events' items; and Part III contained a 15-item revised version of the Impact of Events Scale (IES) developed by Horowitz *et al*.[10] This scale focuses on intrusive images, avoidance of reminders, arousal symptoms and associated post-traumatic stress reactions. Respondents were asked how often they experienced symptoms over the past 2 weeks, and the symptom frequency was assessed

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on a 4-point scale ('Never', 'Rarely', 'Sometimes' or 'Often'). Part IV included eight pilot items about children's world view and future perspectives. The pre-test interviews lasted 50–75 min.

The post-test questionnaire contained three parts. Part I repeated the demographic questions; Part II included an 8-item subjective assessment of children's feelings[11] before and after participating in the trauma healing activities; and Part III contained the revised IES described above. The post-test interviews lasted 20–30 min. After completing the interviews, the children received two pieces of candy as a token of appreciation for participating in the project. The subjective assessment questionnaire asked children about the type of activities they engaged in during the 4-week intervention (i.e. drawing pictures, story-telling, writing essays, singing, dancing, role-playing and sports) and their feelings 'before' and 'after' participating in the activities. The remaining four subjective assessment items addressed the prevalence and intensity of selected post-traumatic stress symptoms (e.g. 'How is your concentration now after sharing your experiences from the war?'). The responses included 'Much better', 'Better', 'Same', 'Worse' or 'Much worse'. The latter four items, which were pilot-tested in Sierra Leone, may need to be revised to avoid potential response bias in future studies.

Questionnaire development

The contextual meaning of each item from the pre-and post-test instruments was carefully reviewed by the six-member Sierra Leonean translation team to ensure cultural appropriateness and linguistic accuracy. The final English–Creole version of both questionnaires was verified by translating the Creole version back into English, using a masked approach to ensure reliability and face validity. The overall individual item correspondence between the English–Creole translation and the Creole–English version was 96% for both questionnaires. The final Creole version of the pre-test questionnaire was piloted on 25 children aged 8–18 years using a convenience sampling technique. Three revisions were made based on the pilot findings prior to administering the pre-test.

Intervention

The information contained in the Rapid-Ed literacy and numeracy modules was reviewed by a leading educational research specialist in consultation with the Ministry of Education and the Plan International staff to ensure that the content accurately reflected the Sierra Leonean cultural context. The information on general stress theory contained in the locally produced Rapid-Ed module was modified by L.G. to integrate current theoretical information on the neurophysiological aspects of traumatic stress reactions, and to include detailed lesson plans for implementing the trauma healing and recreation activities. The revised Trauma Healing Module was then integrated into the existing Rapid-Ed literacy lesson plans prior to implementing the pilot project in Sierra Leone.[12] Before administering the Trauma Healing Module, the camp teachers participated in a 6-h training session on basic child development, current traumatic stress theory, loss and grief reactions, and how to implement the structured trauma healing and recreation activities. A total of eight 60-min structured trauma healing activities were implemented in the camp classes twice per week during the 4-week intervention. These activities focused on reducing the children's levels of emotional distress and post-traumatic stress reactions that often interfere with learning such as difficulty concentrating, nightmares, flashbacks and hypervigilance. The following techniques were utilised to assist the children:

(a) providing a safe environment to share their war experiences;

(b) providing accurate information about the war to clarify misunderstandings and correct magical thinking;

(c) normalising children's reactions to reassure them that they are 'not crazy';

(d) rekindling a sense of optimism/hope about their future by linking some of their positive memories before the war with their present life and future aspirations.

The structured trauma healing activities included the following:

(a) sharing their war-related stories in pairs or small groups;

(b) drawing pictures about one of their worst memories (online Fig. DS1);

(c) sharing their drawings in small groups;

(d) writing essays about their experiences;

(e) taking part in role-plays;

(f) singing or performing traditional dances;

(g) playing musical instruments.

The children also participated in various recreational activities for 20 min per session 4 days per week. These unstructured activities (i.e. jump rope, volleyball, athletics, football, ball tossing) enabled the children to engage in enjoyable physical activities that helped release tension while providing respite from their bad memories and/or painful feelings.

Analyses

After all the interviews were completed, the data were coded, double entered and analysed using Epi-Info Version 6.0 for Windows to assess the univariate statistics, and SAS Version 8 for Windows for the bivariate and multivariate analyses. Correlational analyses were conducted on selected independent and dependent variables. *T*-tests were used to assess the differences between groups for the pre- and post-test samples, which varied across analyses because of missing data.

Results

The demographic characteristics of the 315 children interviewed in the pre-test survey are presented in Table 1. One-third of the camp children lived with one parent, 20% lived with both parents and the remaining children lived with a relative or guardian. A total of 75% of children had been living at the camps for 4–7 months when the pre-test interviews were conducted and the mean age was 10.7 years. The post-test interviews were conducted on 306 children (n= 97%).

Exposure to war violence

The total number of war experiences to which the respondents answered 'Yes' were added up to achieve an overall summary score (alpha=0.80). Data analyses revealed that participants (n=311) were exposed to an average of 25 war-related exposures, with a range between 8 and 34 experiences (online Table DS1). Overall, the percentages shown in Table DS1 reflect high levels of violence where the majority of children witnessed someone being injured/killed by guns, saw dead bodies/body parts, and houses being burned. Altogether, 80% of the children experienced a death in their immediate family, and more than half of them witnessed the killing of their parent(s), sibling(s) or relatives. No significant differences were found between males and females in terms of number of exposures to war experiences (t=0.64, P=0.5214). However, a very small difference was found to be significant between the two camps (t=3.83, P=0.0002) with children at Grafton (mean=25.7) being exposed to 2.3 more violent events than those at Trade Center (mean=23.4). A similarly small significant difference in number of exposures (mean difference=2.2, F=7.30, P=0.0008) was evident between children aged 8–10 years and

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Table 1 Demographic characteristics of children who have been displaced by war in Sierra Leone (*n*=315)

Variable	Frequency, *n*	%
Camp		
Grafton	214	67.9
Trade Center	101	32.1
Gender		
Male	167	53.0
Female	148	47.0
Age, years		
8–10	166	52.7
11–13	127	40.3
14–17	22	7.0
Class at school		
1–2	139	44.1
3–4	130	41.3
5–6	46	14.6
Living situation		
Mother or father	106	33.7
Both parents	56	17.8
Relatives	137	43.4
Guardian	16	5.1
Duration spent in camp, months		
2–3	77	24.5
4–5	140	44.4
6–9	98	31.1

11–13 years. Figure DS1 provides an example of a trauma healing activity completed by a 13-year-old boy, whose drawing shows a rebel amputating a man's hand using a machete.

Psychological reactions

The IES pre-test data in Table 2 show that the majority of participants experienced intrusive recollections and intense arousal symptoms. A total of 95% reported that they thought about the event sometimes or often when they did not want to, and 71% experienced recurrent pictures in their minds about the worst event. Most of the children also reported increased arousal symptoms such as irritability, hypervigilence, sleep disturbances and difficulty concentrating at school. Bad dreams or nightmares associated with the violence they witnessed were reported by 72%, and 76% were worried that they might not live to be an adult. In terms of avoidance symptoms, almost all the children said they sometimes or often tried to avoid reminders of the violence. The correlation analyses conducted on the exposure to violence and psychological reactions data revealed a positive dose–response relationship, whereby greater exposure to war events produced higher total IES scores (r=0.54, $P<0.0001$). The positive dose–response effect observed in this study is consistent with other research findings in children affected by war from the former Yugoslavia, the Middle East, Rwanda, and Afghanistan.[5–8,13–15] The IES post-test data (alpha=0.73), also shown in Table 2, revealed a significant decline in reported occurrence of intrusion (alpha=0.57) and arousal symptoms (alpha=0.61), and a slight increase in avoidance symptoms (alpha=0.74) following the intervention. One possible explanation for the reported increase in post-test avoidance reactions may be that the structured drawing and writing activities were more effective at reducing the levels of intrusive images/recollections, whereas the recreational activities targeted the arousal symptoms. Additional explanations for this finding are provided in the discussion section below.

The difference in the total intrusion mean sub-scale scores at the pre-test (mean=13.0) and post-test (mean=10.2) interviews was statistically significant (t=14.5, $P<0.0001$); and the difference in the total arousal mean sub-scale scores at the pre-test (mean=17.0) and the post-test (mean=8.7) was also statistically significant (t=29.3, $P<0.0001$) (Table 3). For the avoidance sub-scale scores, the pre-test mean was 12.5 and the post-test mean was slightly higher (mean=14.5, t=–6.8, $P<0.0001$). One of the most striking changes between the pre- and post-test study findings was a 63% reduction in the frequency of intrusive images reported by the participants. The most notable reduction in the frequency of arousal symptoms reported between the pre-test (80%) and post-test (9.9%) occurred among the children who had difficulty concentrating at school. The mean total IES score at the post-test was significantly lower than the mean total pre-test IES score (32.9 and 42.5 respectively; t= 18.82, $P<0$ .0001). The mean total IES scores were also significantly lower at the post-test for both boys and girls within every age group, irrespective of the time spent in camp and their living situation. Baseline exposure to violence was strongly positively correlated with the total IES at pre-test. However, there is no significant relationship between the exposures from the pre-test on the total IES as measured after the intervention (r=0.12, P=0.0526). These findings suggest that participation in the trauma healing and nonformal education intervention may have reduced the levels of the children's psychological distress associated with their exposure to the violence they witnessed during the war.

Subjective assessment of trauma healing intervention

The data below reflect the children's subjective responses to five questions about their feelings 4–6 weeks after participating in the intervention. All 306 children who completed the questionnaire had participated in story-telling, small group discussions, singing, dancing and jump rope, and 98% of the sample drew pictures, participated in role-play, and engaged in volleyball, football and catch. Overall, 75% of the respondents from the upper class levels (classes 5 and 6) completed the writing activities. The majority of children who participated in the trauma healing activities said they felt much better (22.3%) or better (73.4%) after sharing their bad memories of the war. A total of 95% reported that their concentration problems at school were also better or much better, and 96% said their bad dreams and/or nightmares diminished. More than half of the children said they felt relief while participating in the structured activities and 36% experienced sadness. About 5% of the children reported mixed feelings or fear while participating in the trauma healing intervention.

Discussion

The magnitude of violent events witnessed by the children in this study, coupled with the elevated levels of emotional distress and traumatic stress symptoms reported, is sobering. Given the sudden, cruel and interpersonal nature of the violence inflicted at close range during the rebel invasion in Sierra Leone, it is no wonder that these survivors experienced intrusive images, bad dreams, nightmares and intense arousal symptoms. Not surprisingly, the levels of exposure to violence as well as the intrusive recollections, bodily arousal and avoidance reactions observed in this sample are consistent with the findings from other studies conducted in war-affected countries.[7,8,14–17] The data from this pilot study integrating trauma healing activities with basic education indicate that providing an opportunity for children affected by war to share their bad memories/painful feelings in a safe setting may significantly reduce the prevalence of intrusion and arousal symptoms that interfere with learning, while restoring a sense of optimism about the future. Overall, 96% reported a significant reduction in concentration problems, sleep disturbances, bad dreams and intrusive images after participating in the trauma healing and recreation activities.

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Table 2 Pre-test–post-test psychological reactions using the revised Impact of Events Scale (*n*=315). Responses reported by participants occurred within the past 2 weeks for each item. Post-test responses (*n*=306)

Item	Frequency, %			
	Never	Rarely	Sometimes	Often
Do you think about the worst event when you don't want to?				
Pre-test	0.0	5.4	53.0	41.6
Post-test	0.0	6.3	89.7	4.0
Do you try to remove the worst event from your mind?				
Pre-test	0.6	7.3	75.9	16.2
Post-test	0.0	6.3	55.8	37.9
Do you worry that you may not live to be an adult?				
Pre-test	3.5	20.4	56.7	19.4
Post-test	0.3	56.8	40.2	2.7
Do you have difficulty concentrating at school?				
Pre-test	2.2	17.1	41.0	39.7
Post-test	0.3	89.7	9.6	0.3
Do you have strong feelings about the worst event?				
Pre-test	0.6	5.4	64.2	29.8
Post-test	0.0	5.6	83.7	10.6
Do you startle more easily because of loud noises?				
Pre-test	0.3	4.1	42.2	53.3
Post-test	0.0	33.2	61.8	5.0
Do you avoid things that remind you of the worst event?				
Pre-test	0.3	2.6	81.8	15.3
Post-test	0.0	1.7	71.0	27.3
Do you try not to talk about the worst event?				
Pre-test	0.9	7.0	79.0	13.1
Post-test	0.0	5.0	59.8	35.2
Do pictures of the worst event suddenly come into your mind?				
Pre-test	3.5	25.1	58.4	13.0
Post-test	0.0	91.7	7.6	0.7
Do other things make you think about the worst event?				
Pre-test	0.3	4.2	84.1	11.4
Post-test	0.0	3.0	95.3	1.7
Do you feel upset in your body when reminded of the worst event?				
Pre-test	0.3	2.2	64.2	33.3
Post-test	0.0	2.7	87.0	10.3
Do you try not to think about the worst event?				
Pre-test	0.6	6.0	85.8	7.6
Post-test	0.0	6.0	71.1	22.9
Do you have difficulty falling/staying asleep at night?				
Pre-test	5.7	29.9	34.1	30.3
Post-test	0.0	85.0	15.0	0.0
Do you get irritable easily?				
Pre-test	1.6	32.2	48.4	17.8
Post-test	1.0	80.1	18.6	0.3
Do you try to stay alert to avoid bad things?				
Pre-test	1.0	4.8	39.0	55.2
Post-test	0.0	37.2	59.1	3.7

However, the modest increase observed in the post-test avoidance scores must be examined. Perhaps this finding may be partially due to the unique nature of acute post-conflict situations, since previous studies on the Rwandan genocide[8] as well as the Taliban takeover in Kabul, Afghanistan,[15] reported similarly elevated cognitive and behavioural avoidance reactions among children. One might postulate that increased avoidance reactions may serve as adaptive defense mechanisms in the short term, which enable survivors to cope with the daily post-conflict realities without being overwhelmed. However, prolonged denial and avoidance of traumatic memories is considered maladaptive and can result in future development of post-traumatic stress disorder.

Limitations

Although these findings appear promising, it is important to note the following limitations. The results of this pilot study would be more conclusive if the researchers had included a matched control group of children who did not receive the intervention. However, given the horrific nature of the atrocities committed during the rebel invasion, it seemed unethical to deny a certain group of survivors an opportunity to potentially alleviate some of their distress by participating in the intervention. Future researchers may choose to withhold the structured trauma healing activities from a group of similarly exposed children; or alternatively, a staggered approach could be used where one group of children receives the structured trauma healing activities, while another group receives the recreation activities, and a third group receives the nonformal education only. A phased approach would enable researchers to determine the relative contribution of each module, and to identify the most effective component in the Rapid-Ed intervention.

Conducting rigorous research and evidence-based interventions in the aftermath of conflict poses several unique challenges. First, there are always security risks to staff members due to the

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Table 3 Pre–post comparisons of mean total Impact of Events Scale (IES) scores.

Variable	*n*	Mean pre-test total IES score	Mean post-test total IES score	*t*-test (d.f.)*
IES sub-scales				
Intrusion	282	13.0	10.2	14.49 (281)
Arousal	282	17.0	8.7	29.28 (281)
Avoidance	282	12.5	14.0	−6.83 (281)
Gender				
Male	155	42.3	33.1	12.99 (154)
Female	127	42.7	32.7	13.76 (126)
Age, years				
8–10	51	41.7	32.6	12.69 (150)
11–13	111	43.2	33.4	12.19 (110)
14–17	20	45.0	32.1	7.80 (19)
Living situation				
Mother or father	94	41.4	33.5	9.77 (93)
Both parents	52	40.2	32.5	6.72 (51)
Relatives	121	44.0	32.7	14.82 (120)
Guardian	15	45.9	32.5	4.32 (14)
Duration spent in camp, months				
2–3	68	42.9	33.2	8.86 (67)
4–5	127	43.2	32.5	14.81 (126)
6–9	87	41.1	33.3	8.60 (86)
IES total	282	42.5	32.9	18.82 (281)

*$P<0.001$ for all *t*-tests.

presence of landmines and unexploded ordinances, in addition to general travel restrictions imposed by peace-keeping troops that directly affect the sample selection process. Second, post-conflict settings almost always have a severely diminished pool of qualified human resources available for assisting with instrument design and data collection. A third challenge inherent in emergency settings with mobile populations concerns the difficulty researchers face when trying to obtain measures of potential mediating variables such as social support, coping style, and pre-morbid mental and physical health status.

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