

Somali and Oromo Refugees: Correlates of Torture and Trauma History

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Historically, refugees and asylum seekers have had a high probability of experiencing politically motivated torture.¹ The United States has resettled many groups of refugees, including these study populations from Somalia and Ethiopia. Having experienced civil war and a lack of formal government for more than a decade,² Somalis have often suffered traumatic events. Oromos claim ongoing political oppression since their territory was incorporated into the country of Ethiopia at the end of the 19th century.^{3–5}

Estimating the prevalence of torture in community samples of refugees is extremely difficult, often impossible, and rarely attempted. The political and emotional sensitivity of torture makes it difficult to study, and refugees are challenging groups for research.⁶ Between 5% and 35% of refugees have been tortured, according to the most frequently cited review.⁷ Existing studies of torture and associated factors typically conducted in refugee clinics and in other treatment settings,^{1,6,8–16} report that posttraumatic stress, anxiety, depression, and somatization are common.^{17,18} However, these studies have rarely included control groups, generally have had small samples, and cannot address the prevalence of torture survival in communities. Any consequences specifically associated with torture, compared with other traumatic events that refugees commonly experience, still need to be identified and the effects quantified.^{19,20}

Only a few studies with large samples ($n > 500$) have examined torture prevalence and posttraumatic stress disorder (PTSD) rates, the focus of our article. From national samples, De Jong et al.²¹ studied postconflict populations in Algeria, Cambodia, Gaza, and Ethiopia, finding rates of PTSD ranging from 16% to 37%. The prevalence of PTSD in the 1200 Ethiopians surveyed was 16%, higher for torture survivors ($P < .001$) than for those not tortured. Modvig et al.²² randomly sur-

Objectives. This cross-sectional, community-based, epidemiological study characterized Somali and Ethiopian (Oromo) refugees in Minnesota to determine torture prevalence and associated problems.

Methods. A comprehensive questionnaire was developed, then administered by trained ethnic interviewers to a nonprobability sample of 1134. Measures assessed torture techniques; traumatic events; and social, physical, and psychological problems, including posttraumatic stress symptoms.

Results. Torture prevalence ranged from 25% to 69% by ethnicity and gender, higher than usually reported. Unexpectedly, women were tortured as often as men. Torture survivors had more health problems, including posttraumatic stress.

Conclusions. This study highlights the need to recognize torture in African refugees, especially women, identify indicators of posttraumatic stress in torture survivors, and provide additional resources to care for tortured refugees. (*Am J Public Health.* 2004; 94:591–598)

veyed 1033 household representatives in East Timor and found a torture prevalence rate of 30%.

Symptom levels tend to be higher in refugee camps than in resettlement populations.^{23–26} Mollica et al.,^{27,28} studying 993 Cambodians in a Thai refugee camp, found that a third had PTSD. Comparing 526 Bhutanese torture survivors in a Nepalese refugee camp with matched controls, Shrestha et al.²⁹ found higher posttraumatic stress and anxiety. Van Ommeren et al.³⁰ subsequently randomly sampled 810 (418 tortured and 392 nontortured) Bhutanese refugees from the same frame (the general source from which the sample population is selected), finding that torture survivors had more occurrences of PTSD (43% vs 4%).

Among refugees living in nearby countries, Iacopino et al.³¹ found 4% torture prevalence among 1180 randomly sampled households of Kosovars living in Macedonia and Albania. Smaller samples included Senegalese refugees in Gambian camps (16% torture prevalence),³² Tibetan nuns and lay students tortured in Tibet but living in India (54% anxiety vs 29% in controls),³³ and Burmese political dissidents in Thailand (23% PTSD).³⁴

In smaller prisoner populations in Turkey, Paker et al.³⁵ estimated that tortured Turkish prisoners had significantly more PTSD compared with other prisoners, and Basoglu et al.³⁶ showed higher rates of lifetime (33%) and current (18%) PTSD than controls.

In Western resettlement populations, Thoneau et al.³⁷ found 8% torture prevalence among 1194 refugee applicants to Canada. Smaller samples have shown PTSD rates among Cambodians of 12%,³⁸ 50%,³⁹ and even 86%.⁴⁰

Our 5-year, multiphased, community-based epidemiological study aimed to identify demographic characteristics, pre- and postmigration factors, torture prevalence, and the association of torture survival with health and social problems in 2 resettled refugee communities. The findings of a quantitative survey of 1134 adult participants are presented here. Two subsequent surveys, using subsets from this sample, will compare torture survivors with nontortured refugees using (1) structured instruments to assess symptoms, disability, coping, social support, and family function and (2) a brief neurological screen to identify soft signs of impairment and the Schedules for Clinical Assessment in Neuropsychiatry⁴¹ to make *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*,⁴²

and *International Classification of Diseases, 10th Revision*⁴³ psychiatric diagnoses.

METHODS

Questionnaire Development and Interview Administration

Questionnaires were administered by 8 Somali and Oromo staff with experience in health care or interviewing and backgrounds in medicine, law, engineering, biology, or social services.

Investigators provided training in survey methods and research protocols. To prevent participants from associating the study with torture, we used the terms *health problems* and *physical or psychological abuse* instead of the word *torture* in the informational documents and consent forms used. Three authors (M.S., C.R., D.J.) held biweekly sessions with staff, providing debriefing and ongoing supervision during data collection.

Because using structured assessment instruments for the entire study was too expensive and impractical for a large sample, we chose a multiphased design. We developed a comprehensive closed-ended questionnaire for this first interview phase. Although questionnaires to assess trauma and torture are described in the literature,^{44–47} their validity for East African refugees has not been documented. Our questionnaire consisted of 188 questions with 537 response items adapted from published studies and the authors' clinical and research experiences. The questionnaire elicited biographical information; current and earlier life circumstances; health status; and experiences of violence, deprivation, and physical or psychological trauma and torture. Questions were asked in a variety of formats, including yes/no, Likert scale, and checklist. The most sensitive trauma and torture questions were asked at the end of the questionnaire, after staff had the opportunity to gain participants' trust. Checklists, an accepted assessment method for torture techniques,⁴⁶ were used, and scales were developed to estimate physical, psychological, and social problems.

Because PTSD is one of the most common and controversial diagnoses associated with torture, the PTSD Checklist (PCL-C) was administered in this interview phase and, for comparison, in the next 2 phases. The PCL-C,

a self-report Likert scale with 17 items, has shown high internal consistency and reliability and strong correlation with PTSD diagnosis using the Clinician Administered PTSD Scale.^{48,49} Translated versions of the PCL-C into Oromo and Somali produced high reliability with Cronbach's α (.93).

Staff members were matched with participants by gender and ethnicity. The questionnaire was self-administered for literate participants (50.4%) and interviewer administered for those who were illiterate (49.6%). These percentages were not significantly different across the groups exposed and unexposed to torture ($\chi^2=0.36$, $df=1$, $P=.55$). Staff remained with all participants during questionnaire administration to ensure that the participants understood the items and to observe for signs of distress. The questionnaire was translated from English into the Somali and Oromo languages and back-translated using standard techniques.^{50–60}

Sampling and Classification

We estimated that a sample size of 1200 would allow us to detect a doubling of the rate of PTSD in the tortured group from a base prevalence of 10% (power=80%, $\alpha=.05$, 2-tailed).

Oromos or Somalis living in the Minneapolis/St. Paul metropolitan area and who were at least 18 years old were eligible. Exclusion criteria included psychological inability to participate or residence in a household where a relative had already been interviewed. Unrelated persons living in the same household were eligible.

Census data were not available for our study because most Oromo and Somali refugees arrived after the 1990 census, and interviewing for this sample (which took place between July 14, 1999, and September 3, 2001) began before the Year 2000 census. Even if census data had been available, the census has historically undercounted refugees and minorities.⁶¹ State data were kept only for initial resettlement of refugees, and community organizations and agencies lacked complete data.

Because a random sampling frame was unavailable, a combination of nonrandom sampling approaches^{62–64} and lengthy recruitment (more than 25 months) was used.

Sampling approaches included targeting persons associated with community organizations and geographic locations (62%) and sampling by linkage (38%). The participation rate was 97.1% of all invited.

Lacking the ability to assess true representativeness of the sample, we compared the sample demographics with newly available outside data in order to identify any differences between our sample and the underlying populations.⁶⁵ The outside data were used to estimate community size, geographic distribution, and demographic features and included public school enrollment reports, birth records, and state refugee resettlement data. No large differences were found between the sample and the underlying populations, suggesting that the sample was representative. The outside data allowed us to estimate the Minneapolis/St. Paul populations as 641 Oromos and 6538 Somalis aged 18 years or older. Consequently, the Oromo sample ($n=512$) may have represented 80% of potential participants, and the Somali sample ($n=622$) may have represented only 8%.

The United Nation's (UN) definition of torture^{66,67} formed the basis for classifying participants as tortured. Key components of this definition include physical or psychological pain and suffering, intentionally inflicted for any reason, based on discrimination and perpetrated by persons acting officially. Although torture can occur in many nonpolitical settings, such as domestic violence or satanic cults, "official" perpetration differentiates the UN definition from others. During administration of the questionnaire, staff clarified the context of traumatic events to ensure compatibility with the UN definition. For Somalis, who have had no formal government since 1991, "official" perpetrators included opposing clans who had taken power.

Participants were classified as torture survivors if they (1) responded in the positive to any of 3 items directly asking whether they had been tortured (Have you been tortured in prison? [Y/N]; Was tortured [marked off on a checklist]; Were you tortured in prison or jail? [Y/N]) and reported experiencing at least 1 identified torture technique item (details available from authors) or (2) reported experiencing 1 of the subsets of torture techniques that investigators considered could be used

only during torture sessions (details available from authors), even if participants responded in the negative to all of the questions about torture exposure.

Data Collection, Management, and Analysis

Staff explained the purpose, procedures, risks, and benefits of the study to potential participants and their rights to refuse participation at any time throughout the interview process. Literate persons read the consent form in the language of their choice, and interviewers read it to those who were illiterate. Staff obtained signed or oral informed consent from subjects before they began the interviews.

Two strategies were undertaken to appraise the level of cooperation and credibility of participants. (1) Staff rated participants after completion of interviews using a 1 to 5 Likert scale, with 1 being the most positive. The median rating was 2 (very cooperative or credible). (2) The questionnaire contained 4 internal validity measures identifying participants with response inconsistency on item pairs,⁶⁸ and, for more than 95% of the sample, more missing items,⁶⁹ a greater number of unusually virtuous responses,⁷⁰ (i.e., responses designed to assess if respondents presented themselves in an overly favorable manner) and a greater number of extreme responses.⁷¹

Those participants identified according to these 4 validity measures were classified as “suspect.” On analysis, the suspect group of participants was found to be associated with torture exposure, Oromo ethnicity, and younger age. Results for all participants were compared with a subset that excluded the suspect records. Because subjective ratings of cooperation and credibility were not different between the suspect and nonsuspect groups, results were presented for the entire sample. Data were double entered, and periodic error checks were made. Summary data for each variable were extensively checked, and out-of-range responses were compared with the original paper questionnaires.

The trauma count for each participant was controlled in order to assess any additional effect of torture beyond other types of trauma. Several specific items to measure social, psychological, and physical problems were incorporated into the questionnaire, combined into summative scales, and refined using an item analysis. These scales, meant to provide only a preliminary indication of problem areas, are presented with the Cronbach α s in Table 1.

Descriptive statistical analysis revealed the distribution of variables and the appropriateness of statistical tests for the data. Stepwise logistic regression was used to compare suspect and nonsuspect groups. Bivariate com-

parisons between torture groups were conducted using χ^2 and *t* tests. Major outcomes of interest included social, physical, and psychological problems, and total PCL-C scores. For the interval measures, multivariable analysis was accomplished using stepwise multiple linear regression. Regression diagnostics were performed for each model to assess any possible violations of assumptions. Analysis was performed using SPSS version 8 (SPSS Inc, Chicago, Ill) and SAS version 8 (SAS Institute Inc, Cary, NC).

RESULTS

The final sample of 1134 included 622 Somalis and 512 Oromos, 605 men and 529 women. Table 2 describes characteristics of the ethnic/gender subgroups. On average, participants reported experiencing 21 of 61 possible nontorture traumatic events. All but 6 participants reported experiencing traumatic experiences.

Problem Scales and PCL-C

Table 3 displays results of the analyses assessing variables associated with the problem scales and PCL-C. Trauma count and exposure to torture were significant at $P < .0001$ for all these measures. In addition, the number of social problems was greater among

TABLE 1—Problem Scales and Cronbach α s: Minneapolis, Minn, July 14, 1999–September 3, 2001

Social Problems	Psychological Problems/Source of Problems	Physical Problems
Does not speak English easily	Had child die	Starvation before leaving homeland
Does not read English easily	Had death in family in last 6 months	Currently taking medication
Does not have job	Has no good work opportunities in United States	On journey from homeland:
Has less than high school education	Feels stress living in United States	Life-threatening illness
Is separated from family	Bothered by things done in home country	Life-threatening lack of food
Has less money to spend than in homeland	Has trouble sleeping	Life-threatening lack of water
Does not anticipate opportunities for work	Has loss of appetite	Life-threatening serious injury
Does not have good friends	Hears voices	Life-threatening physical assault
Has difficulty caring for monthly expenses	Has thoughts of killing self	Head injuries from torture
Feels alone	Has been to doctor for mental health problem	Physical problems resulting from torture
Has problems getting job	Has intense memories of torture	Still has physical reactions from torture
Family has stayed behind	Has frequent headaches	Has faintness or dizziness
Has problems learning English	Has had changes in appetite	
Has hard time understanding American life		
Likes home food better than American food		
$\alpha = .77$	$\alpha = .63$	$\alpha = .77$

TABLE 2—Characteristics of the Sample by Ethnic/Gender Group

	Total (n = 1134)	Oromo Men (n = 282)	Oromo Women (n = 230)	Somali Men (n = 323)	Somali Women (n = 299)	F Statistic	P Value
Age, y, mean (SD)	35.1 (13.9)	31 (12.4)	34.8 (13.9)	37.4 (15.9)	36.8 (14.7)	11.6 _{3,1123}	<.001
Age at time of leaving home, mean (SD)	27.5 (14.5)	24.6 (12.1)	27.8 (14.4)	28.9 (16.0)	28.4 (14.7)	5.0 _{3,1123}	.002
Number of traumatic events endorsed, mean (SD)	20.8 (11)	25.3 (10.4)	25.2 (8.2)	14.1 (8.5)	20.2 (11.8)	83.5 _{3,1130}	<.001
Years between leaving home and arriving in United States, mean (SD)	4.1 (3.2)	3.3 (3.0)	3.1 (2.8)	4.9 (3.2)	4.8 (3.3)	25.91 _{3,1100}	<.001
Years in United States, mean (SD)	3.4 (3.6)	3.1 (4.2)	3.9 (4.4)	3.4 (3.2)	3.2 (2.8)	1.9 _{3,1108}	.12
Marital status, no. (%)							
Married, living with partner	319 (29)	68 (25)	93 (41)	69 (22)	89 (30)		
Separated by immigration	264 (24)	78 (29)	34 (15)	86 (27)	66 (23)		
Single	342 (31)	122 (45)	58 (25)	115 (37)	47 (16)		
Separated, divorced, widowed	180 (16)	2 (1)	44 (19)	43 (14)	91 (31)	156.3 _g	<.001
Education, no. (%)							
No formal education	167 (15)	14 (5)	62 (27)	14 (4)	77 (26)		
Less than high school	418 (37)	104 (38)	103 (45)	117 (36.5)	94 (31)		
High school diploma	292 (26)	58 (21)	31 (14)	115 (36)	88 (30)		
Post high school	245 (22)	99 (36)	33 (14)	75 (23.5)	38 (13)	167.2 _g	<.001
Speaks English, no. (%)	633 (56)	198 (70)	101 (44)	224 (69)	110 (37)	104.8 ₃	<.001
Receives government aid, no. (%)	83 (7)	3 (1)	28 (12)	12 (4)	40 (13)	46.6 ₃	<.001
Employed, no. (%)	577 (51)	198 (72)	103 (45)	188 (58)	88 (30)	114.1 ₃	<.001
Owns home, no. (%)	64 (6)	25 (9)	26 (11)	6 (2)	7 (2)	34.2 ₃	<.001
Has no permanent address, no. (%)	35 (3)	5 (2)	8 (4)	9 (3)	13 (4)	3.4 ₃	.33
Muslim, no. (%)	990 (87)	204 (72)	185 (80)	313 (97)	288 (96)	115.5 ₃	<.001
Christian, no. (%)	105 (9)	62 (22)	43 (19)	0	0	142.2 ₃	<.001

TABLE 3—Multivariable Analysis of Characteristics and Problems

	Social Problems		Physical Problems		Psychological Problems		Total PCL-C Score	
	β (SE)	P Value	β (SE)	P Value	β (SE)	P Value	β (SE)	P Value
Gender: female	1.54 (0.13)	<.0001	(1.0 (0.13)	<.0001	0.16 (0.10)	.0899	(3.35 (0.88)	.0001
Ethnicity: Oromo	(0.71 (0.14)	<.0001	(0.78 (0.14)	<.0001	0.02 (0.10)	.8650	2.29 (0.94)	.0149
Age	(0.01 (0.03)	.7023	(0.02 (0.03)	.5347	(0.02 (0.02)	.3209	0.04 (0.19)	.8336
Married or living with partner	(0.39 (0.13)	.0036	(0.40 (0.14)	.0035	(0.18 (0.10)	.0764	(1.66 (0.91)	.0685
High school graduate	(1.94 (0.13)	<.0001	(0.33 (0.14)	.0159	0.01 (0.10)	.8877	(0.85 (0.93)	.3615
Speaks English	(2.01 (0.14)	<.0001	(0.22 (0.15)	.1289	(0.04 (0.11)	.6848	-0.57 (0.98)	.5606
Has job	(1.27 (0.13)	<.0001	(0.44 (0.14)	.001	(0.18 (0.10)	.0709	(0.55 (0.90)	.5436
Owns home	(0.84 (0.26)	.0013	(0.07 (0.27)	.8027	(0.29 (0.19)	.1381	0.95 (1.85)	.6048
Age at which left home country	0.04 (0.03)	.0979	0.02 (0.03)	.4239	0.05 (0.02)	.0189	(0.01 (0.19)	.9752
Years between leaving home and arriving in United States	0.06 (0.03)	.0472	0.02 (0.03)	.5977	0.02 (0.02)	.3423	(0.35 (0.22)	.1046
Years in United States	0.01 (0.03)	.6347	0.03 (0.03)	.2778	0.06 (0.23)	.0163	(0.20 (0.23)	.3795
Religious practices increased	(0.21 (0.18)	.2570	0.18 (0.19)	.3144	0.08 (0.14)	.5740	3.19 (1.28)	.0131
Religious practices decreased	0.53 (0.24)	.0293	0.25 (0.25)	.3398	0.76 (0.18)	<.0001	4.67 (1.67)	.0051
Trauma count	0.08 (0.01)	<.0001	0.15 (0.01)	<.0001	0.09 (0.01)	<.0001	0.52 (0.05)	<.0001
Exposure to torture	(0.59 (0.14)	<.0001	0.60 (0.15)	<.0001	0.61 (0.11)	<.0001	7.18 (0.98)	<.0001
Adjusted R ²	0.7170		0.5091		0.4962		0.4122	

Note. PCL-C = Posttraumatic Stress Syndrome Checklist.

women, Somalis, and those who had decreased their religious practices since immigrating. English language fluency, employment, high school graduation, marriage, home ownership, and longer residency in the United States were associated with fewer social problems. Male gender and Somali ethnicity were associated with more physical problems, whereas employment, marriage, and high school graduation were associated with fewer physical problems.

None of the assessed factors were associated with fewer psychological problems. More psychological problems were associated with leaving home at an older age, longer residency in the United States, and decreased religious practices since immigrating. Female gender was inversely associated with PCL-C score, whereas Oromo ethnicity and any change in religious practices since immigrating were associated with increased PCL-C scores.

Associations with fewer problems on at least 2 problem scales/PCL-C included employment, high school graduation, marriage, and

continued religious practices, whereas more problems were associated with decreased religious practices, high trauma count, and torture exposure. Despite high scores on the scales, less than 1% of the participants requested or accepted referral to mental health services.

Prevalence of Torture and Characteristics of Survivors

Prevalence rates for each torture category were calculated (Table 4). Of the 1134 participants, 44% met criteria for torture exposure and 56% did not. Criteria for classification are described in the Methods section. Only 15% (n=92) met criteria solely by reporting that they experienced 1 or more of the techniques occurring only during torture (false negatives). Conversely, 40 participants were excluded from the torture group because, although they gave a positive answer to a torture question, they did not report experiencing any torture techniques (false positives).⁷² Had we accepted, as the only criterion, an affirmative response when asking

participants whether they had been tortured, 132 (11.6%) would possibly have been misclassified according to our definition. Fifty torture survivors (10%) reported experiencing only physical or only psychological techniques, whereas the other 90% reported experiencing both.

Torture history varied by gender and ethnicity: men (n=272, 45% of the men) and women (n=228, 43% of the women) had approximately equal exposure to torture, and more Oromos were exposed to torture (n=286, 55%) than Somalis (n=224, 36%). Among ethnic/gender groups, those most often exposed to torture were Oromo men (n=194, 69%) and Somali women (n=141, 47%), followed by Oromo women (n=85, 37%) and Somali men (n=81, 25%). Gender differences were not statistically significant (Table 3), but differences by ethnicity ($\chi^2 = 42.6, df=1, P<.001$) and by ethnic/gender group ($\chi^2 = 126.0, df=3, P<.001$) were significant.

Participants in the tortured and nontortured groups differed in several characteristics and in the degree of reported problems (Table 3). Torture survivors were less often married and were older when they left their home countries. No significant between-group differences were found for men or for those employed, more educated, with permanent addresses, or with longer times between leaving their home countries and arriving in the United States.

For both groups, a higher number of traumatic events correlated positively with scores on all problem scales and total PCL-C. The tortured group averaged 13 more traumatic events than the nontortured group (28 vs 15), adding an average of 1 social and 1 psychological problem, 2 physical problems, and 7 points to the PCL-C scale for those exposed to torture. Beyond the general trauma, torture exposure added small but significant increases to the number of psychological and physical problems but not to the number of social problems. For social problems, the estimated adjusted means were 6.46 (SE = 0.11) for those exposed and 7.03 (SE = 0.09) for those unexposed to torture, showing no significant statistical difference.

The most striking correlate of torture exposure was the increase in total PCL-C score. Those exposed to torture averaged an addi-

TABLE 4—Demographic Characteristics of the Sample by Torture Classification

	Exposed to Torture	Unexposed to Torture	χ^2	P Value
Entire sample (n = 1134)	502 (44)	632 (56)		
Ethnicity			42.6 ₁	<.0001
Somali, no. (%) (n = 622)	221 (36)	401 (64)		
Oromo, no. (%) (n = 512)	261 (55)	231 (45)		
Gender			0.74 ₁	.3900
Male, no. (%) (n = 605)	272 (45)	333 (55)		
Female, no. (%) (n = 529)	228 (43)	302 (57)		
Married or living with partner, no. (%)	120 (25)	199 (32)	7.79 ₁	.0052
Graduated from high school, no. (%)	230 (47)	307 (49)	0.60 ₁	.4387
Employed, no. (%)	243 (49)	334 (53)	1.55 ₁	.2128
Owens home, no. (%)	30 (06)	34 (05)	0.19 ₁	.6656
Has no permanent address, no. (%)	19 (04)	16 (03)	1.47 ₁	.2255
Current age, mean (SD)	36.78 (14)	33.78 (15)	3.45 ₁₁₂₅	.0006
Age on leaving home, mean (SD)	29.50 (14)	25.90 (15)	4.19 ₁₁₀₉	<.0001
Years between leaving home and arriving in United States, mean (SD)	4.04 (03)	4.12 (03)	0.66 ₁₁₀₂	.5119
Years in United States, mean (SD)	3.04 (04)	3.66 (04)	2.82 ₁₁₁₀	.0048
Number of traumas endorsed, mean (SD)	28.07 (10)	14.94 (08)	25.02 ₁₁₃₂	<.0001
Number of social problems, mean (SD)	7.09 (04)	6.43 (03)	3.26 ₁₁₃₂	.0012
Number of psychological problems, mean (SD)	3.67 (02)	1.74 (01)	19.14 ₁₁₃₂	<.0001
Number of physical problems, mean (SD)	4.32 (03)	1.72 (02)	18.88 ₁₁₃₂	<.0001
PCL-C scores, mean (SD)	42.53 (15)	27.17 (10)	18.53 ₉₁₉	<.0001

Note. PCL-C = Posttraumatic Stress Syndrome Checklist.

tional 7-point (>10%) increase in PCL-C score beyond the increase due to trauma alone. Using a cutoff PCL-C score of greater than 50 (range 17 to 85) to indicate suspected PTSD, 123 (25%) of those exposed to torture met this criterion, but only 23 (4%) of the unexposed did.

DISCUSSION

Our study interviewed 1134 East Africans, the largest refugee community sample conducted in a resettlement country. As expected, social problems were common throughout the sample, because the early stages of resettlement for all refugees are characterized by many problems in daily living and adjustment.^{9,73,74} Factors associated with fewer social problems included speaking English and graduating from high school, which presumably increased the chances for employment and home ownership. Marriage can provide social stability, and longer residency in the United States can allow time for adjustment. High school education, employment, and marriage were associated with fewer physical problems, perhaps because those with fewer physical problems could adjust more successfully. However, none of these factors were associated with fewer psychological problems.

Low scores on at least 2 of the problem scales/PCL-C were associated with employment, high school graduation, marriage, and continuing religious practices since immigration. These factors indicate the importance of education, economic stability, social support, and religion for the well-being of refugees. High scores for trauma and torture, as expected, were associated with more problems.

Torture rehabilitation centers have historically claimed that the more educated men were most often targeted as leaders who would serve as examples to their communities.¹ Our study, in contrast, showed that men and those with higher education levels were no more likely to be tortured than women or those with less education. Although more time in transition to the United States, usually in refugee camps, might be expected to increase the risk of trauma, our study did not find any increase for those experiencing longer transitions.

Except for Somali men (25% of whom were tortured), the prevalence of torture exposure in this community sample was significantly higher than the 5% to 35% often reported.⁷ This high prevalence was found despite the expectation that participants would underreport.⁸ If these results can be replicated in other refugee communities, 400 000⁷⁵ is likely an underestimation of the number of torture survivors living in the United States.

Women were as likely to experience torture as men, an exposure rate not previously reported. Because civilians are increasingly affected by modern warfare and terrorism, it is not surprising that women frequently experience torture.^{76,77}

Significant differences in torture exposure by ethnicity and ethnic/gender group were found. Oromos were tortured more often than Somalis, whereas Oromo men and Somali women were the ethnic/gender groups most often tortured. A number of possible explanations can be posited. The very high rates in the Oromo community may reflect long-standing interethnic conflicts. Somali women were more often tortured than Somali men. Anecdotally, Somali men were either killed in their home country or able to escape unharmed, whereas women and children had a more difficult time leaving the country.

Our results suggest that torture's effect may be additive to other forms of trauma. Torture survivors were more likely than other refugees to experience physical and psychological problems, even after we analyzed the group differences using nontorture trauma as a covariate. The most striking correlate of torture exposure in our study was the increase in total PTSD symptoms. Of those tortured, 25% had suspected PTSD compared with only 4% of those not tortured. These rates are comparable to those cited in earlier studies. In addition, PTSD also showed the greatest additive effect of torture. In another study, Silove et al.¹⁹ found an additive effect of PTSD in Tamil torture survivors in Australia after they accounted for other traumatic events. Although the published literature is contradictory, our findings also support a possible dose-response relationship between torture and PTSD.

Several limitations were inherent in the study design. Because we could not use true random sampling methods, our prevalence results are estimates. However, our analyses indicate that an estimated 80% of the Oromo community, nearly the entire Oromo "village," may have been sampled. With such a comprehensive sample of Oromo, the extremely high torture prevalence of Oromo men (69%) is plausible. The study variables were measured at the same time, a limitation shared by all cross-sectional studies. Therefore, inferring causality between torture history and problems was not possible. Although the present analyses strongly support associations between torture history and key problem areas, our 2 follow-up studies will further elucidate these findings. The final clinician-administered diagnostic phase of our research will also assess the duration and frequency of torture experiences in greater depth.

Our study of 2 communities represents only a small proportion of refugees and displaced persons but contributes to the enormous gap in understanding of the effects of torture and trauma on refugee populations worldwide. The capacity to care for survivors falls far short of the need. This study suggests that the shortfall is even greater than previously thought. The 31 torture rehabilitation centers in the United States and the more than 200 worldwide⁷⁸ cannot treat all torture survivors.

From a public health perspective, our findings warrant screening refugees for a history of torture at least among East African and women refugees. However, less than 1% of our highly traumatized sample either requested or followed up a referral to Western mental health services. This highlights the need to investigate the reasons for underutilization and to adequately address the needs of torture survivors living not only in Minnesota but throughout the world. ■

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Contributors

All authors contributed to the conceptualization of ideas, interpretation of findings, and review of the article. J. Jaranson (principal investigator) conceived the study, drafted the article, and supervised operations and personnel. J. Butcher contributed to design and developed the questionnaire. L. Halcon contributed the epidemiological perspective for the research. D.R. Johnson contributed to design and provided insights from his work at the Center for Victims of Torture. C. Robertson contributed to design from the public health nursing perspective. K. Savik supervised the analyses of the data and the research assistants. M. Spring was project coordinator, supervised the interview staff, ensured the quality of the data, and provided a cross-cultural perspective. J. Westermeyer contributed to design with his extensive background in cross-cultural psychiatry.

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Human Participant Protection

The University of Minnesota institutional review board and human subjects protection program and the HealthPartners Foundation institutional review board approved the study before interviewing began and subsequently approved protocol changes, consent forms, and annual progress reports.

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