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Relationships of Childhood Adverse Experiences With Mental Health and Quality of Life at Treatment Start for Adult Refugees Traumatized by Pre-Flight Experiences of War and Human Rights Violations

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Abstract: Adverse and potentially traumatic experiences (PTEs) in childhood were examined among 54 adult refugee patients with pre-flight PTEs of war and human rights violations (HRVs) and related to mental health and quality of life at treatment start. Extent of childhood PTEs was more strongly related to mental health and quality of life than the extent of war and HRV experiences. Childhood PTEs were significantly related to arousal and avoidance symptoms of posttraumatic stress disorder (PTSD) and to quality of life, whereas pre-flight war and HRV experiences were significantly related to reexperiencing symptoms of PTSD only. Within childhood adversities, experiences of family violence and external violence, but not of loss and illness, were significantly related to increased mental health symptoms and reduced quality of life. These results point to the importance of taking childhood adverse experiences into account in research and treatment planning for adult refugees with war and HRVs trauma.

Key Words: Refugee patients, childhood adverse events, war and human rights violation trauma, quality of life, mental health symptoms

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Potentially traumatizing events (PTEs) experienced by refugees are connected with numerous adverse historical, social, and political conditions (George, 2010), embedded in a shifting and evolving cultural context (Kirmayer, 2006). Since the refugee trauma field began to evolve around the 1980s, much research has been devoted to the relationships between refugees' experiences of torture, hardships of war, and persecution in their homeland and their mental health and quality of life in exile (for early contributions, see *e.g.*, Allodi, 1991; Eitinger, 1959; Holtzman and Bornemann, 1990; Mollica et al., 1987; Westermeyer et al., 1983). Similarly, the relationships between traumatic experiences in childhood and adult mental health have been extensively investigated, especially in the last decade (see *e.g.*, Scott et al., 2010), though with roots back to Freud (1896/1962) and his contemporaries. The present study brings these two lines of study together. We investigate childhood adverse experiences relative to later experiences of war and human rights violations (HRVs) in relation to mental health and well-being in a clinical adult refugee sample. The few refugee studies conducted along these lines do not offer a conclusion to whether adult experiences of torture and other atrocities of war are so pervasive that they override the effects of childhood adversities on later mental health.

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The refugee trauma field encompasses early and later insights from research in various areas like developmental psychology, neuroscience, cultural psychiatry, anthropology, social and political conditions, complex trauma, and posttraumatic stress disorder (PTSD). We cannot do justice to the many contributions and debates that have been central to the refugee trauma field. For early publications in some of these fields, see Bracken et al. (1995), Chakraborty (1991), and van der Kolk et al. (1996). We refer also to Kienzler's (2008) literature review of war trauma and PTSD in an interdisciplinary perspective.

What makes adverse events traumatic to the individual depends on individual dispositions and life experiences, on the nature of the adversities, and on cultural and societal values and roles (Hollan, 2013). Warfare, persecution, and torture, as well as family violence and child maltreatment, represent special kinds of trauma that deeply affect the individual, family, and society at large (Allen et al., 2006; Haviland et al., 1995; Schore, 2002). Interpersonal and intentional acts of violence like these are associated with more severe symptoms of posttraumatic stress than natural disasters and accidental human-caused events (Briere, 2004).

There are unclear boundaries between what constitutes psychologically traumatizing events and events that should only be regarded as adverse or highly stressful. In the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV; American Psychiatric Association (1994), traumatic events are defined by the A1 criterion for PTSD as events involving the experiencing, witnessing, or confrontation with actual or threatened death, serious injury, or threats to the physical integrity of the individual or others. The DSM-V American Psychiatric Association (2013) has added events of actual or threatened sexual violence and included indirect exposure to aversive events in the course of professional duties. Severe experiences like torture, rape, imprisonment, witnessing violence against family members, and being close to death have individually been associated with PTSD in refugee studies (*e.g.*, Keller et al., 2006). Further, a dose–response relationship has been reported between number and intensity of trauma exposures and severity of posttraumatic symptoms (Bogic et al., 2012; Johnson and Thompson, 2008; Keller et al., 2006; Marshall et al., 2005; Steel et al., 2009), depression (*e.g.*, Steel et al., 2009), and indices of psychosocial dysfunction (Steel et al., 2002). According to Weathers and Keane (2007), the repeated finding of a dose–response relationship between PTEs and symptoms of PTSD has led to a shift from a categorical to a dimensional understanding of what may be psychologically traumatizing. This means turning from a focus on one highly adverse event to encompassing the possible traumatic effect of a series of adversities that are sometimes less severe.

Many victims of war and HRVs experience all-encompassing insecurity, fear, and grief (Horowitz et al., 1994), as well as intense resentment and anger in response to the injustice involved (Steel et al., 2011). Identity, meaning, values, worldview, coping styles, and social functioning are often affected (Allen et al., 2006; Rosenbaum and Varvin, 2007). When forced migration adds to the multiple pre-flight losses and traumatic experiences of many refugees, the challenges of

acculturation, ongoing worries, and hardships in the post-migration phase may increase the severity of symptoms and suffering (*e.g.*, Allen et al., 2006; Carlsson et al., 2006). The cumulative burden of pre-flight, flight, and post-flight experiences is reflected in the complex symptom patterns and comorbidities found among refugee patients in clinical settings (Carlsson et al., 2014).

Studies of traumatized refugees in Western countries generally find high levels of distress such as symptoms of PTSD, depression, anxiety, and somatization (*e.g.*, Alemi et al., 2014; Priebe et al., 2010; Steel et al., 2002; Taylor et al., 2013) and problems with social functioning, work achievement, and general life satisfaction (*e.g.*, Marshall et al., 2005; Vaage et al., 2010). There has been extensive discussion regarding the impact of culture on what evokes emotional distress, how emotional distress is experienced and expressed in different cultures, and the use of Western diagnoses for members of non-Western cultures (*e.g.*, Hinton and Lewis-Fernández, 2011; Kienzler, 2008; Summerfield, 2000). However, symptoms of PTSD have been found in culturally diverse samples after exposure to trauma, indicating that some common human reactions to extreme stress exist (Hinton and Lewis-Fernández, 2011). Depression, a common affect and disorder among refugees in response to loss and trauma, afflicts members of all ethnic groups but are experienced and expressed differently across cultures (Kleinman, 2004). With time, refugees gradually adapt to the culture of their host country, and their beliefs and values become a mix of their original and new cultures (Carlsson et al., 2014), changing their understanding and expression of mental health issues.

Overwhelming emotional experiences, in terms of acute and ongoing psychic stress, have been related to neurovegetative changes, enduring bodily changes, and sometimes death (*e.g.*, Terranova et al., 2011). Traumatic experiences and chronic stress interfere with the regulatory processes of physiology and affect, leading to increased emotional reactivity and vulnerability to new or persistent stress. Dysfunctions in regulatory mechanisms are associated with intense arousal, multiple somatic symptoms, panic attacks, and destructive cycles of distress, experienced and expressed in ways that depend on local meaning and context (Hinton and Kirmayer, 2013). The underlying processes of severe traumatization also involve impairment of cognitive processes like memory, attention, and processing speed (Brodman et al., 2011). A number of studies have demonstrated an association between the severity of posttraumatic and depressive symptoms and impaired cognitive functioning (Steel et al., 2011; Johnsen and Asbjørnsen, 2009), with implications for learning the language of the host country and managing a job (Steel et al., 2011). Higher levels of psychological distress and symptoms of PTSD have been significantly related to poor host country language skills (Gorst-Unsworth and Goldenberg, 1998; Söndergaard and Theorell, 2004) and unemployment (*e.g.*, Kivling-Bodén and Sundbom, 2002; Teodorescu et al., 2012a), both impeding life in exile.

Adverse experiences have different consequences depending on the individual's developmental phase (Zeanah, 2009). Especially during childhood, adverse events that are severe, recurring, or long-lasting can seriously affect major aspects of personality functioning and lead to increased risk of interpersonal maladjustment and psychopathology (Anda et al., 2006; Yehuda et al., 2001). Wells et al. (2014) found childhood abuse increases the risk of depression later in life. Moreover, interpersonal neglect, abuse, and violence often lead to difficulties in relating to others (Briere and Spinazzola, 2005) and to a reduced capacity to use others for comfort, safety, and to alleviate negative emotional states (*e.g.*, Schore, 2009). Various researchers have found early adverse experiences to be risk factors for the development of PTSD after later exposure to adversities (Breslau et al., 2014; Briere 2004; Neuner et al., 2004). Here, we propose that severe or repeated PTEs experienced in childhood have implications for the ability to cope with later PTEs of war and HRVs and therefore represent additional risk factors for refugees' mental health and functioning in exile.

There is rising recognition of the impacts of early and of cumulative adversities and PTEs across the lifespan (Martins et al., 2014; Weathers and Keane, 2007). However, literature searches (PsychInfo/PubMed/Google Scholar) revealed that published studies on the adverse childhood experiences of adult refugees were scarce. Eckart et al. (2012), in a PTSD-related neuroscientific study comprising mainly Kurdish adult refugees, found that adverse childhood experiences were associated with a negative effect on the hippocampus, possibly increasing vulnerability to the biological and psychological consequences of stress and PTEs later in life. More relevant to the present study, a two-generation study by Olema et al. (2014), involving 100 Ugandan adolescents and their parents, investigated the relative effects of war-related trauma versus experiences of child maltreatment in both generations. Both adolescents and adults were severely affected by both war-related trauma and childhood trauma, yet only maltreatment during childhood significantly accounted for PTSD in the parents.

The Norwegian population was relatively homogenous until the late 1950s when about 1500 Hungarian refugees came to the country. Then followed labor immigrants and, later, refugees from increasingly distant parts of the world (see Brochmann and Kjeldstadli, 2008). In January 2014, there were 179,500 individuals with refugee backgrounds living in Norway, representing 3.5% of the total population and 28.4% of the immigrant population (Statistics Norway, 2014). According to existing research (*e.g.*, Fazel et al., 2005; Vaage et al., 2010), mental health problems are more frequent in the refugee population than in the population overall. Most refugee patients in Norway are treated in the primary health care services (Varvin and Aasland, 2009). Refugees with more severe problems are treated in the mental health specialist services. In these services, therapists must be able to respond therapeutically to a wide range of psychiatric conditions embedded in multiple cultural contexts and expressions. The patients receive psychotherapy, often combined with pharmacological treatment. Theoretical orientation and length of therapy vary.

The present study is an early part of a naturalistic, mixed-method, prospective, longitudinal research program comprising a heterogeneous group of adult refugee mental health patients with pre-flight experiences of war and HRVs, typical of those referred to specialist treatment services in Norway. A slightly smaller set of these participants was previously described in a study of pretreatment personality functioning in relation to mental health and quality of life (QOL) (Opaas and Hartmann, 2013). Investigation of adversities experienced in childhood can give indications of individual vulnerability, which may contribute to exacerbated reactions to war, HRVs, and hardships during and after flight, thus explaining some of the individual differences in mental health and QOL in these patients. The extent of various mental health symptoms and the personal experience of one's QOL capture different aspects of the experience of health and well-being. Different timing or types of PTEs may be differently related to certain mental health symptoms or aspects of QOL and may show different courses of change in future follow-up.

In this study, "(psychological) trauma" refers to experiences that are emotionally overwhelming and that outweigh an individual's psychological coping capacities, thereby giving rise to symptoms of psychological distress. The term "potentially traumatizing events" acknowledges that it is the individual's response that determines whether an event is "traumatic" (*e.g.*, Weathers and Keane, 2007). The terms "potentially traumatic" and "adverse" refer to harmful, dangerous, or hurtful events or experiences that, separately or cumulatively depending on the individual and the circumstances, may or may not have had a traumatizing effect. Although there is no simple relationship between PTEs and traumatization, here individuals are considered traumatized when they have been exposed to highly aversive events and exhibit severe posttraumatic symptoms in the assessment. By "pre-flight" experiences of war and HRVs, we refer to the more or less immediate experiences leading to flight, experienced by all participants, without

excluding experiences related to war and HRVs that have happened earlier in life.

Our aim was to investigate the early and cumulative exposure of participants to adversities or PTEs preceding flight, and to analyze these in relation to the participants' mental health and QOL. We aimed to study: (a) adverse childhood experiences within and outside the family before age 18; (b) participants' PTEs related to war, persecution, and other HRVs; (c) the relationships of extent of childhood adverse events/PTEs and extent of PTEs related to war and HRVs, individually and together, with the following outcome variables: symptoms of PTSD, anxiety, and depression, and four QOL domains (physical health, psychological health, social relationships, and environmental conditions) and compare the strength of these relationships; and (d) to investigate how certain kinds of childhood adversities were related to negative outcomes. We hypothesized, first, that a greater number of pre-flight PTEs related to war and HRVs were related to more symptoms of psychological distress and lower QOL, and second, that more childhood adversities or PTEs were related to more symptoms of psychological distress and lower QOL. The first hypothesis only considered PTEs related to war and HRVs. The second hypothesis took various kinds of adversities and PTEs into account, such as loss, serious illness, family abuse, and war-related experiences, but only if experienced in childhood (up to 18 years).

METHODS

Study Design

Our choice of method was guided by the following concerns: (a) to permit comparison with other clinical refugee samples; (b) to provide a starting point for future investigations of individual and group level change; and (c) to be partly exploratory and allow investigation of aspects we consider relevant, though they may have been rarely studied in this population. It was necessary to limit the number and types of assessment methods to avoid causing excessive strain in the participants. A formal diagnostic interview was therefore not prioritized as part of the research procedure. Diagnoses and symptoms of PTSD, depression, and anxiety refer to the self-report instruments used.

Participants

We collaborated with two general mental health outpatient clinics at District Psychiatric Services and with six psychotherapists in publicly funded individual practices in the Oslo area to recruit refugee patients according to the following inclusion criteria: adult patients with a refugee background referred to and accepted for treatment in specialist mental health outpatient services, with mental health problems evaluated as related to pre-flight experiences of war and HRVs such as persecution, captivity, or torture. We were interested in various mental health problems experienced by refugees that were severe enough for them to be admitted for treatment to these services. A formal diagnosis of PTSD was not required because other mental health disorders may also be related to the impact of refugee trauma (*cf.* the Introduction section). An ability to communicate in Norwegian was not required. Exclusion criteria were severe psychosis or severe drug problems at the time of inclusion. The clinicians who were responsible for intake to treatment evaluated the patients for recruitment to the study. The broad selection criteria allowed us to recruit refugees with various ethnic and cultural backgrounds and with different mental health problems and levels of functioning, thus reflecting the clinically and culturally heterogeneous refugee patient population in these services.

From 2006 to 2009, all patients who were eligible according to the selection criteria were asked to take part in the study. Among the 72 patients asked to participate, 18 patients declined; 15 did so when they were first asked and the remaining three after one introductory meeting with us. Reasons given for declining were not wanting to open up to more people than necessary, not wanting to go into details about their trauma history, or lack of trust in interpreters. The remaining 54 patients accepted and were included in the study, resulting in an inclusion rate of 75%.

Study participants came from 15 Middle Eastern countries (55.6%, $n = 30$) with Iraqis as the largest group (31.5%, $n = 17$), the Balkans (16.7%, $n = 9$), East and Central Africa (7.4%, $n = 4$), Chechnya (11.1%, $n = 6$), and China, Vietnam, and Afghanistan (7.4%, $n = 4$). Among the 54 participants, 64.8% ($n = 35$) were male, mean age was 39.3 years (SD = 8.2; range 21–58), and mean residence time in Norway was 10.5 years ($SD = 6.5$; range 0.5–27). We found that 64.8% ($n = 35$) were married and 81.5% ($n = 44$) had children. Mean education in the country of origin was 9.7 years (SD = 4.5; range 0–16). Mean age when entering Norway was 28.8 years (SD = 8.4; range 5.4–49.7). Only one participant had come to Norway in childhood. Among all participants, only 22.2% ($n = 12$) were employed; all on sick leave at the time of assessment. Despite frequent multiple language competence in their home region and long average residence times in Norway, only 50.0% ($n = 27$) could be interviewed in Norwegian. We consider lack of Norwegian skills and unemployment partly as indications of these patients' mental health suffering and problems with daily life functioning. This seems reasonable because a mandatory, extensive introductory program provides Norwegian language training. Further, although individuals with minority backgrounds often experience discrimination in the job market in Norway, rates of unemployment are low; it is generally possible to get a job. Forty-one percent of participants had histories of mental health treatment. All but two participants had either Norwegian citizenship or permanent residence. No major concerns were at stake (*e.g.*, residency permits) that would systematically bias participant responses to the interviews during research.

Procedures

The study was approved by the Norwegian South-East Regional Committee for Medical and Health Research Ethics (REK, South-East; https://helseforskning.etikkom.no) and was conducted according to the Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects (World Medical Association, 2013). Receiving treatment was not dependent on participation in the research project. Taking part in the study was voluntary and all participants submitted a written informed consent.

Assessment of the participants consisted of five to six sessions, about 10 full hours in total, which were tape-recorded and transcribed. The authors, who are experienced clinicians, conducted the interviews and personally administered all of the instruments. Both researchers met with each participant, thereby enabling joint evaluation and a broader understanding of the patient. Questionnaires were in Norwegian and mostly presented in interview format. Interpreters trained for clinical settings were appointed at the advice of the intake teams, at the request of the participant, or as soon as we noticed insufficient communication skills in Norwegian. We had only in-room interpretation, and both researchers were skilled in the use of interpreters. The use of interpreters in clinical and research practice has inherent problems of a linguistic and cultural nature, well known in transcultural settings (Crosby, 2013). The different cultural traditions and the multitudes of languages among our participants required vigilance to ensure that they understood the questions. In addition, illiteracy, concentration problems, headaches, and other difficulties often made the interview situation demanding and underlined the need to create a holding atmosphere. Linguistic and paralinguistic cues were used to contribute to mutual understanding during our interviews. The items on the questionnaires and checklists brought up associations in many participants. Listening to these helped us to understand how they had understood the question, allowing us to clarify when needed. Such linguistic and transcultural

dialogue on the topics and questions was time-consuming, but we believe this procedure added to the validity of our results.

Instruments and Measures

Our choice of instruments are in line with Carlsson et al. (2014) who, while recognizing the complexity of refugee mental health, recommended using ordinary instruments and measures to permit comparison of findings. In accordance with many of the studies referenced below, we included measures of mental health symptoms and QOL. Questionnaire mean scores were computed if at least 80% of the items were completed.

The Harvard Trauma Questionnaire (HTQ) and The Hopkins Symptom Checklist-25 (HSCL-25) were adapted for use in refugee studies by Mollica et al. (2004) and have been widely used in the study of refugee trauma and mental health (*e.g.*, Carlsson et al., 2006; Gerritsen et al., 2006; Steel et al., 2011). Both instruments are considered to have satisfactory reliability and validity in refugee populations (*e.g.*, Hollifield et al., 2002; Keller et al., 2006; Renner et al., 2006). Symptoms in the last week are rated on a 4-point scale from 1 (not at all) to 4 (extremely). According to Mollica et al. (2004), these instruments should be administered to traumatized refugees by health care workers.

The HTQ Part I (*HTQ-Trauma Events*) (variable names are capitalized and introduced in italic) is a checklist of PTEs that describes eight general categories that are regarded as traumatic events in most cultures (Mollica et al., 2004): material deprivation, war-like conditions, bodily injury, forced confinement and coercion, being forced to harm others, disappearance, violent death or injury of loved ones, and witnessing violence to others. The list was modified from the Revised Cambodian Version to encompass the PTEs most relevant to a multinational sample and came to consist of 37 types of PTEs related to war, persecution, and other HRVs. This part of the HTQ does not specify any range of time or age at which the events were experienced.

The HTQ Part IV, items 1 to 16 of the revised Cambodian version of HTQ-R (Mollica et al., 2004) were derived from the three symptom clusters reexperiencing, arousal, and avoidance, constituting criteria for PTSD according to DSM-IV. In the HTQ, a mean PTSD score of ≥2.5 is considered "checklist positive" for PTSD. Validation studies in refugee populations have found HTQ cutoff levels for a diagnosis of PTSD ranging from 1.17 to 2.5, which are partly dependent upon the cultural background of the sample (Jakobsen et al., 2011). In the present study, we used the original 2.5 cutoff because it most closely fitted the composition of our sample, and we preferred using the standard and more restrictive cutoff. We computed the mean score of the 16 items (*PTSD-Total*) and of the three subscales *PTSD-Reexperiencing* (items 1, 2, 3, and 16), *PTSD-Arousal* (items 6, 7, 8, 9, and 10), and *PTSD-Avoidance* (items 4, 5, 11, 12, 13, 14, and 15).

The HSCL-25 measures symptoms of anxiety and depression. Although not specifically developed for use in refugee populations, this instrument has been found to have good reliability and validity in clinical refugee samples (*e.g.*, Hollifield et al., 2002). The first 10 questions or items, which constitute the anxiety score (*Anxiety*), do not qualify for a specific DSM-IV diagnosis of anxiety but is consistent with several anxiety-related disorders; the next 15 items, constituting the depression score (*Depression*), are consistent with the DSM-IV diagnosis of major depressive disorder (Mollica et al., 2004). A mean depression score of >1.75 is considered checklist positive for major depressive disorder, and an anxiety score of >1.75 is considered a clinical level of anxiety.

The World Health Organization Quality of Life-BREF (WHOQOL-BREF; WHOQOL Group, 1998) was developed as a cross-cultural instrument to measure subjective QOL and has been widely used in refugee studies (*e.g.*, Carlsson et al., 2006; Huijts et al., 2012; Teodorescu et al., 2012b). QOL is defined as "… a broad-ranging concept affected in complex ways by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment" (WHOQOL Group, 1998, p. 3). The WHOQOL-BREF has 26 questions/items covering four domains: *Physical Health* (7 items); *Psychological Health* (6 items), *Social Relationships* (3 items), and *Environmental Conditions* (8 items). The WHOQOL-BREF can be interviewer-assisted or interview-administered when respondents have difficulties with self-administration. Likert scales ranged from 1 to 5 (*e.g.*, not at all/very dissatisfied to completely/very satisfied). Scores are transferred to a scale from 1 (very poor) to 100 (excellent), according to the manual. In a field trial (Skevington et al., 2004) comprising sick and healthy individuals from different sociodemographic layers in 23 countries around the world, the WHOQOL-BREF was found to be cross-culturally sound and valid. The means obtained were 64.8 (Physical Health), 60.0 (Psychological Health), 57.2 (Social Relationships), and 54.0 (Environmental Conditions).

Adverse and potentially traumatic childhood experiences (*PTCEs*) up to age 18 were identified, categorized, and quantified from a systematic study of the qualitative interview data, which consisted of structured and semi-structured interviews. These included family relationships, attachment, health, social situation, losses, traumatic events, and other aspects of personal history during childhood, adolescence, and adulthood. All material collected was searched twice, a few months apart, for childhood experiences related to loss, violence, neglect, and similar hardships within the family, as well as violence and atrocities experienced external to the family. Any inconsistencies in type and number of events between the two searches were evaluated and resolved. The information provided by participants about the year of significant events and their age at the time was compared with sources of historical facts, to clarify uncertainties. The authors reached consensus about the type of events and categorizing of these events according to their psychological meaning. A scoring system was designated, and the sum scores of PTCEs (*PTCE-Sum*) and of subtypes were calculated. The results of this investigation were used quantitatively in the analyses.

Statistical Procedures

We used linear regression to study the relationships of HTQ-Trauma Events and PTCE-Sum with each of the outcome variables. Regressions were performed with the two trauma sum scores separately and then together, to control one for the other and to check the strength of the model in explaining the variance in outcome variables. For differences between regression coefficients for PTCEs and HTQ-Trauma Events, 95% bootstrap BCa confidence intervals (Efron and Tibshirani, 1994) were computed with 10,000 bootstrap replications, and differences were regarded as significant if 0 was outside each interval. Multiple regressions were then run with four subtypes of PTCEs included in the same model. The unstandardized coefficients (*coef*) presented in the tables represent the amount of change in the outcome measure per unit change in the independent variables (HTQ-Trauma Events and PTCE-Sum) and must be interpreted relative to the range of scores, from 1 to 4 for the symptom measures and from 1 to 100 for the QOL measures. Data were analyzed using the Statistical Package for the Social Sciences (IBM Corp., released 2011; IBM SPSS Statistics for Windows, version 20.0. Armonk, NY) and the R (The R-Foundation for Statistical Computing, Vienna, Austria) package boot for bootstrapping.

RESULTS

Our study of adverse and potentially traumatic childhood experiences (PTCEs) among our participants resulted in a list of 14 different kinds of experiences (Table 1). Eleven of these could be placed with relative certainty in either the age period 0 through 12 years, or 13 through 17 years, or as taking place in both periods. We made two items for each of these events according to the childhood period in which they

TABLE 1. Adverse and Potentially Traumatic Childhood Experiences (PTCEs)

PTCEs Experienced Before Age 18 (Item Number)	Participants With the PTCE in the Given Age Period		Sum of Events per Participant (PTCE-Sum)
	0–12 yr Percent (*n*)	13–17 yr Percent (*n*)	0–17 yr *M* (*SD*) Range
Subtype 1: Loss (the 13 items below)			2.0 (1.0) 0–9
One parent died or disappeared (1, 2)	24.1% (13)	7.4% (4)	
Other parent died or disappeared (3, 4)	5.6% (3)	1.9% (1)	
Extended separation from one or both parents (5, 6)	27.8% (15)	37.0% (20)	
One or more siblings died (7, 8)	20.4% (11)	9.3% (5)	
Serious injury or illness among parents or siblings (9, 10)	22.2% (12)	11.1% (6)	
Parent imprisoned, captured, or persecuted (11, 12)	11.1% (6)	9.3% (5)	
Sibling imprisoned or taken captive, age 0 through 17 (13)	11.1% (6)		
Subtype 2: Illness (the 2 items below)			0.6 (0.8) 0–2
Participant seriously ill, in accident, or hospitalized (14, 15)	42.6% (23)	20.4% (11)	
Subtype 3: Family Violence (the 3 items below)			0.6 (1.0) 0–3
Violence within family[a] (16, 17)	27.8% (15)	18.5% (10)	
Parents' alcohol/drug abuse, age 0 through 17 (18)	6% (3)		
Subtype 4: External Violence (7 items)			2.4 (1.9) 0–6
Experienced war (19, 20)	40.7% (22)	66.7% (36)	
Witnessed others being killed (21, 22)	33.3% (18)	44.4% (24)	
Participant persecuted, imprisoned, or taken captive (23, 24)	3.7% (2)	24.1% (13)	
In military service or armed resistance, age 0 through 17 (25)	24 .1% (13)		
Mean PTCE-Sum (25 items)			5.4 (3.5) 0–15

List of 14 types of PTCEs extracted by the authors from the qualitative interviews, categorized into one of four subtypes, Loss, Illness, Family Violence, and External Violence, based on the authors' evaluation of their psychological meaning. Most events are divided into two items, according to when the event was experienced. Each item is scored 1 (experienced in the specified age period) or 0 (not experienced/not narrated).

[a]Violence within family = physical violence between parental figures, or parental violence against participant and/or siblings. $N = 54$.

occurred, resulting in more "points" for repeated or long-lasting PTCEs. Three events (*i.e.*, sibling imprisoned or taken captive, parent's alcohol or drug abuse, and their own participation in military or armed resistance) were scored once for the entire 18-year period because the time frames of these events were difficult to determine with accuracy. The resulting 25 items were scored 1 or 0 for each participant, according to whether such event was experienced within any of the relevant age spans (0–12, 13–17, or 0–17). The sum scores of PTCEs (PTCE-Sum) thus ranged from 0 to 25 for each individual. Mean score of PTCE-Sum was 5.4 (SD = 3.5; range 0–15). Only five participants did not report any adverse childhood experiences. The 14 kinds of PTCEs were grouped into four subtypes: loss of parents or siblings by death, extended separation, and serious illness in parents or siblings *(Loss*: 7 events, 13 items); own severe illness, hospitalization, and accidents, listed together as one event because of the infrequent occurrence of each (*Illness*: 1 event, 2 items); experience of violence and other unsafe conditions within the family (*Family Violence*; 2 events, 3 items); and experience of violence outside the family, such as war, persecution, witnessing atrocities, and taking part in military or paramilitary activity (*External Violence;* 4 events, 7 items). The mean score within each subtype was 2.0 for Loss, 0.6 for Illness, 0.6 for Family Violence, and 2.4 for External Violence. Many participants had experienced hardships at an early age. For example, before age 13, 24.1% ($n = 13$) had lost one of the parents, 42.6% ($n = 23$) had been seriously ill or in accidents, 27.8% ($n = 15$) had experienced physical violence between the parents and/or parental violence directed at the participant or siblings, and 33.3% ($n = 18$) had witnessed others being killed or die a violent death. Some (24.1%; $n = 13$) had participated in armed resistance or been enrolled in military service. The transition from running errands for armed resistance groups to fully taking part in armed activities was often gradual and, for the most part, voluntary among our participants, though they described many tough experiences. However, when summoned to regular military service at an early age, participants were mostly forced. We refer to Table 1 for further details.

Table 2 displays frequently reported HTQ-Trauma Events and illustrates the severity of experiences in our sample. The participants had experienced on average 16.3 (SD = 6.3; range 5–30) different kinds of PTEs related to war and HRVs. As many as 84.9% ($n = 45$) had experienced military attacks, 77.4% ($n = 41$) had witnessed others being killed or die a violent death, and 75.5% ($n = 40$) had themselves been close to being killed or dying. As many as 62.3% ($n = 33$) had been imprisoned, 52.8% ($n = 28$) had been tortured, and 20.8% ($n = 11$) had been raped. Moreover, 34.0% ($n = 18$) had taken part in armed resistance and 28.3% ($n = 15$) had been in wartime military service, and described massive exposure to cruel and heartbreaking scenes. In our sample, 20.8% ($n = 11$) reported having been in detention camps under harsh and often prison-like conditions. We refer to Table 2 for further details. From the qualitative interviews, we knew that most participants had experienced war and/or HRVs after the age of 18, preceding flight; several participants had lived through PTEs of war and HRVs in childhood and in their adult years. Thus, HTQ-Trauma Events and PTCEs had some intersecting items related to experiences of war and HRVs. HTQ-Trauma Events and PTCE-Sum correlated significantly and positively ($r = 0.43$, $p = 0.001$), indicating that participants with many childhood PTEs of various kinds often also had a high number of lifetime and adult PTEs related to war and HRVs.

Participants' symptom levels of PTSD, anxiety, and depression were high. Table 3 reveals that 78.8% ($n = 41$) qualified for a PTSD diagnosis, 96.2% ($n = 51$) had a diagnostic level of anxiety, and 98.1% ($n = 52$) qualified for a diagnosis of major depression according to

TABLE 2. Potentially Traumatic Experiences Related to War and Human Rights Violations (HRVs)

HTQ-Trauma Events	Percent (*n*)
Forced evacuation under dangerous conditions	90.6% (48)
Experienced military attacks (shelling/bombing)	84.9% (45)
Forced to hide	83.0% (44)
Murder/violent death of family or friends	81.1% (43)
Witnessed beatings to head or body	77.4% (41)
Witnessed others being killed	77.4% (41)
Been close to being killed or die	75.5% (40)
Experienced beating to the body	75.5% (40)
Forced separation from family members	67.9% (36)
Confiscation or destruction of personal property	62.3% (33)
Imprisonment	62.3% (33)
Lack of food or water	60.4% (32)
Torture, *i.e.*, deliberate infliction of physical or mental suffering while in captivity	52.8% (28)
Ill health without access to medical care	50.9% (27)
Brainwashing	39.6% (21)
Someone was forced to betray you and place you at risk of death or injury	35.8% (19)
Armed resistance	34.0% (18)
Extortion or robbery	32.1% (17)
Military service in war	28.3% (15)
Sexual abuse or sexual humiliation, other than rape	22.6% (12)
Rape	20.8% (11)
Been in detention camp or prisoners camps	20.8% (11)
Been in refugee camp	20.8% (11)

HTQ-Trauma Events = experiences related to war and HRVs, measured by the Harvard Trauma Questionnaire (HTQ), Part 1 (37 items), exemplified by 23 events frequently experienced in our sample. Mean number of different experiences in our sample was 16.3 (SD = 6.3; range 5–30). $N = 53$.

the measures used. Mean QOL scores (28.5 for Physical Health, 25.5 Psychological Health, 36.6 Social Relationships, and 45.2 for Environmental Conditions) were very low. Compared with the international means obtained by Skevington et al. (2004; see Instruments and Measures section), our results indicated poor QOL, especially in the first three domains. Many respondents reported physical pain and bodily health concerns in addition to emotional and cognitive problems.

Table 4 presents the relationships of HTQ-Trauma Events and PTCE-Sum with PTSD, Anxiety, Depression, and the four QOL domains. The coefficients of PTCE-Sum were significantly higher than the coefficients of HTQ-Trauma Events for PTSD-Avoidance, Psychological Health, and Social Relationships, and the other variables, except PTSD-Reexperiencing, followed the same overall pattern, indicating that the relationships between childhood trauma and the outcome variables were stronger. HTQ-Trauma Events, when entered in the regression alone, was significantly and positively related to PTSD-Total ($coef = 0.022$, $p = 0.032$) and to PTSD-Reexperiencing ($coef = 0.039$, $p = 0.009$), but was not significantly related to other outcome variables. When controlled for PTCE-Sum, HTQ-Trauma Events was significantly and positively related only to PTSD-Reexperiencing ($coef = 0.037$, $p = 0.024$). PTCE-Sum, when entered in the regression alone, was related significantly and positively to PTSD-Total ($coef = 0.044$, $p = 0.015$), PTSD-Arousal ($coef = 0.040$, $p = 0.036$), and PTSD-Avoidance ($coef = 0.051$, $p = 0.021$), significantly and negatively to Social Relationships ($coef = -2.24$, $p = 0.013$) and Environmental Conditions ($coef = -1.42$, $p = 0.047$), and sub-significantly and negatively to Psychological Health ($coef = -1.21$, $p = 0.054$). When controlled for HTQ-Trauma Events, PTCE-Sum was related significantly and negatively to Social Relationships ($coef = -2.38$, $p = 0.019$) and Psychological Health ($coef = -1.45$, $p = 0.037$) and sub-significantly to PTSD-Avoidance ($coef = 0.047$, $p = 0.056$). HTQ-Trauma Events alone accounted for 0.0% to 12.9% of the variance in the different outcome variables, above 10% only in PTSD Reexperiencing. PTCE-Sum alone accounted for 1.1% to 11.6% of the variance, above 10%, in descending order, in Social Relationships, PTSD-Total, and PTSD-Avoidance. Together, HTQ-Trauma Events and PTCE-Sum accounted for 2.9% to 14.1% of the variance, above 10% in PTSD-Total, PTSD-Reexperiencing, Social Relationships, and PTSD-Avoidance (see Table 4 for details).

Table 5 displays how the PTCEs subtypes Loss, Illness, Family Violence, and External Violence and the Total Model relate to the outcome variables. With simultaneous entry in the regression, we found that External Violence and Family Violence were significantly related to increased symptoms of mental health disorder and to reduced QOL. External Violence was related significantly and positively to PTSD-Total ($coef = 0.121$, $p = 0.001$), PTSD-Avoidance ($coef = 0.131$, $p = 0.002$), PTSD-Arousal ($coef = 0.118$, $p = 0.001$), and Depression ($coef = 0.117$, $p = 0.005$), significantly and negatively to quality of Psychological Health ($coef = -3.77$, $p = 0.001$), and sub-significantly and positively to PTSD-Reexperiencing ($coef = 0.105$, $p = 0.051$). Family Violence was related significantly and positively to Anxiety ($coef = 0.176$, $p = 0.027$), significantly and negatively to Environmental Conditions ($coef = 4.90$, $p = 0.044$) and Psychological Health ($coef = -4.55$, $p = 0.019$), and sub-significantly and negatively to Physical Health ($coef = -3.39$, $p = 0.069$). Childhood Loss was significantly and

TABLE 3. Symptoms and Quality of Life

Symptoms	*M* (*SD*)	95% CI: Low, High
PTSD-Total	2.82 (.47)	2.69, 2.95
PTSD-Reexperiencing	2.89 (.69)	2.70, 3.08
PTSD-Arousal	3.12 (.49)	2.98, 3.25
PTSD-Avoidance	2.56 (.57)	2.40, 2.72
Anxiety	2.89 (.59)	2.72, 3.05
Depression	2.94 (.54)	2.79, 3.09
Diagnostic level of symptoms	**Percent (*n*)**	
PTSD (≥2.5)	78.8% (41)	
Anxiety (>1.75)	96.2% (51)	
Major Depression (>1.75)	98.1% (52)	
Quality of Life	***M* (*SD*)**	**95% CI: Low, High**
Physical Health	28.5 (13.8)	24.7, 32.4
Psychological Health	25.6 (15.9)	21.1, 30.0
Social Relationships	36.6 (23.4)	30.1, 43.1
Environmental Conditions	45.2 (18.2)	40.1, 50.3

PTSD and its three DSM-IV-based symptom clusters are measured by the Harvard Trauma Questionnaire (HTQ), Part IV, items 1–16; PTSD-Total = Items 1–16; PTSD-Reexperiencing = Items 1, 2, 3, and 16; PTSD-Arousal = Items 6, 7, 8, 9, and 10; and PTSD-Avoidance = Items 4, 5, 11, 12, 13, 14, and 15. Anxiety (Items 1–10) and Depression (Items 11–25) are measured by the Hopkins Symptom Checklist-25 (HSCL-25); $N = 53$). Quality of life (QOL) is measured by the World Health Organization Quality of Life-BREF (WHOQOL-BREF) and consists of four domains: Physical Health, Psychological Health, Social Relationships, and Environmental Conditions. PTSD, Anxiety, and Depression scores range from 1 (not bothered) to 4 (all the time/extremely). QOL scores range from 1 (extremely low, very poor) to 100 (extremely high, very good). HTQ, Part IV: $N = 52$, HSCL-25: $N = 53$, and WHOQOL-BREF: $N = 52$.

TABLE 4. Relationships of War and HRVs Trauma (HTQ-Trauma Events) and Childhood Trauma (PTCEs) With Symptoms and Quality of Life

	Models by HTQ-Trauma Events Alone[a]		Models by PTCE-Sum Alone[a]		Models by HTQ-Trauma Events and PTCE-Sum Together[b]			
					HTQ-Trauma Events	PTCE-Sum	Total F, p Value, and R^2	
Outcome Variable	***coef* [CI Low, High] *p***	**R^2**	***coef* [CI Low, High] *p***	**R^2**	***coef* [CI Low, High] *p***	***coef* [CI Low, High] *p***	**F (df) p**	**R^2**
Self-reported symptoms								
PTSD-Total	**0.022** [0.002, 0.042] 0.032	0.088	**0.044** [0.009, 0.080] 0.015	0.112	0.014 [−0.008, 0.036] 0.203	0.034 [−0.005, 0.073] 0.090	**4.02** (2, 49) 0.024	0.141
PTSD-Reexperiencing	**0.039** [0.010, 0.068] 0.009	0.129	0.036 [−0.018, 0.090] 0.187	0.035	**0.037** [0.005, 0.070] 0.024	0.008 [−0.050, 0.065] 0.791	**3.68** (2, 49) 0.033	0.130
PTSD-Arousal	0.016 [−0.006, 0.037] 0.147	0.042	**0.040** [0.003, 0.078] 0.036	0.085	0.007 [−0.016, 0.031] 0.525	0.034 [−0.007, 0.076] 0.103	2.50 (2, 49) 0.092	0.093
PTSD-Avoidance	0.017 [−0.009, 0.042] 0.190	0.034	**0.051** [0.008, 0.094] 0.021	0.101	0.005 [−0.022, 0.032] 0.694	0.047 [−0.001, 0.095] 0.056	2.85 (2, 49) 0.067	0.104
Anxiety	−0.005 [−0.031, 0.021] 0.705	0.003	0.026 [−0.020, 0.072] 0.260	0.025	−0.014 [−0.043, 0.015] 0.339	0.037 [−0.014, 0.088] 0.156	1.11 (2, 50) 0.336	0.043
Depression	0.011 [−0.013, 0.035] 0.351	0.017	0.030 [−0.012, 0.071] 0.163	0.038	0.005 [−0.021, 0.031] 0.708	0.026 [−0.021, 0.073] 0.273	1.06 (2, 50) 0.355	0.041
Self-reported QOL								
Physical Health	0.16 [−0.46, 0.78] 0.598	0.006	−0.41 [−1.51, 0.69] 0.459	0.011	0.32 [−0.36, 1.01] 0.351	−0.65 [−1.87, 0.57] 0.287	0.72 (2, 49) 0.492	0.029
Psychological Health	−0.03 [−0.74, 0.69] 0.939	0.000	−1.21 [−2.43, 0.02] 0.054	0.072	0.32 [−0.44, 1.09] 0.401	**−1.45** [−2.81, −0.09] 0.037	2.30 (2, 49) 0.111	0.086
Social Relationships	−0.39 [−1.44, 0.65] 0.454	0.011	**−2.24** [−4.00, −0.49] 0.013	0.116	0.18 [−0.92, 1.28] 0.743	**−2.38** [−4.34, −0.42] 0.019	**3.28** (2, 49) 0.046	0.118
Environmental Conditions	−0.63 [−1.43, 0.17] 0.119	0.048	**−1.42** [−2.82, −0.02] 0.047	0.077	−0.35 [−1.23, 0.52] 0.419	−1.15 [−2.71, 0.41] 0.144	2.39 (2, 49) 0.102	0.089

Symptoms of PTSD are measured by the HTQ, Part IV. Symptoms of anxiety and depression are measured by the Hopkins Symptom Checklist-25 (HSCL-25). QOL are measured by the World Health Organization Quality of Life-BREF (WHOQOL-BREF), in four domains: Physical Health, Psychological Health, Social Relationships, and Environmental Conditions. Significant values ($p < 0.05$) are in bold. HTQ-Trauma Events: $N = 53$; PTCE-Sum: $N = 54$; HTQ, Part IV: $N = 52$; HSCL-25: $N = 53$; and WHOQOL-BREF: $N = 52$; 95% Confidence Intervals (CI).

coef indicates unstandardized regression coefficients. Positive values indicate more symptoms or better quality of life; negative values indicate less symptoms or poorer quality of life.

[a]Linear regression.

[b]Multiple regression.

TABLE 5. Relationships of Subtypes of Potentially Traumatic Childhood Experiences (PTCEs) With Symptoms and Quality of Life

	Loss	Illness	Family Violence	External Violence	All (Total Model)	
Outcome Variable	***coef* [*CI* Low, High] p^u**	***coef* [*CI* Low, High] p^u**	***coef* [*CI* Low, High] p^u**	***coef* [*CI* Low, High] p^u**	***F* (*df*) *p***	**R^2**
Self-reported symptoms						
PTSD-Total	−0.063 [−0.130, −0.004] 0.064	0.128 [−0.033, 0.290] 0.117	0.056 [−0.059, 0.171] 0.335	**0.121** [0.056, 0.186] 0.001	**4.5** (4, 47) 0.003	0.279
PTSD-Reexperiencing	−0.082 [−0.189, 0.026] 0.134	0.179 [−0.083, 0.440] 0.176	0.069 [−0.118, 0.255] 0.462	0.105 [0.000, 0.210] 0.051	1.7 (4, 47) 0.164	0.127
PTSD-Arousal	−0.052 [−0.123, 0.019] 0.148	0.046 [−0.127, 0.219] 0.598	0.070 [−0.053, 0.194] 0.257	**0.118** [0.048, 0.187] 0.001	**3.6** (4, 47) 0.012	0.235
PTSD-Avoidance	−0.060 [−0.144, 0.024] 0.155	0.164 [−0.040, 0.368] 0.112	0.040 [−0.105, 0.185] 0.581	**0.131** [0.049, 0.212] 0.002	**3.3** (4, 47) 0.018	0.219
Anxiety	−0.056 [−0.144, 0.033] 0.212	0.016 [−0.201, 0.232] 0.885	**0.176** [0.021, 0.331] 0.027	0.063 [−0.024, 0.151] 0.152	2.2 (4, 48) 0.078	0.158
Depression	−0.067 [−0.147, 0.013] 0.098	0.105 [−0.091, 0.300] 0.287	0.021 [−0.119, 0.161] 0.763	**0.117** [0.038, 0.196] 0.005	**2.6** (4, 48) 0.049	0.177
Self-reported quality of life						
Physical Health	1.81 [−0.31, 3.93] 0.093	−0.32 [−5.46, 4.83] 0.902	−3.39 [−7.06, 0.27] 0.069	−1.71 [−3.78, 0.35] 0.102	2.2 (4, 47) 0.084	0.157
Psychological Health	**2.37** [0.18, 4.56] 0.034	−1.69 [−7.00, 3.62] 0.525	**−4.55** [−8.33, −0.78] 0.019	**−3.77** [−5.90, −1.64] 0.001	**5.6** (4, 47) 0.001	0.323
Social Relationships	−2.18 [−5.82, 1.45] 0.233	0.08 [−8.75, 8.92] 0.985	−3.61 [−9.90, 2.68] 0.254	−2.28 [−5.82, 1.27] 0.203	1.7 (4, 47) 0.157	0.129
Environmental Conditions	−0.63 [−3.39, 2.13] 0.647	3.50 [−3.21, 10.21] 0.299	**−4.90** [−9.68, −0.13] 0.044	−2.09 [−4.78, 0.61] 0.126	2.5 (4, 47) 0.057	0.174

Multiple linear regression analysis. PTCEs: $N = 54$; HTQ, Part IV: $N = 52$; HSCL-25: $N = 53$; and WHOQOL-BREF: $N = 52$; 95% Confidence Intervals (CI).

coef indicates unstandardized regression coefficients. Positive values indicate more symptoms or better quality of life; negative values indicate less symptoms or poorer quality of life. p^u indicates significance of unique contribution. Significant values ($p < 0.05$) are in bold.

positively related to Psychological Health (*coef* = 2.37, $p = 0.034$) and tentatively and negatively to PTSD-Total (*coef* = −0.063, $p = 0.064$); see the Discussion section. Participants' own Illness was not significantly related to any outcome variable. When fitted with the four subtypes of PTCE, the Total Model explained 32.3% of the variance in Psychological Health, 27.9% of the variance in PTSD-Total, 23.5% of the variance in PTSD-Arousal, 21.9% of the variance in PTSD-Avoidance, 17.7% of the variance in Depression, 17.4% of the variance in Environmental Conditions, 15.8% of the variance in Anxiety, 15.7% of the variance in Physical Health, 12.9% of the variance in Social Relationships, and 12.7% of the variance in PTSD-Reexperiencing.

The results support our first hypothesis that more pre-flight events related to war and HRVs was significantly related to more symptoms of PTSD, as demonstrated in previous studies (*e.g.*, Bogic et al., 2012). We found that the number of HTQ-Trauma Events was significantly and positively related to PTSD-Total and to PTSD-Reexperiencing symptoms, but a significant relationship was not demonstrated for the other two symptom clusters of PTSD, or for Anxiety, Depression, or any QOL domains. Our second hypothesis was supported in that extent of adverse events experienced during childhood was significantly and positively related to PTSD-Total and to PTSD-Arousal and PTSD-Avoidance symptoms, significantly and negatively to the QOL domains Social Relationships and Environmental Conditions, and subsignificantly and negatively to the Psychological Health domain but not to PTSD-Reexperiencing, Anxiety, Depression, or Physical Health. Further, we found that, overall, PTCE-Sum was more strongly related to increases in symptoms of mental disorder and lowered QOL than HTQ-Trauma Events. Finally, when childhood PTEs were categorized into subtypes, this model explained more of the variance in outcome variables than the model displayed in Table 4. Childhood experiences of extra- and intrafamilial violence were significantly related to outcome variables implying lower mental health and poorer QOL.

DISCUSSION

We found a high frequency of childhood adverse and potentially traumatic experiences among our adult refugee participants, who had also experienced later PTEs related to war and HRVs, mainly in early adulthood. The childhood experiences included losses in close relationships, participants' own illness, accidents, and injuries, extra- and intrafamilial violence, and war-related events. The HTQ-Trauma Events tapping war and HRVs demonstrated a high frequency of severe experiences like torture, captivity, rape, military attacks, near-death experiences, and witnessing the violent death of others. Further, the level of symptoms among our participants was higher or equal to, and the QOL lower than comparable clinical samples in Western countries (*e.g.*, Huijts, 2012; Keller et al., 2006; Teodorescu et al., 2012).

Our results supported part of our hypotheses in that both sum of war and HRV experiences (HTQ-Trauma Events) and extent of adverse childhood experiences (PTCEs) were significantly related to total symptoms of PTSD, thus confirming the dose–response model of traumatization (*e.g.*, Bogic et al., 2012). In the refugee literature, severity of symptoms has frequently been related to pre-flight war and HRV trauma. In our study, HTQ-Trauma Events was significantly related only to the reexperiencing symptoms of PTSD and to PTSD-Total, and to none of the other outcome variables, whereas a greater sum score of PTCEs was significantly related to more arousal and avoidance symptoms of PTSD and to poorer quality of social relationships and of psychological health. In this sample of adult refugee patients, extent of childhood trauma was overall more strongly related to "present" mental health and QOL than pre-flight war and HRV trauma. Further, PTCE-Sum explained a greater percentage of the variance in outcome variables than HTQ-Trauma Events, and when PTCEs were divided into subtypes of childhood PTEs, this model explained yet higher percentages of the outcome variables. These percentages were still relatively low, indicating that many other aspects were important to explain the variance in participants' mental health and quality of life as they entered treatment.

The relationships between the PTCE-Sum and PTSD arousal and avoidance symptoms were no longer significant when controlling for HTQ-Trauma Events. A plausible explanation is the overlapping experiences of war and HRVs in HTQ-Trauma Events and PTCEs, in that war-related events, imprisonment, and torture experienced in childhood and adolescence evoke more problems with emotional and physiological regulation (arousal symptoms) than when experienced in adulthood, and that these experiences in childhood contributed to the significant relationship with arousal symptoms. Illustrating such severe childhood experiences, two participants reported having been imprisoned, isolated, and tortured in mid-adolescence, and one participant reported having been imprisoned as a small child with his father and seen him being tortured.

When PTCEs were divided into the variables Loss, Illness, Family Violence, and External Violence, the total model accounted for 12.7% to 32.3% of the variance in symptoms and QOL variables. Violence both within and outside the family, experienced during childhood, were significantly related to present mental health and QOL. Among childhood experiences, Family violence was the only variable significantly related to symptoms of anxiety and to poorer QOL in Environmental Conditions, while both Family Violence and External Violence were related to Depression and to poorer QOL in Psychological Health. Only External Violence was significantly related to PTSD (total symptoms, avoidance, and arousal symptoms). The participants' experiences of Illness and accidents in childhood were not significantly related to mental health symptoms and QOL. The counterintuitive finding that childhood Loss was related to less negative Psychological Health and to less severe symptoms of PTSD should be seen in relation to the atrocities experienced in this highly exposed sample. Overall, our findings are compatible with a cumulative effect of repeated trauma and with the conclusion of Olema et al. (2013) that the negative impact of child maltreatment exceeds the negative impact of war trauma on psychological health and also, according to our findings, on QOL.

Developmental research (Schore, 2002, 2009) has shown that specific vulnerabilities resulting from childhood trauma predispose to the development of PTSD later in life. In our study, the potential ways in which PTCEs influenced reactions to later PTEs can only be hypothesized. The negative impact of repeated and/or severe childhood adverse experiences and PTEs, discussed in the Introduction section, suggests the possibility that the childhood experiences of our participants had affected their personality functioning in a negative way and made them less capable of dealing with later stress, including war atrocities and HRVs (*e.g.*, Breslau et al., 2014; Schore, 2009).

We find it noteworthy that childhood trauma related significantly to the Arousal and Avoidance subscales of PTSD, whereas the generally more recent pre-flight war and HRV experiences related significantly only to the PTSD Reexperiencing subscale. Given that the capacity to alleviate emotional stress develops in infancy and childhood (Crittenden and Landini, 2011; Fonagy, 2001) and is further consolidated in adolescence (Akhtar, 1999), it is reason to hypothesize that childhood PTEs have reduced our participants' capacity to self-soothe and regulate emotions, thus accounting for the elevated Arousal score. More research is needed regarding the mechanisms and differential responses involved in different types and amounts of PTEs occurring at different developmental stages.

The participants' mean score on the QOL-Physical Health domain was very low, and throughout the interviews with participants, we noted the frequency with which they reported pain and other physical symptoms. A core feature of extreme, prolonged, or repeated

trauma is problems with affect regulation (Schore, 2009), which reflects the ability to transform bodily affective experience into mental content that can be contained as thoughts and feelings in coherent psychic structures. Memories of traumatic events are understood as fragmented and transformed into bodily symptoms rather than mental content, both when traumatized in childhood and in adulthood. Accordingly, we understand some of the physical symptoms expressed by our participants as a transformation into physical symptoms of non-mentalized content where neurovegetative changes may play a role (Terranova et al., 2011) and sometimes as a physical response to acute or chronic stress when regulatory mechanisms are dysfunctional or insufficient (Hinton and Kirmayer, 2013). Culturally dependent paraphrasing of psychological problems may also contribute to expressing mental distress in the form of bodily symptoms.

Overall, more childhood PTEs were significantly associated with poorer QOL, whereas the same was not true for PTEs related to war and HRVs. The PTCE-Sum (controlled and not controlled for HTQ-Trauma Events), External Violence, and Family Violence variables were significantly related to several QOL variables. We find it premature, however, to interpret discrete relationships between the various childhood trauma variables and the various QOL domains. We broadly suggest, instead, that participants with more childhood trauma had more problems with their relationships, their environmental conditions, their psychological health, and, tentatively, with their physical health. An alternative explanation that we find less likely would be that individuals who were less content with their QOL reported significantly more childhood adverse events, but not significantly more HTQ-Trauma Events.

Our results must be interpreted with caution owing to several limitations. The sample was relatively small and did not permit inclusion of or controlling for other potentially important variables in the analyses, *e.g.*, like hardships in exile and social support. Symptom scores were generally high, with little variability between participants, making it less likely for statistical relationships to become significant. Next, we tried to capture childhood adverse and potentially traumatic experiences. Although we asked for specific examples of relationships and events to facilitate memory and counteract distortions, we certainly did not capture all the relevant experiences. Later experiences and cognitive and emotional difficulties may have disturbed recall functions and distorted internal representations and reporting of childhood adverse experiences. The list of PTCEs was derived from the qualitative material and represented the experiences of this particular sample. The events, items, and subtypes could surely have been systematized and scored differently. The quantitative use of the PTCE scores in the statistical analyses must be viewed as tentative and partly explorative. Since the PTEs in the HTQ-Trauma Events and in the PTCEs were not mutually exclusive, we could not get a full picture of the relative impact on adult mental health and well-being of childhood trauma versus experiences of war-related trauma in adulthood. Differences in culture and language between participants and researchers may have led to misunderstandings, when using interpreters or not, but were sought lessened through the measures described in the Methods section. Significant relationships found in the research literature and in this study, between various refugee adverse experiences and individual symptom clusters of PTSD, symptoms of anxiety or depression, and QOL in individual domains, could not be further investigated within the scope of this study.

A main strength of this study lies in our investigation of childhood adverse and potentially traumatic experiences, which have rarely been studied in clinical samples of adult refugees. Further, with an obtained 75% inclusion rate in our study, our sample was probably representative of the refugee patients typically referred to specialist treatment services in Norway at that time. The inclusion of individuals who could and could not speak Norwegian, as well as literate and illiterate individuals, counteracted bias towards better functioning participants. A comparable study requiring Norwegian skills (Teodorescu et al., 2012) found lower levels of symptoms on comparable measures, better QOL, and their rate of employment was nearly twice the rate in our study. We obtained statistically significant and theoretically and clinically meaningful results despite the sample size, the cultural diversity, and the difficulties inherent in studying this group.

The cultural diversity of patients found in Norwegian mental health clinics, and probably in the services of other Western countries as well, makes specific cultural knowledge and interventions aimed at culturally specific groups unfeasible. We chose to recruit a sample representative of this diversity, and to focus on what was common among traumatized refugee patients and on significant relationships appearing despite the cultural differences.

Our results raise the awareness of potential childhood adversities and developmental trauma in refugees' lives preceding war and HRV experiences that lead to their flight. Further, our results point to the importance of addressing childhood issues in treatment and research for this group. The high level of symptoms and the low level of well-being among our participants indicated that these were individuals at risk. Developmental research demonstrates the possibility of transgenerational transmission of trauma-related problems (Wiegand-Grefe and Möller, 2012; Yehuda and Bierer, 2007). This raises a concern for the children in these families. We propose that longer and more comprehensive treatment, including family treatment and rehabilitation measures, are required for patients who are more complexly traumatized.

The relationships between war-related events and reexperiencing symptoms of PTSD versus those between childhood adverse events and arousal and avoidance symptoms of PTSD may imply that different psychological processes are involved. New studies should be designed to yield further insights into the relationships between early and later PTEs, mental health problems, and QOL among traumatized refugees. Also, culturally contextualized studies are needed to validate, supplement, and enhance our findings.

CONCLUSIONS

In our sample of adult refugees assessed at treatment start, we found significant associations between extent of childhood PTEs and mental health, as well as between number of war and HRV PTEs and mental health, supporting the notion of a cumulative effect of repeated trauma. The relationships of childhood PTEs to mental health and QOL were stronger than the relationships of preflight war and HRV PTEs to mental health and QOL. Further, the significant association of war and HRV PTEs with reexperiencing symptoms of PTSD versus the significant associations of childhood PTEs with both arousal and avoidance symptoms of PTSD indicate different mechanisms and timing in the "production" of various symptoms after potentially traumatic events experienced in different developmental phases. We find it likely that childhood adverse experiences had induced a vulnerability to later stress in our participants, and also that the psychological impact of their childhood experiences had been accentuated through later experiences of war and HRVs. Childhood experiences of extra- and intrafamilial violence were significantly associated with increased mental health symptoms and reduced quality of life, indicating the potential for lasting harmful consequences of childhood exposure to violence. This study points to the importance of taking into consideration possible traumatization in childhood when planning research of and treatment for traumatized refugee patients. The results need validation through further studies.

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