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Dissemination of Psychotherapy for Trauma Spectrum Disorders in Postconflict Settings: A Randomized Controlled Trial in Rwanda

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Abstract

Background: Dissemination of psychotherapeutic modules to local counselors seems a key requirement for coping with mental health disasters in conflict regions. We tested a train-the-trainer (TTT) dissemination model for the treatment of posttraumatic stress disorder (PTSD). ***Methods:*** We randomly assigned widowed or orphaned survivors of the 1994 Rwandan genocide with a PTSD diagnosis to narrative exposure therapy (NET) treatment (NET-1, n = 38) or to a 6-month waiting list (WL) condition to be followed by treatment (WL/NET-2, n = 38). Expert therapists trained a first dissemination generation of local Rwandan psychologists in NET complemented by 2 sessions of interpersonal psychotherapy modules. Under the supervision of the experts, these Rwandan psychologists (a) provided NET to the NET-1 participants and (b) subsequently trained and supervised a second generation of local psychologists. This second dissemination generation provided treatment to the WL/NET-2 group. The primary outcome measure was the Clinician-Administered PTSD Scale total score before therapy and at 3- and 12-month follow-ups. ***Results:*** At the 3-month follow-up, the NET-1 participants suffered significantly and substantially less from PTSD symptoms than the participants in the WL group. The treatment gains of NET-1 were maintained and increased at follow-up, with a within-group effect size of Cohen's d = 1.47 at the 12-month follow-up. After treatment by the second dissemination generation of therapists, the WL/NET-2 participants improved to an extent similar to that of the NET-1 group at follow-ups, with an effect size of Cohen's d = 1.37 at the 12-month follow-up. ***Conclusions:*** A TTT model of PTSD treatment dissemination can be effective in resource-poor postconflict societies.

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Background

Survivors of war and other armed conflicts often contract mental health problems, especially trauma spectrum disorders [1, 2]. These are debilitating conditions that affect not only individuals but also families, communities, and entire nations [3]. Most affected people have to cope without assistance, often while being victimized, stigmatized, and discriminated against because of their illness [4]. Epidemiologic surveys in postwar communities [1, 5] have found that, depending on the cumulative exposure to traumatic stress, the prevalence of posttraumatic stress disorder (PTSD) varies from 15 to 50%. For example, many survivors of the 1994 genocide in Rwanda have continued to suffer from severe traumatic stress, depression, and related mental health problems [2, 6]. Besides

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PTSD, grief has been identified as an obvious problem in widowed or orphaned survivors of the Rwandan genocide [7, 8].

To meet the needs of the traumatized survivors of war and torture with multiple and complex traumas, Schauer et al. [9] developed narrative exposure therapy (NET) as a standardized short-term therapy. NET is based on the patient's active reconstruction of autobiographic memories of traumatic events with the help of a therapist. Emerging evidence suggests the feasibility and usefulness of NET for the treatment of trauma-related mental health problems in various contexts [10]. Further studies in postconflict settings have demonstrated the feasibility of the dissemination of NET to local personnel [11, 12]. In our pilot trial in Rwanda [13], we demonstrated the efficacy of NET followed by 1 session of an interpersonal psychotherapy (IPT) [14] grief module when applied by European experts [13]. Variants of the IPT module have been successfully applied by experts and disseminated in postconflict settings where experienced IPT therapists have conducted 2 weeks of intensive training with local people [13, 15].

Researchers have called for the implementation of large-scale programs to intervene in the many cases of trauma spectrum disorders in areas of war and armed conflict [16]. However, given the lack of qualified personnel and the limited evidence for available treatment modules in these areas, researchers have also emphasized the formidable challenges in providing mental health services [16]. Given the large numbers of victims in areas of war and armed conflict, local health workers need to be equipped with the knowledge and skills to provide effective treatments [17]. In various clinical settings, treatment by therapists trained in exposure therapy but who otherwise are not expert trauma therapists has achieved recovery rates for PTSD patients similar to those of treatment by highly experienced trauma therapists [18, 19]. Therefore, less-experienced therapists can competently perform exposure therapy if they are adequately taught and supervised [18–20]. However, the dissemination of therapeutic skills is costly, time-consuming, and limited by the availability of experts who can provide on-site training and extended supervision [17].

One way to overcome these shortcomings is to employ the train-the-trainer (TTT) approach [17, 21]. In this approach, experts train a first group of local professionals and supervise their therapy through a series of training cases. Then the first group of local professionals trains and supervises a second group, who can be other local professionals or lay therapists. Although the local trainer group may continue to consult the experts, the level of expert involvement is substantially lessened. Knowledge about high-quality treatments may thereby be sustainably disseminated throughout regions that have limited access to mental health expertise [17, 21]. To date, there is a lack of research evaluating the TTT model. To the best of our knowledge, the potential for dissemination of trauma treatment in postconflict settings has not yet been reported. Therefore, we planned to evaluate the TTT model as an option for the successful coping with the consequences of traumatic stress in conflict zones.

In an epidemiologic study [22], we investigated the prevalence of mental health disorders in 421 Rwandan widows and orphans who were genocide survivors exposed to traumatizing events. We screened for participants suffering from PTSD to whom we would offer participation in a subsequent therapy trial, which is described here. We sought to train educated local Rwandan personnel to effectively conduct a variant of NET and, based on the encouraging experiences with IPT in our pilot trial [13] to treat depression and grief, we also included an IPT-based intervention. We examined whether the symptoms of PTSD would be significantly more attenuated in participants who received the NET variant as administered by recently trained local psychologists (NET-1 therapists, i.e. the first dissemination generation) compared to participants of a waiting list (WL) control group. Then we examined whether we could teach 2 local NET-1 therapists to train peer Rwandan psychologists as a second dissemination generation (referred to here as the NET-2 therapists) to offer an equivalent therapy to the WL/NET-2 participants, denoted as such because they had been the WL control group and then received therapy from the NET-2 therapists. Our leading research question was whether equivalent outcomes could be attained by the 2 participant groups (NET-1 and WL/NET-2) and thus by the 2 dissemination generations of therapists.

Methods

Setting
We conducted this study from November 2007 through to August 2009 in 5 sectors (Huye, Mbazi, Mukura, Ngoma, and Tumba) of the Huye District of Rwanda. We jointly operated with the University of Konstanz and the nongovernmental organization vivo (www.vivo.org), an alliance of professionals who develop, implement, and evaluate evidence-based best-practice interventions in the field of psychotraumatology. The University of Konstanz Ethical Review Board approved this therapy treatment trial (registration ID: NCT00553956). In Rwanda, the National Institute of Statistics, the mayor of the Huye District, and the leaders of the 5 sectors issued research approval.

Recruitment and Randomization

Recruitment provided a convenience sample of Rwandan widows and orphans living in the Huye District. In a previous study [22], 15 third- and fourth-year undergraduate psychology students at the University of Rwanda who had been trained in clinical interviewing by N.J. and S.S. conducted large-scale household-based screenings of genocide survivors in the Huye District of Rwanda to identify widows and orphans who suffered from PTSD. The diagnosis was determined by the PTSD Symptom Scale Interview (PSS-I) [23], which is based on the diagnostic criteria of the DSM-IV-TR [24]. These interviews further included sociodemographic questions, the Event Scale adopted from Schaal and Elbert [6], the Hopkins Symptom Checklist-25 (HSCL-25) [25, 26], and the Mini-International Neuropsychiatric Interview (M.I.N.I.) [27].

In the study [22], we identified 138 survivors suffering from PTSD. The Rwandan students reinterviewed those survivors 2 months later for participation in this trial, administering the PSS-I [23], the HSCL-25 [25, 26], and the M.I.N.I. [27].

Expert interviewers subsequently administered the Clinician-Administered PTSD Scale (CAPS) to participants who fulfilled the PTSD diagnostic criteria [28]. The CAPS has stricter diagnostic criteria for PTSD than the other measures and has been validated cross-culturally as a robust measure of PTSD [29, 30]. The instruments were interpreted from English into Kinyarwanda, an official language of Rwanda, with the help of 5 students of English interpreting at the National University of Rwanda. The interpreters had been trained in the clinical concept and symptom clusters of PTSD using the PSS-I validated in Kinyarwanda [31]. The CAPS interviewers were N.J., S.S., A.M., and 4 other experts who were postgraduate level collaborators from the University of Konstanz or from the nongovernmental organization vivo. All had been trained in clinical psychology and had extensive experience working with survivors of organized violence. As an approach to measuring interrater reliability, N.J. drew lots to select a second expert interviewer to passively observe the CAPS interviews. Separately from and invisible to the interviewer, the second expert interviewer scored the CAPS.

We conducted the interviews in the homes of the participants. Each interviewee received 1,000 Rwandan francs (about EUR 1.30) to compensate for the income loss resulting from taking the time (2–3 h) for the interview. We used simple randomization by drawing lots to assign participants to the 2 different groups (NET-1 and WL/NET-2).

Primary Outcome Measure

The primary outcome measure was the assessment of the clinical significance of the treatment outcome according to the CAPS total score (the sum of the frequency and the severity of the 17 PTSD symptoms). Frequency, referring to how often a symptom had occurred during the previous month, was scored on a 5-point scale (0 = never and 4 = daily or almost every day), and severity, referring to how severe a symptom had been during the previous 4 weeks, was scored on a 5-point scale (0 = none and 4 = extreme). The range of total scores was 0–136. Only symptoms coded with a minimum frequency of 1 (once or twice during the previous month) and with a minimum intensity of 2 (moderate, distress clearly present but still manageable, some disruption of activities) were considered valid symptoms according to the threshold recommendations of Weathers et al. [30] for screening purposes combined with the DSM-IV-TR algorithm for PTSD [24]. The symptoms had to have caused a serious impairment of functioning during the preceding month. The CAPS also includes 3 questions about clinically significant functional impairment (subjective overall distress, social life, and occupation). The answers to these questions are reported separately as a functional impairment score rating the severity of impairment (score 0–12).

Timeline of Therapist Training and Provision of Therapy

Two of the authors (N.J. and S.S.), who are experienced NET trainers, prepared a field manual (available upon request from the authors) based on NET [9] and IPT [14] to guide the training of the first and second dissemination generations of Rwandan psychologists. We aimed to design a manual adapted to the cultural setting as well as to the specific needs of the prospective participants and thus included 2 deidentified NET life narrations of Rwandan orphans treated in the pilot trial [13].

In cooperation with Prof. Jean-Pierre Dusinguizemungu of the National University of Rwanda, N.J. and S.S. recruited 12 Rwandan clinical psychologists with undergraduate (bachelor level) degrees in psychology from the National University of Rwanda. For the first dissemination generation, N.J. and S.S. chose 7 of the 12 psychologists by lot for training in November 2007.

The training comprised 12 days of training in NET and 6 days of training in IPT-oriented grief intervention (8 h/day). N.J. and S.S. conducted the training in French. The trainers introduced the theoretical background and knowledge of the consequences of traumatic stress, depression, and grief followed by the principles of NET and IPT. The trainers taught basic therapeutic skills, such as empathy, patience, and offering problem-solving strategies, and introduced a structured therapy plan. We focused on practical training by conducting daily group exercises in which the NET-1 therapists obtained practical experience by administering NET and IPT to each other under supervision. Furthermore, each psychologist participated in 6 NET demonstration sessions with a genocide survivor suffering from PTSD. After completion of the training, the NET-1 therapists treated the NET-1 participants under the supervision of N.J. Once weekly, each NET-1 therapist received 90–120 min of individual supervision. The NET-1 therapists further underwent 90–120 min of weekly group supervision.

Upon completion of the NET-1 therapy trial, N.J. and S.S. recruited 2 NET-1 therapists based on their availability and therapeutic skills to train the second dissemination generation of therapists. The NET-2 therapists were the remaining 5 clinical psychologists. The trainers of the NET-2 therapists closely followed the structure of training demonstrated by the expert trainers, which was done in the presence of either N.J. or S.S. in French. After each training day, the local trainers received feedback and discussed potential difficulties.

After training, the NET-2 therapists undertook a therapy trial with the WL/NET-2 participants. During the NET-2 therapy trial, 1 trainer supervised the NET-2 therapists in the same way as in the first trial. N.J. passively observed some of the individual and group supervision.

Therapy Plan

The therapy consisted of 8 weekly sessions lasting from 90 min to a maximum of 150 min, with at least 3 days between sessions. The sessions took place in private at the homes of the participants. The therapy started 3–21 days after the expert interview using the CAPS.

The first NET session included extensive psychoeducation about PTSD and comprehensive elaboration on the meaning of participating in the treatment therapy trial. This included explaining that the aim of the study was to evaluate the efficacy of a therapeutic intervention to reduce the symptoms caused by traumatic experiences, and that the intervention included creating a detailed report of the participant's biography. The risks, discomfort, and benefits were discussed. Participant confidentiality and his or her right to withdraw and terminate without any consequences were explained. The participants signed an agreement indicating their willingness to participate and acknowledged having received an adequate psychoeducation. The therapist concluded the first session by recording the participant's lifeline as traced by the participant to gain an overview of the traumatic experiences and structure therapy [9].

During the following 5 NET sessions, the participant narrated the major emotionally arousing events of his or her entire life chronologically, from birth to the present, as directed by the lifeline. The therapist, who recorded the participant's story in writing, sought to reactivate the associated thoughts and emotions and raise the participant's awareness of his or her concomitant bodily responses [9].

The final 2 sessions consisted of IPT-based modules including social interventions to explicitly target symptoms of depression and grief related to the losses and to raise awareness about major current problems. Based on the vulnerability stress model, integrated biological factors and concomitant current psychological and environmental factors were related to the emergence of symptoms [32]. The therapist used depression-specific interventions, integrating the common psychotherapeutic factors of resource activation, problem actuation, therapeutic alliance, mastery, and motivational clarification [33]. The therapist and the participant jointly chose either the grief module, which was intended to facilitate grieving, or the role change module, which targeted improving the acceptance of new life circumstances. Both modules aimed to strengthen the perceived self-efficacy, to develop new capacities, and to establish new social relations [14]. If a participant required support in visiting the district administration about housing problems or in being accompanied to the national trials, the therapist was free to aid the participant within the constraints of the assigned therapy time.

During the final session, each participant received a copy of his or her narration and the telephone number of the Rwandan project supervisor as an emergency contact. Furthermore, the therapist prepared the participant for the evaluation phase of the therapy. Participants did not receive money or any other material compensation for their participation in the therapy.

To measure adherence to treatment, therapists completed protocol sheets that reviewed the main aspects of each therapy session, including duration, reported problems, and medications taken.

Randomization of Therapists to Participants
In both therapy trials, therapists were assigned to participants by drawing lots. For the NET-1 therapy trial, 5 NET-1 therapists each worked with about 7 participants, and the other 2 NET-1 therapists worked with fewer participants in order to make these therapists available in case of an emergency. For the NET-2 therapeutic trial, the WL/NET-2 participants were distributed equally among the NET-2 therapists.

Blinding
N.J. only administered expert interviews at enrolment and did not perform any subsequent CAPS interviews. All other expert interviewers, whom N.J. assigned to participants by lot, were blind to the allocation. To decrease the likelihood of unblinding the CAPS, we did not inform the participants about their group assignment (NET-1 or WL/NET-2). We asked them not to provide information about their therapeutic sessions to the CAPS interviewers. Furthermore, participants estimated time based on the season instead of referring to the Gregorian calendar.

Power Calculation to Determine the Sample Size
In a pilot treatment trial [13], the net effect size of a comparison between NET and IPT (between-group difference of the standardized within-group pre-post differences) was d = 0.90 at the 6-month follow-up. In that trial, there was almost no attrition of participants between randomization and follow-up. Compared to the present study, the pilot trial differed in design, with better-educated and more-experienced therapists, active treatment for the control group, and a different time period. For the current study, the assumption of an effect size of 0.9 would therefore not have led to conclusive results and was adjusted.

Based on our previous studies [5, 6], we assumed a prevalence of PTSD of about 30%. We calculated the required number of participants based on a conservative estimate of a medium net effect size (d = 0.50) yielding a required number of 30 participants in each group for a power of 0.80. We assumed a maximum attrition of 30% including treatment refusals, dropouts, and participants who would not be able located at follow-up. We therefore planned to screen about 400 orphans and widows in our epidemiologic study [22], anticipating that about 80 of them would suffer from PTSD and would then in turn become prospective participants in this treatment trial.

Data Analysis
For continuous outcome variables, differences between changes in the 2 groups' pretreatment and follow-up scores of clinical variables were analyzed using ANOVA and Fisher's F test with time as a 3-level within-subject factor and treatment group as a 2-level between-subject factor. The Levene test was used to analyze the homogeneity of variances, and Cohen's d was used to calculate within-group effect sizes to measure the clinical significance of therapy success. The reliable change index [34] was used to determine whether the changes in an individual participant's scores were statistically significant. The intent-to-treat group consisted of the enrolled participants. Intent-to-treat analyses were used to present the main outcome measures using the last-observation-carried-forward method for missing data. Two-sided significance tests were used throughout, with α set at 0.05. All analyses were done with SPSS 19.0 for Macintosh.

Results

This study proceeded according to plan and timeline without major deviations (fig. 1). All 12 Rwandan psychotherapists completed their participation as planned. The NET-1 therapists worked with 37 participants, and
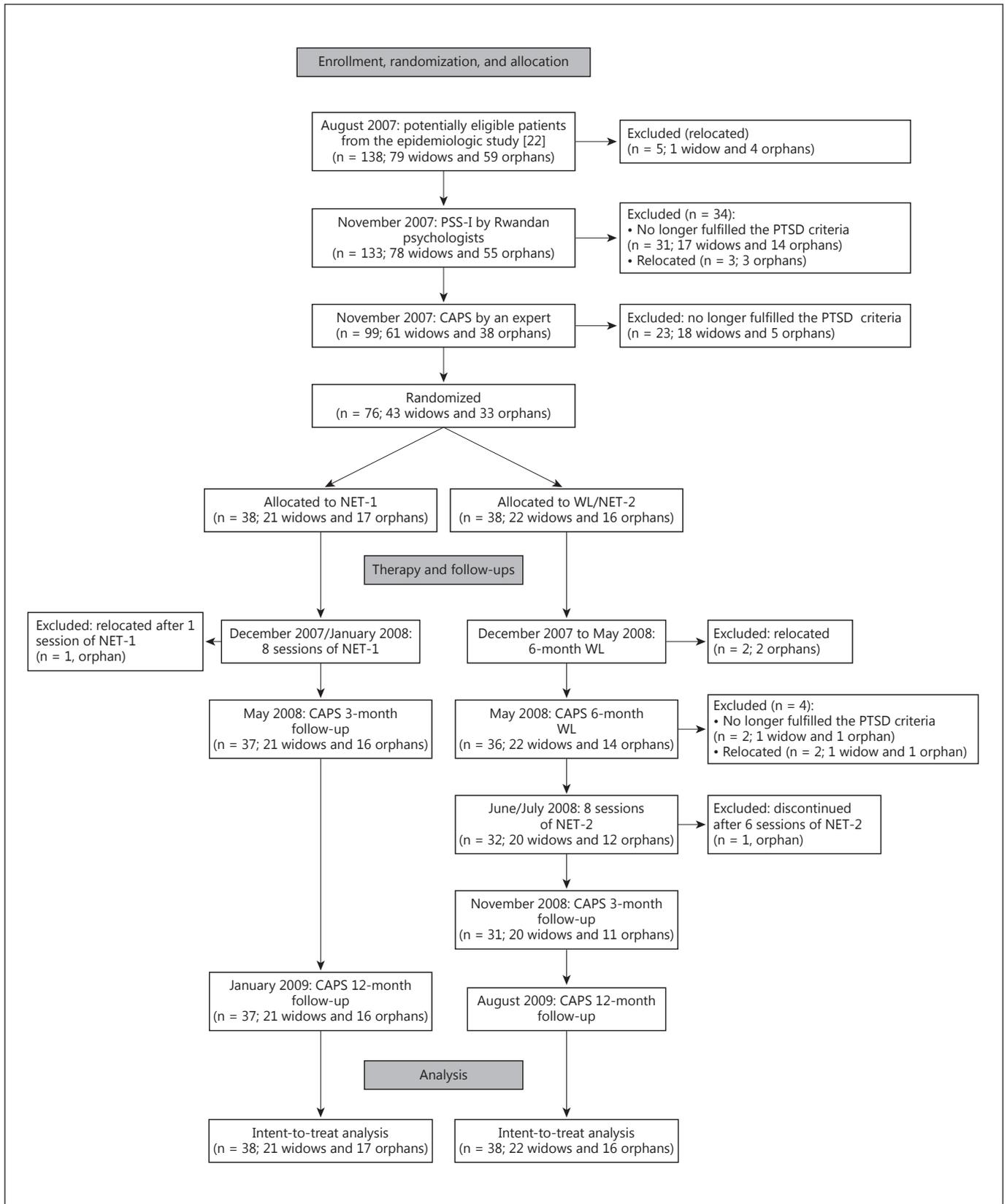
Fig. 1. Flow diagram of this study.

Table 1. Sociodemographic characteristics, extent of psychological support, and traumatic events of the 2 groups at epidemiological assessment [22]

	NET-1 (n = 38)		WL/NET-2 (n = 38)	
	widows (n = 21)	orphans (n = 17; 4 males)	widows (n = 22)	orphans (n = 16; 2 males)
Age, years	48.29±13.40	25.06±4.31	46.86±11.73	24.00±4.40
Children, n	3.33±1.74	1.35±1.46	3.27±2.14	1.31±1.74
Formal education, years	5.43±4.17	5.00±3.39	4.23±3.19	6.88±3.96
Household members, n	4.67±1.93	6.29±7.50	4.64±1.79	4.94±2.46
Participants receiving psychological support, %	4.76	17.65	9.10	18.75
Traumatic event types ever experienced, n	13.19±4.17	15.29±4.17	14.14±2.95	15.13±3.61

Values are presented as means ± SD unless otherwise indicated.

the NET-2 therapists worked with 31 participants. Because of difficult living situations, 2 orphans came to the training center for the treatment. Participants frequently postponed their sessions because of accidents or professional and social obligations. Nevertheless, participants in both groups completed the 8-session treatment within 10 weeks. We observed no deviation of treatment adherence. One orphan in each of the 2 groups dropped out of therapy.

Participants

At therapy baseline, the 2 treatment groups (NET-1 and WL/NET-2), each with 38 participants, were similar with respect to sociodemographic characteristics and the distribution of widows and orphans (table 1). A minority had received psychosocial support at church or at a hospital. Among the 43 widows, the most frequently reported worst life experiences were sexual abuse (n = 9; 21%), the genocide in general (also n = 9; 21%), and witnessing a massacre (n = 6; 14%). Among the 33 orphans, the most frequently reported worst life experiences were sexual abuse (n = 7; 21%), witnessing the killing of a parent (n = 5; 15.2%), and the genocide in general (n = 4; 12%). The number of traumatic event types experienced (25 items) did not significantly differ between NET-1 [n = 38; mean (SD) number of traumatic event types ever experienced, 14.13 (4.24)] and WL/NET-2 [n = 38; mean (SD) number of traumatic event types ever experienced, 14.55 (3.24); t(74) = 0.49; p = 0.63] participants.

Change in CAPS Scores

At therapy baseline, CAPS scores were comparable between the NET-1 and WL/NET-2 participants [t(74) =

−0.74; p = 0.46; table 2; fig. 2]. CAPS scores were also comparable between widows [n = 43; mean (SD) CAPS total score, 73.86 (16.91)] and orphans [n = 33; mean (SD) CAPS total score, 73.58 (16.31); t(74) = −0.07; p = 0.94].

Compared to baseline CAPS scores, the mean CAPS total score of the NET-1 participants at the 3-month follow-up decreased very significantly, and that of the WL/NET-2 participants at the end of a 6-month period on the WL decreased significantly (table 2). A 2-way ANOVA was conducted on the CAPS total score with time (November 2007 and May 2008) as the dependent variable and treatment group (NET-1 vs. WL) as the between-subject factor. The factor time was highly significant [F(1, 74) = 24.79; p < 0.001]. The interaction between time and treatment group was significant [F(1, 74) = 4.3; p = 0.04], indicating that NET-1 participants improved more than WL/NET-2 participants.

For the NET-1 group, the CAPS scores significantly decreased from baseline to assessment at the 12-month follow-up (table 2; fig. 2). For the WL/NET-2 group, CAPS scores significantly decreased from baseline through the 3-month follow-up and they decreased further through the 12-month assessment. Calculation of the reliable change index resulted in a threshold of 17.7 points of change in the CAPS total score. In total, 29 (76%) NET-1 participants and 26 (68%) WL/NET-2 participants improved from baseline through the 12-month follow-up to an extent that was clinically important. The outcomes of the NET-1 and NET-2 courses of therapy are illustrated in design order in figure 2. An ANOVA of the CAPS total score over time (before the treatment and at the 3- and 12-month follow-ups) showed a significant main effect of time for both groups of participants (table 2).

Table 2. Main outcome measures of PTSD symptomatology (CAPS total score) according to treatment group (intent to treat)

	Mean CAPS total score (SD)			F (d.f.)	d (95% CI)	t (d.f.)	Patients with a reliable change criterion of 17.68 points, n (%)
	widows	orphans	total				
NET-1 (n = 38; 17 orphans)							
Baseline	74.10 (20.02)	76.47 (15.71)	75.16 (18.02)	NA	NA	NA	NA
3-Month follow-up	61.29 (28.52)	61.71 (16.86)	61.47 (23.72)	NA	0.66 (−4.01 to 5.33)	4.61[b] (37)	NA
12-Month follow-up	38.76 (25.32)	46.00 (29.14)	42.00 (26.96)	50.87[b] (2, 74)	1.47 (−3.62 to 6.55)	9.20[b] (37)	29 (76.3)
WL/NET- 2 (n = 38; 16 orphans)							
Baseline	73.64 (13.79)	70.50 (16.87)	72.32 (15.02)	NA	NA	NA	NA
6-Month WL	68.64 (14.76)	64.00 (18.82)	66.68 (16.51)	NA	0.36 (−3.14 to 3.863)	2.26[a] (37)	NA
3-Month follow-up	42.18 (21.76)	42.69 (24.68)	42.39 (22.71)	NA	1.24 (−3.17 to 5.64)	7.14[b] (37)	NA
12-Month follow-up	35.41 (20.53)	43.31 (28.36)	38.74 (24.10)	38.87[b] (2, 74)	1.37 (−3.21 to 5.95)	7.33[b] (37)	26 (68.4)

The ANOVA, effect size, and reliable change refer to the CAPS total score compared to the measurements before treatment. NA = Not applicable. [a] $p = 0.030$. [b] $p < 0.001$.
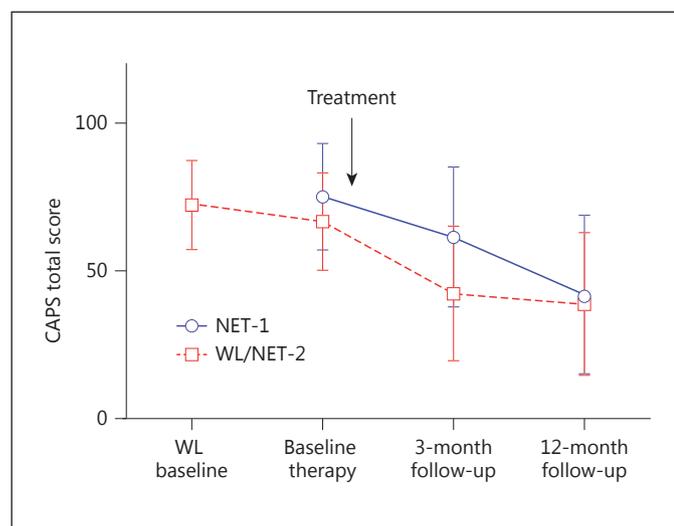
Fig. 2. Mean (±SD) CAPS total score (intent-to-treat) of the NET-1 and WL/NET-2 groups in design order.

Widows and orphans improved similarly in terms of the CAPS total score. For NET-1 participants, a 2-way ANOVA was conducted for the CAPS total score with time (November 2007, May 2008, and January 2009) as the dependent variable and with the kind of loss (widow vs. orphan) as the between-subject factor. The factor time was highly significant [$F_{(2, 72)} = 48.86$; $p < 0.001$], and the interaction between time and kind of loss was not significant [$F_{(2, 72)} = 0.55$; $p = 0.58$]. Similarly, for NET-2 participants a 2-way ANOVA was conducted for the CAPS total score with time (May 2008, November 2008, and August 2009) as the dependent variable and with the kind of loss (widow vs. orphan) as the between-subject factor. The factor time was highly significant [$F_{(2, 72)} = 36.41$; $p < 0.001$], and the interaction between time and kind of loss was not significant [$F_{(2, 72)} = 2.7$; $p = 0.11$].

PTSD Diagnostic Status

At the CAPS evaluation at the 3-month follow-up for the NET-1 group and after 6 months on the WL for the WL/NET-2 group, 28 (74%) of the NET-1 participants and 36 (95%) of the WL/NET-2 participants fulfilled the DSM-IV-TR criteria for a diagnosis of PTSD. At the

12-month follow-up, 16 (42%) of the NET-1 participants and 15 (39%) of the WL/NET-2 participants fulfilled the DSM-IV-TR criteria for a diagnosis of PTSD.

Functional Impairment

In the NET-1 group, functional impairment as measured by the CAPS was significantly decreased (i.e. functioning increased) at the 12-month follow-up [mean (SD) CAPS value, 7.5 (2.7)] from baseline [mean (SD) CAPS value, 4.34 (3.18); $t(37) = 6.5$; $p < 0.001$; effect size, $d = 1.07$; 95% CI 0.42–1.72]. Also in the WL/NET-2 group, functional impairment was significantly decreased at the 12-month follow-up [mean (SD) CAPS value, 4.13 (2.87)] from baseline [mean (SD) CAPS value, 6.03 (2.50); $t(37) = 4.80$; $p < 0.001$; effect size, $d = 0.72$; 95% CI 0.12–1.31].

For the NET-1 group [$F(2, 74) = 23.10$; $p < 0.001$] and the WL/NET-2 group [$F(2, 74) = 10.76$; $p < 0.001$], repeated-measures ANOVA of functional impairment at allocation and at the 3-month and 12-month follow-ups showed a significant main effect of time.

Interrater Reliability

Thirty-seven CAPS interviews had a second expert interviewer passively present. The scores of the experts (for the same interview) showed statistically significant Pearson correlations for the CAPS ($r = 0.98$).

Discussion

In the first step, which included a randomized controlled trial, we compared a NET variant provided by the local trainees to a passive WL and found that after 6 months the mental health status had remarkably improved in the treatment group. In the second step, the first dissemination generation Rwandan psychologists in turn trained the second generation of Rwandan therapists to provide therapy. In the randomized trial, we found that the mental health status of the NET-1 participants improved to a level similar to that of the NET-2 participants, with a reliable change in PTSD symptoms in 29 (76%) of the 38 NET-1 participants and in 26 (68%) of the 38 WL/NET-2 participants. Furthermore, the subjective functional impairment in daily living decreased in both groups after treatment. The number of dropouts from therapy was low, with only 1 orphan in each group discontinuing therapy. Thus, we present substantial and stable benefits that confirm the feasibility and success of therapy for PTSD for participants who received therapy from the second dissemination gen-

eration therapists. We demonstrated not only that it is possible to train educated local psychologists to effectively offer NET to traumatized genocide survivors but also that a first dissemination generation of local psychologists can in turn train a second dissemination generation to effectively offer psychotherapy. Therefore, the TTT model appears to be an option for the successful coping with the consequences of traumatic stress in conflict zones. As Foa [17] emphasized, ongoing support and expert supervision of therapists in the first and second generation, as offered in this study, may be crucial.

To our knowledge, the present study represents the first evaluation of the TTT model with therapy for trauma spectrum disorders in a severely affected and resource-poor postconflict society. Our work is consistent with successful implementation of the TTT program in other fields of health care. In work with psychiatric suicidal patients, an academic TTT program successfully promoted knowledge, clarity, and handling of patients [35]. In a community program teaching clinicians motivational interviewing, Martino et al. [36] found that the TTT model was a feasible and effective strategy for disseminating empirically supported treatments using workshops and supervision. The thus far limited reports on mental health studies have based their outcomes on the primary or secondary recipient's (health care professionals in the first and second generation of dissemination) level of knowledge and clinical behavior [35–37]. Our study differed in terms of the methodological approach as we measured the clinical outcome reported by the patient. This represents, according to Pearce et al. [37], a more objective and valid measure for the evaluation of a TTT model.

Pearce et al. [37] reviewed the literature about the TTT model applied by health and social intervention professionals in diverse cultures. They found the TTT model using multimodal teaching, as administered in our study, to be an effective way to disseminate knowledge, improve clinical behavior, and produce better patient outcomes. The authors suggested the high motivation and practical knowledge of the practitioners as an explanation for the successful implementation of the TTT model. Our experience is consistent with this conclusion. Also in our study we found therapists in both dissemination generations to be highly motivated. Furthermore, the local trainers transmitted a highly positive attitude towards the therapy due to the experienced clinical success, further increasing the motivation and self-efficacy of the therapists and trainers. Furthermore, aside from the lack of years of experience, the trainers presented valuable practical and culturally adapted knowledge to the second generation of therapists.

The success of the trauma treatment measured by the reduction of the CAPS total score of our study compares to that of Schaal et al. [13], who offered therapy by Western experts to Rwandan genocide survivors. Our results further strengthen the results of a number of other studies by Schauer et al. [9], who found a medium-to-high efficacy of NET after only a limited number of directive exposure sessions in clinical field trials concerning local lay counselors who had been trained in comparable war-torn and conflict settings.

In general, our investigation in a resource-poor setting supports findings that narrative exposure treatment for PTSD and its dissemination to counselors with limited previous education and experience can be implemented with no less success than trauma-focused treatment in high-income countries [9, 18, 19]. This is notable because individuals in countries such as Rwanda hardly have a chance to live in a stable and safe environment. It supports the feasibility and efficacy of exposure approaches even in unstable situations.

Limitations

The treatment for the different groups was provided at different time periods. Symptoms may fluctuate systematically across time, e.g. due to sociocultural variations, and thus may have influenced the observed differences between the NET-2 and WL conditions. Moreover, the WL/NET-2 participants underwent 2 CAPS interviews before being treated, whereas participants in the NET-1 group underwent only 1 CAPS interview before being treated. Testing may affect the development of symptom reports.

We interviewed the participants several times and thus did not strictly assess the interrater reliability of the results of the CAPS interviews. As a pragmatic alternative, a second expert passively observed and rated the identical answers in 37 interviews. A very high rater concordance of the scores was found.

Conclusion

NET records human rights violations in societal contexts and thus results in the documentation of events with a historical character. Facts, subjective perspectives, thoughts, emotions, and experiences are noted. The community's response to this recognition and documentation of the adverse experiences of their members has yet to be tested. Moreover, functioning is often indispensable for survival in these communities, and it may also be essential for rebuilding a peaceful society.

The treatment of trauma reduces psychological problems, enables people to be productive, and may support reconciliation. Evidence-based and effective intervention modules exist for the treatment of trauma-spectrum disorders [9, 14]. Our results demonstrate that evidence-based practice treatment can be effectively disseminated to local mental health workers to confront the great suffering of traumatized people, as found in Rwandan society. We succeeded in implementing trauma therapy even with relatively brief training, with a limited number of treatment sessions, and in the context of the difficult living conditions of genocide survivors. The advantages in terms of costs and time open new perspectives, especially for resource-poor or postconflict countries. More counselors can be educated in offering trauma treatment in a short time, and the resources required for external supervision are small, meaning that a large number of trauma patients could potentially benefit from effective therapy.

Disclosure Statement

The authors declare that they have no competing interests.

References

1 de Jong JT, Komproe IH, Van Ommeren M, El Masri M, Araya M, Khaled N, van De Put W, Somasundaran D: Lifetime events and posttraumatic stress disorder in 4 postconflict settings. JAMA 2001;286:555–562.

2 Pham PN, Weinstein HM, Longman T: Trauma and PTSD symptoms in Rwanda: implications for attitudes toward justice and reconciliation. JAMA 2004;292:602–612.

3 Keane TM, Marshall AD, Taft CT: Posttraumatic stress disorder: etiology, epidemiology, and treatment outcome. Annu Rev Clin Psychol 2006;2:161–197.

4 Vikram Patel S, Chisholm D, Flisher AJ, Lund C, Saxen S, Thornicroft G, Tomlinnson M: Scale up services for mental disorders: a call for action. Lancet 2007;370:1241–1252.

5 Karunakara U, Neuner F, Schauer M, Singh K, Hill K, Elbert T, Burnham G: Traumatic events and symptoms of post-traumatic stress disorder amongst Sudanese nationals, refugees and Ugandans in the West Nile. Afr Health Sci 2004;4:83–93.

6 Schaal S, Elbert T: Ten years after the genocide: trauma confrontation and posttraumatic stress in Rwandan adolescents. J Trauma Stress 2006;19:95–105.

7 Schaal S, Jacob N, Dusingizemungu JP, Elbert T: Rates and risks for prolonged grief disorder in a sample of orphaned and widowed genocide survivors. BMC Psychiatry 2010;10:55.

8 Schaal S, Elbert T, Neuner F: Prolonged grief disorder and depression in widows due to the Rwandan genocide. Omega (Westport) 2009; 59:203–219.

9 Schauer M, Neuner F, Elbert T: Narrative Exposure Therapy: a Short-Term Intervention for Traumatic Stress Disorder After War, Terror and Torture, ed 2 (rev). Ashland, Hogrefe and Huber, 2011.

10 Robjant K, Fazel M: The emerging evidence for narrative exposure therapy: a review. Clin Psy Rev 2010;30:1030–1039.

11 Neuner F, Onyut PL, Ertl V, Odenwald M, Schauer E, Elbert T: Treatment of posttraumatic stress disorder by trained lay counselors in an African refugee settlement: a randomized controlled trial. J Consult Clin Psychol 2008;76:686–694.

12 Ertl V, Pfeiffer A, Schauer E, Elbert T, Neuner F: Community-implemented trauma therapy for former child soldiers in Northern Uganda. JAMA 2011;306:503–512.

13 Schaal S, Elbert T, Neuner F: Narrative exposure therapy versus interpersonal psychotherapy: a pilot randomized controlled trial with Rwandan genocide orphans. Psychother Psychosom 2009;163:1–9.

14 Klerman GL, Weissman MM, Rounsaville BJ, Chevron ES: Interpersonal Psychotherapy of Depression. New York, Basic Books, 1984.

15 Bolton P, Bass J, Neugebauer R, Verdeli H, Clougherty KF, Wickramaratne P: Group interpersonal therapy for depression in rural Uganda: a randomized controlled trial. JAMA 2003;289:114–120.

16 Neuner F, Elbert T: The mental health disaster in conflict settings: can scientific research help? BMC Public Health 2007;7:275–281.

17 Foa EB: Psychosocial therapy for posttraumatic stress disorder. J Clin Psychiatry 2006; 67:40–45.

18 Foa EB, Hembree EA, Cahill SP, Rauch SAM, Riggs DS, Feeny NC, Yadin E: Randomized trial of prolonged exposure for posttraumatic stress disorder with and without cognitive restructuring: outcome at academic and community clinics. J Consult Clin Psychol 2005; 73:953–964.

19 Gillespie K, Duffy M, Hackmann A, Clark DM: Community based cognitive therapy in the treatment of post-traumatic stress disorder following the Omagh bomb. Behav Res Ther 2002;40:345–357.

20 Schnurr PP, Friedman MJ, Engel CC, Foa EB, Shea MT, Resick PM: Issues in the design of multisite clinical trials of psychotherapy: VA Cooperative Study No. 494 as an example. Contemp Clin Trials 2005;26:626–636.

21 Cahill SP, Foa EB, Hembree EA, Marshall RD, Nacash N: Dissemination of exposure therapy in the treatment of posttraumatic stress disorder. J Trauma Stress 2006;19:597–610.

22 Schaal S, Dusingizemungu JP, Jacob N, Elbert T: Rates of trauma spectrum disorders and risks of posttraumatic stress disorder in a sample of orphaned and widowed genocide survivors. Eur J Psychotraumatol DOI: 10.3402/ejpt.v2i0.6343.

23 Foa EB, Tolin DF: Comparison of the PTSD Symptom Scale-Interview Version and the Clinician-Administered PTSD Scale. J Trauma Stress 2000;13:181–191.

24 American Psychiatric Association: Diagnostic Criteria from DSM-IV-TR. Göttingen, APA, 2000.

25 Derogatis LR, Lipman RS, Rickels K, Uhlenhut EH, Covi L: The Hopkins Symptom Checklist (HSCL): a self-report symptom inventory. Behav Sci 1974;19:1–15.

26 Lee B, Kaaya SF, Mbwambo JK, Smith-Fawzi MC, Leshabari MT: Detecting depressive disorder with the Hopkins Symptom Checklist-25 in Tanzania. Int J Soc Psychiatr 2008; 54:7–20.

27 Sheehan DV, Lecrubier Y, Sheehan H, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC: The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry 1998;59:22–33.

28 Blake DD, Weathers FW, Nagy LM, Kaloupek DG, Gusman FD, Charney DS, Keane TM: The development of a Clinician-Administered PTSD Scale. J Trauma Stress 1995;8: 75–90.

29 Renner W, Salem I, Ottomeyer K: Cross-cultural validation of measures of traumatic symptoms in groups of asylum seekers from Chechnya, Afghanistan, and West Africa. Soc Behav Pers 2006;34:1101–1114.

30 Weathers FW, Ruscio AM, Keane TM: Psychometric properties of nine scoring rules for the Clinician-Administered Posttraumatic Stress Disorder Scale. Psychol Assess 1999; 11:124–133.

31 Onyut LP, Neuner F, Ertl V, Schauer E, Odenwald M, Elbert T: Trauma, poverty and mental health among Somali and Rwandese refugees living in an African refugee settlement – an epidemiological study. Confl Health 2009;3:6.

32 Zubin J: Scientific models for psychopathology in the 1970's. Semin Psychiatr 1972;4: 283–296.

33 Grawe K: Outline of general psychotherapy (in German). Psychotherapeut 1995;40:130–145.

34 Jacobson NS, Truax P: Clinical significance: a psychotherapy-research. J Consult Clin Psych 1991;59:12–19.

35 Ramberg IL, Wassermann D: Benefits of implementing an academic training of trainers program to promote knowledge and clarity in work with psychiatric suicidal patients. Arch Suicide Res 2004;8:331–343.

36 Martino S, Ball S, Nich C, Canning-Ball M, Rounsaville B, Caroll K: Teaching community program clinicians motivational interviewing using expert and train-the-trainer strategies. Addiction 2011;106:428–441.

37 Pearce J, Mann MK, Jones C, van Buschbach S, Olff M, Bisson JI: The most effective way of delivering a train-the-trainers program: a systematic review. J Contin Educ Health Prof 2012;32:215–226.