ARTICLE

Screening for Traumatic Exposure and Posttraumatic Stress Symptoms in Adolescents in the War-Affected Eastern Democratic Republic of Congo

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Objective: To explore adolescent mental health in the eastern Democratic Republic of Congo, scene of a complex emergency since 1996.

Design: Community cross-sectional data obtained using a cluster sample approach.

Setting: From November 5, 2007, through February 5, 2008, we assessed 13 secondary schools in 4 selected health zones in the Ituri district.

Participants: One thousand forty-six adolescents and young adults aged 13 to 21 years completed a self-report questionnaire.

Main Exposures: War-related traumatic events, posttraumatic stress symptoms, and sociodemographic variables.

Main Outcomes Measures: The Adolescent Complex Emergency Exposure Scale, specifically designed for this region, screened for exposure to potentially traumatic events, and the Impact of Event Scale–Revised measured symptoms of posttraumatic stress consistent with *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) criteria.

Results: Among the 477 girls (45.6%) and 569 boys (54.4%) in the study, 95.0% reported at least 1 traumatic event. On average, adolescents were exposed to 4.71 traumatic events, with higher exposure rates reported in boys, older groups, rural and urban areas, and respondents whose mother or father was dead. Of 990 respondents, 52.2% met symptom criteria for posttraumatic stress disorder. Symptom scores were strongly related to cumulative trauma exposure; however, the strength of this relationship differed slightly across living area groups for girls.

Conclusion: Adolescents in the eastern Democratic Republic of Congo are highly exposed to political violence, putting them at a considerable risk—mediated by living area and sex—to develop posttraumatic stress symptoms.

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Since 1996, the Democratic Republic of Congo (DRC) has been the center of a complex array of intricate conflicts involving local, national, and international factions. Despite a peace agreement attained in 2003, the eastern provinces remain unstable and volatile,[1] making DRC the scene of the world's deadliest crisis since World War II according to mortality figures obtained by the International Rescue Committee. It is estimated that 5.4 million excess deaths have occurred from August 1998 through April 2007, directly related to violence or indirectly through socioeconomical disturbances caused by conflict.[2]

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We will focus on the Ituri district in eastern DRC, where ethnic tensions, mobilized by several armed actors, induced extensive human rights abuses and killings from 1999 through 2006.[3] During the conflict, civilians were targeted for massacre, mutilation, rape, cannibalism, torture, house-to-house raids, or the looting and burning of their houses and sometimes entire villages. These atrocities earned Ituri the notorious name of "the bloodiest corner in DRC"[4] and led to the opening of the very first investigation of the International Criminal Court.[5] Moreover, all associated armed groups recruited children for military service, amounting to an estimated 30 000 child soldiers participating in conflicts in the eastern provinces.[6] The violence in Ituri killed more than 60 000 and caused more than 500 000 people to flee, often to encounter further violence and hardship on their way.[4] Approximately 210 000 remain displaced in the Ituri district, and occasional local upsurges of violence continue to create new flows of forced displacement.[7]

It is well known that exposure to war-related violence poses a serious threat to the

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emotional well-being of civilians.[8-10] With reference to children and adolescents, empirical studies have found convincing proof of the development of posttraumatic stress disorder (PTSD), among other disorders, as a consequence of war atrocities and related human rights violations. Reported prevalence rates grossly range from 22% to 90%.[11-16] However, evidence on the situation in Sub-Saharan Africa—the region of the world most affected by armed conflict—is lacking.[17-20] In the aftermath of the Rwandan genocide, a survey by the United Nations Children's Fund found that 95.5% of the 3030 eight- to 19-year-old individuals interviewed had witnessed violence during the war, and 79% reached the cutoff score for clinically significant symptoms of PTSD.[18] Exposure rates were similar in an adult sample (94.1%), whereas 24.8% were found to meet PTSD symptom criteria.[9]

Previous research has found certain factors that mediate the development of posttraumatic stress symptoms in children, which from an ecological framework can be seen as interconnected across microsystems, mesosystems, and macrosystems in the war-affected society.[21,22] As such, the amount and severity of traumatic exposure,[15,16,20-23] being female,[13,19-23] and the absence of parental support[13,23] were all found to be positively associated with symptoms. Age has also been discerned as an influencing factor, although its effect appears to vary according to each specific context.[16,19,23] However, adolescents often appear to be most afflicted by war violence,[10] while high expectations are imposed on them in the rehabilitation of war-affected societies.[24] This places the psychosocial recovery of adolescents high on the humanitarian and development agenda.[25-27]

We undertook this study to explore the prevalence of traumatic exposure and subsequent posttraumatic stress symptoms in adolescents and young adults aged 13 to 21 years on the one hand and mediating factors on the other. Such a screening is perceived as essential to estimate the impact of the Ituri crisis on mental health and to inform planning for intervention in its early recovery phase.[16] On the basis of previous research findings on the effects of war on child mental health, we hypothesized that cumulative traumatic exposure is associated with higher symptom levels (a dose-effect relationship). Also, we expected sex, the death of parents, age, and living area to affect exposure rates and symptom levels.

METHODS

PROCEDURE

From November 5, 2007, through February 5, 2008, 1051 secondary school pupils from 13 schools throughout Ituri were screened. None of the pupils refused participation, although 5 respondents were excluded owing to inordinate missing values, which reduced the sample size to 1046.

Ongoing security threats and dilapidated road infrastructure constrained our sampling frame, forcing us to use a cluster sampling procedure. We used the criteria of physical accessibility and security status to select 7 urban, peripheral, and rural target areas, with the humanitarian community's health zone map as our frame of reference. However, because of an unexpected fuel crisis and regional outbursts of cholera, we were obligated to narrow our sample to 4 health zones (Bunia, Rwampara, Nyankunde, and Rethy), all of which had been comparably stable for the past 2½ years. We used the extensive network of MEDAIR, an international nongovernmental organization for emergency relief that has been active in Ituri since 1997, to obtain contact with schools in the selected areas. Within each school, all second-grade pupils underwent assessment, unless practical reasons obliged us to act otherwise (eg, because of security regulations strongly discouraging traveling by dark, we were unable to assess certain class groups functioning in the afternoon). None of the schools invited to participate refused. They and their pupils were thanked for their participation with a donation of playground material.

The nature of our sample—secondary school pupils—guaranteed adequate literacy levels for anonymous self-report assessment, which took place in the classroom. To maximize comprehension, ample attention was paid to explaining response procedures. In addition, the researcher remained present for guidance and elucidation while pupils completed the questionnaires. Participants were given the choice between a French or Swahili questionnaire.

Information on local psychosocial projects was dispersed for those who needed further support. Furthermore, written informed consent was obtained from all participants. Because of practical constraints (possible illiteracy from caretakers and remote residence) and because of the developmental status of our participants, parental consent was not sought. This study design was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of Ghent University.

SCREENING INSTRUMENTS

Information was gathered through 3 self-administered instruments. First, variables such as age, sex, self-defined tribe, and whether the mother and father were still alive were assessed using a sociodemographic questionnaire. Potentially traumatic exposure was measured using the Adolescent Complex Emergency Exposure Scale, which was specially designed for war-affected adolescents in this region and consists of 14 yes/no questions, each referring to a specific event (C.M., I.D., E.B., and Y.R., unpublished data, April 2007). The sum of potentially traumatic events endured resulted in a measure of cumulative traumatic exposure for each respondent.

Finally, posttraumatic stress symptoms were assessed with the Impact of Event Scale–Revised (IES-R),[28] a scale based on the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition) criteria[29] for PTSD and consisting of the following 3 subscales: intrusion (7 items), avoidance (8 items), and hyperarousal (7 items). Respondents were asked to identify a specific event and indicate how much it distressed them by rating each item on a 5-point scale, in which 0 indicates not at all; 1, a little bit; 2, moderately; 3, quite a bit; and 4, extremely. In line with previous research assessing adolescent posttraumatic stress,[23] we inquired about symptoms experienced during the past month, a time frame that deviates from the original IES-R. Answering possibilities were accompanied by a visual probe (a dot growing to larger circles from 0 to 4). The IES-R yields a total score (calculated by taking the mean of all summed item scores) and subscale scores for intrusion, hyperarousal, and avoidance.

Although solely validated in the West and not specifically for adolescents, the IES-R has frequently been used in nonwestern contexts, including research on war-affected adolescents in Sub-Saharan Africa.[11,14] The items of the French version of the IES-R were presented to a local expert focus group and were found to have satisfactory face and content validity for use in eastern DRC (C.M., I.D., E.B., and Y.R., unpublished data, April 2007). In the present study, internal reliabili-

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ties for the subscales ranged from 0.79 to 0.84, whereas the Cronbach α for the total scale was estimated at 0.92 for the French version and 0.93 for the Swahili version.

The validated French version of the IES-R was previously found to have good test-retest reliability and acceptable convergent validity.[30] However, this does not necessarily imply the validity of this instrument (or of the Swahili version) in eastern DRC.

We used a cutoff value of 1.10 for suspected clinically significant symptoms. This value is comparable to the one used by Asukai et al[31] in 2002 and Derluyn et al[14] in 2004.

All instruments were translated into Swahili and back-translated twice, using 3 independent groups of native bilingual speakers (C.M., I.D., E.B., and Y.R., unpublished data, April 2007). Two pilot studies took place. In one, 8 pupils completed the questionnaire, accompanied by the researcher asking them for feedback on each question, leading to some minor changes in the phrasing of certain items and the general layout. The procedure was tested and adjusted according to the results of the second pilot study, which consisted of 2 classroom assessments.

STATISTICAL ANALYSIS

We used descriptive statistics to describe demographic characteristics and traumatic exposure for the entire group, groups according to living area (urban, peripheral, and rural), and girls vs boys. To examine the hypothesized influence of certain factors on exposure, we used independent-sample *t* tests to analyze group mean differences in cumulative traumatic exposure based on the following variables: sex, death of father, and death of mother. To compare traumatic exposure across living area and age group, we opted for 1-way analysis of variance with Games-Howell post hoc tests to address unequal variances. Differential exposure to specific traumatic events across categories was tested by calculating the χ^2 statistic.

We used univariate analysis of covariance to investigate the presupposed effects of demographic characteristics (sex, age category, mother alive, father alive, and living area) and traumatic exposure (covariate) on the total IES-R score. We entered all of the main effects and first-order interactions with traumatic exposure in the model. For analytic purposes, we also included the second-order interaction among traumatic exposure, sex, and living area and the interaction between sex and living area.

Significance for χ^2-related *P* values was set at $P \leq .001$. For all other statistical determinations, significance levels were established at $P < .05$. A partial η^2 statistic was used as an estimate of effect size.

RESULTS

SOCIODEMOGRAPHIC PROFILE OF RESPONDENTS

Table 1 summarizes the sociodemographic profile of our sample. The mean age of our respondents was 15.8 (SD, 1.8; range, 13-21) years; 569 (54.4%) were boys and 477 (45.6%) were girls. Of 1042 respondents, 446 (42.8%) were living in town (Bunia center), 334 (32.1%) in its periphery, and 262 (25.1%) in rural areas (Rwampara, Nyankunde, and Rhety). Thirty-two different tribes were represented in our sample, mainly Hema (241 [23.0%]), Bira (192 [18.4%]), and Lendu/Ngiti (165 [15.8%]). Of 1016 respondents who answered all questions regarding parental death, 259 respondents (25.5%) had 1 parent dead, whereas 78 (7.7%) had both parents dead.

Table 1. Characteristics of Participants

	No. (%) of Participants[a]		
	Girls (n=477)	Boys (n=569)	All (N=1046)
Age, y			
13-14	140 (29.7)	121 (21.4)	**261** (25.2)
15-16	204 (43.2)	243 (43.0)	**447** (43.1)
17-21	128 (27.1)	201 (35.6)	**329** (31.7)
Living area			
Rural	122 (25.6)	140 (24.7)	**262** (25.1)
Urban	190 (39.9)	256 (45.2)	**446** (42.8)
Peripheral	164 (34.5)	170 (30.0)	**334** (32.1)
Father deceased[b]	122 (26.0)	161 (28.8)	**283** (27.5)
Mother deceased[c]	63 (13.4)	77 (13.8)	**140** (13.6)
Tribe			
Hema	89 (18.7)	152 (26.7)	**241** (23.0)
Bira	85 (17.8)	107 (18.8)	**192** (18.4)
Lendu/Ngiti	79 (16.6)	86 (15.1)	**165** (15.8)

[a] Denominators vary because of missing data. Because of rounding, percentages may not total 100.
[b] Denominators are 470 girls, 560 boys, and 1030 total participants.
[c] Denominators are 471 girls, 557 boys, and 1028 total participants.

POTENTIALLY TRAUMATIC EXPOSURE AND MEDIATING VARIABLES

Of 1041 respondents, 989 (95.0%) reported 1 or more traumatic events. On average, the adolescents had been exposed to 4.71 potentially traumatic events (median, 5; range, 0-13), whereas 98 respondents (9.4%) reported a total of 9 or more traumatic experiences.

Table 2 shows the type and cumulative number of potentially traumatic events to which the study population was exposed according to sex, living area, and age group. Among our sample, 72.4% reported the violent death of family members and friends (with prevalence rising to 86.6% in rural areas), and 65.7% reported witnessing someone being killed. Also remarkable was the proportion of adolescents who had been kidnapped by armed groups (18.6% of the total sample and 28.5% of those in the oldest category) and had witnessed (33.2%) or experienced (9.7%) sexual violence.

The difference in mean (SD) cumulative exposure in boys (5.03 [2.76]) compared with girls (4.33 [2.58]) was found to be significant (95% confidence interval [CI], −1.02 to −0.37). Furthermore, mean reported exposure varied according to living area groups ($F_{2,1036}=28.63$; $P<.001$), with adolescents in rural areas reporting the most total traumatic exposure (the mean [SD] values for living area groups are given in Table 2). Post hoc analyses of living area group mean difference indicated that, on average, adolescents currently living in the Bunia periphery had experienced significantly fewer traumatic events than their peers in rural (95% CI, −1.92 to −0.95) and urban (95% CI, −1.70 to −0.80) areas. Finally, the difference in mean exposure to traumatic events between all 3 age groups was also found to be significant ($F_{2,1029}=52.56$; $P<.001$) (the group mean [SD] values are given in Table 2). Adolescents aged 17 to 21 years reported the highest exposure to traumatic events, followed by those aged 15 to 16 years, whereas

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Table 2. Traumatic Exposure per Subgroup and for Total Sample[a]

Type of Trauma	Sex			Living Area				Age, y				Total (N=1046)
	Girls (n=477)	Boys (n=569)	χ^2 Test	Urban (n=446)	Peripheral (n=334)	Rural (n=262)	χ^2 Test	<15 (n=261)	15-16 (n=447)	>16 (n=329)	χ^2 Test	
Has been separated from family	89 (19.2)	129 (23.0)	2.15	123 (28.4)	50 (15.2)	44 (17.0)	23.11[b]	46 (17.9)	90 (20.7)	80 (24.7)	4.10	218 (21.3)
Has witnessed violent acts against family members or friends	90 (19.7)	131 (23.8)	2.42	101 (23.9)	47 (14.4)	73 (28.7)	18.53[b]	37 (14.7)	78 (18.1)	103 (32.6)	32.47[b]	221 (22.0)
Had family members or friends violently killed during the war	331 (70.4)	418 (74.1)	1.75	312 (71.1)	207 (62.7)	226 (86.6)	42.07[b]	163 (62.9)	304 (69.1)	273 (83.7)	34.83[b]	749 (72.4)
Experienced the looting/burning of their house	293 (62.5)	352 (63.0)	0.03	284 (65.0)	160 (48.8)	199 (76.8)	50.32[b]	130 (50.2)	262 (59.7)	247 (76.7)	46.02[b]	645 (62.7)
Experienced gunfire attacks	290 (63.2)	378 (67.7)	2.32	304 (70.0)	173 (53.6)	189 (73.8)	32.29[b]	135 (53.4)	280 (64.2)	247 (77.4)	36.98[b]	668 (65.7)
Has seen someone being killed	279 (59.5)	399 (70.9)	14.71[b]	299 (68.4)	191 (57.9)	185 (70.9)	13.50[b]	137 (53.1)	281 (63.6)	254 (78.6)	43.05[b]	678 (65.7)
Has seen dead bodies or mutilated bodies	291 (62.0)	383 (67.5)	3.42	295 (67.4)	196 (69.0)	180 (68.7)	7.84	142 (54.6)	282 (63.8)	244 (74.8)	26.49[b]	674 (65.7)
Has been injured during the war	58 (12.3)	111 (19.6)	10.21[b]	90 (20.4)	41 (12.4)	38 (14.6)	9.72	30 (11.6)	66 (14.8)	69 (21.2)	10.57	169 (16.3)
Has been in prison	18 (3.8)	52 (9.2)	11.68[b]	42 (9.6)	8 (2.4)	20 (7.7)	15.38[b]	4 (1.6)	28 (6.3)	36 (11.1)	21.16[b]	70 (6.8)
Has been enrolled in an armed group	24 (5.1)	82 (14.7)	25.27[b]	59 (13.6)	20 (6.1)	27 (10.4)	11.39	14 (5.4)	41 (9.3)	49 (15.2)	15.46[b]	106 (10.3)
Has been kidnapped by an armed group	59 (12.6)	133 (23.6)	20.62[b]	101 (23.1)	39 (11.8)	52 (19.9)	16.19[b]	28 (10.9)	67 (15.2)	93 (28.5)	35.26[b]	192 (18.6)
Has been forced to kill, injure, or rape someone	14 (3.0)	55 (9.8)	18.76[b]	38 (8.5)	13 (3.9)	18 (6.9)	7.05	7 (2.7)	30 (6.8)	32 (9.9)	11.86	69 (6.7)
Has seen someone being raped	165 (35.0)	180 (31.8)	1.16	156 (35.3)	94 (28.3)	92 (35.1)	5.02	70 (26.9)	148 (33.4)	123 (37.6)	7.51	345 (33.2)
Has been sexually abused	49 (10.5)	50 (9.0)	0.65	40 (9.3)	26 (7.8)	31 (11.9)	2.86	8 (3.1)	45 (10.4)	43 (13.3)	18.12[b]	99 (9.7)
Total exposure score, mean (SD)	4.33 (2.58)	5.03 (2.76)		5.06 (2.81)	3.81 (2.50)	5.24 (2.46)		3.66 (2.30)	4.49 (2.69)	5.79 (2.58)		4.71 (2.70)

[a] Unless otherwise indicated, data are expressed as number (percentage) of participants. Denominators vary because of missing data.
[b] $P \leq .001$.

Table 3. IES-R Scores in 1046 Adolescents

IES-R Subscale	Mean (SD) [Range] Score
Intrusion	1.29 (0.91) [0.00-4.00]
Avoidance/numbing	1.28 (0.84) [0.00-3.75]
Hyperarousal	1.28 (0.96) [0.00-4.00]
Total	1.28 (0.82) [0.00-3.91]

Abbreviation: IES-R, Impact of Event Scale–Revised.

the youngest group, aged 13 to 14 years, was least exposed.

Significant differences in mean exposure were found while comparing groups on reportage of death of the father (mean [SD], 5.73 [2.70]; 95% CI, –1.78 to –1.06) and reportage of the death of the mother (mean [SD], 5.85 [3.12]; 95% CI, –1.82 to –0.87).

POSTTRAUMATIC STRESS SYMPTOMS AND MEDIATING VARIABLES

The mean scores for the IES-R scales were notably high, as shown in **Table 3**. Of 990 adolescents in our sample, 52.2% (n=569) had a PTSD symptom score higher than 1.10 (the threshold used for clinically significant symptoms).

When we examined the scores, we found that the mean symptom scores did not differ significantly across groups based on the following variables: age category ($F_{2,952}=0.71$; $P=.49$), death of the mother ($F_{1,952}=0.38$; $P=.54$), death of the father ($F_{1,952}=0.02$; $P=.90$), and sex ($F_{1,952}=0.24$; $P=.62$). We found a highly significant positive main effect of traumatic exposure on IES-R total score ($F_{1,952}=114.11$; $P<.001$; $\eta^2=0.11$) and a small but significant effect of living area ($F_{2,952}=4.36$; $P=.01$; $\eta^2=0.01$) that was strongest in rural areas, followed by urban areas and weakest in the periphery. However, the effect of living area can be further refined because this variable was also involved in 2 significant interaction effects found in our model: a first-order interaction with traumatic exposure ($F_{2,952}=5.03$; $P=.01$; $\eta^2=0.01$) and a second-order interaction effect among sex, living area, and traumatic exposure ($F_{2,952}=4.72$; $P=.01$; $\eta^2=0.01$). The effect of exposure was strongest for girls in urban areas, followed by the effects for boys (who as a group did not differ in symptom scores across living areas) and for girls in rural areas. The relation was weakest for girls living in the

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periphery. Of all the other interactions entered in the model, none had a significant effect.

COMMENT

This study shows the enormous effect that the Ituri conflict had on the lives of Congolese children because 95.0% of all adolescents aged 13 to 21 years in our sample reported at least 1 potentially traumatic event. This massive degree of exposure is comparable to that of the Rwandan ethnic conflict in 1994.[9,18] Differences in degree and type of exposure across urban, peripheral, and rural areas reflect the locality of the conflict. It is well known how combating militias and coalitions differed across regions and how they all used different tactics and rituals during the conflict.[4] In consequence, differential exposure creates geographically diverse psychosocial needs, demonstrating the highest priority for rural areas, followed by urban areas. In line with previous findings, boys experienced more potentially traumatic events than did girls. This is supported by the fact that boys appeared to be more actively involved in the war compared with girls (eg, as child soldiers), possibly bringing them into riskier situations. The same explanation could apply to the higher traumatic exposure rates found in older groups.[10,16] Being younger is generally associated with a higher degree of protection by significant others, reducing the risk of traumatic exposure.[10,13,19] Likewise, we found the death of the mother or father to be associated with higher exposure rates.[13-15,19]

With reference to the risk and protective factors expected to mediate mental health outcomes after traumatic exposure, our data strongly support the existence of a dose-response relationship between the amount of trauma to which the individual was exposed and the severity of symptoms.[13,19-21] Contrary to our hypotheses, the lack of parental support did not produce higher symptom levels.[14,19] This finding could be elucidated by the extremely high exposure rates in the community and the generalized fragmentation of community and family ties, breaking down support resources and consequently leading to a high risk for the development of PTSD symptoms in all children.[20,21] On the other hand, family structures in DRC do not revolve around the nuclear family, possibly limiting the significance of the protective effects of parental support.[32]

The expected higher vulnerability of girls[13,19-23] only appeared in urban areas. The effect of living area on the development of symptoms after traumatic exposure is difficult to interpret because it is probably influenced by differences on the mesosystem level not assessed within this study. For a more thorough understanding, we need more insight into the role of multilevel risk and protective factors mediating the development of these symptoms.

During the more than 3 years since the violence climaxed, approximately half of all respondents (52.2%) met symptom criteria for PTSD (IES-R total score, >1.10). However, these numbers should be interpreted with caution because they do not necessarily provide an indication of functional disability resulting from the symptoms.[33] Furthermore, it has been argued previously that the elevated occurrence of symptoms could be interpreted as somewhat normal in a context of mass violence and is bound to ameliorate naturally as society and related support resources are restored.[20,34] Nonetheless, a notable proportion within the community may develop sustained psychosocial impairments. Therefore, it seems reasonable to conclude that, if psychological needs remain unattended, intrapsychological and consequently relational and community problems could persist.[13,15,16,19-21,34] Earlier research has also found that traumatic exposure and related symptoms predicted feelings of revenge and negative attitudes toward reconciliation, potentially inducing renewed cycles of violence.[9,35] From this perspective, it becomes obvious that mental health care should be addressed as part of the total relief, rehabilitation, and reconstruction processes in conflict-affected societies.[10]

Although the literature on the effectiveness of psychosocial interventions for children in war zones is sparse, evidence shows that a community-based approach is preferred, consistent with the specificities of this context, such as the large number of affected individuals, continuing instability, shortage of mental health professionals, and limited resources.[15,16,21] Based on our findings and experience, we agree that culture-appropriate nonspecific group-based psychosocial interventions, aimed at creating a healthy, stable environment and the promotion of resiliency, are likely to address psychosocial needs in a sustainable and locally relevant way.[16]

Performing research in a developing and moreover war-torn country may be considered particularly challenging. The characteristic challenges we encountered, such as the lack of infrastructure and threats to security and health, have directed us toward a cross-sectional research design with certain sampling limitations and toward reliance on self-report measures. These methodological choices come along with well-known restraints[34] that should be considered when interpreting the generalizability of our findings. Furthermore, the school population of DRC could be expected to differ from the population not attending school, although several school programs run by nongovernmental organizations and United Nations agencies have made successful efforts to ameliorate school accessibility.[27,36] However, no recent estimates of the proportion of children attending secondary school are available. Even if a bias of socioeconomic background affected our sample, our findings on the extreme level of traumatic exposure and PTSD symptoms are more likely to underestimate the general situation because higher socioeconomic status is often associated with a lower degree of exposure and symptoms.[10,19]

Despite the importance we ascribed to the cultural adjustment and iterative back-translation of our instruments and procedure, transcultural errors cannot be excluded. Finally, the low refusal rate could be explained by the engagement of the Congolese people to ameliorating their circumstances. However, because the leading researcher was obviously from the West, unequal power relations and high expectancy could have played a role.[8,20]

CONCLUSIONS

The rehabilitation of postconflict areas involves many aspects, with psychosocial needs not always given high pri-

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ority.[8] Because PTSD symptoms may constrain functioning in society and restrict attitudes toward reconciliation,[9,35] they should be dealt with as part of the reconstruction agenda as well. Our study provides, to our knowledge, the first findings on exposure rates and posttraumatic stress symptoms in war-affected adolescents in eastern DRC and offers indications for psychosocial needs. As the peacebuilding process in DRC currently moves away from crisis relief and toward development aid, the need for psychosocial care, especially in rural areas with the highest traumatic exposure and the least access to relief and rehabilitation services, should be set on the agenda.

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