

Posttraumatic stress disorder symptoms in Bosnian refugees 3 1/2 years after resettlement

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Abstract—This study describes the evolution of trauma-related symptoms over 3 1/2 years in a group of Bosnian refugees. Twenty-one refugees received standardized psychological assessments shortly after arriving in the United States and then 1 year and 3 1/2 years later. Of these refugees, 76% met diagnostic criteria for posttraumatic stress disorder (PTSD) at baseline, 33% at 1 year, and 24% at 3 1/2 years. PTSD severity scores in women refugees were higher than scores in men at all three evaluation time points. At the 3 1/2-year evaluation, 44% of women and 8% of men met criteria for PTSD and no correlation was found between PTSD symptom severity and either age or level of trauma exposure. A significant inverse correlation was found between Global Assessment of Functioning (GAF) scores and PTSD severity scores. Refugees who reported better mastery of the English language had significantly higher GAF scores. Although PTSD symptom severity decreased over time, most refugees continued to have at least one or more trauma-related symptoms and 24% still met criteria for PTSD after 3 1/2 years in the United States. Women refugees and those who had not mastered the English language appeared to be more vulnerable to persisting psychological effects of trauma.

Key words: age, anxiety, Bosnia, English, GAF, longitudinal course, PTSD, refugees, sex, trauma.

INTRODUCTION

In recent years, research interest has grown on the consequences of trauma in refugees. A number of studies have

found that trauma exposure is the most important predictor of mental health status in refugee populations [1–2]. In Western countries, studies have reported that refugees are about 10 times more likely to have posttraumatic stress disorder (PTSD) than the general populations of the host countries [3]. Furthermore, unlike survivors of many other traumas, refugees also must deal with other stressors, including exile, resettlement, and acculturation, that greatly affect their long-term adjustment and quality of life [4]. To date, relatively few prospective follow-along studies have addressed trauma-related symptoms in combat veterans [5] and survivors of natural disasters [6–7] and traffic accidents [8]. Even fewer studies have examined the longitudinal course of PTSD in traumatized refugees, starting with the early phases of resettlement [9].

Abbreviations: CTEI = Communal Traumatic Experiences Inventory, DSM-III-R = Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised, GAF = Global Assessment of Functioning (Scale), PSDI = Positive Symptom Distress Index, PSS = PTSD Symptom Scale, PTSD = posttraumatic stress disorder, SCL-90-R = Symptom Checklist-90-Revised, SD = standard deviation.

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The war in Bosnia and Herzegovina from 1992 to 1995 produced a major refugee crisis, with a large number of individuals resettled in the United States. The present study is the third in a series of reports on the prospective evolution of trauma-related symptoms among a group of Bosnian refugees who settled in Connecticut [10–11]. These refugees were exposed to multiple traumatic events, including forced march, death of a family member, exposure to a fire, forcible removal of personal property, detention in a concentration camp, witness to violence or death, being beaten or tortured, and lack of food or water. Refugees were evaluated shortly after arriving in the United States and then 1 year and 3 1/2 years later.

METHODS

Of the 45 Bosnian refugees who were evaluated upon arriving in Connecticut, 34 were available for 1-year follow-up assessment and 21 for 3 1/2-year assessment. Of the 21 refugees who completed baseline, 1-year, and 3 1/2-year follow-up evaluations, 12 were males and 9 were females. At baseline, their ages ranged from 13 to 55 years. All had previously lived in Bosnia and all were ethnic Muslims. Subjects were originally referred to our study by refugee resettlement organizations in Connecticut. For the two follow-up phases of the study, the original participants were contacted by telephone or letter. All gave written informed consent to participate in this study.

Clinical assessments for the initial study included a complete psychiatric history and a mental status examination. Additionally, at each of the three time points, assessments included the PTSD Symptom Scale (PSS) [12], the Global Assessment of Functioning (GAF) Scale (from the Diagnostic and Statistical Manual of Mental Disorders-Third Edition-Revised [DSM-III-R]) [13], and the Symptom Checklist-90-Revised (SCL-90-R) [14]. The PSS consists of 17 items that diagnose PTSD according to DSM-III-R criteria. The SCL-90-R provides specific and global indexes of subjective psychological distress and includes the Positive Symptom Distress Index (PSDI), an overall measure of intensity of symptomatic distress. The Communal Traumatic Experiences Inventory (CTEI) [10], a 36-item clinician-administered questionnaire that indicates the number of traumatic events, was completed during the baseline assessment. It was developed specifically to assess Bosnian refugees and is based on other screening instruments used for refu-

gees of genocidal trauma [5]. English proficiency was assessed at 3 1/2-year follow-up with a questionnaire adapted from Westermeyer and Her's instrument for resettled refugees [15]. All the instruments were translated into Croatian, and back translations were used to check accuracy.

No statistical differences were found in amount of trauma, severity of PTSD, or GAF or SCL-90-R scores between the group of refugees evaluated at 3 1/2 years and the group lost to follow-up.

RESULTS

Table 1 presents a summary of baseline, 1-year, and 3 1/2-year follow-up assessments. (All scores are shown as mean \pm standard deviation [SD].) At baseline, 16 subjects (76%) met the criteria for PTSD, with a PTSD severity score of 18.8 ± 12.6 . At 1-year follow-up, seven subjects (33%) met criteria for PTSD, with a severity score of 11.7 ± 10.4 . At 3 1/2-year follow-up, five subjects (24%) met criteria for PTSD. One of these subjects did not have PTSD at the two previous assessments. Severity score on the PSS at 3 1/2 years was 7.3 ± 7.7 .

On the CTEI, subjects experienced an average of 15.8 traumatic events (men 16.1, women 15.3). CTEI scores did not correlate with PTSD severity, GAF, PSDI, age, or sex at any of the three evaluation time points.

Age was not significantly correlated with CTEI, PTSD severity, or PSDI from the SCL-90-R at baseline or at the 3 1/2-year follow-up. Age also was not correlated with GAF at baseline; however, it was inversely associated with GAF ($r = -0.51$, $p < 0.05$) as well as English proficiency ($r = -0.67$, $p < 0.001$) at the 3 1/2-year follow-up.

GAF scores at baseline were inversely correlated with PTSD severity ($r = -0.73$, $p < 0.001$) and PSDI ($r = -0.69$, $p = 0.001$). Similarly, GAF at 3 1/2 years was inversely associated with PTSD severity ($r = -0.76$, $p < 0.001$). Subjects who reported better mastery of the English language had significantly higher GAF scores at 3 1/2 years ($r = -0.63$, $p < 0.01$).

PTSD severity scores (mean \pm SD) were higher in women than in men at all three evaluation points: for women, baseline was 22.1 ± 15.3 , 1 year 15.4 ± 10.5 , and 3 1/2 years 11.1 ± 8.6 ; for men, baseline was 16.3 ± 10.1 , 1 year 8.8 ± 9.8 , and 3 1/2 years 4.4 ± 5.8 (**Figure**). However, the differences were statistically significant only at

Table 1.

Psychiatric assessment scale scores and posttraumatic stress disorder (PTSD) diagnosis for Bosnian refugees ($N = 21$) resettled in United States at baseline, 1 year, and 3 1/2 years.

Refugee	Age (yr)	Baseline					1-Year Follow-Up				3 1/2-Year Follow-Up			
		CTEI	PSS	GAF Scale	SCL-90-R	PTSD Diagnosis*	PSS	GAF Scale	SCL-90-R	PTSD Diagnosis*	PSS	GAF Scale	SCL-90-R	PTSD Diagnosis*
1	17	13	6	85	1.03	—	2	85	1.56	—	0	90	1.63	—
2	13	13	1	85	1.20	—	8	78	1.06	—	12	80	1.19	X
3	46	21	35	67	1.23	X	20	80	1.32	X	12	80	1.44	X
4	53	19	17	70	1.55	X	12	73	2.00	—	4	80	1.68	—
5	19	18	14	80	1.16	X	4	85	1.28	—	0	90	1.24	—
6	43	19	12	60	1.71	X	12	78	1.71	—	9	80	1.50	—
7	15	11	1	85	1.46	—	2	85	0.00	—	1	80	1.33	—
8	38	20	26	65	2.02	X	33	62	2.04	X	11	85	1.41	—
9	55	18	19	60	2.18	X	34	60	2.41	X	19	60	1.91	X
10	55	13	23	80	2.07	X	27	60	1.75	X	13	65	1.54	X
11	25	22	11	70	1.06	—	4	65	1.11	—	6	80	1.00	—
12	39	15	41	65	1.48	X	17	87	—	X	10	85	1.48	—
13	38	6	19	65	2.03	X	4	85	—	—	6	75	1.78	—
14	34	17	15	75	1.43	X	1	70	—	—	0	90	0.00	—
15	16	18	21	70	1.00	X	0	90	—	—	1	90	0.00	—
16	14	19	25	70	—	X	0	90	—	—	2	85	2.25	—
17	38	8	13	69	1.17	X	5	80	—	—	0	85	1.17	—
18	34	20	45	45	2.65	X	19	65	2.10	X	31	67	2.35	X
19	45	13	16	70	—	X	14	70	—	—	1	85	1.00	—
20	41	13	0	75	—	—	13	80	—	—	5	85	1.17	—
21	35	15	35	51	3.74	X	14	52	2.64	X	10	70	1.31	—

*X = Met criteria for PTSD.

CTEI = Communal Traumatic Experiences Inventory, GAF = Global Assessment of Functioning, PSS = PTSD Symptom Scale, SCL-90-R = Symptom Checklist-90-Revised.

the 3 1/2-year follow-up ($t = 2.14$, $p < 0.05$). While 75 percent of men were diagnosed with PTSD at baseline, only 16 percent met criteria for PTSD 1 year later and 8 percent had PTSD at 3 1/2 years. Rates of PTSD for women were 78 percent at baseline, 56 percent at 1 year, and 44 percent at 3 1/2 years. No statistical differences in GAF were found between men and women.

Using severity ratings of moderate or greater (2 or higher on the PSS), we found that reexperiencing symptoms were reported by 86 percent of refugees at baseline assessment, 52 percent of refugees at 1-year follow-up, and 43 percent refugees at 3 1/2-year follow-up. Avoidance cluster symptoms were experienced by 86 percent of refugees at baseline evaluation, 43 percent at 1-year follow-up, and 24 percent at 3 1/2-year follow-up. Hyperarousal cluster symptoms were reported by 62 percent of refugees at baseline evaluation, 52 percent of refugees at 1-year follow-up, and 9.5 percent of refugees at 3 1/2-year follow-up. The three individual symptoms most frequently experienced at severity level 2 or higher

were the same for all three assessments: avoiding thoughts of the war, having intrusive memories of war, and being upset when reminded of the trauma.

Average severity ratings for the three PTSD symptom clusters are presented in **Table 2**. Throughout the 3 1/2-year period, scores for the reexperiencing cluster remained higher than the other two clusters. Avoidance and hyperarousal scores were similar to one another.

We performed hierarchical regression analyses to examine the cumulative and relative contributions of sex, severity of PTSD symptomatology at baseline, and English proficiency to the prediction of PTSD severity at 3 1/2 years. Sex was entered in the model first and significantly predicted PTSD severity at 3 1/2 years ($R^2 = 0.19$, $F_{1,19} = 4.58$; $p < 0.05$). Next, PTSD severity at baseline was added and significantly increased prediction of PTSD severity ($\Delta R^2 = 0.23$, $F_{1,18} = 7.14$; $p < 0.05$). Finally, English was added to the model and contributed marginally to prediction of PTSD severity at the 3 1/2-year follow-up ($\Delta R^2 = 0.10$, $F_{1,17} = 3.54$; $p < 0.10$) (**Table 3**).

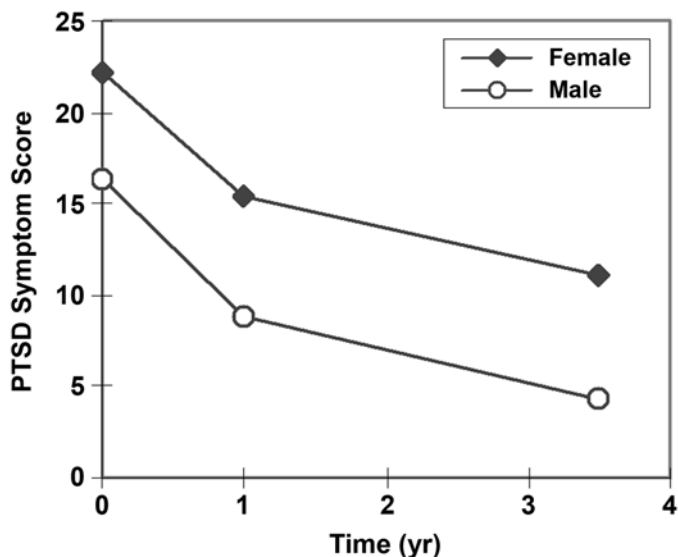


Figure.

Posttraumatic stress disorder (PTSD) symptom severity scores for female ($n = 9$) and male ($n = 12$) Bosnian refugees.

We also performed hierarchical regression analyses to determine contributions of age, level of functioning (GAF) at baseline, general psychopathology (PSDI) at baseline, and English proficiency to the prediction of functioning (GAF) at 3 1/2 years. Age was entered in the model first, and significantly predicted level of functioning at 3 1/2 years ($R^2 = 0.26$, $F_{1,19} = 6.69$; $p < 0.05$). Next, GAF at baseline was added and did not contribute to prediction of GAF at 3 1/2 years ($\Delta R^2 = 0.09$, $F_{1,18} = 2.47$; $p = 0.13$). When PSDI (SCL-90-R) at baseline was added into the model, it significantly increased prediction of GAF at 3 1/2 years ($\Delta R^2 = 0.21$, $F_{1,17} = 7.03$; $p < 0.05$). Likewise, English proficiency significantly increased the prediction of GAF at 3 1/2 years ($\Delta R^2 = 0.23$, $F_{1,17} = 9.25$; $p < 0.01$) (Table 4).

DISCUSSION

In this sample of repetitively traumatized Bosnian refugees, rates of PTSD were initially quite high and then, after they were living in the United States, gradually decreased over 3 1/2 years. Even after 3 1/2 years, 24 percent of refugees continued to meet criteria for PTSD. These rates are consistent with rates reported among Bosnian refugees living in European countries [16] and with rates reported in other refugee groups [17–18].

Table 2.

Average severity ratings of 21 Bosnian refugees for three posttraumatic stress disorder symptom clusters at three evaluation time points.

Symptom Cluster	Baseline	1 Year	3 1/2 Years
Reexperiencing	1.37	1.04	0.74
Avoidance	0.99	0.52	0.35
Hyperarousal	1.06	0.64	0.32

Note: Severity ratings: 0 = Not at all; 1 = Once a week or less, a little bit, once in a while; 2 = 2–4 times a week, somewhat, half the time; 3 = 5 or more times a week, very much, always.

While traumatic experiences of some refugees may resemble those of combat veterans (e.g., exposure to human perpetrated acts of violence such as shelling, sniper fire, and atrocities), we found that, contrary to several studies with combat veterans [5,19] in whom avoidance symptoms remained the most prominent of the three symptom clusters for years following the trauma, our refugee group continues to report reexperiencing symptoms as most severe. In fact, the three most frequently experienced symptoms remained the same throughout the 3 1/2 years. This finding is consistent with the findings from Holocaust survivor literature in which reexperiencing symptoms remain most prominent even after 50 years [20–21]. More recent evidence also exists that women report a greater number of reexperiencing symptoms than men [22].

Even though men and women experienced the same amount of trauma, women had higher PTSD symptom severity scores than men in all three evaluations. The difference was statistically significant at the 3 1/2-year time point when PTSD symptoms in women refugees were 2.5 times more severe than male refugees. In addition, the women were 5 times more likely to be diagnosed with PTSD. Higher rates of PTSD in women also have been reported in victims of urban trauma [23] and military trauma [24]. Our findings indicate that women refugees appear to be more vulnerable to the persisting symptoms of PTSD. Indeed, in this sample, the two best predictors of PTSD severity at 3 1/2 years were sex and PTSD severity at baseline. One possible explanation for the higher PTSD severity scores among women refugees could be potential differences in the types of traumatic events that women and men experience. Findings of PTSD sex differences in nonrefugee trauma survivors have revealed higher rates of exposure to interpersonal violence among women than men [25]. Unfortunately, our sample size prevents any reliable differentiation in the types of trauma by sex, and we hope to address this issue in our future studies of this population.

Table 3.

Hierarchical regression analyses of Bosnian refugees ($N = 21$) and the cumulative and relative contributions of posttraumatic stress disorder (PTSD) of sex alone, added PTSD severity at baseline, and added English.

Variable PTSD Severity at 3 1/2 Years	R^2	ΔR^2	df	F Test	β
Sex	0.19*	—	1,19	4.58	—
Sex + Baseline PTSD Severity	0.42 [†]	0.23*	1,18	7.14	0.49
Sex + Baseline PTSD Severity + English	0.52 [†]	0.10 [‡]	1,17	3.54	-0.32

* $p < 0.05$.

[†] $p < 0.01$.

[‡] $p < 0.10$.

Table 4.

Hierarchical regression analyses of Bosnian refugees ($N = 21$) and contributions of Global Assessment of Functioning (GAF) of age alone, then added GAF and PSDI at baseline, and added English.

Variable GAF at 3 1/2 Years	R^2	ΔR^2	df	F Test	β
Age	0.26*	—	1,19	6.69	—
Age + Baseline GAF	0.35*	0.09	1,18	2.47	0.33
Age + Baseline GAF + Baseline PSDI	0.59 [†]	0.21*	1,17	7.03	-0.63
Age + Baseline GAF + Baseline PSDI + English	0.58 [†]	0.23 [†]	1,17	9.25	0.67

* $p < 0.05$.

[†] $p < 0.01$.

PSDI = Positive Symptom Distress Index.

We found a highly significant inverse correlation between level of functioning (GAF) and PTSD severity throughout the 3 1/2-year period. Thus, as PTSD symptoms subsided, general functioning improved. General functioning also appeared to be related to knowledge of English. English proficiency at 3 1/2 years significantly predicted level of functioning at 3 1/2 years. Adjustment seems to be more difficult for older people who at 3 1/2 years had lower GAF scores and were less proficient in English. Worth noting is that GAF in this group of refugees has been remarkably high since resettlement despite the high rates of trauma-related psychopathology.

The current study has several limitations. First, the number of refugees was small. Second, evaluations of traumatic experiences were retrospective in nature and thus subject to potential inaccurate recall. Finally, language differences might have affected some of our assessment procedures.

CONCLUSIONS

The findings in the present study suggest that PTSD is very common among severely traumatized refugees and that traumatized women may be more vulnerable to the persisting effects of trauma. At 3 1/2 years, predictors

of PTSD symptomatology included baseline PTSD severity and sex, while predictors of general functioning included age, baseline functioning, and English proficiency. These findings point to the potential importance of early screening and treatment of trauma-related symptoms in refugees as well as the need to master the language spoken in the country of resettlement. Future work with refugees should identify possible populations at increased risk, such as women and older persons and provide appropriate and timely treatment.

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