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Social interaction in the aftermath of conflict-related trauma experiences among women in Walungu Territory, Democratic Republic of Congo

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Abstract

The aim of this study was to understand the relative contribution of PTSD and non-PTSD associated reductions in social interaction among a group of adult Congolese women (N=701) who have experienced multiple and different traumatic events and are participating in a village livestock microfinance program. The two main outcomes were frequency of (1) family/community members visiting women's homes and (2) women visiting family/community members in their home. Bivariate and multivariable linear regression was used to understand relationships between multiple and grouped trauma experiences, PTSD, depression and social interaction. The majority of women (51.6%) reported rarely or never visiting family/community members or having family/community members visit the woman's home (54.9%). In the multivariable model, material deprivation was significantly associated with fewer visits in the woman's home. Exposure to certain conflict-related traumas, but not material deprivation, was significantly associated with fewer visits to the homes of family/community members. Increased symptoms of PTSD were significantly associated with fewer visitors in woman's home and fewer visits to the homes of family/community members. A better understanding of the social effects of conflict on individuals and local communities is necessary to support rebuilding of local communities.

Keywords

social interaction; conflict; trauma; Democratic Republic of Congo; PTSD

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Introduction

Conflict-affected populations endure multiple and different stressful situations including exposure to trauma (e.g. displacement, violence). Across populations with increased trauma exposure, there is a consistent relationship between trauma and elevated symptoms characteristic of posttraumatic stress disorder (PTSD), depression and anxiety (Eytan et al., 2004; Roberts, Damundu, Lomoro, & Sondorp, 2009). Not all people exposed to traumatic events experience poor mental health. Trauma caused by human intent or that which threatens the life of someone is more closely associated with PTSD onset than other types of trauma experiences (Charuvastra & Cloitre, 2008). Individuals who report social support during and after traumatic experiences such as natural disasters or conflict are more likely to have favorable health outcomes (Bonanno, Brewin, Kaniasty, & LaGreca, 2010; Charuvastra & Cloitre, 2008). Social support is important to maintain an individual's health state possibly because it provides emotional stability, social connection and contributes to self worth and well-being (Cohen & Willis, 1985). During high-stress periods like violent conflict, perception or experience of social support may protect against the effect of trauma on PTSD risk (Charuvastra & Cloitre, 2008; Cohen & Willis, 1985). Lack of or negative social support (e.g., negative attitudes, blame) may contribute to the development, maintenance and severity of PTSD (Charuvastra & Cloitre, 2008; Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011). The type of support and who provides it (e.g., family, community members) is influenced by a range of factors including extent of need, expectations or requests for assistance, education level, availability of help and level of community destruction (Kaniasty & Norris, 1995; Kaniasty, Norris, & Murrell, 1990). Among other factors, family support is associated with individual expectations of family assistance; community support is associated with relative need or relative loss. Individuals who require more assistance post-disaster report more support than those with less relative need (Kaniasty et al., 1990).

The importance of social relationships in post-conflict and disaster settings extends beyond considering social support a buffer to mental health outcomes. Social support is important before and after traumatic experiences to prevent and facilitate recovery from PTSD (Charuvastra & Cloitre, 2008). Positive, regular social relations after trauma may promote resilience and coping behaviors (Bonanno et al., 2010). Individuals affected by conflict emphasize a need to repair and rebuild communities. For example, in a qualitative study with refugees in Mozambique, women discussed how conflict and the subsequent displacement affected physical, psychological and social spheres of life. When asked about the most important effects of war, women described the 'injury to the spirit, loss of social belonging and somatic afflictions' (Sideris, 2003). Sideris characterized the loss of social belonging on women's identity: '[I]dentity is given by social belonging – family bonds which provide support, access to land which sustains life and kinship participation in familiar social practices which create meaning' (Sideris, 2003).

In his model of Conservation of Resources (COR), Hobfoll (1989) theorized that people 'strive to retain, protect and build resources and that what is threatening to them is the potential or actual loss of these valued resources' (p. 516). Following traumatic experiences, individuals risk a rapid loss of material, social and psychological resources. Each resource

loss creates further loss and can increase symptoms of poor mental health (Heath, Hall, Russ, Canetti, & Hobfoll, 2012; Hobfoll, 1989). Evidence in favor of the COR model has been shown with survivors of natural disasters (Bonanno et al., 2010; K. Kaniasty & Norris, 1993) and political violence (Heath et al., 2012) through the bidirectional relationship between psychological distress and resource loss (D. M. Johnson, Palmieri, Jackson, & Hobfoll, 2007). The frequency and type of social support offered to individuals is not constant; over time, supportive resources may decline as community members invest in rebuilding their own lives after the traumatic event (K. Kaniasty & Norris, 1995).

Community members in eastern Democratic Republic of the Congo (DRC), a region that has experienced conflict since 1996, emphasize the need to facilitate social reintegration and rebuild traditional community support structures (Kohli et al., 2012). Congolese living in eastern DRC report high exposure to traumatic events including physical (50%), movement (20.8%), property (50.8%), and sexual (42.9%) violations (K. Johnson et al., 2010). The prolonged conflict has resulted in widespread feelings of fault, fear of future violence, loss of productivity, esteem and trust in part due to cultural and social understanding of family member's trauma experience (Kohli et al., 2012). In other settings, certain types of conflict trauma (e.g., ill without medical care, close to death) are associated with symptoms of PTSD (Bonanno et al., 2010; Roberts et al., 2009). Exposure to different and multiple traumatic events may result in reduced social interaction by survivors with families and communities. For example, due to the public nature of conflict-related sexual violence (e.g. women raped in front of family) and the use of brutal methods (e.g. gang rape, forcing family participation), survivors of sexual violence may experience isolation and reduced family and community support or acceptance (Kohli et al., 2014; Kohli et al., 2012). Sexual violence-related social isolation may arise for a range of reasons including local customs, which do not permit women to have sexual relations outside of marriage even when the sexual relation is forced, or health complications due to the assault (e.g., fistula, mental health) (Kelly et al., 2012; Kohli et al., 2012). In populations that experience multiple and different types of violence like rural Congolese, certain traumatic experiences may affect social relations, including social interaction, positively or negatively.

This study contributes to understanding social support in populations affected by conflict or disaster. This study also responds to local Congolese priorities to rebuild community and family support systems. The overall goal is to understand the relative contribution of PTSD and non-PTSD (e.g., depression, past exposure to traumatic events) factors on social interaction among a group of adult women who have experienced multiple and different traumatic events since 1996. In Congolese communities, having visitors and visiting people in their home is an important way to maintain connections between community members, provide assistance, share information and strengthen bonds. Therefore, this study uses social interaction (e.g., having visitors, visiting people) as a proxy for social support between traumatized individuals and community members. Specifically, we examine two research questions: (1) is there a direct relationship between PTSD and non-PTSD factors with social interaction?; and (2) what is the relative contribution of PTSD and non-PTSD factors to reduction in social interaction?

Methods

Study intervention

The study uses baseline data collected as part of a National Institute of Health/National Institute of Minority Health and Health Disparities (NIMHD)-funded randomized community trial of Pigs for Peace (PFP). PFP is a Congolese-led livestock microfinance program implemented in Walungu Territory, South Kivu province, DRC. The PFP impact evaluation is a partnership between Programme d'Appui aux Initiatives Economiques (PAIDEK), a Congolese microfinance organization, and Johns Hopkins University School of Nursing. PFP is designed to provide village-based livestock credit as a community-led initiative to improve health and economic stability of families and improve relationships between family and village members. Pigs were selected for the program because animals are an important source of economic well-being in rural villages and there are no cultural taboos or gender-based responsibilities for raising or selling pigs. Members of PFP complete a village-based training program led by trained Congolese PFP Research and Microfinance agents (i.e., PFP agents), commit to building a pigpen and compost, accept a loan of a female piglet, and raise the pig with support of PFP agents. When the loan pig gives birth, the member repays their pig loan with one female piglet and pays interest on the loan by providing a second piglet to the project. These offspring are given as loans to other PFP members in the village. The participant and family own the remaining offspring and original loan pig, as their loan is paid in full (Glass, Ramazani, Tosha, Mpanano, & Cinyabuguma, 2012).

Study procedures

The impact evaluation of PFP includes ten villages that were selected based on operational feasibility, local commitment from village chief and administrators and village-level assessments. Adults, aged 16 years and older, were eligible for the study if they expressed a commitment and understanding of microfinance principles (e.g., repayment of loans), were permanent village residents and were responsible individuals in the household (e.g., married 16-year-old, orphan head of household). Participation was limited to one member (male or female) of a household. Interested and eligible households participated in a lottery, where participants placed their name cards in a box and a child from the village randomly selected households for the project. Selected households were alternatively placed in intervention and delayed control groups. This current analysis is limited to data collected from female participants during the baseline interview. This analysis is restricted to adult women because men and women are likely to experience trauma and its psychological consequences in different frequencies (Rehn & Sirleaf, 2002). They also maintain community bonds in different ways/places with women spending more time at home or in the homes of friends and neighbors.

Data collection

Baseline data collection took place after randomization and prior to initiation of program activities (training, loan distribution). Trained PFP agents and interviewers (men and women) conducted interviews. Experience during pilot tests with the questionnaire and prior work by this research team in rural communities (Glass et al., 2012; Kohli et al., 2012) gave

evidence that rural villagers (men and women) felt comfortable being interviewed by either male or female team members. Baseline data collection took place between May and August 2012. A few participants were unavailable (e.g., participant hospitalized) during data collection; therefore the final baseline interview was completed in November 2012. All interviews were conducted in Swahili or Mashi, depending on the preference of the respondent, and took between 45 to 90 minutes to complete.

Research ethics

Ethics review and approval for the impact evaluation of PFP was obtained through the Johns Hopkins University School of Medicine. As there is no local IRB in South Kivu province, a committee of respected Congolese educators at the Universite Catholique at Bukavu reviewed and approved of this study. Interviews with participants were conducted one-on-one in a private setting after taking informed, voluntary, oral consent. Data was securely stored in a password-protected file on a server with access limited to select members of the research team.

Questionnaire development and variables

The study questionnaire was developed collaboratively from the team's prior work and using existing, validated research instruments. The questionnaire was developed in English, translated to French, and then to Swahili and Mashi. A tablet-based questionnaire and database was developed to collect, store (in an encrypted file), protect and transfer data. The questionnaire, including use of the tablet, was pilot tested to strengthen the questionnaire and implementation strategy. This analysis focuses on the measures below:

Demographic variables—Participants reported their current age category: 15–19 years, 20–24 years, 25–34 years, 35–44 years, 45–60 years, over 60 years. Age was included in the model as a continuous variable with values between 0–4 where the reference group was 15–19 years and persons over 60 years were coded as four. Current marital status was included as a dichotomous variable as divorced/widowed/separated/abandoned/never married (i.e., reference group) compared to married individuals.

Social interaction—The two main outcomes were measured as two separate questions: the frequency (never, rarely, sometimes, often) of (1) family/community members visiting women's homes and (2) women visiting with family/community members in their homes in the past thirty days. Both variables were considered continuous outcomes where a value of zero (i.e., reference group) was 'never' and three was 'often'. The Pigs for Peace team introduced these outcomes as important for their community.

Exposure to trauma—The exposure to trauma events section of the questionnaire was adapted from the Harvard Trauma Questionnaire (HTQ) (R.F. Mollica & Harvard Program in Refugee Trauma, 2004). Participants were asked about their exposure to 18 different traumatic events over the past 10 years. Exposure to trauma was analysed in two ways: as a continuous variable (0–18 different traumatic events) and categories of trauma. The 18 trauma events were grouped for analysis following the categories used in a study with Cambodian refugees (R. F. Mollica, Henderson, & Tor, 2002) with some modifications for

different trauma exposures. The categories are: (a) material deprivation (three events: lack of food or water, lack of shelter, ill health without access to medical care); (b) warlike conditions (one event: combat situation); (c) bodily injury (four events: torture/witnessed torture, serious injury, rape/sexual assault, other type of sexual humiliation); (d) coercion (six events: imprisonment, brainwashing, lost/kidnapped, being close to death, forced isolation, forced separation from family members); and (e) violence to others (four events: unnatural death of family member/friend, murder of family member/friend, murder of stranger, witness rape/sexual abuse). Each of these categories were scored 0 (no event within the category) or 1 (one or more events within the category).

Mental health—A 16-item version of Section 4 of the HTQ (R.F. Mollica & Harvard Program in Refugee Trauma, 2004) was used to identify symptoms consistent with PTSD in the past 7 days. The depression component of the Hopkins Symptom Checklist (HSCL) was used for reporting experience of symptoms that bothered or distressed the respondent in the past one month (R.F. Mollica & Harvard Program in Refugee Trauma, 2004). Both the HTQ and HSCL have been used to understand symptoms of depression and PTSD with populations affected by conflict (R. F. Mollica et al., 1993; Onyut et al., 2009; Roberts et al., 2009) and have good psychometric properties (Roberts, Ocala, Browne, Oyok, & Sondorp, 2008; Ventevogel et al., 2007).

With the complete baseline sample of male and female adult participants (N=839) in the present study, the Cronbach's alpha for the depression subscale was 0.85 and for PTSD 0.97. For this analysis, an average symptom score for depression and PTSD was calculated. If less than 25% of the individual symptoms for a given scale were missing for an individual, the symptom score was computed as the average of available items. When more than 25% of the symptoms were missing for an individual for a given scale, the symptom score for that individual was not computed. After accounting for missing symptom data, the final sample for depression and PTSD included 699 and 672 participants, respectively, out of 701 total women included in this analysis. PTSD and depression were included as continuous covariates.

Data analysis

Frequencies of covariates and dependent variables were calculated. For both social interaction outcomes, bivariate linear regression was performed with each of the six types of trauma examined. For the first research question, multivariable linear regression was conducted, including dummy coded vectors for village, age and marital status as covariates to account for non-trauma factors that may affect frequency of interaction in the villages. Depression and PTSD were included as covariates in the models for the second research question. With this sample size, a standard deviation of 0.50 of the independent variable and alpha level of .05, we were able to detect with 80% power small to moderate associations for the frequency of family/community visiting woman's home (effect size ≥ 0.11) and women visiting with family/community members in their homes (effect size ≥ 0.10). Data was analysed using STATA/IC 11.2 (Stata Corporation, Texas, USA).

Results

Seven hundred and sixty-two women were randomly selected for participation in the PFP impact evaluation. During baseline interviews, 42 women were excluded, because on careful review, it was determined that they did not meet the study eligibility criteria (e.g., not a permanent village resident, another household member enrolled in the study). Fifteen women (2%), although previously agreeing to participate in the study interview, decided not to participate at the time of baseline interview. Of the 705 remaining women, four were excluded due to incomplete data for this analysis. Therefore, this study includes 701 females that participated in baseline data collection.

Demographic and mental health data

Most participants were currently married (70.8%) and between 25–34 years (29.7%) (Table 1). The average symptom score (possible range: 1–4) for PTSD was 2.21 (CI: 2.16, 2.26) and for depression, 1.84 (CI: 1.80, 1.87).

Experience of traumatic events

Almost all women (92.0%) reported at least one traumatic event in the past 10 years; on average, each woman experienced 3.96 different events (Table 2). The majority of participants reported material deprivation (79.5%) in the past ten years including 62.9% who had ill health without access to medical care, 56.6% who lacked food or water and 23.7% who lacked shelter. Almost half of participants reported experiencing warlike conditions (48.6%) and coercion (e.g., forced separation, close to death) (47.2%) in the past ten years.

Social interactions and bivariate relationship with traumatic events

About 11% of participants reported having family/community members visit their home often in the past one month (Table 3). The average score (possible range: 0–3) of family/community members visiting a woman's home in the past one month was 1.16 (CI: 1.08, 1.24). Results of bivariate linear regression showed that women who reported more traumatic events ($b: -0.03$; CI $-0.06, -0.01$) and witnessed violence to others (e.g., murder of family/friend, witness rape/sexual abuse; $b: -0.21$; CI: $-0.38, -0.05$) were more likely to report fewer visits to their home by family/community members (Table 4).

Nearly half of all participants reported that they never (30.5%) or rarely (21.1%) visited with family/community members in their homes. The average score (possible range: 0 – 3) of visiting family/community members in their homes in the past one month was 1.29 (CI: 1.21, 1.36). Less frequently visiting family/community members in their homes was associated with experience of traumatic events ($b: -0.05$; CI: $-0.07, -0.03$), warlike conditions ($b: -0.26$; CI: $-0.41, -0.11$), violence to others ($b: -0.22$; CI: $-0.38, -0.06$), coercion ($b: -0.34$; CI: $-0.49, -0.19$) and bodily injury ($b: -0.27$; CI: $-0.43, -0.10$) in bivariate linear regression. The correlation between women's report of visiting with family/community members in their homes and women's report of family/community members visiting the woman's home was 0.48, suggesting that there may be differences in determinants of these two types of social interaction.

Multivariable analysis with predictors of social interactions

The multivariable model presented in Table 5 examines the relationship between family/community members visiting the woman's home and experience of trauma controlling for PTSD, depression, village, current age and current marital status. In each of the six models, PTSD symptoms are a significant predictor of women having visitors in their home in the past month. The only traumatic experience that remained significantly associated with women's reports of family/community members visiting the home was material deprivation (b: -0.26; CI: -0.47, -0.05), after controlling for village, age, marital status, depression and PTSD. Having symptoms of depression was only independently and significantly associated with visiting the woman in her home after controlling for material deprivation trauma, symptoms of PTSD, village, age and marital status.

Table 6 presents the results from the multivariable linear regression between women's reports of visiting with family/community members in their homes in the past month and experience of trauma in the past 10 years controlling for current PTSD, depression, village, age and marital status. Increasing exposure to traumatic events (b: -0.05; CI: -0.07, -0.02), PTSD (b: -0.20; CI: -0.39, -0.02) and exposure to some traumatic events—warlike conditions (b: -0.21; CI: -0.38, -0.05), violence to others (b: -0.19; CI: -0.37, -0.01), and coercion (b: -0.24; CI: -0.43, -0.06)—had a significant negative relationship with women visiting with family/community members in their homes, after controlling for mental health symptoms, village, age, and marital status. The relationship between women visiting with family/community members in their homes and PTSD symptoms was stronger than exposure to trauma in all of the models except the number of different traumatic events experienced by the participant.

Discussion

This study examined women's reports of social interaction defined as the frequency of family/community members visiting the woman's home and women visiting family/community members' homes in the past month. Close to half of women reported rarely (21.1%) or never (30.5%) visiting with family/community members in their homes and close to half of women reported rarely (15.1%) or never (39.9%) having family/community members visit the woman's home. An experience of material deprivation was associated with women's reports of fewer visits by family/community members but not significantly related to women visiting the homes of family/community members. Less frequent visits to the homes of family/community members was significantly associated with number of traumatic events, warlike conditions, violence to others, and coercion. The results indicate that there are distinct and significant relationships between social interaction and experience of different types and number of traumatic experiences. In all models, experiencing increased symptoms characteristic of PTSD was associated with women's report of less frequent visitors in her home and visiting family/community members in their homes in the past month.

Material deprivation was prevalent in the 10 villages with almost 80% of women reporting a lack of material needs being met in the past 10 years. Most women in this study did not have paid (cash or kind) employment (60.2%); most were subsistence farmers. In a low-resource

setting, conflict can severely limit health, social and economic resources. Due to the devastating impact of the conflict, multi-level interventions that address the community-wide effects of conflict are important (Sonke Gender Justice Network & PROMUNDO, 2012). For women in this study, less frequent visits from family/community members are associated with increased material deprivation after controlling for village, age, marital status, and symptoms of depression and PTSD. Survivors of a hurricane in North and South Carolina reported similar findings. Individuals with increased relative advantage (e.g., age, race, education) reported receiving more help than those equally affected by the disaster but with less relative advantage (and possibly increased need) (Kaniasty & Norris, 1995). For Congolese, decisions to support others could be informed by relative advantage, perhaps with givers of assistance hoping for reciprocal support in the short or long term. Alternatively, hospitality including sharing of food and drinks with visitors is an important sign of respect and way to maintain and develop relationships. Therefore, as a way to preserve social bonds and the host families' honour, community members may not visit families that have experienced material loss because they know these families are unable to provide the expected hospitality.

Women were less likely to visit with family/community members in their homes in the last month as experience of traumatic events increased or they reported experience of warlike conditions, violence to others, and coercion trauma. Interestingly, experience of other types of traumatic events, including total number of traumatic events, was not related to the frequency of family/community members visiting the woman's home after controlling for village, age, marital status, and symptoms of depression and PTSD. The divergent relationship between exposure to different types of traumatic events and frequency of visiting others in their homes versus being visited by family/community members may be that women with particular traumatic exposures choose to separate themselves from others in the family or village. Bosnian refugees living in Chicago, U.S. discussed how violence and migration negatively affected their social networks. Several participants in that study described choosing to remain isolated from others as a form of self-protection from 'anxiety, intrusive imagery, and painful memories elicited during social interactions' (Miller et al., 2002). A subset of women who have experienced certain traumas may act to preserve their health by avoiding social interaction.

Drawing from research on stigma, another possible explanation for reduced visits to the homes of family/community members and certain trauma experiences (warlike conditions, violence to others, coercion, increased total events) may be stigma or fear of stigma by family/community members and moral judgment (Yang & Kleinman, 2008). A literature review on social support and PTSD provided evidence for the protective nature of shared traumatic events; isolated events that did not include other members of the community were associated with shame (Charuvastra & Cloitre, 2008). Women that have witnessed, experienced or been forced to participate in traumatic and violent events may fear retribution, anger or discrimination. They may perceive less support, and therefore reach out to family and neighbours less frequently, even if village members include them. For example, women survivors of sexual violence in rural eastern DRC have described how some members of the community assist them with clothing and food and others 'point at them' and gossip (Kelly et al., 2012; Kohli et al., 2012). In DRC, certain types of events

(e.g., level of violence, association with supposed culpability) are associated with social consequences. A better understanding of the factors that drive women who have experienced certain traumatic events to visit family/community members less frequently may explain the broad and long-term impact of conflict on family and community relationships.

The consistent relationship between increased symptoms characteristic of PTSD and social interaction is not surprising. Several studies have pointed to a relationship between social isolation, social support and family separation with PTSD (Eytan et al., 2004; Miller et al., 2002) that operates in one or both directions. Social support may buffer the effect of trauma on PTSD, including reducing avoidance and emotional disengagement associated with PTSD. Conversely, lack of social support may result in feelings of insecurity, vulnerability, psychological distress and increased withdrawal (Charuvastra & Cloitre, 2008). In a study in Eastern DRC, individuals with PTSD reported more difficulty engaging in daily work and social contact than individuals without PTSD (Veling, Hall, & Joosse, 2013). As compared to other PTSD symptom clusters (re-experiencing, avoidance, arousal), emotional numbing is associated with future and multiple resource loss including material, work, interpersonal and family resources among abused, low-income women (D. M. Johnson et al., 2007). These findings suggest that PTSD-associated resource loss can reduce an individual's coping ability and resiliency to future loss, trauma or distress. In this study, reporting symptoms consistent with PTSD was more strongly related to women not visiting with family/community members in their homes than warlike conditions, violence to others and bodily injury trauma. PTSD symptoms were also more strongly related to family/community members not visiting the woman's home than material deprivation. Over time, participation in the parent study that engages women in a community-based livestock microfinance program may positively affect social interactions.

This study has several limitations. This study focused on women with certain level functionality and willingness to engage in village development programs. The data shows that even in a functional sample of women, the effects of PTSD and trauma on social interaction remain important. The dependent variables approximate the level of social interaction but do not provide insight into other places or quality of interaction. While it is possible that most villagers socialize outside of their homes, the home represents a place where visitors are cherished in Congolese culture (Menkiti, 1984). Exposure to traumatic events represents a 10-year period of conflict. Some experiences will be in the recent past and others several years prior to interviews. It is not possible to estimate the directionality of the relationship between social interaction and mental health as both measures focus on recent experience. With on-going violence, poverty, unemployment and lack of sustained social resources, there are likely multiple links between type and number of stress exposures (conflict and non-conflict related), mental health, and social interaction. Increased understanding of family dynamics and community acceptance and longitudinal data analysis from the on-going parent study may provide insight including whether program participation impacts social interaction and mental health. Due to sample size limitations, widowed, unmarried and abandoned women were categorized together although they may have different trauma exposures and social and health outcomes. In future, use of a validated measure of social interaction that examines family and community support separately will help to clarify the directionality and strength of relationships.

Conclusion

Few studies have examined the social impact of trauma in the context of conflict and post-conflict situations. Most research on social outcomes in these settings is focused on subgroups that are perceived to be at greater risk for stigma and rejection including survivors of sexual violence. In previous work with local communities, villagers have explained that the trauma experience of one village resident affects the entire community (Kohli et al., 2012). This study provides support to Congolese village residents concerns about how the impact of conflict is widespread in rural communities; it includes and extends beyond the impact of sexual violence. Future research should examine the social effects of conflict and post-conflict trauma on individuals and communities. An examination of different types of social interactions and factors that influence these interactions could provide insight into ways to rebuild and strengthen local communities including informing the design of interventions to better target barriers to success and work towards more sustainable development programs.

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Table 1

Descriptive statistics

	Frequency	Per cent
Village (N=701)		
Karhagala	43	6.13
Kamisimbi	49	6.99
Cagombe	57	8.13
Cahi	66	9.42
Lurhala	74	10.56
Kahembari	75	10.70
Irhaga	81	11.55
Karherwa	84	11.98
Cize	85	12.13
Izege	87	12.41
Age Group (N=701)		
16–19 years	12	1.71
20–24 years	106	15.12
25–34 years	208	29.67
35–44 years	151	21.54
45–60 years	186	26.53
>60 years	38	5.42
Marital Status (N=699)		
Married	495	70.82
Widowed	155	22.17
Separated/Divorced/Abandoned	42	6.01
Never married	7	1.00
Symptoms of PTSD (N=672)		
Mean score (95% confidence interval)	2.21 (2.16,2.26)	
Possible range of average symptom score	1–4	
Symptoms of Depression (N=699)		
Mean score (95% confidence interval)	1.84 (1.80,1.87)	
Possible range of average symptom score	1–4	

Table 2

Frequency of experiencing individual and grouped traumatic events in the past 10 years (N=701)

	Frequency	Per cent
Average number of traumatic events	3.96	
Material deprivation trauma	557	79.46
Ill health without access to medical care	441	62.91
Lack of food/water	411	58.63
Lack of shelter	166	23.68
Warlike condition (combat trauma)	341	48.64
Violence to others	257	36.66
Unnatural death of family/friend	176	25.11
Murder of family/friend	147	20.97
Witness rape or sexual abuse	79	11.27
Murder of stranger	46	6.56
Coercion	331	47.22
Forced separation from family members	194	27.67
Being close to death	161	22.97
Brainwashing	114	16.26
Forced isolation	63	8.99
Imprisonment	50	7.13
Lost or kidnapped	47	6.70
Bodily injury	205	29.24
Tortured or witnessed torture	128	18.26
Serious injury	112	15.98
Rape/sexual assault	55	7.85
Other types of sexual humiliation	44	6.28

Table 3

Frequency of visiting and being visited by village members in the past 30 days

	Frequency	Per cent
Frequency of family/community members visiting woman's home (N=697)		
Often	76	10.90
Sometimes	238	34.15
Rarely	105	15.06
Never	278	39.89
Average score	1.16 (CI: 1.08,1.24)	
Frequency of women visiting family/community members in their homes (N=698)		
Often	76	10.89
Sometimes	262	37.54
Rarely	147	21.06
Never	213	30.52
Average score	1.29 (1.21,1.36)	

Table 4

Bivariate linear regression of visiting or being visited by village members in the past 30 days and experience of traumatic events in the past 10 years

	Frequency of family/community members visiting woman's home		Frequency of women visiting family/community members in their homes	
	B	Standard Error	B	Standard Error
Number of different traumatic events (0-18 events)	-0.03	0.01	-0.05	0.01
Material deprivation	-0.19	0.10	0.15	0.09
Warlike conditions	0.03	0.08	-0.26	0.08
Violence to others	-0.21	0.08	-0.22	0.08
Coercion	-0.14	0.08	-0.34	0.08
Bodily injury	-0.05	0.09	-0.27	0.08

* The reference group for dependent variables is never visiting or being visited by family/community members

* p<0.05,

** p<0.01,

*** p<0.001

Table 5

Multivariable linear regression between frequency of family/community members visiting woman's home and experience of traumatic events in the past 10 years controlling for PTSD, depression, age in years, married and village (not presented here) (N=667)

	B	Standard Error	β	Adjusted R2
MODEL 1				
No. of traumatic events (0–18)	–0.02	0.01	–0.07	0.064
PTSD symptoms	–0.42	0.10	–0.26***	
Depression symptoms	0.20	0.12	0.09	
Age	0.16	0.04	0.18***	
Married	0.21	0.10	0.09*	
MODEL 2:				
Material deprivation	–0.26	0.11	–0.10*	0.069
PTSD symptoms	–0.45	0.09	–0.28***	
Depression symptoms	0.24	0.12	0.11*	
Age	0.17	0.04	0.19***	
Married	0.24	0.10	0.10*	
MODEL 3:				
Warlike conditions	0.08	0.09	0.04	0.062
PTSD symptoms	–0.48	0.10	–0.30***	
Depression symptoms	0.22	0.12	0.10	
Age	0.16	0.04	0.18***	
Married	0.24	0.10	0.10*	
MODEL 4:				
Violence to others	–0.16	0.10	–0.07	0.064
PTSD symptoms	–0.43	0.10	–0.27***	
Depression symptoms	0.20	0.12	0.09	
Age	0.16	0.04	0.18***	
Married	0.23	0.10	0.09*	
MODEL 5:				
Coercion	–0.05	0.10	–0.02	0.061
PTSD symptoms	–0.45	0.10	–0.28***	
Depression symptoms	0.21	0.12	0.10	
Age	0.16	0.04	0.18***	
Married	0.24	0.10	0.10*	
MODEL 6:				
				0.062

	B	Standard Error	β	Adjusted R2
Bodily injury	0.10	0.11	0.04	
PTSD symptoms	-0.49	0.10	-0.30***	
Depression symptoms	0.21	0.12	0.10	
Age	0.16	0.04	0.18***	
Married	0.24	0.10	0.10*	

*
p<0.05,

**
p<0.01,

p<0.001

Table 6

Multivariable linear regression between frequency of women visiting family/community members in their homes and experience of traumatic events in the past 10 years controlling for PTSD, depression, age, being married and village (not presented here) (N=667)

	B	Standard Error	β	R2
MODEL 1				
No. of traumatic events (0–18)	–0.05	0.01	–0.17**	0.059
PTSD symptoms	–0.20	0.10	–0.13*	
Depression symptoms	0.10	0.11	0.05	
Age	0.09	0.03	0.11**	
Married	–0.05	0.10	–0.02	
MODEL 2:				
Material deprivation	0.21	0.10	0.08*	0.048
PTSD symptoms	–0.33	0.09	–0.22***	
Depression symptoms	0.12	0.11	0.06	
Age	0.09	0.04	0.11**	
Married	0.00	0.09	0.00	
MODEL 3:				
Warlike conditions	–0.21	0.09	–0.10*	0.052
PTSD symptoms	–0.29	0.09	–0.19**	
Depression symptoms	0.14	0.11	0.07	
Age	0.10	0.03	0.12**	
Married	–0.00	0.09	–0.00	
MODEL 4:				
Violence to others	–0.19	0.09	–0.09*	0.049
PTSD symptoms	–0.27	0.09	–0.18**	
Depression symptoms	0.12	0.11	0.06	
Age	0.10	0.03	0.11**	
Married	–0.01	0.10	–0.01	
MODEL 5:				
Coercion	–0.24	0.09	–0.12**	0.053
PTSD symptoms	–0.25	0.09	–0.17**	
Depression symptoms	0.11	0.11	0.05	
Age	0.10	0.03	0.12**	
Marital status	–0.01	0.09	–0.00	
MODEL 6:				
Bodily injury	–0.17	0.10	–0.08	0.047

	B	Standard Error	β	R2
PTSD symptoms	-0.29	0.09	-0.19**	
Depression symptoms	0.15	0.11	0.11	
Age	0.10	0.04	0.11**	
Married	-0.01	0.10	-0.00	

*
p<0.05,

**
p<0.01,

p<0.001