

# Gender Differences in Traumatic Experiences and Posttraumatic Stress Symptoms After the Rwandan Genocide Against the Tutsi

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The effects of the 1994 Rwandan Genocide against the Tutsi are widespread and long-lasting, but little is known about how posttraumatic consequences differ regarding gender. In the present study, we estimated the associations between trauma exposure and posttraumatic stress symptoms (PTSS) in a Rwandan community sample and examined whether the associations differed by gender. The sample comprised 498 adults (75.2% women) living in Rwanda's Huye District in 2011. We used a validated self-report checklist to assess the eight most frequent traumatic experiences during the Genocide. The PTSD Checklist–Civilian version (PCL-C) was used to assess PTSS. Associations between trauma exposure and PTSS were estimated using structural equation modeling (SEM), with additional SEMs stratified by gender. The prevalence of exposure to each traumatic event ranged from 15.1% to 64.5%, with more severe PTSS among individuals who reported personal physical injury,  $\beta = .76$ , 95% CI [0.54, 0.98]; witnessing sexual/physical violence against a loved one,  $\beta = .51$ , 95% CI [0.20, 0.81]; a close relative/friend's death,  $\beta = .54$ , 95% CI [0.24, 0.83]; property destruction,  $\beta = .35$ , 95% CI [0.048, 0.51]; or a family member's death due to illness,  $\beta = .21$ , 95% CI [0.00, 0.41]. Men who saw people killed and women who witnessed sexual/physical violence against a close family member reported elevated PTSS. The psychiatric impact of the Rwandan Genocide continues into the 21st century. Increased attention should be paid to the long-term and demographic patterns of distress and disorder, especially in the absence of widespread clinical mental health services.

The Rwandan Genocide occurred between April and July 1994. The violence was perpetrated on the basis of ethnic status, and approximately 1,000,000 Tutsi civilians were killed, representing around 14% of the current Rwandan population (Clark, 2010). The acute Genocide period occurred over a relatively short time; however, the effects continue to be felt throughout Rwanda to the present day (Des Forges, 1999). The Genocide reshaped the fabric of the country, leaving many in-

dividuals with the mental health consequences of trauma and loss (Bolton, 2001; Rieder & Elbert, 2013).

Despite its massive scale and impact, community-based epidemiological studies of the psychiatric consequences of the Genocide have been surprisingly scarce. In general, investigations have found a consistently elevated risk of posttraumatic stress disorder (PTSD), depression, and prolonged grief among individuals who experienced traumatic violence and loss during that time. However, these studies have typically relied on small convenience samples (Schaal & Elbert, 2006), and often, work based on larger community samples has not examined potential heterogeneity in exposure to traumatic events and posttraumatic outcomes.

Gender is an important factor to consider when endeavoring to understand the experiences and consequences of genocide. Actions employed in carrying out genocide are often gendered through the murder of men as enemy combatants and rape and sexual violence of women aimed at destroying their sense of security and reproductive capacity (see Fein, 1999,

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and von Joeden-Forgey, 2010, for a comprehensive summary). In Rwanda, both men and women experienced a high degree of trauma exposure, but their experiences were different. Men and boys were more likely to be killed, whereas women and girls were more likely to experience sexual assault (Jones, 2000, 2002, 2008). A visible consequence of these gendered experiences was illuminated in 1996, when researchers found that 70% of the Rwandan population was female and 50% of all households were headed by women (Human Rights Watch et al., 1996). Previous researchers have emphasized the importance of gender in determining differences in the type, severity, and response to traumatic exposures (Breslau et al., 1991; Tolin & Foa, 2006) with regard to their influence on disorder risk. For example, in response to stress and trauma exposure, women have been shown to be more likely to experience PTSD and other internalizing disorders, whereas men are more likely to develop externalizing behaviors (Seedat et al., 2009). To date, studies have typically considered gender as a confounding variable rather than directly investigating heterogeneity in the effects of trauma exposure between these groups (Munyan-damutsa et al., 2012; Pham et al., 2004). The latter approach may illuminate important differences in the traumatic experiences of the Rwandan Genocide, with distinct implications for the long-term mental health of women and men. The aims of the present study were to examine the burden of traumatic experiences in a Rwandan community population heavily exposed to the Genocide. Specifically, using a latent variable framework, we estimated the associations between traumatic events and posttraumatic stress symptoms (PTSS) overall and examined whether these associations differed by gender.

## Method

### Participants and Procedure

The source population was located in Huye district in the South Province in Rwanda, a region that was heavily affected by the Genocide (Des Forges, 1999). The source population comprised adults 18 years of age and older in 2011 residing in Huye. Using probability proportional to size (PPS) sampling, 46 of 132 available villages were selected to recruit approximately 500 participants. Sampling weights were created to account for study selection from the source population, calculated as the inverse of the joint probability of village, household, and individual selection (Mansournia & Altman, 2016).

Approximately 11 households were approached in each village. The first house in each village was selected using random walks methods (Coghlan et al., 2009; Patel et al., 2007). Subsequent houses were identified via systematic sampling. At each residence, the interviewer invited one adult to participate in the study, based on simple random sampling from a list of all eligible residents. Study eligibility required being at least 18 years of age and giving informed consent to enter the study. Nonliterate subjects were read the form, and their consent was indicated by a witnessed mark on the page. If the invitee was unwilling

or unable to participate after three visits, that household was excluded. Interviews were conducted in or near respondents' homes, where privacy could be ensured. The research protocol was approved by the Rwandan National Ethics Committee (RNEC) and the Institutional Review Board of New York State Psychiatric Institute. Participants were offered 10 Rwandan francs as compensation. The questionnaire was administered in Kinyarwanda based on forward and back-translation methods (Rugema et al., 2015). The overall response rate was 95.8 ( $n = 504$  of 526). The analytic sample excluded participants who did not provide any outcome data ( $n = 6$ ). Study design and sampling details have been previously published (Pozen et al., 2014).

## Measures

### Genocide-Related Traumatic Experiences

A checklist of eight traumatic events was developed from extensive interviews with Rwandans about the most frequent traumatic experiences that occurred during the Genocide. This checklist was further validated with field testing and alignment with PTSD Criterion A1 as outlined in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association [APA], 1994). Detailed information on the development of the checklist has been previously published (Pham et al., 2004). Respondents answered "yes" or "no" with regard to whether they experienced each of the following events during the Genocide: property destruction, being forced to flee their home, hearing the death or injury of others, witnessing the death of others, witnessing sexual or physical violence perpetrated upon a family member, being personally physically injured, experiencing the death of a family member from illness, and having close relatives or friends killed. Included illnesses were described by respondents as those related to the events of the Genocide as well illnesses to which family members succumbed because they could not be treated during the Genocide.

### PTSS

The PTSD Checklist–Civilian version (PCL-C) was used to assess PTSS related to participants' experiences during the Genocide. The PCL-C is based on symptoms outlined in the *DSM-IV* (APA, 1994). Respondents were asked to report the frequencies of past-month symptoms, rating items using a scale of 0 (*not at all*) to 5 (*extremely*). Possible scores range from 17 to 85, with higher scores indicating more severe PTSS. A previous investigation of the current sample found the best-fitting factor structure of the 17-item scale assessed five underlying symptom clusters anchored to experiences that occurred during the Genocide (Fodor et al., 2015). These included symptoms of reexperiencing (five items), avoidance (two items), numbing (five items), dysphoric arousal (three items), and anxious arousal (two items).

Descriptive analyses utilized a binary measure of probable PTSD based on a total PCL-C score higher than 43

(Blanchard et al., 1996). Based on previous psychometric recommendations (Blanchard et al., 1996; Forbes et al., 2001), item-level scores were dichotomized at a threshold of “moderate” symptom frequency. The PCL-C has previously demonstrated good construct validity and excellent internal consistency in the current sample, Cronbach’s  $\alpha = .96$  (Fodor et al., 2015), as well as other samples (Blanchard et al., 1996; Rugiero et al., 2003; Weathers et al., 1993).

### **Sociodemographic Variables**

Confounding by several sociodemographic variables was considered, including continuous age, educational attainment (none, some primary school, some secondary school, some postsecondary schooling or higher), marital status (married, never married, widowed), and counts of material assets, grouped as home assets (electricity, television, and refrigerator) and mobile assets (radio and mobile phone). Heterogeneity by binary gender (i.e., male vs. female) was considered in the associations between traumatic experiences and PTSD.

### **Data Analysis**

Descriptive analysis included bivariate frequencies and unadjusted odds ratios (*OR*) of probable PTSD by demographic variables. The associations between traumatic event exposure (vs. nonexposure) and long-term PTSS were estimated using a series of structural equation models (SEMs). These models can account for potential measurement error in observed variables (Prince et al., 2020) as well as for the latent nature of PTSS clusters. To provide conservative estimates of the effect of individual traumatic events adjusted for all other events, all traumatic events were included in each model. A weighted least squares means and variances (WLSMV) estimator was used in the analysis to account for the dichotomous PTSS items. Models allowed for free estimations of factor loadings and intercepts, and variances of the latent variable were constrained to 1. Model goodness of fit was evaluated using the Wald chi-square test, root mean square error of approximation (RMSEA) and its 95% confidence intervals, and the comparative fit index (CFI). Previously established cutoffs for acceptable fit were defined as an RMSEA value less than .10 and a CFI value greater than .90 as well as an RMSEA value less than .05 and a CFI value greater than .95 for good fit (Hu & Bentler, 1999; Wall & Amemiya, 2000) along with a statistically significant Wald chi-square test statistic.

In addition to estimating a model for the total analytic sample, gender-stratified models were estimated. Statistical tests of heterogeneity (e.g., Breslow–Day statistic) were not computed, as eight exposures were considered and the likelihood of Type I error was high. Instead, we compared differences in the magnitude of model estimates. Potential confounding due to comorbid psychiatric conditions (e.g., depression) was not considered to avoid overadjusting for potential mediators in the model. Additionally, to examine the potential for Type I error due to multiple-group testing, 99% confidence intervals were

calculated for all stratified model estimates in a sensitivity analysis. All analyses included sample weights and were conducted in R (Version 3.6.2), using the *lavaan* package for SEM analyses (Rosseel, 2012).

## **Results**

The prevalence of probable PTSD among demographic groups is presented in Table 1. Probable PTSD was more prevalent among women, participants who were older (i.e., 35–83 years), those who had never been married, and those who lived in Rwanda in 1994. There was a negative dose–response association between probable PTSD prevalence and education, home assets, and mobile assets.

The prevalence and unadjusted odds ratios of traumatic events overall and by gender are presented in Table 2. The prevalence of traumatic event exposure ranged from 15.1% for witnessing sexual or physical violence perpetrated upon a family member to 66.1% for the death of a family member due to illness. Compared with men, women were more likely to report the death of a close friend or relative and witnessing sexual or physical violence of a close family member.

The adjusted SEM estimates of trauma exposure and PTSS are presented in Table 3. The latent five-factor model fit with the data well, CFI = .98, TLI = .96, RMSEA = .05, 95% CI [.04, .07],  $\chi^2(26, N = 504) = 61.7, p < .001$ , in the total sample. In addition, PTSS were elevated among individuals who experienced personal physical injury, the death of a close relative or friend, having witnessed sexual or physical violence of a close family member, property destruction, and the death of a family member due to illness.

The gender-stratified SEM results are presented in Figure 1 and Supplementary Table S1. Among men only, ratings of PTSS were significantly higher among those who saw people killed, whereas having witnessed sexual or physical violence against a close family member was significant only among women. Among both groups, experiencing the death of a close relative or friend, property destruction, and personal physical injury were each associated with higher levels of PTSS. In the stratified measurement models, the factor loadings were slightly higher among women than men. Gender-stratified model estimates with 99% confidence intervals are presented in Supplementary Table S2. The results generally did not change, suggesting that the models were robust to Type I error due to multiple-group testing.

## **Discussion**

In the present study, we examined the mental health burden of trauma exposure experienced during the genocide against the Tutsi in Rwanda by estimating the associations between traumatic experiences and PTSS and examining whether these associations differed by gender. Overall, many traumatic events were associated with higher levels of PTSS, especially events

**Table 1***Demographic Characteristics of the Total Sample and Among Participants With Probable Posttraumatic Stress Disorder (PTSD)*

Demographic variable	Total sample (N = 498)		Probable PTSD (n = 123, 24.7%)	
	n	%	n	%
Gender				
Men	124	24.8	17	13.7
Women	374	75.2	106	28.3
Age (years)				
18–34	202	40.5	32	15.9
35–83	296	59.5	89	29.9
Has children				
No	89	17.9	15	16.5
Yes	398	80.0	106	26.5
Rwandan resident in 1994				
No	48	9.7	5	10.6
Yes	441	88.6	117	26.6
Marital status				
Married	273	54.8	60	22.0
Never married	113	22.6	38	33.9
Widowed	108	21.6	23	21.4
Educational attainment				
None	87	17.4	31	35.6
Some primary school	272	54.7	74	27.1
Some secondary school	109	21.8	19	17.1
Any postsecondary or more	28	5.7	1	2.8
Home assets <sup>a</sup>				
0	336	67.5	95	28.1
1	62	12.5	12	19.4
2	80	16.0	15	19.0
3	20	4.0	2	10.0
Mobile assets <sup>b</sup>				
0	108	21.7	40	37.0
1	150	30.2	41	27.3
2	240	48.1	42	17.6

Note. <sup>a</sup>Electricity, television, refrigerator. <sup>b</sup>Radio, mobile phone.

related to the harm of the respondent or a close friend or family member. Specifically, experiencing the death of a close relative or friend and personal physical injury were associated with higher PTSD symptom levels. In addition, there was evidence of gender differences in these associations. Men who witnessed the death of others reported increased PTSS, whereas women who witnessed violence to family members reported increased PTSS.

The effects of traumatic experiences can be present for years after the events, as documented in previous Rwandan community samples (Munyandamutsa et al., 2012; Rugema et al., 2013, 2015) and across societies and social conditions (Kessler et al., 2017). However, to our knowledge, the current study was the first to estimate the associations between different types of traumatic experiences and PTSS in this population as well as to examine potential gender-based differences in these

associations. Individuals with elevated PTSS likely reflect a highly chronic form of the outcome. Findings from studies conducted in industrialized countries suggest that most posttraumatic stress responses attenuate in the short-term following a traumatic experience (Atwoli, Stein, et al., 2015; O'Donnell et al., 2007; Pietrzak et al., 2014), although limited evidence shows that PTSS are more persistent after trauma exposure in low-income countries (Atwoli, Stein, et al., 2015; Solomon & Mikulincer, 2006).

Concordant with the results of recent cross-national studies (Kessler et al., 2017), the present findings suggest that events related to the harm of the respondent or someone with whom they were close (i.e., a friend or family member) increased PTSS severity. In addition to the myriad mental and physical health consequences of personal injury (Atwoli et al., 2016; Martin et al., 2000; Waigandt et al., 1990), the psychosocial toll of

**Table 2**  
Prevalence of Traumatic Events, Overall and by Gender

Traumatic event	Gender						OR	$\chi^2$ (1, $N = 498$ )	$p$
	Total		Men		Women				
	$n$	%	$n$	%	$n$	%			
Heard people injured or killed	319	64.1	81	63.8	242	64.2	1.01	0.01	.947
Saw people killed	214	43.0	53	41.7	160	42.4	1.03	0.01	.942
Witnessed a close relative or friend be the victim of sexual/physical violence	75	15.1	11	8.7	64	17.0	2.15	5.15	.023
Physically injured	80	16.1	26	20.5	52	13.8	0.62	3.29	.070
Close relative or friend killed	214	43.0	45	35.4	171	45.4	1.51	3.76	.053
Forced to flee home	159	31.9	40	31.5	122	32.4	1.04	0.03	.870
Property destroyed	224	45.0	52	40.9	172	45.6	1.21	0.81	.369
Family member died from illness	329	66.1	79	62.2	252	66.8	1.22	0.85	.356

experiencing the harm or death of others is significant and may have long-term grief-related effects (Atwoli, Platt, et al., 2015). In addition, the loss of someone close to a respondent likely reduced the availability of social support. Different types of support may be salient in contexts of disasters and widespread conflict (Kaniasty & Norris, 1992). Emotional support, such as empathy and companionship, may be especially beneficial to individuals through the reappraisal process in coping (Platt et al., 2016). On the other hand, the finding that property loss was also associated with PTSS supports the importance of tangible support (e.g., material resources; Kaniasty & Norris, 1995). It is likely that most traumatic events affect multiple types of support, however, leading to a long-term cascade of disadvantage.

Although gender differences in the association between traumatic events and PTSD are well-established overall, including in the Rwandan population (Rugema et al., 2015), the current study sought to explore potential gender differences in PTSD symptoms by type of traumatic experience. In concert with findings from previous meta-analytic studies (Tolin & Foa, 2006), we found evidence that the impact of traumatic events was more pronounced among women than men. In addition, having witnessed sexual or physical violence perpetrated upon a close friend or family member increased PTSD symptoms among women only. This difference may have also been influenced by

changes in social support as well as gendered coping styles. Moreover, women have been shown to be more likely to embody caregiving roles and, as such, are more likely to be impacted by the negative experiences of other individuals in their social network (Barnett et al., 1987; Kessler & McLeod, 1984).

Another gender-specific determinant of PTSS risk is an individual's degree of fear related to the traumatic experience or the likelihood that they could be a victim of the same experience (APA, 2000). Witnessing sexual violence may have created a significantly elevated sense of personal fear among women given that women were more likely to experience sexual violence in the Genocide (Richter-Lyonette, 1997). Indeed, it is likely that some female participants directly experienced sexual violence during the Genocide; however, we did not query this exposure. Men, on the other hand, were more likely than women to be killed in the Genocide, and, thus, the same fear perception may also explain men's elevated PTSS due to witnessing the death of others. We acknowledge that this latter finding was somewhat unexpected, as women are generally more likely to develop PTSD after exposure to nearly all types of trauma (Tolin & Foa, 2006). However, there is some evidence that after accounting for other types of trauma, men are more likely than women to develop PTSD after witnessing death (Stein et al., 2000). Overall, our study highlights that gender

**Table 3***Structural Equation Model Estimating the Association Between Trauma Exposure and Posttraumatic Stress Symptoms*

Traumatic event	$\beta$	95% CI	Factor loading
Heard people injured or killed	.10	[-0.14, 0.34]	
Saw people killed	.27	[0.03, 0.52]	
Witnessed sexual or physical violence of a close family member	.51	[0.20, 0.81]	
Close relative or friend killed	.54	[0.24, 0.83]	
You were physically injured	.76	[0.54, 0.98]	
Forced to flee home	.06	[-0.17, 0.30]	
Property destroyed	.35	[0.13, 0.58]	
Family member died from illness	.21	[0.01, 0.41]	
PTSS cluster			
Reexperiencing			0.92
Avoidance			0.73
Numbing			0.91
Dysphoric arousal			0.92
Anxious arousal			0.80

Note: Model was adjusted for gender, age, educational attainment, marital status, home assets, and mobile assets. CFI = .93, TLI = .91, RMSEA = 0.08, 95% CI [0.07, 0.09];  $\chi^2(26, N = 498) = 61.7$ .

was an important aspect of traumatic responses to the Rwandan Genocide against the Tutsi, and more research is needed to test these putative explanations to better understand differences in the long-term consequences that trauma-exposed women and men face.

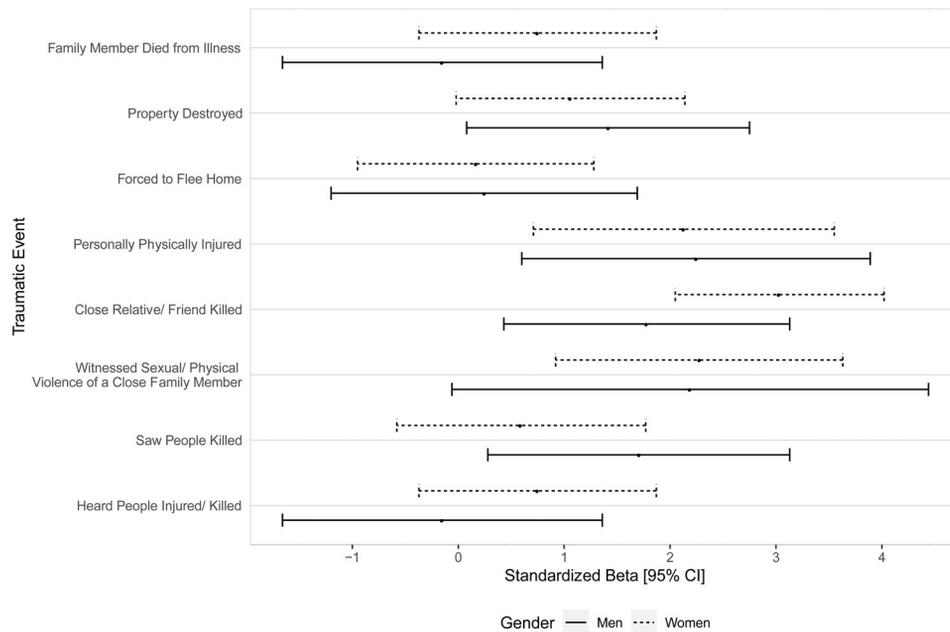
In addition, there are numerous consequences of the experiences of the Genocide that are likely to have mediated the effects of traumatic events and PTSS 20 years later, ranging from individual-level socioeconomic status to national political movements. One particularly important example is local Gacaca trials, which operated between 2002 and 2012 and were intended to provide a transparent process of accountability and large-scale retributive justice to Genocide victims (Clark, 2010; Nyseth Brehm et al., 2014). Likewise, the effects of traumatic events likely differed on the basis of numerous effect modifiers in addition to gender. Although previous studies have begun to interrogate these types of questions (Pham et al., 2004), more research is needed to understand how and for whom the Genocide influences current mental health status.

The present findings must be interpreted in light of several limitations. First, the study design was cross-sectional, allowing the possibility of reverse causation. Psychiatric conditions prior to 1994 may have influenced the level and type of traumatic experiences individuals faced; however, this bias was likely low given the systematic nature and widespread trauma exposure that characterized the Genocide. Second, the gap in time between the end of the Genocide and study recruitment may have resulted in differential selection from the source population into the study sample. For example, the most heavily traumatized individuals may have not survived or may have

left the geographic area before study recruitment. This type of selection may yield underestimates of the burden of trauma and PTSD symptoms in the community if those who left have had more severe PTSD symptoms. It is unclear if this selection would differ by respondents' gender. Although longitudinal research would help address these limitations, the demographic distribution and prevalence of PTSD in the present sample was similar to previous studies that were implemented 8 years after the Genocide (Pham et al., 2004); thus, unequal selection was likely not a significant source of bias in this study. Third, the measurement of multidimensional exposures, such as traumatic events, can be difficult. Experiences are often highly correlated, and other analytic approaches to model traumatic events may be equally valid. Instead of grouping or modeling counts of traumatic events, we chose to estimate the association between each event and PTSS. The study results highlight the impact of distinct trauma types, which may be obscured when events are combined or modeled as cumulative exposures (Netland, 2005). Similarly, it is likely that important and prevalent traumatic events (e.g., personal experience of sexual assault) were unmeasured. Fourth, study estimates were not adjusted for other health-related comorbidities, such as depression or substance use. We acknowledge the myriad consequences of traumatic experiences and that other health conditions would be equally plausible outcomes in the present study. The goal of this study was not to present associations between traumatic experiences and PTSS independent of all other health conditions but rather to begin to describe the heterogeneity of these experiences and their implications for long-term mental health within Rwandan communities. Future work should extend this approach to other

**Figure 1**

Structural Equation Model (SEM) Standardized Beta Estimates and 95% Confidence Intervals of the Association Between Trauma Exposure and Posttraumatic Stress Symptoms, Stratified by Gender



Note. The SEM estimates are represented with dots; confidence intervals are represented with solid and dashed lines for men and women, respectively.

health outcomes. Finally, much of the evidence to inform our discussion of the psychological mechanisms related to trauma exposure and posttraumatic stress come from countries in the Global North. More research is needed in low-income countries, with specific attention to the cultural context of such settings in informing, testing, and interpreting study measures and hypotheses.

Despite these limitations, the present analysis contributes to the trauma literature by characterizing the distinct traumatic exposures of women and men during the Rwandan Genocide and the posttraumatic consequences of those events 17 years later. The study was strengthened by the use of a large community-based probability sample and the thorough consideration of types of traumatic experiences. We aimed to emphasize the importance of gender differences in traumatic experiences during the Rwandan Genocide and their implications with regard to PTSS. Genocide represents a deeply violent and destructive form of conflict and trauma exposure at the population level, the experience of which has a profound impact on individuals and communities. Although the immediate aftermath of a mass conflict necessitates an acute humanitarian response, more attention should be paid to the long-term and local patterns of psychiatric distress and disorder, especially in the absence of widespread clinical mental health services.

### Open Practices Statement

The study reported in this article was not formally preregistered. Neither the data nor the materials have been made avail-

able on a permanent third-party archive; requests for the data or materials should be sent via email to RN3@columbia.edu.

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