Prevalence of torture and other war-related traumatic events in forced migrants: A systematic review

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Abstract

Aim: To describe and appraise the research literature reporting prevalence of torture and/or war-related potentially traumatic experiences (PTEs) in adult forced migrants living in high-income countries. **Methods:** A search for peer-reviewed articles in English was conducted in PubMed, Web of Science, PILOTS, key journals, and reference lists. Studies based on clinical samples and samples where less than half of participants were forced migrants were excluded. Data was extracted and a methodological quality appraisal was performed. **Results:** A total of 3,470 titles and abstracts were retrieved and screened. Of these, 198 were retrieved in full-text. Forty-one articles fulfilled inclusion criteria and the total number of study participants was 12,020 (median 170). A majority focused on specific ethnic groups or nationalities, Southeast Asian, Middle Eastern and Balkan being the most frequent. Reported prevalence rates of torture ranged between one and 76 % (median 27 %). Almost all participants across all studies had experienced some kind of war-related PTE. **Conclusions:** Reported prevalence rates of torture and war-related PTEs vary between groups of forced migrants. Trauma history was often studied as a background variable in relation to mental health. The heterogeneity of data, as well as the methodological challenges in reaching forced migrants and defining and measuring traumatic experiences, prevent generalisation concerning trauma history across groups.

Keywords: forced migrants, migrants, refugees, war-trauma, torture

Background

Torture is the most severe violation of human rights a person can be subjected to. A wilful and intentional infliction of severe suffering or pain in another person, it destroys a person's identity, sense of self, and trust in other people.[1] Torture, as defined by the UN, is "any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person … by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity …".[2] The World Medical Association (WMA) Tokyo declaration defines torture without specifying a perpetrator as "the deliberate, systematic or wanton infliction of physical or mental suffering by one or more persons

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acting alone or on the orders of any authority, to force another person to yield information, to make a confession, or for any other reason".[3] The UN has established the Istanbul Protocol[4] as a set of guidelines for the documentation of torture and its consequences.

Torture is practiced in over 140 countries worldwide according to Amnesty International,[5] countries where many forced migrants in the world originate. The United Nations High Commissioner for Refugees (UNHCR) estimates that, as of the end of 2014, 59.5 million people were forcibly displaced by persecution, conflict or human rights violations. Of these, 14.4 million are refugees under the UNHCR's mandate,[6] the remainder are either in refugee-like situations, displaced in their own country, in transit, seeking asylum in a foreign country, or rejected or "failed" asylum seekers.

Traumatic experiences, and torture in particular, have been found to be a predictor of mental ill-health, primarily posttraumatic stress disorder (PTSD), depression and/or anxiety.[7] Because of its impact, trauma history is an important factor in the health of forced migrants.

Studies in other contexts than refuge and displacement have shown that approximately 25% of individuals subjected to a traumatic event develop PTSD.[8] The majority of studies exploring this relationship have been carried out in relation to distinct events, like terror attacks[9, 10] or natural disasters,[11-13] or as the result of combat experiences in veterans.[14, 15] Many forced migrants have experienced multiple traumatic events, in some cases torture, and on-going hardship in their country of origin, during their flight, and post-migration.[7, 16] It has been argued that such situations cannot be compared to single, distinct events.[8] Despite the large global population of forced migrants, research on trauma history, torture prevalence and their sequelae in this group is relatively rare.[7, 16-18]

Earlier reviews of literature which report on trauma history have mainly focused on mental health, rather than the background variable, traumatic experiences.[7, 16, 18] When these have included studies based on clinical samples, where the prevalence of trauma history can be expected to be elevated, or where traumatic experiences may be an inclusion criteria, high prevalence rates of violence and torture are artifacts of study design.[16]

Selective citation of figures concerning trauma history in forced migrants can serve different interests and give rise to either insufficient interventions or to stigmatisation and inappropriate assumptions of the level of traumatisation in these groups. It is therefore important to provide a comprehensive review focused on the trauma history prevalence rates in forced migrants.

The aim of the review was to describe and appraise the research literature reporting prevalence of torture and/or war-related potentially traumatic experiences (PTEs) in adult forced migrants living in high-income countries.

Methods

A systematic review of the literature of empirically based original studies reporting on prevalence of trauma history in the form of torture and/or war-related PTEs in forced migrants in high-income countries was performed. The PRISMA guidelines were followed where applicable. Searches of databases PubMed, Web of Science and PILOTS were conducted in February 2015, with a follow up search at the end of September 2015, combining the following search terms: (immigrant* OR migrant* OR refugee* OR asylum seeker*) AND (torture*

OR traumatised* OR war-trauma* OR "political violence*" OR "organised violence*" OR "posttraumatic stress*" OR PTSD), including variants of spelling and hyphenation. Organised and political violence were included in order to reach a wider spectrum of human rights violations beyond war or torture. Posttraumatic stress (PTS) and PTSD were included as studies with this focus often report prevalence of related traumata. Where applicable, free-text search terms were used in combination with MeSH terms for optimum search criteria.[19] Searches were restricted to peer-reviewed material where possible. Manual searches of bibliographies and relevant journals were performed. The results of the systematic search can be seen in Figure 1 on page 45.

Inclusion and exclusion criteria

Eligible studies reported original empirical, quantitative data on the prevalence of torture or war-related PTEs among adult forced migrants in high-income countries. Studies had to be peer reviewed and written in English. No limit concerning date of publication was used. Where several articles reported on the same empirical material, one article – that which reported trauma history most thoroughly – was included.

Types of traumatic events: All definitions of torture were included, as was secondary torture, defined as having a family member, or in some cases a close friend, who has been subjected to torture. The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV) criterion A1 of PTSD was used to define PTE in this study so that a greater variety of definitions would be included (rather than the more specific definitions in DSM V). This sets out that there has been exposure to a PTE when a person has "experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others".[20] For PTEs to be war-related, they should be expressly linked to conflict, persecution, or other human rights violations. Torture and war-related PTEs are jointly referred to as trauma history. Studies reporting only on general pre-migration harm, or exclusively reporting trauma history unrelated to war or persecution, such as robbery or natural disasters, were excluded.

Types of study samples: The target population for this review – forced migrants – was taken to include refugees, quota refugees, internally displaced persons (IDPs), persons under temporary protection, asylum seekers and failed asylum seekers. Studies where less than half of the respondents were forced migrants, or where it was impossible to determine whether they were forced or voluntary migrants, were excluded. Studies based on samples recruited from treatment centres for torture survivors, among psychiatric (in- or out-) patients, or where any previous experience of trauma or loss was an inclusion criteria, where excluded. Samples recruited among primary care patients were included.

Studies concerned with forcibly displaced children or adolescents were excluded. Age span and distribution were sometimes difficult to determine, and individual assessments were made, the guiding principle being that all participants should be adult or close to adulthood. The minimum age differed between studies, some used a minimum age of 18, some of 16; these were all included. For example, one study recruited participants in a Danish high school, where 85% of participants where between 17 and 20 years old (mean age 18.5, SD 2.1). The view was taken that all

respondents were close to adulthood, and the study was included.[21] Studies where the age distribution was unclear were excluded.[22, 23] Where age-specific data was available, only data for adult respondents was extracted.[24]

Studies with 50 or less respondents (relevant to this review) were also excluded.

Types of contexts: High-income countries were defined as the members of the Organisation for Economic Co-operation and Development (OECD). Studies concerning Holocaust survivors, or refugees from East to West Germany during the cold war were excluded.

Data extraction and quality assessment

Extracted data from the included articles comprised: aim, year and country of study, nationality/ethnicity and legal status of the participants, details on study design (design, sampling method, size and recruitment context of sample, response rate, number of participants), type of measure, instrument used to record trauma history, and number of trauma items. The statistics extracted were prevalence of torture, witnessed torture and secondary torture. Prevalence rates of the three most common war-related PTE-items reported were also extracted, as well as the mean number of trauma, where reported. Lack of food, water, shelter and medical care were common across studies, but were not extracted among trauma history items. Where war-related PTEs were reported in a single item, the prevalence rate and the question were recorded.

A quality appraisal of all included articles was performed, based on a modified version of standardised published guidelines for quality assessment of prevalence data.[25] The chosen assessment checklist has been used in systematic reviews of descriptive statistics concerning prevalence of reported events.[26] The checklist was modified to specifically evaluate the quality of the descriptive data on prevalence of trauma history, rather than the entire analyses. Questions regarding whether a definition of torture had been used, whether standard translation or interpretation procedures were followed, and whether the studies had ethical approval were added. Items concerning validation or reliability were removed, as the included articles did not generally specify validity beyond symptom instruments and not for trauma history items. Questions concerning analysis and reporting of confidence intervals were deemed irrelevant and removed. Instead, a question concerning stratified reporting of prevalence rates was included.

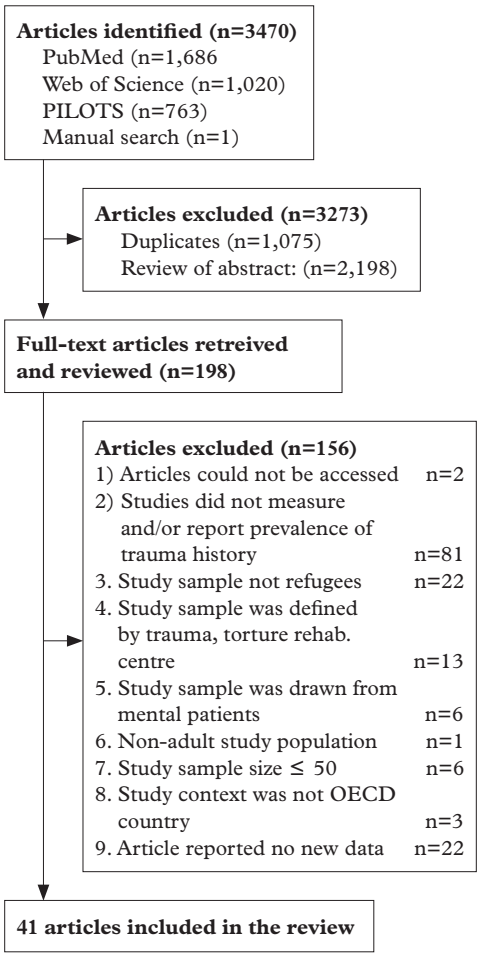
Results

The systematic search resulted in 3469 titles, and one additional title was found in the manual search. Of these, 1075 titles were removed as duplicates and another 2195 were removed after screening of the title and abstract; 198 articles were retrieved in full text. The final selection consisted of 41 articles meeting the criteria for inclusion, a list of which can be found in Appendix A with all of the characteristics and findings of each study.

Of the selected articles, 17 included prevalence, frequency or amount, of trauma history among their objectives. The remaining 24 reported trauma history as a background factor or control variable in an analysis of mental health, or in the context of validity tests or factor analysis. Thirty three articles specifically reported on prevalence of torture or witnessing torture, five of which reported no other types of pre-migration PTEs.

An aspect of mental health was the primary object of all articles but two.[27, 28] Thirty-six articles reported prevalence of mental illness in forced migrants. Most

Figure 1: *Results of systematic search*



common, in 31 cases, PTSD was either screened for or diagnosed. Other diagnoses or screening concerned major depression (MD), depressive symptoms, anxiety, and psychological distress, often in combination with PTSD and/or each other. One article reported validity for a PTSD-screening instrument,[29] another reported on validity of self-reported experience of torture,[28] and one on a principal components analysis of trauma history items.[27]

Study characteristics

Among those who reported year of data collection, one was carried out in the 80's,[30] eight in the 90's, 16 between 2000 and 2010, and six since 2010.[31-36] Approximately half (20 articles) reported approval from an ethical board or committee. The countries producing the largest number of studies were USA (9) and Australia (8), followed by Sweden and Denmark (4), and Canada and Switzerland (3). The most common approach was to target certain ethnic groups or nationalities. South East Asian and Middle Eastern origins were the most common, followed by the Balkans. The distribution of ethnicities/nationalities of the respondents can be found in Table 1.

Table 1: *Origin of study participants in the articles included in this review. In parenthesis, the origin/ethnicity of the study participants as described in the articles.*

Origin	No. of studies
Asian (Afghan, Burmese, Cambodian, Karen, Tamil, Vietnamese)	9
Middle Eastern (Arab, Mandaean, Iraqi, Iranian, Kurdish, Turkish, Syrian, Middle Eastern)	8
Balkan (Bosnian, Kosovar, Kosovo-Albanian)	8
African (Somali, Somali/Oromo, Sudanese)	3
Latin American (Guatemalan, Latin American)	2
Various (Asylum seekers, quota refugees, Latin American + Turkish and Iranian, Latin American + African)	11

Regarding the legal status of respondents, 25 articles were concerned with refugees, eight with asylum seekers, one with rejected asylum seekers,[37] and one with quota refugees.[34] Five studies engaged in comparing different migrant groups: voluntary migrants, asylum seekers and refugees,[38] detained and non-detained,[33] newly arrived and less newly arrived asylum seekers,[39] and persons with temporary or permanent protection visas.[40]

Methodology

Of the included articles, 39 were cross-sectional studies and the remaining two were part of longitudinal studies.[41, 42] The total number of study participants in the included studies was 12,020, with an average and median of 289 and 179 participants respectively.

Sampling: The majority of studies were based on convenience/mixed (17) or consecutive/total (15) samples. They were recruited in various contexts – at refugee resettlement agencies, detention centres, community services, asylum centres, refugee health, or reception centres or NGOs. Recruiting was often done by community experts or by bilingual caseworkers.

Some studies made use of the fact that, in several countries, asylum seekers and refugees are recommended, or obliged, to attend a health screen. Information was either extracted directly from medical records,[24] or questionnaires or interviews were performed in connection with the health screen,[31, 34, 43] or registers from refugee health screens were used as a sampling frame.[44]

Nine studies were based on random samples. In two of these, the researchers had been able to use data from, or participate in projects where large-scale household surveys were carried out.[45, 46] The remaining six should not be understood as fully probabilistic samples, but rather that the researchers used some element of randomness in the sampling process. A typical example is Sabin et al.[47] who studied trauma history and general and mental health among Guatemalan refugees living in refugee camps in Chiapas, Mexico. For security and practical reasons, they had to make a convenience sample of the refugee camps – several were considered impossible or unsafe to visit. In the five chosen refugee camps, they were able to interview one randomly chosen adult per household.

A study by Marshall et al.[48] illustrates the challenges of producing a sampling frame, in their study of Cambodian refugees in Long Beach, California. They made a sampling frame by letting a community expert survey randomly selected census blocks (stage one) in four areas known to include a large Cambodian population. The community expert selected households likely to contain Cambodian individuals, relying on visual signs, such as plants favoured by the Cambodian community or Buddhist or other icons. A stratified random sample where households selected by the community expert were over-sampled was made (stage two). The final stage was to randomly select one individual per eligible household to be included in the survey (stage three).

Instruments and procedures: The most common instrument was the Harvard Trauma Questionnaire (HTQ), used in 15 studies. Around half of these indicated that they had modified the questionnaire, either taking away items that may offend, and/or adding items specific for the target group, often after taking counsel from focus groups or key-persons in the community. Other instruments used were the Traumatic Life

Events Questionnaire (TLEQ),[49, 50] the Post-traumatic Diagnostic Scale (PDS) part 1,[29, 51] the Communal Traumatic Events Inventory (CTEI),[52] the Life Events and Social History Interview Schedule,[53] the Stressful Life Events Screening Questionnaire,[32] the War Trauma Questionnaire (WTQ),[54] and the War Trauma Scale.[44]

Semi-structured interviews were used in three studies,[30, 55, 56] structured interviews, without a pre-defined instrument in seven studies. A couple of studies used medical records, either from a refugee health care centre,[30] or records from introductory medical examinations for refugees.[24]

Most studies focusing on specific nationalities or ethnic groups relied on established translation-back translation procedures, while the studies including asylum seekers or refugees of various origins to a greater extent used interpreters.

Definitions of torture

Of the 33 articles reporting prevalence of torture, only eight articles indicated that an official definition of torture was operationalised. The most common definition used was the UN Convention against torture,[24, 30, 34, 57, 58] one of which also made use of the Istanbul Protocol to identify and record victims of torture.[58] The WMA Tokyo protocol was used in two of the cases,[28, 59] and the US legal definition was used in one case.[31] It is possible that other studies used a torture definition without reporting it.

Few expand on how the operationalization of the definitions was carried out. Two studies coded the responses in semi-structured interviews as either fulfilling the UN definition of torture or not.[30, 58] Jaranson et al. had their interviewers clarify to the respondents the context and nature of torture before asking a Y/N question.[57] Shannon et al. also asked Y/N questions, and after positive responses to questions concerning exposure to torture, asked further questions "to determine if the torture caused severe physical or psychological suffering and who perpetrated the torture".[31]

Prevalence rates of torture

The overall prevalence rates of torture in the included studies varied between 1 and 76% (median 27%). The first (Q1) and third quartile (Q3) being 18 and 40%, respectively (see Table 2).

Table 2: *Key counts and figures for torture prevalence in included studies*[i]

	Torture (%)	Witnessing torture (%)	Secondary torture (%)
Number of groups*	33	8	10
Min	1	12	13
Q1	18	32	26.25
Median	27	38.5	39
Q3	40	42.75	45.75
Max	76	46	51

[i] some studies include more than one study group and, in this count, subgroups in the articles were counted and accounted for separately.

The lowest estimate of torture prevalence, 1%, was found in a random sample of long-time resident Vietnamese immigrants to Australia, of which 57% were confirmed refugees.[66] The item torture in this study also incorporated "being a victim of terrorists". Trauma history prevalence levels in this study were also generally lower than in other studies. The second and third lowest estimates of torture prevalence were 8% in a convenience sample of Mandaean refugees in Australia[36] and 10% in a random sample of Syrian refugees living in a refugee camp in Turkey.[32]

The highest estimate, 76%, was found among a convenience sample of Iranian and Turkish asylum seekers and refugees in the Netherlands in the late 1980's. Part of the sample was visitors to the medical centre, but they were in the minority. The second and third highest estimates were 67% in a convenience sample of Afghan asylum seekers in Japan[62] and 54% in a random sample of Cambodian refugees in the US,[48] respectively.

Torture prevalence rates reported separately for men and women, different age groups or nationalities were uncommon. Those who did found primary torture to be more common among men,[24, 30, 34, 43] and among older age groups or groups fleeing at a higher age.[54, 66] Secondary torture was found to be more common among women than men.[24] There are, however, exceptions. Jaranson et al.[57] noted a history of torture prevalence rate of 36% in a sample of Somali and Oromo refugees in Minnesota. When stratifying only for gender, the numbers were very similar, 45% of men and 43% of women had been tortured. But, when stratifying also for ethnicity, it emerged that in the Oromo group 69% of men and 17% of women had been tortured, and in the Somali group, 25% of men and 47% of women had been subjected to torture.

Hondius et al.[30] reported that most of the respondents subjected to torture had also experienced other types of violent persecution. Another study found that torture survivors averaged 13 more traumatic events than non-tortured participants.[57]

Table 3: *Reported torture methods, n (%), among tortured respondents in four studies*

Torture methods	Masmas et al.[58] (n=64)	Montgomery and Foldspang[28] (n=22)	Hondius et al.[30] Study I (n=210)	Hondius et al.[30] Study II (n=118)
Unsystematic blows, incl. with object / Beating or kicking	58 (91)	19 (86)	187 (89)	92 (78)
Falanga	25 (40)		81 (39)	42 (36)
Suspension / Hanging	19 (30)	6 (27)	59 (28)	30 (25)
Electric torture	16 (25)	3 (14)	116 (55)	33 (28)
Personal threats or threats to family / Threats	56 (88)	18 (82)	85 (40)	86 (73)
Witnessing torture	40 (63)	13 (59)	56 (27)	52 (44)
Mock execution	18 (29)		22 (10)	27 (23)
Sexual abuse	6 (10)		26 (12)	26 (22)

Types of torture
The types of torture reported are set out for each study as far as possible in Appendix A. Of particular interest are three articles which report on four studies where the prevalence of different types of torture are reported for three groups: Middle Eastern refugees in Denmark where 30% reported torture,[28] asylum seekers from various countries in Denmark in 2007 where 45% reported some form of torture;[58] and refugees and asylum seekers from Latin America, Turkey and the Middle East (study I) and from Turkey and Iran (study II) in the Netherlands in the late 1980's where 44% and 76% respectively reported some form of torture.[30] More detailed statistics can be found in Table 3.

Measurement of torture and war-related PTEs
As already mentioned, the measurement and reporting of war-related PTEs varies greatly between studies, as can be seen in Appendix A, which limits the possibility for comparison. The instruments used to record trauma history included both specific items, like "torture" and "seeing dead bodies", "murder of family or friend", and less specific items like "being close to death" and "combat situation", as well as open items such as "anything else". In semi-structured interviews or structured interviews with few trauma items, the reported war-related PTEs were much more general. One study found that the single question measuring war-related PTEs was endorsed by such a large share of respondents that statistical analysis of the sequelae of pre-migration trauma became difficult.[31]

It is notable that several of the studies using multiple item instruments did not include any question about experiencing rape or sexual abuse.[27, 54-56] One study found that traumatic events were more likely to be reported to health care personnel when a professional interpreter was present.[61]

Prevalence rates of war-related PTEs
Several studies report that all,[47, 48] or almost all [29, 32, 33, 41, 52, 54, 56] of their study participants have experience of at least one traumatic event. The items "lack of food", "lack of water", "lack of shelter", "lack of medicine", and "living in a refugee camp" were included in many item-lists, and were often the most commonly reported; in a number of cases over 70 or 80% of respondents reported these items.[27, 35] Although unquestionably war-related, they are more relevant as context items.

The violent war-related PTEs most commonly reported were "being close to death", "unnatural death of a loved one", "being or living in a situation of war", "bombing or shooting", "combat situation", "imprisonment", "forced separation from family", "witnessing acts of violence" (see Appendix A). Items concerning rape and sexual abuse receive low rates across all studies, generally between 0 and 10%.[32, 38] With few exceptions,[30, 52, 56] studies do not report on flight-related PTEs.

As mentioned, 15 studies measured pre-migration trauma history with the HTQ Part 1, albeit many with modifications, allowing for comparison of the results from 11 studies, as set out in Table 4.

Table 4: *Trauma checklist scores from the 11 studies which used HTQ Part 1.*

Study (n)	Roth et al.[42] (218)	Sabin et al.[47] (170)	Schweitzer et al.[35] (2011)	Schweitzer et al.[65] (2006)	Silove et al.[38] (62[i]/30[ii])	Nickerson et al.[36] (315)	Cleveland and Rousseau[33] (122/66)	Heeren et al.[39] (86)	Steel et al.[40] (2006) (1393 / 102[iv])	Steel et al. (2002)[66] (1161)	Schwarz-Nielsen et al. [37](53)
Lack of food or water	147 (75)	160 (94)[iv]/ 146 (86)[vi]	50 (74)	37 (59)	20(32) /8(27)	134 (43)	55(45) /27(41)	33 (38)	65(46) /23(23)	231 (20)	34 (64)
Ill without access to medical care	108 (57)		38 (56)	12 (19)	25(40) /10(33)	88 (28)	49(40) /27(41)	22 (26)	53(38) /16(16)	43 (4)	38 (72)
Lack of shelter	146 (74)	145 (85)	47 (69)	36 (57)	19(31) /9(30)	85 (27)	38(31) /16(24)	29 (34)	26(19) /11(11)	33 (3)	26 (49)
Imprison-ment	19 (10)	12 (7)	13 (19)	17 (27)	12(19) /5(17)	59 (19)	39(32) /14(21)	24 (28)	52(37) /15(15)	146 (13)	18 (34)
Serious injury	38 (20)	21 (12)	19 (28)	8 (13)	8(13) /4(13)	31 (10)	47(39) /23(35)	16 (19)	20(14) /9(9)	97 (8)	22 (42)
Combat situation	180 (91)	34 (20)[vii]	38 (58)	24 (38)	14(23) / 3(10)	53 (17)	33(27) /26(39)	25 (29)	21(15) /8(8)	73 (6)	31 (59)
Brain-washing	39 (23)	86 (51)	19 (28)	10 (16)	7(11) /5(17)	14 (4)		9 (10)	18(13) /6(6)		12 (23)
Rape or sexual abuse	8 (4)	6 (4)	7 (10)	7 (11)	0(0) /0(0)	9 (3)	24(20) /19(29)	9(10) [viii]/4(5) [iv]		8(1)[x] /4(0)[xi]	12 (23)
Forced isolation from others	66 (35)		11 (16)	14 (22)	17(27) /6(20)	32 (10)	53(43) /19(29)	27 (31)	20(14) /6(6)	28 (2)	27 (51)
Being close to death	112 (61)	95 (56)	28 (41)	19 (30)	25(40) /10(33)	156 (50)	110(90) /61(92)	34 (40)	106(76) /29(29)	167 (14)	34 (64)
Forced separation from family	86 (45)	79 (47)	31 (46)	54 (86)	29(46) /14(47)	43 (14)	79(65) /45(68)	37 (44)	36(26) /11(11)	129 (11)	32 (60)
Murder of family or friend	94 (48)	90 (53)	23 (34)	43 (68)	24(39) /14(46)	123 (39)	56(46) /35(53)	29 (34)	105(75) /62(61)	38 (3)	32 (60)
Unnatural death of family or friend	85 (45)	76 (45)	29 (43)	11 (18)	29(47) /16(53)	130 (41)	54(44) /35(53)	35 (41)	110(79) /63(62)		36 (68)
Murder of stranger/s	85 (44)	75 (44)	13 (19)	11 (18)	29(46) /12(40)	77 (24)	52(43) /24(36)	17 (20)	68(49) /32(32)		28 (53)
Lost or kidnapped	53 (28)	36 (21)	9 (13)	8 (13)	8 (13) /6 (20)	30 (10)	28(23) /11(17)	15 (17)	16(11) /6(6)		26 (42)
Torture	90 (53)	24 (14)	20 (30)	13 (21)	16(26) /4(13)	24 (8)	52(43) /19(29)	22 (26)	25(18) /12(12)	10 (1)	22 (42)

[i]Asylum seekers, [ii]Refugees, [iii]Temporary Protection Visa holders, [iv]Permanent Protection Visa holders, [v]Lack of food, [vi]Lack of water, [vii]Participated in the conflict in Guatemala, [viii]Sexual assault by family member or familiar person, [ix]Sexual assault by a stranger, [x]Sexual molestation, [xi]Rape

Trauma history and mental ill health

While several studies implicitly report a dose-response relationship between mental ill health and the number of endorsed trauma items, only a few make the suggestion explicitly.[47, 48] Among Somali refugees in Australia, trauma experienced directly by the individual was found to predict PTSD symptomatology and somatisation, while trauma experienced by a person's family members predicted levels of depression and anxiety.[65]

Torture is reported as a particularly strong predictor of mental ill health.[57] A history of torture is found to predict both physical and psychological symptoms. Physical symptoms were found to be twice as frequent and psychological symptoms around two to three times as frequent among torture survivors as among non-tortured newly arrived asylum seekers in Denmark.[58]

Discussion

The aim of this review was to describe and appraise the existing literature concerning prevalence of torture and other war-related PTEs among forced migrants in high-income countries. It was found that, with few exceptions, prevalence of torture and other war-related PTEs were high in the samples studied, although prevalence rates of torture varied greatly overall from between 1 and 76% (median 27%). Torture prevalence was, in general, higher in men and in older age groups. Torture had often occurred in a context of several other war-related PTEs. The violent war-related PTEs most commonly endorsed were "being close to death", "unnatural death of a loved one", "combat situation", "imprisonment", "forced separation from family", and "witnessing acts of violence". The most common instrument to measure trauma history was the HTQ. Most studies were based on small, non-random samples recruited among specific ethnic groups or nationalities, limiting generalisation. Trauma history, torture in particular, was found to be an important background factor for mental ill health. A meta-analysis of the data would not have been meaningful given the heterogenity of the data.

Torture definitions were reported only in a minority of the included studies, and reported history of torture may thus not be comparable. However, studies comparing self-defined torture against the UN definition, show high rates of sensitivity and specificity; 92% and 82% respectively in a sample of Middle Eastern refugees,[28] and 86% and 91% respectively in a sample of Somali and Oromo refugees.[67] The latter study also found that a false positive endorsement of a torture item was related to other types of severe trauma, and false negatives were related to reporting of fewer instances of torture.

The notably low rates of reported sexual violence among the war-related PTEs may be due to the sensitivity of these questions and the context in which epidemiological studies are performed.

Trauma history and prevalence of torture are highly dependent on the background of the group studied and the situation in the place of origin that caused them to migrate. The nature of the conflict or situation, the timing of refuge, and also socio-demographic characteristics influence the probability of having been subjected to certain types of traumata. This must be kept in mind when comparing figures between and within groups. In groups where no epidemiological studies have been carried out, country reports and eye-witness accounts may be the best sources of information in predicting possible trauma levels in certain groups, and what sub-groups are at greatest risk.

Most studies reporting on prevalence of

trauma history in forced migrants focus on mental health, and most checklists are developed in clinical rather than community settings. The most commonly use checklist, the HTQ, was for example designed in relation to Southeast Asian refugee clinical samples in the 1980's,[68] and its trauma items checklist should be understood in this context.[69]

The instrument used and the trauma items included, as well as their definitions, are important factors in how and what items can be reported. This issue has been dealt with in different ways: by having few broad trauma items[31] or having a large number of more specific trauma items,[70] and by including an "everything else"-item in the trauma history checklist. The first solution may lead to high prevalence rates of those few broad trauma items, giving little information of what events have been experienced, and leaving few respondents as comparison group. The second is time-consuming and may be distressing and cause re-traumatisation in the respondents.[71] The third option allows the study to include PTEs beyond those specifically asked for, with or without specifying what that may be, but compromises the specificity of the checklist. Another approach is to perform semi-structured interviews that are later coded into different categories of trauma. Leaving the initiative and power to the respondents may be a good choice, but repeating a traumatic experience in one's own words may be more distressing than responding to a yes/no question in a trauma history checklist.[71] Further, problems with recall become more pronounced as recognition memory is more comprehensive than recall memory.[72] This is particularly relevant in relation to trauma history, as traumatic experiences may affect memory and cognitive function.

Concerning the amount of trauma, or traumatisation, trauma history checklists are rather blunt instruments. Several studies included in this review approximate "amount of trauma" with number of traumata endorsed by each participant. Given the sensitivity of the questions, and the context of epidemiological studies, this may be the only measure available. The average number of traumata was reported and used in models exploring relationships between traumatisation and mental health. While such relationships were found in some studies, such figures should be used with caution. The trauma items themselves are neither comparable, nor carry any information of frequency, severity or subjective response, and in a population like refugees that often have experienced highly traumatic events, the added score on a trauma checklist may better measure the variety in trauma history rather than amount.

The language of forced migration is fraught with politics, and a person labelled asylum seeker in one country may be called illegal entrant or collectively "boat people" in another. "Refugee" may refer to persons in a wide range of situations, from a "refugee proper" who fulfils a specific legal definition, such as that of the 1951 Convention, to someone seeking protection,[21] to anyone from a refugee-sending country.[66, 73] Among "refugees proper" resettled by the UNHCR in 2014, 15.7% were selected on the basis of being "survivors of violence and/or torture".[74] The broad range of both particular and more vague uses of the word "refugee" makes it a concept unwise to use without specification.

Post-migration factors and the need for further research

While trauma level (number of different events) is found to be correlated to PTSD, or

to other types of distress, many studies also find that post-migration stressors like detention,[40, 62, 75] temporary, rather than permanent, residence permits,[38, 40, 63, 76] separation from family[40, 54] worries about family left behind,[36, 65] feelings of not being secure,[59] and social and economic strain and alienation[64] may also be related to PTSD, when controlling for trauma levels. In some cases, the effects of post migration-stressors were found to be larger than that of trauma history.[35, 36, 53] While post-migration stressors may trigger PTSD symptoms, they are not their primary cause, and it is important that further research is carried out in both these fields.

Migration- and post-migration-related trauma have been given little attention in comparison with pre-migration trauma, but it is increasingly important to take into account. With the changing policies of refugee-receiving countries and stricter border management, migrants are forced to put their lives at stake in order to seek refuge.

It is imperative that further knowledge is gained concerning the prevalence of torture among forced migrants; the signatories of the UN Convention against Torture have agreed to provide opportunities for rehabilitation and redress for torture survivors. A first step towards fulfilling this promise is to identify the groups and individuals concerned.

Finding ways to collect comparable data concerning torture experiences and other sensitive questions, such as sexual violence, in an as unobtrusive way as possible is of great importance. Our research group is currently examining the validity of a general protocol for assessing prevalence of torture and trauma history at the community level.

Strengths and limitations

We performed a systematic review using standard searching techniques, limiting the results to peer-reviewed research articles in English. Including grey literature and other languages than English would have yielded more data.[77-80] Studies measuring trauma history as a background variable were included only if they reported prevalence rates in a satisfactory way. Contacting authors for additional data would have resulted in a more comprehensive overview of existing data on torture and trauma history prevalence.

The wide range of type and focus of the studies reporting on trauma history in forced migrants makes standardised appraisal difficult. The specific features of the included data varied. Non-probabilistic samples were generally included in the samples and varying data collection techniques were used. Further, the included studies have used different instruments and varying definitions of torture, meaning that the reported torture prevalence figures are not necessarily comparable. Only descriptive, rather than comparative appraisal, was therefore conducted.

Despite the limitations of the present study, there is a strong case for high trauma history levels, including torture, in all groups of forced migrants. The present study provides a detailed and thought-provoking review of the reported prevalence rates of torture and war-related PTEs in forced migrants as well as related methodological issues in the current research literature.

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Appendix A

Table: *Article matrix of the included studies, including quality appraisal*

CTEI: Communal Traumatic Events Inventory; HTQ: Harvard Trauma Questionnaire; LESHIS: Live Events and Social History Schedule; NLAAS: National Latino and Asian American Study; PDS: Posttraumatic Stress Diagnostic Scale; SLESQ: Stressful Life Events Screening Questionnaire; TLEQ: Trauma Life Events Questionnaire; WTQ: War Trauma Questionnaire; WTS: War Trauma Scale; TPV: Temporary protection visa; PPV: Permanent protection visa.

Author Country Ethnicity/ nationality Legal status Date	**Study design Sampling method Recruitment context Sample size n Response rate (%)**	**Type of measure/ Instrument-no. of items**	**Included participants n[a] (F/M)**	**Torture n (%)[b]**	**Witnessed torture n (%)[b]**
Ai et al. (52) USA Kosovar Refugees 1999-2000	Cross-sectional Convenience Refugee resettlement agencies, community (90)	Self report/ CTEI-24	129 (58/ 71)		54 (42)
Alpak et al.(32) Turkey Syrian Refugees 2013	Cross-sectional Random Refugee camp	Structured interview/ SLESQ-14	352 (173/ 179	34 (10) torture / beating	112 (32) torture / beating
Blair (60) USA Cambodian Refugees 1991	Cross-sectional Random Community 150 (82)	Structured interview/ WTS-42	124 (75/49)	26 (21)	
Cheung (53) New Zealand Cambodian Refugees	Cross-sectional Total Community 239 (93)	Structured interview LESHIS-20	223 (119/104)	51 (23)	

[a] Included participants include those who are relevant for the present study, thus not including reference groups or comparison groups.
[b] Where torture items are indicated as something other than "torture", the item is included in the column.
[c] The quality appraisal checklist can be found in Appendix B.

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	nterpreter/ translation process	Stratified reporting	Ethics approval
	Evacuated from town 120 (93) Stolen possessions 108 (84), Separated from loved ones 104 (81)	Y	Y	N	Y	N	Y	N	N
	Had been in a region that is affected by war 324 (92) Experienced/witnessed the death of a close friend or a family member (except spouse/child) 233 (66) Saw and touched dead bodies apart from funerals 178 (51)	N	Y	Y	Y	N	Y	NA	Y
	Lost relatives during this time because of the war 105 (85) Lost one or more immediate family members during Pol Pot time 97 (78) Saw dead bodies during Pol Pot time 91 (73)	Y	Y	Y	Y	N	Y	N	N
	Forced labour 180 (81) Loss of property/livelihood 145 (65) Torture 51 (23)	Y	Y	NA	Y	N	Y	N	N

Author Country Ethnicity/ nationality Legal status Date	Study design Sampling method Recruitment context Sample size n Response rate (%)	Type of measure/ Instrument-no. of items	Included participants n[a] (F/M)	Torture n (%)[b]	Witnessed torture n (%)[b]
Cleveland and Rousseau (33) Canada Detained/ non-detained asylum seekers 2010-2011	Cross-sectional Consecutive/ Convenience Detention centre,/ Community 135 (90) / 66 (100)	Structured interview HTQ-20	122 (40/82) /66 (33/33)	52 (43)/ 19 (29)	
Craig et al. (50) USA Bosnian Refugees 2005	Cross-sectional Random Community (25)	Self report TLEQ-23	126		
Elklit et al. (21) Denmark Bosnian Asylum seekers/ refugees	Cross-sectional Total Boarding school 165 (72)	Self report HTQ-23	119 (39/80)	27 (23)	
Eytan et al. (61) Switzerland Kosovar Asylum seekers 1998	Cross-sectional Consecutive Medical screening	Structured interview	319 (89/230)		
Hauff and Vaglum (56) Norway Vietnamese Refugees	Cross-sectional Consecutive Community 148 (98)	Semi-structured interview	145 (31/114)		
Heeren et al. (39) Switzerland Asylum seekers resident 0-5 months/12-26 months 2008-2009	Cross-sectional Random Asylum centres/ Community 126 (68)	Structured interview HTQ-23	43 (12/31) /43 (14/29)	11 (26)/ 11 (26)	

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	nterpreter/ translation process	Stratified reporting	Ethics approval
47 (39)/26 (39)	Being close to death 110 (90)/ 61 (92) Beaten or assaulted 82 (67)/ 50 (76) Family member's health or safety seriously threatened 81 (66)/ 47 (71)	N	N	N	Y	N	Y	NA	Y
	Unexpected death of a loved one 101 (80) Experienced events related to living in a war zone 93 (74) Loved one survived life-threatening event 66 (52).	N	Y	N	Y	NA	Y	NA	N
30 (25)	Loss of possessions 59 (50) Firing/shelling 53 (45) Death threats 53 (45)	N	Y	NA	Y	N	Y	NA	U
	Situation of war 156 (49) Personal violence 69 (22) Imprisonment 47 (15)	N	Y	NA	N	NA	N	NA	N
	Experience of bombing, fires, shooting 62 (90) Witnessed war injuries or deaths 48 (69) War exposure: life danger or wounded 36 (52)	N	Y	NA	N	NA	Y	NA	N
	Forced separation from family member 18 (42)/ 19 (44), Unnatural death of family member or friend, 17 (40)/ 18 (42), Being close to death, 14 (33)/ 20 (47)	N	N	N	Y	N	Y	NA	Y

Author Country Ethnicity/ nationality Legal status Date	Study design Sampling method Recruitment context Sample size n Response rate (%)	Type of measure/ Instrument-no. of items	Included participants n[a] (F/M)	Torture n (%)[b]	Witnessed torture n (%)[b]
Hondius et al. (30) The Netherlands Middle Eastern, Latin American/ Turkish,Iranian Refugees and Asylum seekers 1982-1987/1988	Cross-sectional Consecutive, convenience Refugee health centre/refugee reception centre, community	Medical records/ Semi structured interview	480 (147/333)/ /156 (53/103)	210 (44)/ 118 (76)	56 (12)/ 52 (33)
Ichikawa et al. (62) Japan Afghan Asylum seekers 2002-2003	Cross-sectional Convenience Lawyers and NGOs 73 (75)	Structured interview HTQ-17	55 (2/53)	37 (67)	
Jaranson et al. (57) USA Somali/Oromo Refugees 1999-2001	Cross-sectional Convenience Community 1167 (97)	Structured interview Single query, checklist of torture items	1134 (529/605)	405 (36)	
Johnston et al. (63) Australia Refugees TPV/ PPV holders 2004-2005	Cross-sectional Convenience Community	Structured interview	71 (31/40) 60 (33/27)		
Lie (41) Norway Bosnian Refugees 1994-1995	Longitudinal Consecutive Community 554 (58)	Structured interview HTQ-15	343 (176/167)	48 (14)	137 (40)
Lindencrona et al. (64) Sweden Iraqi Refugees 2002-2004	Cross-sectional Consecutive Resettlement support programme	Structured interview /3	112 (43/69)	44 (40) torture/ systematic assault	
Loutan et al. (43) Switzerland Asylum seekers 1993-1994	Cross-sectional Consecutive Entry medical assessment 575 (100)	Self report /8	573 (208/365)	104 (18)	

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	nterpreter/ translation process	Stratified reporting	Ethics approval
	Persecution of family/friends 320 (67)/ 138 (88) Arrest, imprison-ment, camp 230 (48)/ 130 (83) Very difficult flight 78 (16)/ 14 (9)	Y	N/N	NA/ N	N/N	Y	N	Y	Y
	Being close to death 45 (82) Combat situation 44 (80) Forced separation from family members 44 (80)	N	Y	NA	Y	N	Y	NA	Y
		Y	Y	N	Y	Y	Y	Y	Y
	Personal and/or family experience of persecution 37 (52)/23 (38)	N	Y	N	N	NA	Y	NA	Y
	Been in danger of life 302 (88) Experienced war 295 (86) Been living in hiding 233 (68)	Y	Y	N	Y	N	Y	Y	Y
	Living in a war zone 93 (83) Detention and imprisonment 28 (28)	N	N	NA	Y	N	Y	NA	Y
	Imprisonment 186 (33) Murder of family members 178 (31) Severe beating 173 (30)	Y	N	NA	Y	N	N	Y	N

Author Country Ethnicity/ nationality Legal status Date	Study design Sampling method Recruitment context Sample size n Response rate (%)	Type of measure/ Instrument-no. of items	Included participants n[a] (F/M)	Torture n (%)[b]	Witnessed torture n (%)[b]
Marshall et al. (48) USA Cambodian Refugees	Cross-sectional Random Community 586 (87)	Structured interview HTQ-35	490 (319/171)	241 (54)	
Masmas et al. (58) Denmark Asylum seekers 2007	Cross-sectional Convenience Asylum reception centre 164 (87)	Structured interview	142 (41/101)	64 (45)	
Matheson et al. (49) Canada Somali Refugees 2003	Cross-sectional Convenience Community 575 (100)	Self report TLEQ-14	90 (58/32)		
Momartin et al. (27) Australia Bosnian Refugees	Cross-sectional Convenience Community 146 (70)	Structured interview /30	126 (77/49)	57 (45) tortureor rape	
Montgomery and Foldspang (28) Denmark Middle Eastern Refugees 1992-1993	Cross-sectional Consecutive Refugee reception centre 74 (100)	Structured interview	74 (43/31)	22 (30)	
Nickerson et al. (36) Australia Mandaean Refugees 2006-2007	Cross-sectional Convenience Community 367 (86)	Structured interview HTQ-23	315 (165/150)	24 (8)	
Norris and Aroian (29) USA Arab Immigrants/ Refugees	Cross-sectional Convenience Community 548 (83)	Structured interview PDS	453 (453/0)	175 (39)	

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	nterpreter/ translation process	Stratified reporting	Ethics approval
	Near-death due to starvation 483 (99) Experienced a combat situation 480 (98) Forced labor (like animal or slave) 466 (96)	N	Y	Y	Y	N	Y	NA	Y
	Persecution 97 (68) Armed conflict 83 (59), Imprisonment 62 (44)	Y	N	NA	Y	Y	Y	Y	Y
	Ethnic discrimination 30 (33) Death of a loved one 30 (33) Warfare/combat 18 (20)	Y	Y	N	Y	NA	N	Y	N
	Evicted from city 92 (73) Separated from family by force 83 (66) Burned down house 77 (61)	Y	Y	N	N	N	Y	N	U
		N	N	NA	N	Y	Y	NA	N
42 (13)	Imprisonment 59 (19) Serious injury 31 (10) Combat situation 53 (17)	N	Y	N	Y	N	Y	NA	Y
	Military combat or war zone 401 (89) Serious accident, fire, or explosion 318 (70) Imprisonment 218 (48)	N	Y	N	Y	N	Y	NA	N

Author Country Ethnicity/ nationality Legal status Date	Study design Sampling method Recruitment context Sample size n Response rate (%)	Type of measure/ Instrument-no. of items	Included participants n[a] (F/M)	Torture n (%)[b]	Witnessed torture n (%)[b]
Poole and Galpin (34) New Zealand Quota refugees 2007-2008	Cross-sectional Consecutive Refugee entry medical exam	Interviews, records	750 (391/359)	144 (19)	
Rasmussen et al. (45) USA Refugees	Cross-sectional Random Community	Structured interview NLAAS-protocol	660 (315/345)		
Robjant et al. (51) UK Asylum seekers	Cross-sectional Convenience Detention centre, community	Self report PDS	146 (48/98)	41 (28)	
Roth et al. (42) Sweden Kosovar Mass-evacuated asylum seekers 1999	Longitudinal Consecutive Airliner passenger lists 343 (64)	Structured interview HTQ-17	218 (122/96)	90 (53)	
Rousseau et al. (55) Canada Latin American/ African Asylum seekers	Cross-sectional Convenience Community organizations 153 (77)	Semi-structured interview	60/53	5 (8)/ 21 (40)	
Sabin et al. (47) Mexico Guatemalan Refugees 2000	Cross-sectional Random Refugee camps 183 (93)	Structured interview HTQ-19	170 (99/71)	24 (14)	54 (32)
Schwarz-Nielsen and Elklit (37) Denmark Rejected asylum seekers 2007	Cross-sectional Convenience Asylum centres 146 (36)	Self report HTQ-17	53 (19/34)	22 (42)	

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	nterpreter/ translation process	Stratified reporting	Ethics approval
		Y	N	NA	N	Y	N	Y	N
	Unarmed civilian in a war zone 209 (32) Seen bad injury or dead body 202 (35) Civilian exposed to on-going terror 190 (28)	Y	N	N	Y	NA	Y	Y	N
	Imprisonment 29 (43)/ 11 (46)/ 11 (24) Military combat or a war zone 29 (43)/ 2 (8)/16 (35) Non-sexual assault by a stranger 25 (37)/ 4 (17)/ 8 (17)	N	N	N	N	N	N	NA	Y
	Combat situation 180 (91) Any other situation that was frightening or you felt your life was in danger 149 (87) Being close to death 112 (61)	Y	Y	N	Y	N	Y	Y	Y
12 (20)/16 (30)	Witnessing acts of violence 44 (73)/ 42 (79, Treats 36 (60)/ 29 (55) Harassment 27 (45)/ 33 (62)	Y	N	N	N	N	Y	Y	N
	Close to death 95 (56) Assassination of family members or friends 90 (53) Brainwashing 86 (51)	Y	Y	Y	Y	N	Y	N	N
	Witnessed or experienced events: Unnatural death of family or friend 32 (68) Being close to death 34 (64) Murder of family or friend 32 (60)	Y	Y	N	Y	N	Y	N	Y

Author Country Ethnicity/ nationality Legal status Date	Study design Sampling method Recruitment context Sample size n Response rate (%)	Type of measure/ Instrument-no. of items	Included participants n[a] (F/M)	Torture n (%)[b]	Witnessed torture n (%)[b]
Schweitzer, Brough et al. (35) Australia Burmese Refugees	Cross-sectional Consecutive NGOs, community 75 (93)	Structured interview HTQ-16	70 (40/30)	20 (30)	31 (46)
Schweitzer, Melville et al. (65) Australia Sudanese Refugees 2003	Cross-sectional Convenience Community	Structured interview HTQ-16	63 (21/42)	13 (21)	
Shannon et al. (31) USA Karen Refugees 2003	Cross-sectional Total Health screen 181 (99)	Structured interview	179 (87/92)	49 (27)	
Silove et al. (38) Australia Tamil Asylum seekers/ Refugees	Cross-sectional Convenience Community	Self report HTQ-16	62 (14/48) /30	16 (26)/ 4 (13)	
Steel, Silove, Brooks et al. (40) Australia Mandaean TPV-holders/ PPV-holders	Cross-sectional Convenience Community 268 (90)	Self report HTQ-15	241 (109 /132)	37 (15)	
Steel, Silove, Phan et al. (66) Australia Vietnamese Refugees	Cross-sectional Random Community 1413 (82)	Structured interview HTQ-24	1161 (689 /472)	10 (1) Torture, victim of terrorists	
Sundquist and Johansson (59) Sweden Latin American Refugees 1991	Cross-sectional Total Community 413 (83)	Structured interview	338 (174/174)	78 (23)	

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	interpreter/ translation process	Stratified reporting	Ethics approval
25 (39)	Combat situation 38 (58) Forced separation from family members 31 (46) Unnatural death of family or friend 29 (43)	N	Y	Y	Y	N	U	NA	Y
30 (48)	Forced separation from family members 54 (86) Murder of family of friend 43 (68) Combat situation 24 (38)	N	Y	N	Y	N	U	NA	N
92 (51)	War trauma 154 (86)	Y	Y	Y	Y	Y	Y	Y	N
	Unnatural death of family or friend 29 (47)/ 16 (53) Forced separation from family members 29 (46)/ 14 (47) Murder of stranger or strangers 29 (46)/ 12 (40)	Y	Y	N	Y	N	Y	Y	N
	Unnatural death of family or friend 110 (79)/ 63 (62) Being close to death 106 (76)/ 29 (29) Murder of family or friend 105 (75)/ 62 (61)	N	Y	N	Y	N	Y	NA	Y
	Being close to death 167 (14) Imprisonment 146 (13) Forced separation from family members 129 (11)	N	Y	Y	Y	N	Y	NA	Y
		Y	Y	Y	Y	Y	Y	Y	N

Author Country Ethnicity/ nationality Legal status Date	Study design Sampling method Recruitment context Sample size n Response rate (%)	Type of measure/ Instrument-no. of items	Included participants n[a] (F/M)	Torture n (%)[b]	Witnessed torture n (%)[b]
Taloyan et al. (46) Sweden Kurdish Refugees /Immigrants 1991	Cross-sectional Random Community 299 (66)	Structured interview	197 (86/111)		
Turner et al. (54) UK Kosovo-Albanian Refugees 1999-2000	Cross-sectional Consecutive Community	Self report WTQ-14	842 (445/397)		
Willard et al. (24) USA Iraqi Refugees 2008-2009	Cross-sectional Consecutive Health screen 511 (97)	Records of interviews	306 (129/ 177)	111 (36)	

Secondary torture n (%)[b]	Three most common traumas. Item, n (%)	Trauma history in aim[c]	Population well- defined	Respondents match study population	Standardised measurement	Torture defined	nterpreter/ translation process	Stratified reporting	Ethics approval
	Have you been subjected to violence in the home country as a consequence of war or political unrest? 110 (56)	N	Y	N	Y	NA	N	NA	Y
	Forced to leave home 808 (97) Shelling at close range 754 (91) Shooting at close range 747 (90)	N	Y	N	N	NA	Y	NA	N
65 (51)		Y	Y	NA	Y	Y	Y	Y	Y

Appendix B

Critical appraisal checklist for studies reporting prevalence of torture and war related PTEs in refugees

Reviewer: _____ Date: _____
Author: _____ Record no: _____

	Yes	No	Unclear	Not applicable
Is trauma history part of the outcome of the study? (If trauma history is not part of the outcome of the study, only the Sampling, Measurement and Ethics items should be considered, not Analysis)	☐	☐		
Sampling				
1. Is the target population defined clearly?	☐	☐	☐	☐
2. Was probability sampling used to identify potential respondents?	☐	☐	☐	☐
3. Do the characteristics of respondents match the target population?	☐	☐	☐	☐
Measurement				
4. Are the data collection methods standardised?	☐	☐	☐	☐
5. Are the survey instruments reliable?	☐	☐	☐	☐
6. Are the survey instruments valid for the study group?	☐	☐	☐	☐
7. Is torture properly defined, and responses checked against that definition (if applicable)?	☐	☐	☐	☐
8. Are appropriate translation standards (translation-back translation) met and/or trained interpreters used (if applicable)?	☐	☐	☐	☐
Analysis				
9. Are trauma history results reported and analysed and for subgroups of the study group?	☐	☐	☐	☐
10. Do the reports include confidence intervals for statistical estimates?	☐	☐	☐	☐
Ethics				
11. Is the study approved by an ethical committee or discusses ethical implications in a satisfactory way?	☐	☐	☐	☐

Comments:

Instructions:
For studies where trauma history is not part of the reported outcome of the study, questions 9 and 10 (Analysis) are not applicable. For reporting appraisal in the excel table, use these abbreviations:
Yes=Y, No=N, Unclear=U, Not Applicable=NA

Sampling
1. Is the target population defined clearly? See Boyle 1998

2. Was probability sampling used to identify potential respondents?
   See Boyle 1998. If mixed random/consecutive and non-random sampling is used, mark UNCLEAR in the checklist.

3. Do the characteristics of respondents match the target population?
   See Boyle 1998

Measurement
4. Are the data collection methods standardised? See Boyle 1998.
5. Are the survey instruments reliable? See Boyle 1998.
6. Are the survey instruments valid for the study group? See Boyle 1998.

7. Is torture properly defined, and responses checked against that definition?
   Do the researchers state what definition of torture is used? Have they made sure that what is reported by the respondents as torture meet that definition? This question is only applicable for studies where prevalence of "torture", "witnessing torture" and/or "secondary torture" are reported.

8. Are appropriate translation standards (translation-back translation) met and/or trained interpreters used (if applicable)?
   Have the researchers used translation-back translation procedures when translating the instruments/questionnaires used (if applicable)? Do they use trained interpreters or bilingual interviewers in a satisfactory way when interviewing respondents (if applicable)?

Analysis
9. Are trauma history results reported and analysed and for subgroups of the study group?
   Have the researchers reported trauma history (torture, witnessing torture, secondary torture and/or other trauma history items) for subgroups (age groups, gender, origin etc.) of the sample?

10. Do the reports include confidence intervals for statistical estimates?
    See Boyle 1998.

Ethics
11. Is the study approved by an ethical committee and discusses ethical implications in a satisfactory way?
    Both approval and satisfactory discussion of ethical implications should be present in order to answer this question with YES.